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SOLUBILITY DATA SERIES

Volume 59

.

POLYCYCLIC AROMATIC HYDROCARBONS: BINARY NON-AQUEOUS SYSTEMS PART II: SOLUTES F-Z

SOLUBILITY DATA SERIES

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INTRODUCTION TO THE SOLUBILITY DATA SERIES

SOLUBILITY OF SOLIDS IN LIQUIDS

NATURE OF THE PROJECT

The Solubility Data project (SDP) has as its aim a comprehensive review of published data for solubilities of gases, liquids and solids in liquids or solids. Data of suitable precision are compiled for each publication on data sheets in a uniform format. The data for each system are evaluated and, where data from independent sources agree sufficiently, recommended values are proposed. The evaluation sheets, recommended values, and compiled data sheets are published on consecutive pages.

COMPILATIONS AND EVALUATIONS

The formats for the compilations and critical evaluations have been standardized for all volumes. A description of these formats follows.

Compilations

The format used for the compilations is, for the most part, self-explanatory. Normally, a compilation sheet is divided into boxes, with detailed contents described below.

Components: Each component is listed according to IUPAC name, formula, and Chemical Abstracts (CA) Registry Number. The Chemical Abstracts name is also included if this differs from the IUPAC name, as are trivial names if appropriate. IUPAC and common names are cross-referenced to Chemical Abstracts names in the System Index.

The formula is given either in terms of the IUPAC or Hill (1) system and the choice of formula is governed by what is usual for most current users: i.e., IUPAC for inorganic compounds, and Hill system for organic compounds. Components are ordered on a given compilation sheet according to:

- (a) saturating components:
 - (b) non-saturating components;

(c) solvents.

In each of (a), (b) or (c), the components are arranged in order according to the IUPAC 18column periodic table with two additional rows:

Columns 1 and 2:	H, alkali elements, ammonium, alkaline earth elements
Columns 3 to 12:	transition elements
Columns 13 to 17:	boron, carbon, nitrogen groups; chalcogenides, halogens
Column 18:	noble gases
Row 1:	Ce to Lu
Row 2:	Th to the end of the known elements, in order of atomic number.

The same order is followed in arranging the compilation sheets within a given volume.

Original Measurements: References are abbreviated in the forms given by Chemical Abstracts Service Source Index (CASSI). Names originally in other than Roman alphabets are given as transliterated by Chemical Abstracts. In the case of multiple entries (for example, translations) an asterisk indicates the publication used for compilation of the data.

Variables: Ranges of temperature, pressure, etc. are indicated here.

Prepared by: The names of all compilers are given here.

Experimental Values: Components are described as (1), (2), etc., as defined in the

"Components" box. Data are reported in the units used in the original publication, with the exception that modern names for units and quantities are used; e.g., mass per cent for weight per cent; mol dm³ for molar; etc. Usually, only one type of value (e.g., mass per cent) is found in the original paper, and the compiler has added the other type of value (e.g., mole per cent) from computer calculations based on 1989 atomic weights (2). Temperatures are expressed as $t/^{\circ}$ C, $t/^{\circ}$ F or T/K as in the original; if necessary, conversions to T/K are made, sometimes in the compilations and always in the critical evaluation. However, the author's units are expressed according to IUPAC recommendations (3) as far as possible.

Errors in calculations, fitting equations, etc. are noted, and where possible corrected. Material inserted by the compiler is identified by the word "compiler" or by the compiler's name in parentheses or in a footnote. In addition, compiler-calculated values of mole or mass fractions are included if the original data do not use these units. If densities are reported in the original paper,

conversions from concentrations to mole fractions are included, but otherwise this is done in the evaluation, with the values and sources of the densities being quoted and referenced.

Details of smoothing equations (with limits) are included if they are present in the original publication and if the temperature or pressure ranges are wide enough to justify this procedure and if the compiler finds that the equations are consistent with the data.

The precision of the original data is preserved when derived quantities are calculated, if necessary by the inclusion of one additional significant figure. In some cases, compilers note that numerical data have been obtained from published graphs using digitizing techniques. In these cases, the precision of the data can be determined by the quality of the original graph and the limitations of the digitizing technique. In some cases graphs have been included, either to illustrate data more clearly, or if this is the only information in the original. Full grids are not usually inserted as it is not intended that users should read data from the graphs.

Method: The apparatus and procedure are mentioned briefly. Abbreviations used in Chemical Abstracts are often used here to save space, reference being made to sources of further detail if these are cited in the original paper.

Source and Purity of Materials: For each component, referred to as (1), (2), etc., the following information (in this order and in abbreviated form) is provided if available in the original paper: source and specified method of preparation; properties; degree of purity.

Estimated Error: If estimated errors were omitted by the original authors, and if relevant information is available, the compilers have attempted to estimate errors (identified by "compiler" or the compiler's name in parentheses or in a footnote) from the internal consistency of data and type of apparatus used. Methods used by the compilers for estimating and reporting errors are based on Ku and Eisenhart (4).

Comments and/or Additional Data: Many compilations include this section which provides short comments relevant to the general nature of the work or additional experimental and thermodynamic data which are judged by the compiler to be of value to the reader.

References: The format for these follows the format for the Original Measurements box, except that final page numbers are omitted. References (usually cited in the original paper) are given where relevant to interpretation of the compiled data, or where cross-reference can be made to other compilations.

Evaluations

The evaluator's task is to assess the reliability and quality of the data, to estimate errors where necessary, and to recommend "best" values. The evaluation takes the form of a summary in which all the data supplied by the compiler have been critically reviewed. There are only three boxes on a typical evaluation sheet, and these are described below.

Components: The format is the same as on the Compilation sheets.

Evaluator: The name and affiliation of the evaluator(s) and date up to which the literature was checked.

Critical Evaluation:

(a) Critical text. The evaluator checks that the compiled data are correct, assesses their reliability and quality, estimates errors where necessary, and recommends numerical values based on all the published data (including theses, patents and reports) for each given system. Thus, the evaluator reviews the merits or shortcomings of the various data. Only published data are considered. Documented rejection of some published data may occur at this stage, and the corresponding compilations may be removed.

The solubility of comparatively few systems is known with sufficient accuracy to enable a set of recommended values to be presented. Although many systems have been studied by at least two workers, the range of temperatures is often sufficiently different to make meaningful comparison impossible.

Occasionally, it is not clear why two groups of workers obtained very different but internally consistent sets of results at the same temperature, although both sets of results were obtained by reliable methods. In such cases, a definitive assessment may not be possible. In some cases, two or more sets of data have been classified as tentative even though the sets are mutually inconsistent.

(b) Fitting equations. If the use of a smoothing equation is justifiable the evaluator may provide an equation representing the solubility as a function of the variables reported on all the compilation sheets, stating the limits within which it should be used.

(c) Graphical summary. In addition to (b) above, graphical summaries are often given.

(d) Recommended values. Data are recommended if the results of at least two independent

groups are available and they are in good agreement, and if the evaluator has no doubt as to the adequacy and reliability of the applied experimental and computational procedures. Data are reported as tentative if only one set of measurements is available, or if the evaluator considers some aspect of the computational or experimental method as mildly undesirable but estimates that it should cause only minor errors. Data are considered as doubtful if the evaluator considers some aspect of the computational or experimental method as undesirable but still considers the data to have some value where the order of magnitude of the solubility is needed. Data determined by an inadequate method or under ill-defined conditions are rejected. However, references to these data are included in the evaluation together with a comment by the evaluator as to the reason for their rejection.

(e) References. All pertinent references are given here, including all those publications appearing in the accompanying compilation sheets and those which, by virtue of their poor precision, have been rejected and not compiled.

(f) Units. While the original data may be reported in the units used by the investigators, the final recommended values are reported in SI units (3) when the data can be accurately converted.

QUANTITIES AND UNITS USED IN COMPILATION AND EVALUATION OF SOLUBILITY DATA

Mixtures, Solutions and Solubilities

A mixture (5) describes a gaseous, liquid or solid phase containing more than one substance, where the substances are all treated in the same way.

A solution (5) describes a liquid or solid phase containing more than one substance, when for convenience one of the substances, which is called the *solvent*, and may itself be a mixture, is treated differently than the other substances, which are called *solutes*. If the sum of the mole fractions of the solutes is small compared to unity, the solution is called a *dilute solution*.

The *solubility* of a solute 1 (solid, liquid or gas) is the analytical composition of a saturated solution, expressed in terms of the proportion of the designated solute in a designated solvent (6).

"Saturated" implies equilibrium with respect to the processes of dissolution and precipitation; the equilibrium may be stable or metastable. The solubility of a substance in metastable equilibrium is usually greater than that of the same substance in stable equilibrium. (Strictly speaking, it is the activity of the substance in metastable equilibrium that is greater.) Care must be taken to distinguish true metastability from supersaturation, where equilibrium does not exist.

Either point of view, mixture or solution, may be taken in describing solubility. The two points of view find their expression in the reference states used for definition of activities, activity coefficients and osmotic coefficients.

Note that the composition of a saturated mixture (or solution) can be described in terms of any suitable set of thermodynamic components. Thus, the solubility of a salt hydrate in water is usually given as the relative proportions of anhydrous salt in solution, rather then the relative proportions of hydrated salt and water.

Physicochemical Quantities and Units

Solubilities of solids have been the subject of research for a long time, and have been expressed in a great many ways, as described below. In each case, specification of the temperature and either partial or total pressure of the saturating gaseous component is necessary. The nomenclature and units follow, where possible, ref. (3)

A note on nomenclature. The nomenclature of the IUPAC Green Book (3) calls the solute component B and the solvent component A. In compilations and evaluations, the first-named component (component 1) is the solute, and the second (component 2 for a two-component system) is the solvent. The reader should bear these distinctions in nomenclature in mind when comparing equations given here with those in the Green Book.

1. Mole fraction of substance 1, x_1 or x(1):

$$x_1 = n_1 / \sum_{s=1}^{c} n_s$$
 [1]

where n_s is the amount of substance of s, and c is the number of distinct substances present (often

the number of thermodynamic components in the system). Mole per cent of substance 1 is $100 x_1$

2. Ionic mole fractions of salt i, x_{i+} , x_{i-} : For a mixture of s binary salts i, each of which ionizes completely into v_{i+} cations and v_{i-} anions, with $v_i = v_{i+} + v_{i-}$ and a mixture of p non-electrolytes k, of which some may be considered as solvent components, a generalization of the definition in (7) gives:

$$x_{+i} = \frac{v_{+i}x_i}{1 + \sum_{j=1}^{s} (v_j - 1)x_j}, \quad x_{-i} = \frac{v_{-i}x_{+i}}{v_{+i}} \quad i = 1...s$$
[2]

$$x_{ok} = \frac{x_k}{1 + \sum_{j=1}^{s} (v_j - 1) x_j}, \quad k = (s+1)...c$$
[3]

The sum of these mole fractions is unity, so that, with c = s + p,

$$\sum_{i=1}^{s} (x_{+i} + x_{-i}) + \sum_{i=s+1}^{c} x_{oi} = 1$$
 [4]

General conversions to other units in multicomponent systems are complicated. For a threecomponent system containing non-electrolyte 1, electrolyte 2 and solvent 3,

$$x_{1} = \frac{v_{2}x_{01}}{v_{2}-(v_{2}-1)x_{2}} \quad x_{2} = \frac{x_{2}}{v_{2}-(v_{2}-1)x_{2}}$$
[5]

These relations are used in solubility equations for salts, and for tabulation of salt effects on solubilities of gases.

3. Mass fraction of substance 1, w_1 or w(1):

$$w_1 = g_1 / \sum_{s=1}^{c} g_s$$
 [6]

where g_s is the mass of substance s. Mass per cent of substance 1 is 100 w_1 . The equivalent terms weight fraction, weight per cent and g (1)/100 g solution are no longer used.

4. Solute mole fraction of substance 1, $x_{s,1}$:

$$x_{s,1} = m_1 / \sum_{s=1}^{c'} m_s = x_1 / \sum_{s=1}^{c'} x_s$$
[7]

where c' is the number of solutes in the mixture. These quantities are sometimes called Jänecke mole (mass) fractions (8, 9). Solute mass fraction of substance 1, $w_{s,1}$, is defined analogously.

5. Solvent mole fraction of substance 1, $x_{v,1}$:

$$x_{\nu,1} = x_1 / \sum_{s=1}^{p} x_s$$
 [8]

Here, p is the number of solvent components in the mixture. Solvent mass fraction of substance 1, $w_{v,1}$, is defined analogously.

6. Molality of solute 1 in a solvent 2, m_1 :

$$m_1 = n_1 / n_2 M_2$$

roj

SI base units: mol kg⁻¹. Here, M_2 is the molar mass of the solvent.

7. Aquamolality, Solvomolality of substance 1 in a mixed solvent with components 2, 3 (10), $m_1^{(3)}$:

$$m_1^{(3)} = m_1 \overline{M} / M_3$$
^[10]

SI base units: mol kg⁻¹. Here, the average molar mass of the solvent is

$$\overline{M} = x_{\nu,2}M_2 + (1 - x_{\nu,2})M_3$$
[11]

and $x_{v,2}$ is the solvent mole fraction of component 2. This term is used most frequently in discussing comparative solubilities in water (component 2) and heavy water (component 3) and in their mixtures.

8. Amount concentration of solute 1 in a solution of volume V, c_1 :

$$c_1 = [\text{formula of solute}] = n_1/V$$
 [12]

SI base units: mol m⁻³. The symbol c_1 is preferred to [formula of solute], but both are used. The old terms *molarity*, *molar* and *moles per unit volume* are no longer used.

9. Mass concentration of solute 1 in a solution of volume V, ρ_1 :

$$\rho_1 = g_1 / V = c_1 M_1 / V$$
 [13]

SI base units: kg m⁻³.

10. Mole ratio, $r_{n,12}$ (dimensionless):

$$r_{n,12} = n_1/n_2$$
 [14]

Mass ratio, symbol $r_{m,12}$, may be defined analogously.

11. Ionic strength, I_m (molality basis), or I_c (concentration basis):

$$I_m = \frac{1}{2} \sum_i m_i z_i^2, \quad I_c = \frac{1}{2} \sum_i c_i z_i^2$$
 [15]

where z_i is the charge number of ion i. While these quantities are not used generally to express solubilities, they are used to express the compositions of non-saturating components. For a single salt i with ions of charge numbers z_+ , z_- ,

$$I_{m} = |z_{+}z_{-}|vm_{i}, \quad I_{c} = |z_{+}z_{-}|vc_{i}$$
[16]

Mole and mass fractions and mole ratios are appropriate to either the mixture or the solution point of view. The other quantities are appropriate to the solution point of view only. Conversions between pairs of these quantities can be carried out using the equations given in Table 1 at the end of this Introduction. Other useful quantities will be defined in the prefaces to individual volumes or on specific data sheets.

Salt hydrates are generally not considered to be saturating components since most solubilities are expressed in terms of the anhydrous salt. The existence of hydrates or solvates is noted carefully the critical evaluation.

Mineralogical names are also quoted, along with their CA Registry Numbers, again usually in in the text, and CA Registry Numbers (where available) are given usually in the critical evaluation.

In addition to the quantities defined above, the following are useful in conversions between concentrations and other quantities.

12. Density, ρ :

$$\rho = g/V = \sum_{s=1}^{c} \rho_s$$
[17]

SI base units: kg m⁻³. Here g is the total mass of the system.

13. Relative density, $d = \rho/\rho^0$: the ratio of the density of a mixture at temperature *t*, pressure *p* to the density of a reference substance at temperature *t'*, pressure *p'*. For liquid solutions, the reference substance is often water at 4°C, 1 bar. (In some cases 1 atm is used instead of 1 bar.) The term specific gravity is no longer used.

Thermodynamics of Solubility

Thermodynamic analysis of solubility phenomena provides a rational basis for the construction of functions to represent solubility data, and thus aids in evaluation, and sometimes enables thermodynamic quantities to be extracted. Both these aims are often difficult to achieve because of a lack of experimental or theoretical activity coefficients. Where thermodynamic quantities can be found, they are not evaluated critically, since this task would involve examination of a large body of data that is not directly relevant to solubility. Where possible, procedures for evaluation are based on established thermodynamic methods. Specific procedures used in a particular volume will be described in the Preface to that volume.

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	x _i	w _i	m _i	c _i
<i>x_i</i> =	x _i	$\frac{1}{1 + \frac{M_i}{M_c} \left(\frac{1}{w_i} - 1 + \sum_{j \neq i}^{c-1} \left(\frac{M_c}{M_j} - 1\right) \frac{w_j}{w_i}\right)}$	$\frac{1}{1 + \frac{1}{m_i M_c} + \sum_{j \neq i}^{c-1} \frac{m_j}{m_i}}$	$\frac{1}{1 + \frac{1}{M_c} \left(\frac{\rho}{c_i} - M_i\right) + \sum_{j \neq i}^{c-1} \frac{c_j}{c_i} \left(1 - \frac{M_j}{M_c}\right)}$
w _i =	$\frac{1}{1 + \frac{M_c}{M_i} \left(\frac{1}{x_i} - 1 + \sum_{j \neq i}^{c-1} \left(\frac{M_j}{M_c} - 1\right) \frac{x_j}{x_i}\right)}$	w _i	$\frac{1}{1 + \frac{1}{m_i M_i} \left(1 + \sum_{j \neq i}^{c-1} m_j M_j \right)}$	<u> </u>
< m _i =	$\frac{1}{M_c \left(\frac{1}{x_i} - 1 - \sum_{j \neq i}^{c-1} \frac{x_j}{x_i}\right)}$	$\frac{1}{M_i \left(\frac{1}{w_i} - 1 - \sum_{j \neq i}^{c-1} \frac{w_j}{w_i}\right)}$	m _i	$\frac{1}{\frac{1}{c_i}\left(\rho - \sum_{j \neq i}^{c-1} c_j M_j\right) - M_i}$
<i>c_i</i> =	$\frac{\rho}{M_i + M_c \left(\frac{1}{x_i} - 1 + \sum_{j \neq i}^{c-1} \left(\frac{M_j}{M_c} - 1\right) \frac{x_j}{x_i}\right)}$	$\frac{\rho w_i}{M_i}$	$\frac{\rho}{\frac{1}{m_i} \left(1 + \sum_{j \neq i}^{c-1} M_j m_j\right) + M_i}$	c _i

Table 1. Interconversions between Quantities Used as Measures of Solubility c-component Systems Containing c - 1 Solutes i and Single Solvent c

 ρ - density of solution; M_i - molar masses of i. For relations for 2-component systems, set summations to 0.

PREFACE

The chemical literature contains solubility data for a large number of solutes dissolved in a single solvent. Solubility data for crystalline solutes in binary solvent systems are relatively scarce, and data for ternary (and higher-order) solvent systems are virtually nonexistent as experimental measurements become progressively more difficult, time-consuming and expensive with each additional solvent component. Despite continued efforts by experimentalists and scientific organizations, both in terms of new experimental measurements and critically evaluated data compilations, there still exist numerous systems for which actual solubility data are not readily available. To address this problem, researchers have to determine precise experimental data in binary solvents, and then use the measured results to check the predictive ability of modern semi-empirical relationships derived from basic thermodynamic principles.

With the aforementioned ideas in mind, I compiled published solubility data for anthracene, naphthalene, phenanthrene, pyrene, fluorene, fluoranthene, carbazole, thianthrene, and other two- and three-ring polycyclic aromatic heteroatom compounds in pure and binary organic solvent mixtures so that experimental values will be readily available in a single reference source. Volume 54 in the IUPAC Solubility Data Series initiated this effort. The chemical literature contained far too many systems, however, to be accommodated within established page limits for a single volume. Volume 54 was limited in scope to polycyclic aromatic compounds dissolved in binary organic solvent systems. Pure, single component solvents were included in Volume 54 only if the solubility measurements were performed as part of the binary solvent study. A large number of solute-solvent systems were excluded under this criterion. The present two-volume set is devoted to solubility of polycyclic aromatic compounds in pure, single-component, organic nonelectrolyte solvents. Experimental data for a very select number of binary solvent mixtures is also included in the set. For the most part, binary solvent data was published after Volume 54 was completed, and involves either anthracene or pyrene dissolved in alkane + alcohol and alcohol + alcohol mixtures. Solubility data for well over 250 different systems were retrieved from the chemical literature and are compiled in this volume. Literature sources searched include a complete coverage of Chemical Abstracts from 1907 to June 1994; Beilstein, Handbuch der Organischen Chemie; and the International Critical Tables.

Critical evaluation of published solubility data was performed only if four or more independent sources of experimental data could be found for the particular solutesolvent system under consideration. In the case of isothermal solubility data, where only a single temperature was studied, the published mole fraction solubilities were arithmetically averaged, and the mean and corresponding standard deviation are reported. If experimental solubilities were given at several temperatures, then the critical evaluation involved a linear least squares regression of the natural logarithm of mole fraction solubility versus the reciprocal of absolute temperature, in accordance with accepted thermodynamic practices. The mathematical equation for the

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least squares line and Ln x_1 versus 1/T graph are included in the volume. For a few systems, there was sufficient experimental data to permit construction of the binary phase diagram.

Polycyclic aromatic compounds are an important chemical class. They have been used as model compounds in coal liquefaction process design calculations, serve as the "parent" compound or base found in a number of drug molecules, and several are mutagens, carcinogens, or common organic pollutants resulting from oil spills. Moreover, many of the polycyclic aromatic compounds have very limited mole fraction solubilities, and from a thermodynamic modeling standpoint, saturated solutions are treated as infinitely dilute solutions. The solute is considered to be surrounded by solvent molecules and solute-solute molecular interactions are ignored.

Compilations of published solubility data for crystalline polycyclic aromatic compounds dissolved in pure, single component solvents and in binary organic solvent systems alone, however, do not address entirely the needs of the scientific community. There are a number of systems that one encounters for which actual experimental data may consist solely of solute solubilities in the two pure solvents, and for which additional experimental measurements are not feasible. Solubility determinations are both time-consuming and expensive, and presume that the necessary chemicals and instrumentation have been procured. Research laboratories are not routinely equipped to measure solubility data, and one cannot always wait days for additional supplies to be delivered. In such instances, predictive expressions provide the sole means to generate desired values in timely fashion. Predictive methods facilitate interpolation between measured data points and help to screen data sets for possible outliers (incorrect entries) in need of redetermination.

Recognizing the increasing role that predictive expressions have enjoyed in modern science, I have decided to include in this volume a very brief survey of select methods currently being used to estimate solute solubilities in mixed solvents, particular binary alkane + alcohol and alcohol + alcohol systems. Admittedly, not every predictive expression can be presented. Several hundred pages of text would be required to adequately examine the various quantitative structure-activity relationships (QSARs), semi-empirical, stoichiometric complexation and group contribution models developed during the past fifty years. Discussion in the present volume is limited to basic thermodynamic principles governing the solubility of crystalline nonelectrolyte solutes, and predictive expressions actually used by the editor to screen the compiled solubility data sets for possible outliers. Agreement between theory and experimental solubilities indicates that the measured values are internally consistent. Such comparisons afford a convenient means to critically evaluate single measurements, as is the case with the majority of published solubility data for polycyclic aromatic compounds in binary solvent mixtures. Conventional methods of evaluation used in the Solubility Data Series are not applicable since data available from the different laboratories were not measured under the same conditions of temperature and solvent composition. For a more detailed treatment of solubility behavior, readers are referred to monographs by Acree (1), Grant and Higuchi (2),

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Hildebrand and Scott (3), James (4), Prausnitz et al. (5), and Shinoda (6).

BASIC THERMODYNAMIC PRINCIPLES

Composition of a liquid solution can be expressed in a variety of ways, as (1) the ratio of the amount of one component to the amount of a second component, n_1/n_2 , etc., (2) amount concentration

 $c_i = [i] = n_i/V$ SI base units: mol m⁻³ [1]

(3) m le fraction

 $x_1 = n_1/(n_1 + n_2 + n_3 + ...)$ [2]

or (4) volume fraction

 $\phi_1 = n_1 V_1 / (n_1 V_1 + n_2 V_2 + n_3 V_3 + \dots)$ ^[3]

Strictly speaking, the true volume of a real solution is not equal to the sum of the volumes of the individual components but is the fractional sum of partial molar volumes, which for a ternary solution is $V = x_1V_1 + x_2V_2 + x_3V_3$. For purposes of this monograph, volume fractions are defined in terms of the molar volumes of the pure unmixed components $V_{m,i}$ (molar mass divided by density)

 $\phi_1 = n_1 V_{m,1} / (n_1 V_{m,1} + n_2 V_{m,2} + n_3 V_{m,3} + \dots) \qquad [4]$ This quantity serves as an input parameter in expressions for estimating solubilities in mixed solvents since it requires no a priori knowledge concerning volumetric behavior. Solute solubilities can be found in the chemical literature in terms of any of the aforementioned concentration variables, or as molality, m_i, which is the amount of solute <u>i</u> divided by the mass of the solvent

 $m_i = n_i/n_s M_s$ SI base units: mol kg⁻¹ [5] where M_s is the molar mass of the solvent.

Solubility is a strong function of the intermolecular forces between the solute and solvent molecules. The well-known adage *similis similibus solvuntur* (like is dissolved by like) serves merely as an empirical statement of the fact that, in the absence of specific interactions, the molecular forces between chemically similar species lead to a smaller endothermic enthalpy of solution than those between dissimilar species. Because dissolution must be accompanied by a decrease in the Gibbs energy, a low endothermic enthalpy is preferable to a large one. Factors other than the intermolecular forces between the solute and solvent, however, play an important role in determining the solubility of a crystalline material.

The solubility of a solid substance may be considered to arise from three, and in some cases four, contributions:

- (a) The breaking of solute-solute interactions in the crystalline lattice;
- (b) the breaking of solvent-solvent interactions, often referred to as cavity formation;
- (c) the formation of solute-solvent interactions; and
- (d) the perturbation of solvent-solvent interactions in the immediate vicinity of the solute, as in solvent structuring.

Each of these four contributions may be further divided into specific chemical (complexation) and nonspecific physical (simple dispersion) interactions. To

illustrate, consider the solubilities of the two isomers phenanthrene and anthracene. The mole fraction solubility of phenanthrene in benzene at 298 K ($x_1 = 0.2068$) is approximately 25 times greater than that of anthracene ($x_1 = 0.0074$), even though both solutes are chemically similar to each other. The reason for this difference in solubility results from something that is all too often overlooked, that is, the solubility depends not only upon the activity coefficient of the solute (which reflects the intermolecular forces between the solute and solvent and between solute molecules), but also depends upon the chemical potential of the standard state to which the activity coefficient refers and on the chemical potential of the pure solid.

The thermodynamic criterion for solubility equilibrium of a component 1 in any system at temperature T, standard pressure p° is:

$$\mu_1^*(\text{solid}, T, p^\circ) = \mu_1(\sin, T, p^\circ)$$
[6]

We choose the standard state for component 1 as the chemical potential of supercooled liquid 1 and T, p^0 . Thus

$$\mu_1^*(\mathbf{B}, T, p^0) = \mu_1^0(\mathbf{1}, T, p^0) + \mathrm{RT} \ln a_1$$
[7]

from which the standard Gibbs energy of fusion is

$$\Delta_{fus} G_m^{o} / RT = -\ln a_1$$

Assuming that the difference in heat capacities, $\Delta C_{\rm p}$, between the solid and supercooled liquid remains constant over the temperature range from T to the melting temperature, $T_{\rm m}$, the following expression is obtained

$$\ln a_{1}(s) = \ln (\gamma_{1}x_{1}) = -\Delta_{fus}H_{m}^{o} (T_{m} - T)/R T T_{m} + \Delta C_{p} (T_{m} - T)/RT$$
$$- (\Delta C_{p}/R) \ln (T_{m}/T)$$
[9]

for the solubility of a crystalline solute in a liquid solvent, where $\Delta_{fus}H_m^o$ is the standard enthalpy of fusion. In the above expression γ_1 is the activity coefficient of the solute. The expression for $a_1(s)$ must include additional term(s) if the solid undergoes a phase transition (7,8).

MELTING TEMPERATURES AND ENTROPIES OF FUSION

Melting point temperatures and enthalpy of fusion data are tabulated in Table I for 29 polycyclic aromatic hydrocarbons and hetero-atom derivatives. Except where noted, numerical values were taken from published compilations (9,10). For molecules not listed in the table it is possible to estimate $\Delta_{fus}H_m^{0}$ from simple geometric considerations and/or group contribution parameters. Enthalpy and entropy are both state functions, and only the initial and final states, *i.e.*, the crystal and the melt, need to be defined. At the molecular level, the two states differ in their relative degree of geometric order. Intermolecular distance, spacial orientation and packing arrangement in the crystalline state are defined within a much narrower range than in the liquid melt.

For conceptualization, Yalkowsky and Valvani (11) divided the total melting process for rigid, nonspherical polycyclic aromatic compounds into the following subprocesses:

(a) Translational melting representing the change from the highly ordered arrangement of the molecular mass centers in the crystal to the more randomized, expanded

Polycyclic Aromatic Compound	T _m /κ	∆ _{fus} H _m ^o /kJ mol ⁻¹	Δ _{fus} sm [°] /J mol ⁻¹ K ⁻¹
Naphthalene	351.3	19.12	54.4
Acenaphthylene	362.1	10.96	30.3
Dibenzofuran	355.7	18.60	52.3
Dibenzothiophene	371.0	15.30	41.2
Thianthrene	428.5	25.44	59.4
Carbazole	516.2	29.42	57.0
Acenaphthene	366.6	21.54	58.8
Acridine	452.4	19.70	43.5
Fluorene	388.0	19.58	50.5
Xanthene	373.7	19.20	51.4
Anthracene	492.7	28.83	58.5
Phenanthrene	372.4	16,47	44.2
Pyrene	424.4	17.11	40.3
Fluoranthene	381.0	18.87	49.5
Chrysene	531.4	26.15	49.2
Triphenylene	473.5	25.10	53.0
Benz[a]anthracene	434.3	21.38	49.2
Benzo[c]phenanthrene	334.7	16.31	48.7
Perylene	553.9	31.75	57.3
Benzo[a]pyrene	454.2	17.32	38.1
Benzo[ghi]perylene	554.2	17.37	31.3
Dibenz[a,c]anthracene	553.5	25.82	46.6
Dibenz[a,h]anthracene	544.2	31.16	57.3
Benzo[rst]pentaphene	556.8	27.87	50.1
Dibenzo[def,p]chrysene	501.2	24.68	49.2
Dibenzo[a,e]pyrene	520.2	30.50	58.6
Phthalazine	364.5	13.32	36.5
Quinazoline	320.9	16.95	52.8
Quinoxaline	305.7	11.80	38.6

TABLE I.Enthalpies and Entropies of Fusion of Select Polycyclic AromaticHydrocarbons and Hetero-atom Derivatives^a

^a Melting temperatures, T_m , and enthalpy of fusion data for all polycylic aromatic compounds, except for phthalazine, quinazoline and quinoxaline, were taken from published compilations by Acree (9,10). Experimental data for the three diazanaphthalenes was from a calorimetric study by Sabbah and Pemenzi (25).

arrangement in the liquid; and

(b) Rotational melting resulting from the change in ordered arrangement of the crystalline molecule's major axis to a randomly oriented arrangement in the liquid.

As noted by the authors, the molar entropy of fusion, $\Delta_{fus} S_m^{o}$, is equal to the entropy of the liquid state minus the entropy of the crystal:

(10)

$$A_{fus}S_m^{-1} = -R \ln P_{fus}$$
 [10]
where P_{fus} is the ratio of the number of molecular arrangements of molecules in the
crystal to the number of molecular arrangements of molecules in the liquid. The ratio
is equal to the probability (above the melting point temperature) of a collection of
one mole of liquid molecules spontaneously arranging themselves in such a manner so as
to fulfill the geometric requirements of the crystal. Since entropies of the
translational melting and rotational melting subprocesses are related to their
probabilities are always independent (*i.e.*, $P_{fus} = P_{trans} P_{rot}$), then entropies must be
additive

$$\Delta_{\text{fus}} S_{\text{m}}^{\text{o}} = \Delta_{\text{trans}} S_{\text{m}}^{\text{o}} + \Delta_{\text{rot}} S_{\text{m}}^{\text{o}}$$
^[11]

The appearance of translational entropy of fusion can be visualized by a twodimensional analogy involving a field of checkers or disks that has been trapped into a nearly close-packed two-dimensional crystalline arrangement. When the crystal melts, a slight expansion and randomization of the disk positions occur. The probability of two-dimensional fusion is equal to the total number of arrangements of the disks that are possible within the area allotted for the solid divided by the corresponding number of arrangements that are possible within the area allotted to the liquid melt. This, in turn, is related to the ratio of the free areas available within each phase for the disks. Free areas are replaced by free volumes in the case of a three-dimensional arrangement of molecules. Entropies of fusion for spherical molecules such as inert gases and for pseudospherical molecules such as tetrachloromethane typically range between 12.5 - 16.7 J mol⁻¹ K⁻¹. Yalkowsky and Valvani (11) assumed the intermediate value of $A_{trens}S_m^{\circ} = 14.6$ J mol⁻¹ K⁻¹ for the translational melting contribution to the entropy of fusion, though the authors did state that nonspherical molecules generally have a somewhat larger volume change associated with melting.

The rotational entropy of fusion results from differences in rotational degrees of freedom. In the crystal, molecules (with their centers of mass fixed) can wobble or vibrate approximately 10° in the spherical coordinates ϕ and θ from their most stable position after averaging over all axes. Molecules in the liquid phase have much greater orientational freedom and can rotate over a much wider range of ϕ and θ . If it is assumed for simplicity that liquid molecules can rotate freely, then any reference point will trace out a sphere about the center of gravity of the molecule. The reference point traces out only a spherical segment if the molecule's motion is restricted, as would be the case for the crystalline lattice. A $\pm 10^{\circ}$ variation in ϕ and θ corresponds to a spherical segment that is roughly 0.00754 times that of a sphere of the same radius, or roughly a rotational entropy of fusion of $\Lambda_{fus}S_m^{\circ} = 41.8$ J mol⁻¹ K^{-1} . On the basis of the above discussion (11), the total entropy of fusion for a rigid polycyclic aromatic compound would be $\Delta_{fus} S_m^{\ o} = \Delta_{trans} S_m^{\ o} + \Delta_{rot} S_m^{\ o} \approx 56.4 \text{ J mol}^{-1} \text{ K}^{-1}$, which is in reasonable (though by no means perfect) agreement with experimental values listed in Table I.

Chickos and coworkers (12,13) derived a group additivity approach for estimating entropies of fusion based upon the mathematical relationships: For acyclic and aromatic hydrocarbons

 $\Delta_{fus} S_m^{o} = \Sigma n_i C_i G_i + \Sigma n_j C_j G_j + \Sigma n_k C_K G_k$ [12] For cyclic hydrocarbons

 $\Delta_{fus} S_m^{0} = [8.41 + 1.025 (n - 3)] + \Sigma n_i C_i G_i + \Sigma n_j C_j G_j + \Sigma n_k C_K G_k [13]$ For polycyclic molecules

 $\Delta_{fus} S_m^{\circ} = [8.41 \ N + 1.025 \ (R - 3N)] + \Sigma n_i C_i G_i + \Sigma n_j C_j G_j + \Sigma n_k C_k G_k$ [14]

where $K = \sum n_k$, n refers to the number of equivalent methylene groups necessary to simulate the size of the ring, R is the total number of ring atoms and N is the total number of rings in the polycyclic molecule. Hydrocarbon components are identified by the subscript *i*, the *j* subscript identifies the carbon(s) bearing the functional group(s) and the *k* subscript denotes the different functional groups in the molecule. Each group contribution to the entropy of fusion represents the product of the number of identical groups in the molecule (n) times the group value (G) times an empirical coefficient (C) which modifies each group contribution according to the structural environment around the carbon atom bearing substituent functional groups.

Inherent in the above group additivity estimation scheme is the underlying assumption that the contribution of any particular atom or group of atoms to the entropy change associated in going from a rigid anisotropic solid state to the highly isotropic liquid state is fundamentally constant. Entropies for mesomorphic liquid crystalline transitions are thus included in the overall melting process, if possible. The corresponding enthalpies of fusion, needed in the calculation of $a_1(s)$, are obtained by multiplying $\Delta_{fus} S_m^{\ o}$ by the observed melting point temperature, T_m . Unpublished computations (14) for over 150 organic compounds not included in the original group parameter evaluation show that eqns. [12] - [14] provide very reasonable estimates of $\Delta_{fus} S_m^{\ o}$ and $\Delta_{fus} H_m^{\ o}$. Average difference between predicted and observed values was approximately 7 %.

SOLUBILITIES IN SINGLE SOLVENTS

Enthalpies of fusion have been discussed above at length so that interested readers can calculate solute activity coefficients from the experimental solubility data tabulated in this volume. Enthalpy of fusion, activity coefficient and solute solubility are interrelated through eqn. [9]. Equation [9] immediately provides two useful conclusions regarding the solubility of solids in liquids. Although these conclusions rigorously apply to ideal solutions ($\gamma_1 = 1$), they serve as useful guidelines for other solutions that do not deviate excessively from ideal behavior.

- (a) For a given solid-solvent system, the solubility increases with increasing temperature. The rate of increase is approximately proportional to the enthalpy of fusion and, to a first approximation, does not depend upon the melting temperature.
- (b) For a given solvent and at a fixed temperature, if two solids have a similar entropy of fusion then the solid with the lower melting temperature has the higher solubility. Similarly, if two solids have about the same melting temperature then the one with the lower enthalpy of fusion has the higher solubility.

In the preceding discussion Raoult's law is used to define the thermodynamic properties of an ideal solution. For very high molecular weight solvent systems, eqn. [9] (with $\gamma_1 = 1$) grossly underestimates solubilities of small solute molecules. This is not too surprising because the Flory-Huggins model

 $G = RT [x_1 \ln \phi_1 + x_2 \ln \phi_2]$ [15]

 $\ln a_{1} = \ln \phi_{1} + \phi_{2} (1 - V_{m,1}/V_{m,2})$ [16] provides a more realistic description of solution ideality in polymer solutions. The corresponding expression for solubility (as a volume fraction eqn. [3]) is given by $\ln \phi_{1} + (1 - \phi_{1})(1 - V_{m,1}/V_{m,2}) = - \Delta_{fus}H_{m}^{o} (T_{m} - T)/RT T_{m} + \Delta C_{p} (T_{m} - T)/RT - (\Delta C_{p}/R) \ln (T_{m}/T)$ [17]

Chiou and Manes (15) compared experimental solubilities of 11 crystalline nonpolar polycyclic aromatic compounds and their derivatives in glycerol trioleate ($V_{m,s} = 966$ cm³ mol⁻¹) to predictions based upon eqns. [9] and [17]. The authors' calculations revealed that the observed mole fraction solubilities are considerably higher than the predictions of eqn. [9] (with $\Delta C_p = 0$), the predictions in some instances being low by as much as 100 percent. In comparison, the observed volume fraction solubilities, ϕ_1 , were comparable to or only slightly lower than the predictions of eqn. [17] (again with $\Delta C_p = 0$). The magnitude of the deviations from Racult's law is well beyond the uncertainty of the observed solubilities. Since the solubility data can be explained by the Flory-Huggins model and since there is no convincing evidence to indicate strong specific solute-solvent interactions, the observed negative deviations from Racult's law appears to be an artifact of the model caused by large molecular size disparity. The solubility measurements of Chiou and Manes, combined with an earlier study on glycerol trioleate/water partition coefficients (16), suggest that the Flory-Huggins model should be considered in systems having molar volume ratios of 4 or more.

SCATCHARD-HILDEBRAND SOLUBILITY PARAMETER THEORY

Elementary ideas from statistical thermodynamics lead to some general conclusions at the molecular level concerning nonideality of mixtures. Nonelectrolyte mixtures are classified according to their molecular properties by considering the kind of internal forces acting between like and unlike molecules. Such a division of intermolecular forces leads to classification of mixtures into simple and complex liquids. The interactions in simple liquids result primarily from dispersion forces, or nonspecific interactions as they are often called. On the other hand, in complex liquids the molecules have a permanent nonuniform distribution of charge (polar liquids) so that they interact through electrostatic forces in addition to dispersion forces. The electrostatic interactions (primarily dipole-dipole interactions) lead to some degree of specific interactions resulting in a specific geometric orientation of one molecule with respect to an adjacent molecule. For this reason this interaction is sometimes called the orientation effect. If these interactions are strong enough, stable dimers or larger complexes may be formed and the liquid is said to be associated. The boundary between weakly polar liquids and associated liquids is ne¹ alous, and there have been numerous disagreements in the published literature regarcing the separation of specific and nonspecific interactions.

The Scatchard-Hildebrand solubility parameter model (6,17) provides reasonable estimates of solute solubility in systems containing only nonspecific interactions:

RT ln $(a_1(s)/x_1) = V_{m,1} (1 - \phi_1)^2 (\delta_1 - \delta_{solvent})^2$ [18] where $\delta_{solvent}$ and δ_1 refer to the solubility parameters of the solvent and supercooled liquid solute, respectively, $V_{m,1}$ is the molar volume of the supercooled liquid solute, x_1 is the saturation mole fraction solubility, and ϕ_1 is the solute's volume fraction solubility calculated using the ideal molar volume approximation (eqn. [4]). For solvent components, the liquid molar volumes and solubility parameters are often tabulated in the literature (for example, see both Hoy (18) and Barton (17)), and when not available, they can be calculated directly from density and vapor pressure measurements on the pure liquid. Molar volumes of supercooled liquid solutes, $V_{m,1}$, on the other hand, are estimated either by group contribution methods or by the experimentally determined apparent molar volumes in the solvent of interest. Solubility parameters of the supercooled liquid can be obtained indirectly from solubility measurements or can be estimated by group contribution methods.

Tables II and III compare the predictions of eqn. [18] to experimental solubilities of naphthalene and biphenyl in a wide range of organic solvents. Properties used in the computations include the activities of the supercooled liquid solutes, a(s,biphenyl) = 0.384 and a(s,naphthalene) = 0.312, the molar volumes, $V_{m,biphenyl}$ = 149.4 cm³ mol⁻¹ and $V_{m,naphthalene}$ = 123.0 cm³ mol⁻¹, and best estimates for the solubility parameters, $\delta_{biphenyl}$ = 20.05 J^{1/2} cm^{-3/2} and $\delta_{naphthalene}$ = 19.84 J^{1/2} cm^{-3/2}. Inspection of Tables II and III reveals that the predicted values are, for the most part, within 10 % of the experimental solubilities.

SOLUBILITIES IN BINARY SOLVENT MIXTURES

The solubility parameter approach is extended to binary solvent mixtures by defining $\delta_{solvent}$:

 $\delta_{\text{solvent}} = (\phi_2 \ \delta_2 + \phi_3 \ \delta_3) / (\phi_2 + \phi_3) = \phi_2^{(s)} \ \delta_2 + \phi_3^{(s)} \ \delta_3 \qquad [19]$ as a volume fraction average of the solubility parameters of the two pure solvents, δ_2 and δ_3 . The superscript (s) indicates that the solvent composition is calculated as if the solute were not present.

The popularity of the solubility parameter approach arises because it relates the solubility of a solute in a given solvent, either pure or mixed, to the bulk properties

Solvent	δ ₂ ª	V _{m,2} /cm ³ mol ⁻¹	x ₁ (exp) ^b	x ₁ (calc)
Dichloromethane	20.21	64.50	0.330	0.311
Chlorobenzene	19.78	102.26	0.311	0.312
Benzene	18.74	89.41	0.292	0.305
frichloromethane	18.74	80.64	0.339	0.305
fethylbenzene	18.27	106.84	0.292	0.295
Sthylbenzene	18.08	123.08	0.289	0.289
Tetrachloromethane	17.49	97.08	0.255	0.275
Cyclohexane	16.75	108.76	0.147	0.242
<pre>dethylcyclohexane</pre>	15.95	128.32	0.147	0.189
n-Octane	15.42	163.48	0.142	0.146
n-Heptane	15.34	147.48	0.130	0.144
n-Hexane	14.87	131.51	0.122	0.119
Carbon disulfide	20.29	60.62	0.283	0.311

TABLE II. Comparison Between Experimental and Predicted Naphthalene Solubilities

^a $\delta_2/J^{1/2}$ cm^{-3/2}.

^b Experimental solubilites were determined by Chang (26).

Solvent	δ2 ^ª	$V_{m,2}/cm^3 mol^{-1}$	x ₁ (exp) ^b	x ₁ (calc)
Dichloromethane	20.21	64.50	0.412	0.384
Chlorobenzene	19.78	102.26	0.397	0.384
Benzene	18.74	89.41	0.381	0.374
Trichloromethane	18.74	80.64	0.422	0.375
Methylbenzene	18.27	106.84	0.377	0.362
Ethylbenzene	18.08	123.08	0.363	0.353
Tetrachloromethane	17.49	97.08	0.342	0.340
Cyclohexane	16.75	108.76	0.190	0.295
Methylcyclohexane	15.95	128.32	0.183	0.215
n-Octane	15.42	163.48	0.147	0.147
n-Heptane	15.34	147.48	0.138	0.145
n-Hexane	14.87	131.51	0.124	0.112
Carbon disulfide	20.29	60.62	0.369	0.384
				•

TABLE III. Comparison Between Experimental and Predicted Biphenyl Solubilities

^a $\delta_2/J^{1/2}$ cm^{-3/2}.

^b Experimental solubilities were determined by Chang (26).

of the pure components. Whereas this particular application of the solubility parameter theory has certain practical advantages in that it requires only a minimal number of experimental observations, a more flexible expression for binary solvent systems can be derived by replacing the individual δ_i values with the measured solubilities in the pure solvents and the measured thermodynamic excess properties of the solvent mixture.

To incorporate direct experimental observations into the basic solubility parameter model, first substitute eqn. [19] into eqn. [18]

 $(1 - \phi_1)^{-2} RT \ln (a_1(s)/x_1) = V_{m,1} (\phi_2^{(s)} \delta_2 + \phi_3^{(s)} \delta_3 - \delta_1)^2$ [20] and multiply out the squared term

$$(1 - \phi_1)^{-2} RT \ln (a_1(s)/x_1) = V_{m,1} [\phi_2^{(s)} (\delta_2 - \delta_1)^2 + \phi_3^{(s)} (\delta_3 - \delta_1)^2 - \phi_2^{(s)} \phi_3^{(s)} (\delta_2 - \delta_3)^2]$$

$$(21)$$

Inspection of eqn. [21] reveals that, for model systems obeying this expression, the saturation solubility of the solute in a pure solvent (components 2 and 3) is described by

$$(G_1^{E})_i^{\alpha} = (1 - \phi_1)^{-2} RT \ln (a_1(s)/x_1) = V_{m,1} (\delta_1 - \delta_1)^2 \qquad i = 2,3 \quad [22]$$

The small subscripts i = 2 and i = 3 are used to distinguish the properties of the solute in a pure solvent from those in the binary solvent system. Similarly, the excess Gibbs energy of the binary solvent mixture can be expressed

 $G_{23}^{E} = (x_{2}^{(s)} V_{m,2} + x_{3}^{(s)} V_{m,3}) \phi_{2}^{(s)} \phi_{3}^{(s)} (\delta_{2} - \delta_{3})^{2}$ [23] in terms of solubility parameters.

Combining eqns. [21]-[23] one finds that the solubility of a solute in binary solvent mixtures with only nonspecific interactions is

$$RT \ln (a_{1}(s)/x_{1}) = (1 - \phi_{1})^{2} [\phi_{2}^{(s)} (G_{1}^{E})_{2}^{\circ} + \phi_{3}^{(s)} (G_{1}^{E})_{3}^{\circ} - V_{m,1} (x_{2}^{(s)} V_{m,2} + x_{3}^{(s)} V_{m,3})^{-1} G_{23}^{E}]$$

$$(24)$$

a volume fraction average of the solute's properties in the two pure solvents, $(G_1^c)_2^{w}$ and $(G_1^E)_3^{w}$, and a contribution due to the non-mixing of the solvent pair by the presence of the solute. Enhancement of the non-mixing term by a large solute molecule can lead to predictions of maximum $(G_{23}^E > 0)$ or minimum $(G_{23}^E < 0)$ mole fraction solubilities.

Thus far, attention has focussed primarily on the predictive aspects of the solubility parameter approach. It should be noted that the basic solution model can also serve as the point of departure for the mathematical representation of solubility data. The extended Hildebrand solubility equation

$$-\ln x_{1} = -\ln a_{1}(B) + (V_{m,1} \phi_{solvent}^{2}/RT) [\delta_{solvent}^{2} + \delta_{1}^{2} - 2 \Sigma A_{i} \delta_{solvent}^{i}]$$
[25]

derived by Martin and co-workers (19-21) reproduces very accurately the solubility behavior of many crystalline nonelectrolytes in very nonideal binary solvent mixtures. Numerical values of the various A_i -coefficients are computed from the solubility data using a least squares analysis, provided that the solubility parameters of all solvent components are known. Mathematical representations, such as eqn. [25], do enable the calculation of interpolated solubilities between two measured values and facilitate computerized storage and retrieval of experimental data. Ochsner *et al.* (22) discussed the mathematical representation of solubility data using expressions based upon mixture response-surface methods, and Acree *et al.* (23,24) suggested representations based upon the Nearly Ideal Binary Solvent (NIBS) and Modified Wilson models. Readers are encouraged to read these articles for several interesting ideas and comparisons.

MATHEMATICAL REPRESENTATION OF SOLUBILITY DATA IN BINARY SOLVENTS

Expressions for predicting the thermodynamic properties of ternary nonelectrolyte systems have served as the point of departure for mathematical representation of experimental excess molar Gibbs energy, excess molar heat capacity, excess molar enthalpy and excess molar volume data. Differences between predicted and observed values are expressed as

 $(Z^{E}_{123})_{exp} - (Z^{E}_{123})_{calc} = x_1 x_2 x_3 Q_{123}$ [26] with Q-functions of varying complexity. For most systems encountered, the experimental data can be adequately represented by a power series expansion

$$Q_{123} = A_{123} + \Sigma B_{12}^{(i)} (x_1 - x_2)^i + \Sigma B_{13}^{(j)} (x_1 - x_3)^j + \Sigma B_{23}^{(k)} (x_2 - x_3)^k$$
[27]

though rarely are experimental data determined with sufficient precision to justify more than a few parameters.

Conceptually, these ideas can be extended to solute solubilities in binary solvent mixtures. However, there has never been up until this volume a sufficiently large data base for solid solute solubilities to warrant computerized storage in equational form. With computerized data storage and retrieval becoming increasingly popular, it seems appropriate to review the various mathematical expressions that have been proposed in the chemical literature for describing the variation of solute solubility with binary solvent composition. Like the predictive expressions discussed in the preceding sections, mathematical representations provide not only a means to screen experimental data sets for possible outliers in need of redetermination, but also facilitate interpolation at solvent compositions falling between measured data points.

Acree and coworkers (23,24) suggested possible mathematical representations for isothermal solubility data based upon either a Combined NIBS/Redlich-Kister model:

$$\ln x_1 = x_2^{(s)} \ln (x_1)_2 + x_3^{(s)} \ln (x_1)_3 + x_2^{(s)} x_3^{(s)} \Sigma S_1 (x_2^{(s)} - x_3^{(s)})^{\dagger}$$
[28]

or Modified Wilson equation

$$\ln (a_{1}(s)/x_{1}) = 1 - x_{2}^{(s)} \{1 - \ln [a_{1}(s)/(x_{1})_{2}]\}/(x_{2}^{(s)} + x_{3}^{(s)} \Lambda_{23}^{adj}) - x_{3}^{(s)} \{1 - \ln [a_{1}(s)/(x_{1})_{3}]\}/(x_{2}^{(s)} \Lambda_{32}^{adj} + x_{3}^{(s)})$$
[29]

where the various S_i and Λ_{ij}^{adj} "curve-fit" parameters can be evaluated via least squares analysis. A summarized comparison presenting the descriptive abilities of eqns. [29] and [28] is summarized in Tables IV and V, respectively. For pyrene, a value of $a_1(s)$ = 0.1312 was used in all Modified Wilson computations. The actual solubilities are

Solvent (2) + Solvent (3)	۸ _{ij} adj,a	% Dev. ^b
n-Hexane + 1-propanol	1.340	1.4
	1.348	
n-Heptane + 1-propanol	1.249	0.7
	1.577	
n-Octane + 1-propanol	1.032	1.1
	1.936	
Cyclohexane + 1-propanol	1.749	0.6
	1.281	
Methylcyclohexane + 1-propanol	1.605	0.4
	1.450	
2,2,4-Trimethylpentane + 1-propanol	0.804	0.6
	1.744	
n-Hexane + 2-propanol	1.080	0.4
	1.628	
n-Heptane + 2-propanol	1.072	0.9
	1.908	
n-Octane + 2-propanol	0.936	1.1
	2.248	
Cyclohexane + 2-propanol	1.464	0.8
	1.556	
Methylcyclohexane + 2-propanol	1.404	1.0
	1.744	
2,2,4-Trimethylpentane + 2-propanol	0.904	0.8.
	1.752	

TABLE IV. Mathematical Representation of Pyrene Solubilities in Select Binary Mixtures using the Modified Wilson Equation

^a Adjustable parameters for the Modified Wilson equation are ordered as Λ_{23}^{adj} and then Λ_{32}^{adj} . See eqn. [29] in text. ^b % Dev. = (100/N) Σ | ln [x_A (cal)/ x_A (exp)] |.

Solvent (2) + Solvent (3)	Si ^a	% Dev ^b	s,ª	% Dev ^b	
n-Hexane + 1-propanol	1.334	2.3	1.188	0.6	
	- 0.045		0.073		
			0.544		
n-Heptane + 1-propanol	1.476	1.1	1.383	0.4	
•	- 0.190		- 0.202		
			0.280		
n-Octane + 1-propanol	1.703	2.4	1.528	0.3	
	- 0.627		- 0.419		
			0.701		
Cyclohexane + 1-propanol	1.459	0.9	1.396	0.7	
•	0.232		0.268		
			0.226		
Methylcyclohexane + 1-propanol	1.544	0.8	1.507	0.4	
	- 0.042		- 0.011		
			0.138		
2,2,4-Trimethylpentane + 1-propanol	0.936	0.9	0.864	0.1	
	- 0.352		- 0.255		
			0.304		
n-Hexane + 2-propanol	1.511	0.7	1.460	0.3	
	- 0.302	-	- 0.265		
			0.190		
n-Heptane + 2-propanol	1.948	2.0	1.799	0.2	
······································	- 0.636		- 0.478		
			0.581		
n-Octane + 2-propanol	2.225	3.0	1.988	0.4	
	- 1.082		- 0.795		
			0.942		
Cyclohexane + 2-propanol	1.830	1.4	1.726	0.1	
	- 0.219		- 0.165	0.2	
			0.372		
Methylcyclohexane + 2-propanol	2.054	1.8	1.921	0.3	
······································	- 0.380		- 0.279		
			0.491		
2,2,4-Trimethylpentane + 2-propanol	1.423	1.4	1.329	0.5	
	- 0.345	•••	- 0.232	6.5	
			0.378		

TABLE V.Mathematical Representation of Pyrene Solubilities in Select Binary
Solvent Mixtures using the Combined NIBS/Redlich-Kister Equation

^a Regressional coefficients in the Combined NIBS/Redlich-Kister mathematical representation. Coefficients are ordered as S_0 , S_1 and S_2 . First and third columns refer to the best two- and three-parameter equation, respectively. See eqn. [28] of text.

^b % Dev. = (100/N) Σ | ln [$x_A(cal)/x_A(exp)$] |.

given in the data compilation portion of this volume. Careful examination of Tables IV and V reveals that both equations provide a reasonable mathematical representation of the anthracene solubility data in all systems considered. Back-calculated and observed values generally differ by less than \pm 1.5 %, which is comparable to the quoted experimental uncertainty. There may be one or two individual data points with each system, however, for which deviations may exceed \pm 3 %. Excellent agreement between experimental values and those back-calculated from the Combined NIBS/Redlich-Kister and Modified Wilso⁻ equations further document the internal consistency of the anthracene solubility data. For these systems there were no other convenient means to critically evaluate the published isothermal solubility data. In all of the computations performed to date, I failed to find any experimental data in need of redetermination.

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FLUORANTHENE SOLUBILITIES IN PURE AND BINARY SOLVENT MIXTURES

A. <u>Saturated Hydrocarbons (including cycloalkanes)</u>

cyclohexane

- B. <u>Alkenes</u>
- C. Aromatic Hydrocarbons

benzene methylbenzene 1,2,4,5-tetramethylbenzene naphthalene 2-methylnaphthalene 2,7-dimethylnaphthalene fluorene anthracene phenanthrene acenaphthene chrysene

- D. Esters
- E. <u>Ethers</u>

1,4-dioxane

F. Haloalkanes and Haloaromatic Hydrocarbons

tetrachloromethane chlorobenzene

G. Alcohols

methanol ethanol 1-octanol 1-hydroxy-2-methylbenzene

H. Ketones

2-propanone

I. <u>Miscellaneous Pure Solvents</u>

pyridine
nitrobenzene
dimethyl sulfoxide
1,3-dinitrobenzene
1,4-dinitrobenzene
1,3,5-trinitrobenzene
1,2,3,5-tetranitrobenzene
2,4-dinitromethylbenzene
2,4,6-trinitromethylbenzene
2,4,6-trinitromethoxybenzene

2

2,4,6-trinitroaniline 2-chloro-1,3,5-trinitrobenzene 3-methyl-2,4,6-trinitrophenol

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J. <u>Binary Solvent Mixtures</u>

COMPONENTS :			ORIGINAL MEASUREMENTS:			
(1) Fluoranthene; C ₁₆ H ₁₀ ; [206-44-0]			McLaughlin, E.; Zainal, H.A.			
(2) Cyclohexane; C ₆ H ₁₂ ; [110-82-7] VARIABLES:			J. Chem. Soc. <u>1960</u> , 3854-3857.			
			PREPARED BY:			
Temperature			W.E. Acre	ee, Jr.		
EXPERIMENTAL V	VALUES			,		
T/K	*2	<i>*</i> 1	T/K	*2	×1	
301.8	0.9796	0.0204	344.2	0.8237	0.1763	
317.6	0.9600	0.0400				
325.5	0.9401	0.0599				
338.2	0.8809	0.1191				
		AUXILIARY	INFORMATION	ł		
METHOD: APPARI	ATUS/PROCEDUR	E	SOURCE ANI	D PURITY OF M	ATERIALS:	
thermometer.	Constant temperature bath and a precision thermometer.			(1) Purity not given, Gesellschaft fur Teerverwertung, was passed over an alumina column with benzene as eluant.		
Mixtures of known concentrations sealed in glass ampoules and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly increased. Solubility determined by visual noting the temperature at which the last trace of solid solute disappeared.			(2) Purity, source and purification method was not specified.			
			ESTIMATED	ERRORS:		
			T/K: precision ± 0.1. x_1 : ± 0.0003 (compiler).			

COMPONENTS:		ORIGINAL MEASUREMENTS:							
<pre>(1) Fluoranthene; C₁₆H₁₀; [206-44-0] (2) Benzene; C₆H₆; [71-43-2] VARIABLES:</pre>		McLaughlin, E.; Zainal, H.A. J. Chem. Soc. <u>1959</u> , 863-867. PREPARED BY:							
					Temperature		W.E. Acree, Jr.		
					EXPERIMENTAL VALUES	·····			
T/K	*2	<i>x</i> ₁							
318.0	0.7826	0.2174							
329.2	0.6989	0.3011							
337.6	0.6174	0.3826							
350.4	0.4669	0.5331							
	AUXILIARY	INFORMATION							
METHOD: APPARATUS/PROCEDURE		SOURCE AND PURITY OF MATERIALS:							
Constant temperature bath and a precision thermometer.		 Purity not given, Gesellschaft fur Teerverwertung, was passed over an alumina column with benzene as eluant. 							
Mixtures of known concentrations sealed in glass ampoules and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly increased. Solubility determined by visual		(2) "AnalaR", was dried over sodium wire and freshly distilled before use.							
noting the temperature trace of solid solute	at which the last	ESTIMATED ERRORS:							
ursuppeared,		T/K: precision ± 0.1. x ₁ : ± 0.0003 (compiler).							

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	••••••••••••••••••••••••••••••••••••••								
COMPONENTS: (1) Fluoranthene; C ₁₆ H ₁₀ ; [206-44-0] (2) Benzene; C ₆ H ₆ ; [71-43-2]		ORIGINAL MEASUREMENTS: Kravchenko, V.M.; Pastukhova, I.S. J. Gen. Chem. U.S.S.R. <u>1959</u> , 29, 29-34. (English translation)							
					VARIABLES: Temperature		PREPARED BY: W.E. Acree, Jr.		
T/K	<i>x</i> 2	<i>x</i> 1	Solid Phase						
278.7	1.000	0.000	(2)						
276.5	0.979	0.021	(2)						
274.9	0.956	0.044	(2)						
274.4	0.943	0.057	Eutectic						
277.2	0.935	0.065	(1)						
280.9	0.924	0.076	(1)						
290.2	0.898	0.102	(1)						
295.5	0.877	0.123	(1)						
300.8	0.856	0.144	(1)						
307.7	0.829	0.171	(1)						
309.5	0.813	0.187	(1)						
315.8	0.780	0.220	(1)						
324.4	0.714	0.286	(1)						
333.2	0.651	0.349	(1)						
343.3	0.569	0.431	(1)						
348.3	0.511	0.489	(1)						
383.2	0.000	1.000	(1)						
		Ţ	0.057 and T/K = 274.4.						
	AUXILIARY	INFORMATION							
ETHOD: APPARATUS/PROCE	DURE	SOURCE AND PU	RITY OF MATERIALS:						
Phase diagram was determined using a thermal analysis method (described in detail in V.M. Kravchenko, J. Phys. Chem. U.S.S.R. <u>1939</u> , 13, 133), supplemented by visual observations.		 (1) Purity and chemical source were not specified in paper, was recrystallized before use. (2) Purity and chemical source were not specified in paper, was distilled before use. 							
		ESTIMATED ERR							

Components:	ORIGINAL MEASUREMENTS: Krezewki, R.; Smutek, M. Collection Czech. Chem. Commun. <u>1967</u> , 32, 1258-1259. PREPARED BY: W.E. Acree, Jr.		
(1) Fluoranthene; C ₁₆ H ₁₀ ; [206-44-0]			
(2) Methylbenzene; C ₇ H ₈ ; [108-88-3]			
VARIABLES:			
T/K = 293			
EXPERIMENTAL VALUES			
t/°C x ₂	<i>x</i> 1		
20.0 0.895	0.105		
	INFORMATION		
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:		
Constant temperature bath, thermometer, and a precision balance. Excess solute and solvent placed in closed glass container and allowed to equilibrate for several hours at constant temperature. Aliguots of saturated solutions were transferred into tared constainers and weighed. Solubilities calculated from	 Purity not specified, coal tar extract was recrystallized several times from ethanol to give a melting point temper ature of 110.0-110.3 °C. 99 %, Urxovy Zavody, Czech., was used as received. 		
weight of solid residue that remained after solvent had evaporated.	ESTIMATED ERRORS:		
	T/K : precision \pm 0.05.		

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COMPONENTS: (1) Fluoranthene; C ₁₆ H ₁₀ ; [206-44-0] (2) 1,2,4,5-Tetramethylbenzene; C ₁₀ H ₁₄ ; [95-93-2] VARIABLES: Temperature		ORIGINAL MEASUREMENTS:			
			V.M.; Pastukhova, I.S.		
		J. Gen. Chem. U.S.S.R. <u>1959</u> , 29, 29-34. (English translation) PREPARED BY:			
					W.E. Acree,
		EXPERIME	NTAL VALUES		
	T/K	×2	x 1	Solid Phase	
	352.4	1.000	0.000	(2)	
	347.4	0.915	0.085	(2)	
	343.3	0.840	0.160	(2)	
	339.4	0.762	0.238	(2)	
	336.5	0.715	0.285	(2)	
	332.7	0.650	0.350	(2)	
	332.2	0.618	0.382	Eutectic	
	334.5	0.601	0.399	(1)	
	340.4	0.552	0.448	(1)	
	349.2	0.462	0.538	(1)	
	358.2	0.351	0.649	(1)	
	368.2	0.218	0.782	(1)	
	374.8	0.118	0.882	(1)	
	383.2	0.000	1.000	(1)	
		AUXILIAF	Y INFORMATION		
			SOURCE AND P	URITY OF MATERIALS:	
ETHOD: A	PPARATUS/PROCE	DURE			
Phase di thermal detail i U.S.S.R.	agram was dete analysis metho n V.M. Kravche <u>1939</u> , <i>13</i> , 13	DURE prmined using a dd (described in nko, J. Phys. Chem. 3), supplemented by	specifi before	use.	
Phase di thermal detail i U.S.S.R.	agram was dete analysis metho n V.M. Kravche	ermined using a od (described in enko, J. Phys. Chem.	specifi before (2) Purity	ed in paper, was recrystallized use. and chemical source were not ed in paper, was recrystallized	
Phase di thermal detail i U.S.S.R.	agram was dete analysis metho n V.M. Kravche <u>1939</u> , <i>13</i> , 13	ermined using a od (described in enko, J. Phys. Chem.	specifi before (2) Purity specifi	ed in paper, was recrystallized use. and chemical source were not ed in paper, was recrystallized use.	

COMPONENTS :		ORIGINAL MEASUREMENTS:						
<pre>(1) Fluoranthene; C₁₆H₁₀; [206-44-0] (2) Naphthalene; C₁₀H₈; [91-20-3] VARIABLES: Temperature</pre>		Kravchenko, V.M.; Pastukhova, I.S. J. Gen. Chem. U.S.S.R. <u>1959</u> , 29, 29-34. (English translation) PREPARED BY:						
					W.E. Acree	W.E. Acree, Jr.		
					EXPERIMENTAL VALUES		······	
		T/K	*2	x 1	Solid Phase			
353.4	1.000	0.000	(2)					
346.3	0.883	0.117	(2)					
338.5	0.753	0.247	(2)					
332.2	0.663	0.337	(2)					
329.0	0.610	0.390	Eutectic					
330.9	0.589	0.411	(1)					
337.1	0.539	0.461	(1)					
343.5	0.471	0.519	(1)					
352.8	0.386	0.614	(1)					
361.4	0.293	0.707	(1)					
374.2	0.125	0.875	(1)					
383.2	0.000	1.000	(1)					
·								
		RY INFORMATION						
	EDURE	SOURCE AND	PURITY OF MATERIALS:					
Phase diagram was dete thermal analysis metho detail in V.M. Kravche U.S.S.R. <u>1939</u> , 13, 13	EDURE Prmined using a od (described in anko, J. Phys. Chem.	(1) Purity specif before	and chemical source were not ied in paper, was recrystallized					
thermal analysis metho detail in V.M. Kravche	EDURE Prmined using a od (described in anko, J. Phys. Chem.	SOURCE AND (1) Purity specif before (2) Purity	and chemical source were not ied in paper, was recrystallized use. and chemical source were not ied in paper, was recrystallized					
Phase diagram was dete thermal analysis metho detail in V.M. Kravche U.S.S.R. <u>1939</u> , 13, 13	EDURE Prmined using a od (described in anko, J. Phys. Chem.	SOURCE AND (1) Purity specif before (2) Purity specif	and chemical source were not ied in paper, was recrystallized use. and chemical source were not ied in paper, was recrystallized use.					

COMPONENTS: (1) Fluoranthene; C ₁₆ H ₁₀ ; [206-44-0] (2) 2-Methylnaphthalene; C ₁₁ H ₁₀ ; [91-57-6] VARIABLES: Temperature		ORIGINAL MEASUREMENTS: Kravchenko, V.M.; Pastukhova, I.S. J. Gen. Chem. U.S.S.R. <u>1959</u> , 29, 29-34. (English translation)						
					PREPARED B	PREPARED BY: W.E. Acree, Jr.		
					W.E. Acree			
		EXPERIMENTAL VALUES		- 				
		T/K	*2	x 1	Solid Phase			
307.3	1.000	0.000	(2)					
298.4	0.899	0.101	(2)					
296.5	0.871	0.129	(2)					
293.8	0.835	0.165	(2)					
292.5	0.799	0.201	Eutectic					
297.9	0.764	0.236	(1)					
310.2	0.711	0.289	(1)					
317.4	0.662	0.338	(1)					
330.3	0.586	0.414	(1)					
341.3	0.508	0.492	(1)					
349.7	0.420	0.580	(1)					
356.6	0.344	0.656	(1)					
365.1	0.242	0.758	(1)					
375.6	0.102	0.898	(1)					
383.2	0.000	1.000	(1)					
		Y INFORMATION						
•	CEDURE	SOURCE AND	PURITY OF MATERIALS:					
Phase diagram was de thermal analysis met detail in V.M. Kravc U.S.S.R. <u>1939</u> , 13,	CEDURE termined using a hod (described in henko, J. Phys. Chem. 133), supplemented by	SOURCE AND (1) Purity specif before	y and chemical source were not Fied in paper, was recrystallized a use.					
	CEDURE termined using a hod (described in henko, J. Phys. Chem. 133), supplemented by	(1) Purity specif before (2) Purity	y and chemical source were not fied in paper, was recrystallized e use. y and chemical source were not fied in paper, was recrystallized					
Phase diagram was de thermal analysis met detail in V.M. Kravc U.S.S.R. <u>1939</u> , 13,	CEDURE termined using a hod (described in henko, J. Phys. Chem. 133), supplemented by	SOURCE AND (1) Purity specif before (2) Purity specif	y and chemical source were not fied in paper, was recrystallized e use. y and chemical source were not fied in paper, was recrystallized e use.					

Components:		ORIGINAL MEASUREMENTS:			
<pre>(1) Fluoranthene; C₁₆H₁₀; [206-44-0] (2) 2,7-Dimethylnaphthalene; C₁₂H₁₂; [582-16-1] VARIABLES: Temperature</pre>		Kravchenko, V.M.; Pastukhova, I.S. J. Gen. Chem. U.S.S.R. <u>1959</u> , 29, 29-34.			
					(English translation)
		PREPARED BY: W.E. Acree, Jr.			
					EXPERIMENTAL VALUES
		T/K	x 2	x 1	Solid Phase
370.2	1.000	0.000	(2)		
365.3	0.916	0.084	(2)		
358.1	0.792	0.208	(2)		
352.6	0.704	0.296	(2)		
344.2	0.572	0.428	(2)		
339.2	0.518	0.482	Eutectic		
340.7	0.491	0.509	(1)		
349.3	0.407	0.593	(1)		
356.4	0.328	0.672	(1)		
363.8	0.242	0.758	(1)		
372.6	0.136	0.864	(1)		
383.2	0.000	1.000	(1)		
	AUXILIARY	INFORMATION			
ETHOD: APPARATUS/PROCI			PURITY OF MATERIALS:		
Phase diagram was dete thermal analysis metho detail in V.M. Kravche U.S.S.R. <u>1939</u> , <i>13</i> , 13	EDURE ermined using a od (described in enko, J. Phys. Chem.	(1) Purity specif before (2) Purity	and chemical source were not ied in paper, was recrystallized use. and chemical source were not		
Phase diagram was dete thermal analysis metho detail in V.M. Kravche	EDURE ermined using a od (described in enko, J. Phys. Chem.	SOURCE AND (1) Purity specif before (2) Purity specif before	and chemical source were not ied in paper, was recrystallized use. and chemical source were not ied in paper, was recrystallized use.		
ETHOD: APPARATUS/PROCI Phase diagram was dete thermal analysis metho detail in V.M. Kravche U.S.S.R. <u>1939</u> , 13, 1: visual observations.	EDURE ermined using a od (described in enko, J. Phys. Chem.	SOURCE AND (1) Purity specif before (2) Purity specif before ESTIMATED E	and chemical source were not ied in paper, was recrystallized use. and chemical source were not ied in paper, was recrystallized use.		

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COMPONENTS: (1) Fluoranthene; C ₁₆ H ₁₀ ; [206-44-0] (2) Fluorene; C ₁₃ H ₁₀ ; [86-73-7]		ORIGINAL MEASUREMENTS: Kravchenko, V.M.; Pastukhova, I.S. J. Gen. Chem. U.S.S.R. <u>1959</u> , 29, 29-34. (English translation)							
					VARIABLES:		PREPARED BY: W.E. Acree, Jr.		
					Temperature				
EXPERIMENTAL VALUES		- Į							
T/K	*2	* 1	Solid Phase						
387.2	1.000	0.000	(2)						
380.7	0.901	0.099	(2)						
373.2	0.805	0.195	(2)						
363.7	0.702	0.298	(2)						
353.8	0.611	0.389	(2)						
345.3	0.523	0.477	(2)						
342.2	0.481	0.519	Eutectic						
343.1	0.470	0.530	(1)						
347.9	0.429	0.571	(1)						
352.6	0.375	0.625	(1)						
360.0	0.296	0.704	(1)						
368.1	0.203	0.797	(1)						
376.3	0.095	0.905	(1)						
383.2	0.000	1.000	(1)						
	AUXILIARY	INFORMATION							
METHOD: APPARATUS/PROCED	URE	SOURCE AND I	PURITY OF MATERIALS:						
Phase diagram was deter thermal analysis method detail in V.M. Kravchen U.S.S.R. <u>1939</u> , 13, 133 visual observations.	(described in ko, J. Phys. Chem.	specifi before (2) Purity specifi	and chemical source were not ied in paper, was recrystallized						
		before							
		ESTIMATED EN	RRORS :						

COMPONENTS :		ORIGINAL MEASUREMENTS:			
<pre>(1) Fluoranthene; C₁₆H₁₀; [206-44-0] (2) Anthracene; C₁₄H₁₀; [120-12-7] VARIABLES: Temperature</pre>		Kravchenko, V.M.; Pastukhova, I.S.			
		J. Gen. Chem. U.S.S.R. <u>1959</u> , 29, 29-34. (English translation) PREPARED BY:			
		SXPERIMENTAL VALUES			
T/K	x 2	x 1	Solid Phase		
489.7	1.000	0.000	(2)		
475.1	0.822	0.178	(2)		
467.4	0.731	0,269	(2)		
459.7	0.645	0.355	(2)		
449.4	0.544	0.456	(2)		
435.2	0.434	0.566	(2)		
419.9	0.329	0.671	(2)		
395.7	0.196	0.804	(2)		
387.3	0.170	0.830	(2)		
380.2	0.141	0.859	(2)		
374.2	0.140	0,860	(2)		
375.0	0.116	0.884	(1)		
376.5	0.094	0.906	(1)		
377.8	0.070	0.930	(1)		
383.2	0.000	1.000	(1)		
			.870 and T/K = 374.2.		
	AUXILIARY	INFORMATION			
ETHOD: APPARATUS/PROCED			PURITY OF MATERIALS:		
Phase diagram was determined using a thermal analysis method (described in detail in V.M. Kravchenko, J. Phys. Chem. U.S.S.R. <u>1939</u> , 13, 133), supplemented by visual observations.		specif before (2) Purity specif before ESTIMATED E	and chemical source were not ied in paper, was recrystallized use.		
			2 (Compiler).		

	1				
components :		ORIGINAL MEASUREMENTS:			
(1) Fluoranthene; C ₁₆ H ₁₀ ; [206-44-0]		Kravchenko, V.M.; Pastukhova, I.S.			
(2) Phenanthrene; C ₁₄ H ₁₀ ; [85-01-8]	J. Gen. Cl (English t	J. Gen. Chem. U.S.S.R. <u>1959</u> , 29, 29-34. (English translation)			
/ARIABLES:	PREPARED B	PREPARED BY: W.E. Acree, Jr.			
Temperature	W.E. Acree				
EXPERIMENTAL VALUES	- 	<u> </u>			
т/к ×2	×1	Solid Phase			
372.5 1.000	0.000	(2)			
368.7 0.935	0.065	(2)			
363.8 0.844	0.156	(2)			
355.3 0.706	0.294	(2)			
349.6 0.609	0.391	(2)			
346.2 0.540	0.460	Eutectic			
347.5 0.520	0.480	(1)			
353.4 0.437	0.563	(1)			
358.5 0.356	0.644	(1)			
365.0 0.262	0.738	(1)			
375.7 0.104	0.896	(1)			
383.2 0.000	1.000	(1)			
	NRY INFORMATION	PURITY OF MATERIALS:			
METHOD: APPARATUS/PROCEDURE Phase diagram was determined using a thermal analysis method (described in detail in V.M. Kravchenko, J. Phys. Chem. U.S.S.R. <u>1939</u> , 13, 133), supplemented by	(1) Purity specif before	and chemical source were not fied in paper, was recrystallized a use.			
METHOD: APPARATUS/PROCEDURE Phase diagram was determined using a thermal analysis method (described in detail in V.M. Kravchenko, J. Phys. Chem.	(1) Purity specific before (2) Purity	and chemical source were not ied in paper, was recrystallized use. and chemical source were not ied in paper, was recrystallized			
ETHOD: APPARATUS/PROCEDURE Phase diagram was determined using a thermal analysis method (described in detail in V.M. Kravchenko, J. Phys. Chem. U.S.S.R. <u>1939</u> , 13, 133), supplemented by	(1) Purity specific before (2) Purity specific	and chemical source were not Fied in paper, was recrystallized a use. and chemical source were not Fied in paper, was recrystallized a use.			

Components:		ORIGINAL MEASUREMENTS:						
 (1) Fluoranthene; C₁₆H₁₀; [206-44-0] (2) Acenaphthene; C₁₂H₁₀; [83-32-9] VARIABLES: Temperature 		Kravchenko	o, V.M.; Pastukhova, I.S.					
		J. Gen. Chem. U.S.S.R. <u>1959</u> , 29, 29-34. (English translation) PREPARED BY: W.E. Acree, Jr.						
					XPERIMENTAL VALUES		---	
					T/K	*2	* 1	Solid Phase
368.3	1.000	0.000	(2)					
362.3	0.908	0.092	(2)					
358.1	0.837	0.163	(2)					
348.2	0.707	0.293	(2)					
339.4	0.612	0.388	(2)					
335.3	0.571	0.429	(2)					
335.0	0.562	0.438	Eutectic					
340.8	0.508	0.492	(1)					
350.7	0.394	0.606	(1)					
363.4	0.248	0.752	(1)					
368.8	0.185	0.815	(1)					
383.2	0.000	1.000	(1)					
1001100.		INFORMATION						
	ROCEDURE	SOURCE AND	PURITY OF MATERIALS:					
(ETHOD: APPARATUS/PR Phase diagram was d thermal analysis me detail in V.M. Krav <i>U.S.S.R.</i> <u>1939</u> , 13, visual observations	ROCEDURE letermined using a othod (described in rchenko, J. Phys. Chem. 133), supplemented by	(1) Purity specif before (2) Purity	and chemical source were not ied in paper, was recrystallized use. and chemical source were not ied in paper, was recrystallized use.					

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COMPONENTS: (1) Fluoranthene; C ₁₆ H ₁₀ ; [206-44-0] (2) Chrysene; C ₁₈ H ₁₂ ; [218-01-9] VARIABLES: Temperature		ORIGINAL MEA	ORIGINAL MEASUREMENTS: Kravchenko, V.M.; Pastukhova, I.S.			
		Kravchenko,				
		Proc. Acad. <u>1956</u> , 111,	Proc. Acad. Sci. U.S.S.R., Sect. Chem. 1956, 111, 667-669. (English translation)			
		PREPARED BY:				
		W.E. Acree,	W.E. Acree, Jr.			
EXPERIMENTAL VALUES		I				
T/K	*2	<i>*</i> 1	Solid Phase			
528.2	1.000	0.000	(2)			
519.2	0.910	0.090	(2)			
510.5	0.805	0.195	(2)			
498.4	0.707	0.293	(2)			
486.2	0.596	0.404	(2)			
474.5	0.502	0.498	(2)			
457.2	0.398	0.602	(2)			
442.4	0.309	0.691	(2)			
418.8	0.201	0.799	(2)			
403.2	0.154	0.846	(2)			
387.3	0.103	0.897	(2)			
378.2	0.082	0.918	(2)			
378.7	0.061	0.939	(1)			
383.2	0.000	1.000	(1)			
	AUXILIA	RY INFORMATION				
ETHOD: APPARATUS/PROCE	DURE	SOURCE AND P	URITY OF MATERIALS:			
Phase diagram was dete thermal analysis metho detail in V.M. Kravche U.S.S.R. <u>1939</u> , 13, 13	d (described in nko, J. Phys. Chem.		and chemical source were not ed in paper, was recrystallized use.			
visual observations.	.,	(2) Purity specifi before	and chemical source were not ed in paper, was recrystallized use.			
		ESTIMATED ER	RORS:			
			ESTIMATED ERRORS: T/K : precision \pm 0.2 (Compiler). x_1 : \pm 0.002 (Compiler).			

Components :	ORIGINAL MEASUREMENTS:
<pre>(1) Fluoranthene; C₁₆H₁₀; [206-44-0] (2) 1,4-Dioxane; C₄H₈O₂; [123-91-1]</pre>	Pinal, R.; Rao, P.S.C.; Lee, L.S; Cline, P.V.; Yalkowsky, S.H. Environ. Sci. Technol. <u>1990</u> , 24, 639-646.
VARIABLES:	PREPARED BY:
<i>T</i> /K = 296	W.E. Acree, Jr.
EXPERIMENTAL VALUES	
t/°C c	1/(mol dm ⁻³)
23.0 1	.54
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:
	RY INFORMATION
Constant temperature bath, centrifuge, thermometer, and an HPLC equipped with uv absorption and fluorescence detection.	 (1) Purity not given, commercial sample of unspecified source, was used as received.
•	
Excess solute and solvent were placed in glass vials and allowed to equilibrate with rotation for 12-24 hours in a con- stant temperature bath. Prior to analysi samples were centrifuged at a minimum of 300 RCF for 15 minutes. The clear super- natant solution was analyzed by reversed- phase liquid chromatography with either	
fluorescence or uv detection.	ESTIMATED ERRORS:

COMPONENTS:		· · · · · · · · · · · · · · · · · · ·	ORIGINAL N	EASUREMENTS:	
(1) Fluoranthene; C ₁₆ H ₁₀ ; [206-44-0]		McLaughlin, E.; Zainal, H.A.			
<pre>(2) Tetrachloromethane; CCl₄; [56-23-5] VARIABLES:</pre>		J. Chem. Soc. <u>1960</u> , 2485-2488.			
		PREPARED BY:			
Temperature		W.E. Acre	e, Jr.		
EXPERIMENTAL	VALUES				
T/K	*2	x ₁	T/K	*2	x ₁
305.0	0.8968	0.1032	333.6	0.7016	0.2984
313.4	0.8576	0.1424			
320.2	0.8179	0.1821			
326.2	0.7722	0.2278			
		AUXILIARY	INFORMATION	ſ	
METHOD: APPAR	ATUS/PROCEDUR	E	SOURCE AND	PURITY OF M	ATERIALS:
Constant temperature bath and a precision thermometer. Mixtures of known concentrations sealed in glass ampoules and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly increased. Solubility determined by wisual		Teerv alumi (2) Anala dried	erwertung, w na column wi R grade, sou	Gesellschaft fur as passed over an th benzene as eluant. rce not given, was ous calcium chloride ore use.	
increased. Solubility determined by visual noting the temperature at which the last trace of solid solute disappeared.			ERRORS: sision <u>+</u> 0.1. 003 (compiles		

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COMPONENTS:	ORIGINAL MEASUREMENTS:
 (1) Fluoranthene; C₁₆H₁₀; [206-44-0] (2) Chlorobenzene; C₆H₅Cl; [108-90-7] 	Pinal, R.; Rao, P.S.C.; Lee, L.S; Cline, P.V.; Yalkowsky, S.H. Environ. Sci. Technol. <u>1990</u> , 24, 639-646.
VARIABLES:	PREPARED BY:
T/K = 296	W.E. Acree, Jr.
EXPERIMENTAL VALUES	•
t/°C	(mol dm ⁻³)
23.0 1.6	1
AUXILIARY	INFORMATION
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:
Constant temperature bath, centrifuge, thermometer, and an HPLC equipped with uv absorption and fluorescence detection.	(1) Purity not given, commercial sample of unspecified source, was used as received.
Excess solute and solvent were placed in glass vials and allowed to equilibrate with rotation for 12-24 hours in a con- stant temperature bath. Prior to analysis samples were centrifuged at a minimum of 300 RCF for 15 minutes. The clear super- natant solution was analyzed by reversed- phase liquid chromatography with either	(2) Purity and chemical source not given, purification procedure not specified.
fluorescence or uv detection.	ESTIMATED ERRORS:
	$T/K: \pm 1.$ $c_1: \pm 5$ % (relative error; compiler).

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Fluoranthene; C ₁₆ H ₁₀ ; [206-44-0] (2) Methanol; CH ₄ O; [67-56-1]	Pinal, R.; Rao, P.S.C.; Lee, L.S; Cline, P.V.; Yalkowsky, S.H. Environ. Sci. Technol. <u>1990</u> , 24, 639-646.
VARIABLES:	PREPARED BY:
T/K = 296	W.E. Acree, Jr.
EXPERIMENTAL VALUES	
t/°C	(mol dm ⁻³)
23.0 0.0	704
AUXILIARY	INFORMATION
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:
Constant temperature bath, centrifuge, thermometer, and an HPLC equipped with uv absorption and fluorescence detection.	 Purity not given, commercial sample of unspecified source, was used as received.
Excess solute and solvent were placed in glass vials and allowed to equilibrate with rotation for 12-24 hours in a con- stant temperature bath. Prior to analysis samples were centrifuged at a minimum of 300 RCF for 15 minutes. The clear super- natant solution was analyzed by reversed- phase liquid chromatography with either	(2) Purity and chemical source not given, purification procedure not specified.
fluorescence or uv detection.	ESTIMATED ERRORS:
	$T/K: \pm 1.$ $c_1: \pm 5$ % (relative error; compiler).

Components :	ORIGINAL MEASUREMENTS:		
(1) Fluoranthene; C ₁₆ H ₁₀ ; [206-44-0]	Krezewki, R.; Smutek, M.		
(2) Ethanol; C ₂ H ₆ O; [64-17-5]	Collection Czech. Chem. Commun. <u>1967</u> , 32, 1258-1259.		
VARIABLES:	PREPARED BY:		
T/K = 293	W.E. Acree, Jr.		
EXPERIMENTAL VALUES			
$t/^{\circ} C x_2$	x ₁		
20.0 0.9949	0.00514		
AUXILIARY	INFORMATION		
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:		
Constant temperature bath, thermometer, and a precision balance. Excess solute and solvent placed in closed glass container and allowed to equilibrate for several hours at constant temperature. Aliquots of saturated solutions were transferred into tared constainers and weighed. Solubilities calculated from	 Purity not specified, coal tar extract, was recrystallized several times from ethanol to give a melting point temper- ature of 110.0-110.3 °C. Commercial sample, purity and source not given, was dehydrated and distilled shortly before use. 		
weight of solid residue that remained after solvent had evaporated.	ESTIMATED ERRORS:		
	T/K: precision \pm 0.05. x,: \pm 3 % (relative error; compiler).		

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Fluoranthene; C ₁₆ H ₁₀ ; [206-44-0] (2) 1-Octanol; C ₈ H ₁₈ O; [111-87-5]	Miller, M.M.; Wasik, S.P.; Huang, GL.; Shiu, WY.; Mackay, D. <i>Environ. Sci. Technol.</i> <u>1985</u> , <i>19</i> , 522-529.
VARIABLES:	PREPARED BY:
T/K = 298	W.E. Acree, Jr.
EXPERIMENTAL VALUES	
t/°C	(mol dm ⁻³)
25.0 0.1	726
AUXILIARY	INFORMATION
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:
Constant temperature bath, rotator, thermometer, and a gas-liquid chromato- graph with flame ionization detection.	 Highest available commercial purity, specific chemical supplier not given, was used as received.
Excess solute and solvent placed in glass vials and allowed to equilibrate for 24 hours with gentle agitation, and left to settle for 48 hours before anal- ysis. Aliquots of saturated solutions were removed and concentrations were determined using a gas-liquid chromatograph equipped with flame ionization detector and on 10 %	(2) 99+ %, Aldrich Chemical Company, Milwaukee, Wisconsin, USA, was used as received.
SE30 ultraphase column.	ESTIMATED ERRORS:
	$T/K: \pm 0.1$ (compiler). $c_1: \pm 3$ % (relative error; compiler).

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Fluoranthene; $C_{16}H_{10}$; [206-44-0]	Pinal, R.; Rao, P.S.C.; Lee, L.S; Cline, P.V.; Yalkowsky, S.H.
(2) 1-Octanol; C ₈ H ₁₈ O; [111-87-5]	Environ. Sci. Technol. <u>1990</u> , 24, 639-646.
VARIABLES:	PREPARED BY:
T/K = 296	W.E. Acree, Jr.
EXPERIMENTAL VALUES	
t/°C	(mol dm ⁻³)
23.0 0.1	98
AUXILIARY	INFORMATION
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:
Constant temperature bath, centrifuge, thermometer, and an HPLC equipped with uv absorption and fluorescence detection.	 Purity not given, commercial sample of unspecified source, was used as received.
Excess solute and solvent were placed in glass vials and allowed to equilibrate with rotation for 12-24 hours in a con- stant temperature bath. Prior to analysis samples were centrifuged at a minimum of 300 RCF for 15 minutes. The clear super- natant solution was analyzed by reversed- phase liquid chromatography with either	(2) Purity and chemical source not given, purification procedure not specified.
fluorescence or uv detection.	ESTIMATED ERRORS:
	T/K: \pm 1. c_1 : \pm 5% (relative error; compiler).

COMPONENTS :	ORIGINAL MEASUREMENTS:
 (1) Fluoranthene; C₁₆H₁₀; [206-44-0] (2) 1-Hydroxy-2-methylbenzene; C₇H₈O; [95-48-7] 	Pinal, R.; Rao, P.S.C.; Lee, L.S; Cline, P.V.; Yalkowsky, S.H. <i>Environ. Sci. Technol.</i> <u>1990</u> , 24, 639-646.
VARIABLES:	PREPARED BY:
<i>T</i> /K = 296	W.E. Acree, Jr.
EXPERIMENTAL VALUES	
t/°C	(mol dm ⁻³)
23.0 0.09	534
AUXILIARY	INFORMATION
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:
Constant temperature bath, centrifuge, thermometer, and an HPLC equipped with uv absorption and fluorescence detection. Excess solute and solvent were placed in glass vials and allowed to equilibrate with rotation for 12-24 hours in a con- stant temperature bath. Prior to analysis	 Purity not given, commercial sample of unspecified source, was used as received. Purity and chemical source not given, purification procedure not specified.
scant temperature bath. Filor to analysis samples were centrifuged at a minimum of 300 RCF for 15 minutes. The clear super- natant solution was analyzed by reversed- phase liquid chromatography with either fluorescence or uv detection.	ESTIMATED ERRORS: $T/K: \pm 1.$ $c_1: \pm 5$ % (relative error; compiler).

Components:	ORIGINAL MEASUREMENTS:		
(1) Fluoranthene; C ₁₆ H ₁₀ ; [206-44-0]	Krezewki, R.; Smutek, M.		
(2) 2-Propanone; C ₃ H ₆ O; [67-64-1]	Collection Czech. Chem. Commun. <u>1967</u> , 32, 1258–1259.		
VARIABLES:	PREPARED BY:		
<i>T/</i> K = 293	W.E. Acree, Jr.		
EXPERIMENTAL VALUES	<u> </u>		
$t/^{\circ}$ C x_{2}	x1		
20.0 0.9289	0.0711		
AUXILIARY	INFORMATION		
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:		
	1		
Constant temperature bath, thermometer, and a precision balance. Excess solute and solvent placed in closed glass container and allowed to equilibrate for several hours at constant temperature. Aliguots of saturated solutions were transferred into tared constainers and weighed. Solubilities calculated from	<pre>was recrystallized several times from ethanol to give a melting point temper- ature of 110.0-110.3 °C. (2) Commercial sample, purity and source</pre>		
and a precision balance. Excess solute and solvent placed in closed glass container and allowed to equilibrate for several hours at constant temperature. Aliquots of saturated solutions were transferred into tared constainers and	 ethanol to give a melting point temper- ature of 110.0-110.3 °C. (2) Commercial sample, purity and source not given, was dehydrated and distilled 		

COMPONENTS:		ORIGINAL MEASUREMENTS:		
(1) Fluoranthene; C ₁₆ H	₁₀ ; [206-44-0]	Krezewki, R.; Smutek, M.		
(2) Pyridine; C ₅ H ₅ N; [110-86-1]	Collection Czech. Chem. Commun. <u>1967</u> , 32, 1258–1259.		
VARIABLES:		PREPARED BY:		
T/K = 293		W.E. Acree, Jr.		
EXPERIMENTAL VALUES	·····			
t/°C	*2	×1		
20.0	0.842	0.158		
	AUXILIARY	INFORMATION		
METHOD: APPARATUS/PROCE	DURE	SOURCE AND PURITY OF MATERIALS:		
Constant temperature b and a precision balanc Excess solute and solv glass container and al for several hours at c Aliquots of saturated transferred into tared weighed. Solubilities	e. ent placed in closed lowed to equilibrate onstant temperature. solutions were constainers and calculated from	 Purity not specified, coal tar extract, was recrystallized several times from ethanol to give a melting point temper- ature of 110.0-110.3 °C. Purity not given, Urxovy Zavody, Czech., treated with potassium permanganate, dried over potassium hydroxide and then distilled before use. 		
weight of solid residu after solvent had evap		ESTIMATED ERRORS: T/K : precision \pm 0.05. x_1 : \pm 3 % (relative error; compiler).		

20	
COMPONENTS :	ORIGINAL MEASUREMENTS:
(1) Fluoranthene; C ₁₆ H ₁₀ ; [206-44-0]	Pinal, R.; Rao, P.S.C.; Lee, L.S; Cline, P.V.; Yalkowsky, S.H.
(2) Nitrobenzene; C ₆ H ₅ NO ₂ ; [98-95-3]	Environ. Sci. Technol. <u>1990</u> , 24, 639-646.
VARIABLES:	PREPARED BY:
T/K = 296	W.E. Acree, Jr.
EIPERIMENTAL VALUES	
t/°C	(mol dm ⁻³)
23.0 1.9	В
AUXILIARY	INFORMATION
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:
Constant temperature bath, centrifuge, thermometer, and an HPLC equipped with uv absorption and fluorescence detection.	 (1) Purity not given, commercial sample of unspecified source, was used as received.
Excess solute and solvent were placed in glass vials and allowed to equilibrate with rotation for 12-24 hours in a con- stant temperature bath. Prior to analysis samples were centrifuged at a minimum of 300 RCF for 15 minutes. The clear super- natant solution was analyzed by reversed- phase liquid chromatography with either	(2) Purity and chemical source not given, purification procedure not specified.
fluorescence or uv detection.	ESTIMATED ERRORS:
	$T/K: \pm 1.$ $c_1: \pm 5$ (relative error; compiler).

COMPONENTS :	ORIGINAL MEASUREMENTS:
 (1) Fluoranthene; C₁₆H₁₀; [206-44-0] (2) Dimethyl sulfoxide; C₂H₆OS; [67-68-5] 	Pinal, R.; Rao, P.S.C.; Lee, L.S; Cline, P.V.; Yalkowsky, S.H. Environ. Sci. Technol. <u>1990</u> , 24, 639-646.
VARIABLES:	PREPARED BY:
<i>T</i> /K = 296	W.E. Acree, Jr.
EIPERIMENTAL VALUES	
t/°C	(mol dm ⁻³)
23.0 1.0	9
AUXILIARY	INFORMATION
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:
Constant temperature bath, centrifuge, thermometer, and an HPLC equipped with uv absorption and fluorescence detection.	 Purity not given, commercial sample of unspecified source, was used as received.
Excess solute and solvent were placed in glass vials and allowed to equilibrate with rotation for 12-24 hours in a con- stant temperature bath. Prior to analysis samples were centrifuged at a minimum of 300 RCF for 15 minutes. The clear super- natant solution was analyzed by reversed- phase liquid chromatography with either	(2) Purity and chemical source not given, purification procedure not specified.
fluorescence or uv detection.	ESTIMATED ERRORS:
	$T/K: \pm 1.$ $c_1: \pm 5$ % (relative error; compiler).

COMPONENTS:		ORIGINAL ME	CASUREMENTS:	
(1) Fluoranthene; C ₁₆ H ₁₀	; [206-44-0]	Shinomiya, C.		
<pre>(2) 1,3-Dinitrobenzene; C₆H₄N₂O₄; [99-65-0] /ARIABLES: Temperature</pre>		J. Chem. Soc. Japan <u>1940</u> , 15, 259-270.		
		PREPARED BY	[3	
		W.E. Acree, Jr.		
XPERIMENTAL VALUES				
T/K	*2	x ₁	Solid Phase	
363.2	1.000	0.000	(2)	
356.2	0.879	0.121	(2)	
350.2	0.784	0.216	(2)	
346.2	0.752	0.248	(2)	
342.2	0.740	0.260	(2)	
344.7	0.730	0.270	(2)	
342.2	0.690	0.310	1:1 Compound	
347.2	0.655	0.345	1:1 Compound	
348.0	0.633	0.367	1:1 Compound	
349.2	0.601	0.399	1:1 Compound	
349.7	0.568	0.432	1:1 Compound	
349.7	0.522	0.432	1:1 Compound	
			-	
350.2	0.502	0.498	1;1 Compound	
349.2	0.430	0.570	(2)	
349.2	0.385	0.615	(2)	
352.7	0.307	0.693	(2)	
382.7	0.000	1.000	(2)	
molecular compound	having a melting po	oint temperatur	-dinitrobenzene light yellow e of 350.2 K. Two eutectic 1 = 0.560 and T/K = 344.2.	
	AUXILIA	Y INFORMATION		
ETHOD: APPARATUS/PROCED	URE	SOURCE AND	PURITY OF MATERIALS:	
No experimental details	given in paper.		and chemical source were not ied in paper.	
		(2) Purity	and chemical source were not ied in paper.	
		specif	ted IN baber.	
		specif ESTIMATED E		

COMPONENTS:		ORIGINAL ME		
(1) Fluoranthene; C ₁₆ H ₁	-	Shinomiya, C. J. Chem. Soc. Japan <u>1940</u> , 15, 259-270.		
(2) 1,4-Dinitrobenzene [100-25-4]	; C ₆ H ₄ N ₂ O ₄ ;	J. Chem. 3	00. Japan <u>1940</u> , 19, 299-270.	
VARIABLES:		PREPARED BY:		
Temperature		W.E. Acree, Jr.		
EXPERIMENTAL VALUES				
T/K	x2	<i>x</i> 1	Solid Phase	
446.7	1.000	0.000	(2)	
426.2	0.706	0.294	(2)	
411.2	0.568	0.432	(2)	
388.2	0.406	0.594	(2)	
370.2	0.323	0.667	(2)	
363.2	0.231	0.769	(1)	
370.2	0.166	0.834	(1)	
379.2	0.056	0.944	(1)	
382.7	0.000	1.000	(1)	
	AUXILIAR	Y INFORMATION		
METHOD: APPARATUS/PROCES	DURE	SOURCE AND	PURITY OF MATERIALS:	
No experimental details	a given in paper.	(1) Purity specif	and chemical source were not ied in paper.	
			and chemical source were not ied in paper.	
		ESTIMATED E	RRORS:	
		$\begin{array}{c} T/K: \text{ precise} \\ x_1: \pm 0.002 \end{array}$	sion <u>+</u> 0.2 (Compiler). 2 (Compiler).	
	·····			

OMPONENTS:		ORIGINAL ME	ASUREMENTS:	
(1) Fluoranthene; C ₁₆ H	10; [206-44-0]	Shinomiya, C. J. Chem. Soc. Japan <u>1940</u> , 15, 259-270. PREPARED BY:		
(2) 1,3,5-Trinitroben: [99-35-4]	zene; C ₆ H ₃ N ₃ O ₆ ;			
ARIABLES:	· · · · · · · · · · · · · · · · · · ·			
mperature		W.E. Acree, Jr.		
PERIMENTAL VALUES				
T/K	<i>x</i> 2	x 1	Solid Phase	
396.2	1.000	0.000	(2)	
413.0	0.893	0.107	1:1 Compound	
437.7	0.828	0.172	1:1 Compound	
461.7	0.738	0.262	1:1 Compound	
461.5	0.714	0.286	1:1 Compound	
476.2	0.581	0.419	1:1 Compound	
477.7	0.489	0.511	1:1 Compound	
477.2	0.469	0.531	1:1 Compound	
473.2	0.376	0.624	1:1 Compound	
456.2	0.283	0.717	1:1 Compound	
307 7		0 030		
397.7	0.161	0.839	1:1 Compound	
379.2	0.161 0.049	0.839	-	
379.2 382.7 Author reports for	0.049 0.000 mation of a 1:1 flue	0.951 1.000 pranthene - 1.3	(1) (1) (1) ,5-trinitrobenzene yellow e of 478.2 K. Two eutectic = 0.868 and T/K = 371.7.	
379.2 382.7 Author reports for	0.049 0.000 mation of a 1:1 flue	0.951 1.000 pranthene - 1.3	(1) (1) ,5-trinitrobenzene vellow	
379.2 382.7 Author reports for molecular compound points occur at x ₁	0.049 0.000 mation of a 1:1 fluc having a melting pd = 0.040 and T/K = 3	0.951 1.000 Dranthene - 1,3 Dint temperature 176.2, and at x ₁	<pre>(1) (1) ,5-trinitrobenzene yellow e of 478.2 K. Two eutectic = 0.868 and T/K = 371.7.</pre>	
379.2 382.7 Author reports for molecular compound points occur at x ₁	0.049 0.000 mation of a 1:1 fluc having a melting pd = 0.040 and T/K = 3	0.951 1.000 Dranthene - 1,3 Dint temperatur 076.2, and at x 076.2, and at x 076.2 NY INFORMATION SOURCE AND F	<pre>(1) (1) ,5-trinitrobenzene yellow e of 478.2 K. Two eutectic = 0.868 and T/K = 371.7. PURITY OF MATERIALS:</pre>	
379.2 382.7 Author reports for	0.049 0.000 mation of a 1:1 fluc having a melting p = 0.040 and T/K = 3 0.040 and T/K = 3 AUXILIAN	0.951 1.000 Dranthene - 1,3 Dint temperature 076.2, and at x ₁ 076.2, and at x ₁ 076.2 X INFORMATION SOURCE AND E (1) Purity	<pre>(1) (1) ,5-trinitrobenzene yellow e of 478.2 K. Two eutectic = 0.868 and T/K = 371.7. PURITY OF MATERIALS:</pre>	
379.2 382.7 Author reports for molecular compound points occur at x ₁ THOD: APPARATUS/PROCE	0.049 0.000 mation of a 1:1 fluc having a melting p = 0.040 and T/K = 3 0.040 and T/K = 3 AUXILIAN	0.951 1.000 branthene - 1,3 bint temperature 176.2, and at x ₁ 176.2, and at x ₁ 176.2 XY INFORMATION SOURCE AND E (1) Purity specifi (2) Purity	<pre>(1) (1) ,5-trinitrobenzene yellow e of 478.2 K. Two eutectic = 0.868 and T/K = 371.7. PURITY OF MATERIALS: and chemical source were not led in paper.</pre>	
379.2 382.7 Author reports for molecular compound points occur at x ₁ THOD: APPARATUS/PROCE	0.049 0.000 mation of a 1:1 fluc having a melting p = 0.040 and T/K = 3 0.040 and T/K = 3 AUXILIAN	0.951 1.000 branthene - 1,3 bint temperature 176.2, and at x ₁ 176.2, and at x ₁ 176.2 XY INFORMATION SOURCE AND E (1) Purity specifi (2) Purity	<pre>(1) (1) ,5-trinitrobenzene yellow e of 478.2 K. Two eutectic = 0.868 and T/K = 371.7. PURITY OF MATERIALS: and chemical source were not led in paper. and chemical source were not .ed in paper.</pre>	

COMPONENTS :	······································	ORIGINAL ME	ASUREMENTS :		
(1) Fluoranthene; C ₁₆ H ₁₀ ;	[206-44-0]	Shinomiya, C.			
(2) 1,2,3,5-Tetranitrobe C ₆ H ₂ N ₄ O ₈ ; [3698-53-1]	2) 1,2,3,5-Tetranitrobenzene; C ₆ H ₂ N ₄ O ₈ ; [3698-53-1]		J. Chem. Soc. Japan <u>1940</u> , 15, 259-270.		
ARIABLES:		PREPARED BY:			
Temperature		W.E. Acree, Jr.			
EXPERIMENTAL VALUES					
T/K	*2	* 1	Solid Phase		
399.2	1.000	0.000	(2)		
385.2	0.939	0.061	(2)		
389.2	0.836	0.164	(2)		
393.2	0.680	0.320	1:1 Compound		
393.2	0.672	0.328	1:1 Compound		
405.2	0.561	0.439	1:1 Compound		
405.2	0.522	0.478	1:1 Compound		
407.2	0.501	0.499	1:1 Compound		
403.2	0.402	0.598	1:1 Compound		
397.2	0.360	0.640	1:1 Compound		
383.2	0.284	0.716	1:1 Compound		
370.2	0.217	0.783	1:1 Compound		
361.2	0.202	0.798	1:1 Compound		
269.0	0.142	0.050	/1 \		
367.2	0.142	0.858	(1)		
367.2 371.2	0.127	0.858	(1)		
371.2 382.7 Author reports forma	0.127 0.000 ation of a 1:1 fluc	0.873 1.000 pranthene - 1.2	(1) (1) ,3,5-tetranitrobenzene brown		
371.2 382.7 Author reports forma	0.127 0.000 ation of a 1:1 fluc	0.873 1.000 pranthene - 1.2	(1) (1)		
371.2 382.7 Author reports forma	0.127 0.000 ation of a 1:1 flucture aving a melting po 0.253 and T/K = 3	0.873 1.000 pranthene - 1.2	(1) (1) ,3,5-tetranitrobenzene brown		
371.2 382.7 Author reports forma	0.127 0.000 ation of a 1:1 fluc aving a melting po 0.253 and T/K = 3	0.873 1.000 pranthene - 1,2 Sint temperature 83.2, and at x ₁ 83.2 in the second	(1) (1) ,3,5-tetranitrobenzene brown		
371.2 382.7 Author reports forms molecular compound h points occur at $x_1 =$	0.127 0.000 ation of a 1:1 flucture taving a melting point 0.253 and T/K = 3 0.253 And T/K = 3 AUXILIAN	0.873 1.000 pranthene - 1,2 int temperature 83.2, and at x ₁ Source AND 1 (1) Purity	<pre>(1) (1) (1) ,3,5-tetranitrobenzene brown e of 407.2 K. Two eutectic = 0.801 and T/K = 357.2.</pre>		
371.2 382.7 Author reports forma molecular compound h points occur at x ₁ =	0.127 0.000 ation of a 1:1 flucture taving a melting point 0.253 and T/K = 3 0.253 And T/K = 3 AUXILIAN	0.873 1.000 pranthene - 1,2 int temperature 83.2, and at x ₁ Source and at x ₁ (1) Purity specifi (2) Purity	<pre>(1) (1) (1) ,3,5-tetranitrobenzene brown e of 407.2 K. Two eutectic 1 = 0.801 and T/K = 357.2. PURITY OF MATERIALS: and chemical source were not</pre>		
371.2 382.7 Author reports forms molecular compound h points occur at x ₁ =	0.127 0.000 ation of a 1:1 flucture taving a melting point 0.253 and T/K = 3 0.253 And T/K = 3 AUXILIAN	0.873 1.000 pranthene - 1,2 int temperature 83.2, and at x ₁ Source and at x ₁ (1) Purity specifi (2) Purity	<pre>(1) (1) (1) ,3,5-tetranitrobenzene brown e of 407.2 K. Two eutectic = 0.801 and T/K = 357.2. PURITY OF MATERIALS: and chemical source were not ied in paper. and chemical source were not ied in paper.</pre>		

		ANTOTAL M			
:ONPONENTS :		ORIGINAL ME			
(1) Fluoranthene; C ₁₆ H		Shinomiya, C.			
(2) 2,4-Dinitromethyll C ₇ H ₆ N ₂ O ₄ ; [121-14-2		J. Chem. Soc. Japan <u>1940</u> , 15, 259-270. PREPARED BY:			
ARIABLES:					
Temperature		W.E. Acree	, Jr.		
XPERIMENTAL VALUES		·····			
T/K	x 2	×1	Solid Phase		
344.2	1.000	0.000	(2)		
341.2	0.941	0.059	(2)		
336.2	0.853	0.147	(2)		
332.2	0.770	0.230	1:1 Compound		
334.2	0.747	0.253	1:1 Compound		
338.7	0.695	0.305	1:1 Compound		
342.7	0.636	0.364	1:1 Compound		
346.7	0,552	0.448	1:1 Compound		
347.7	0.543	0.457	1:1 Compound		
348.7	0.452	0.548	1:1 Compound		
347.2	0.402	0.598	1:1 Compound		
347.7	0.221	0.779	(1)		
363.2	0.198	0.802	(1)		
375.7	0.090				
3/3./					
382.7 • Author reports for	0.000 rmation of a 1:1 fluo	0.910 1.000 pranthene - 2,4	(1) (1) -dinitromethylbenzene yellow		
382.7 • Author reports for molecular compound	0.000 rmation of a 1:1 fluo i having a melting po	1.000 pranthene - 2,4 pint temperatur			
382.7 • Author reports for molecular compound points occur at x	0.000 rmation of a 1:1 flux i having a melting po = 0.224 and T/K = 3 AUXILIAN	1.000 pranthene - 2,4 pint temperatur 30.2, and at x 30.2 and at x	<pre>(1) -dinitromethylbenzene yellow e of 348.7 K. Two eutectic = 0.640 and T/K = 341.2.</pre>		
382.7 • Author reports for molecular compound points occur at x	0.000 rmation of a 1:1 flux i having a melting po = 0.224 and T/K = 3 AUXILIAN	1.000 pranthene - 2,4 pint temperatur 30.2, and at x 30.2 and at x	(1) -dinitromethylbenzene yellow e of 348.7 K. Two eutectic		
382.7 • Author reports for molecular compound points occur at x ₁ = THOD: APPARATUS/PROCE	0.000 rmation of a 1:1 fluo 1 having a melting pa 1 = 0.224 and T/K = 3 1 = 0.224 and T/K = 3 AUXILIAN EDURE	1.000 pranthene - 2,4 pint temperatur 30.2, and at x 30.2, and at x 30.2 of the second s	<pre>(1) -dinitromethylbenzene yellow e of 348.7 K. Two eutectic = 0.640 and T/K = 341.2.</pre>		
382.7 • Author reports for molecular compound points occur at x ₁ = THOD: APPARATUS/PROCE	0.000 rmation of a 1:1 fluo 1 having a melting pa 1 = 0.224 and T/K = 3 1 = 0.224 and T/K = 3 AUXILIAN EDURE	1.000 pranthene - 2,4 pint temperatur 30.2, and at x 30.2,	<pre>(1) -dinitromethylbenzene yellow e of 348.7 K. Two eutectic = 0.640 and T/K = 341.2. PURITY OF MATERIALS: and chemical source were not</pre>		
382.7 • Author reports for molecular compound	0.000 rmation of a 1:1 fluo 1 having a melting pa 1 = 0.224 and T/K = 3 1 = 0.224 and T/K = 3 AUXILIAN EDURE	1.000 pranthene - 2,4 pint temperatur 30.2, and at x 30.2,	<pre>(1) -dinitromethylbenzene yellow e of 348.7 K. Two eutectic = 0.640 and T/K = 341.2. PURITY OF MATERIALS: and chemical source were not ied in paper. and chemical source were not ied in paper.</pre>		

COMPONENTS:		ORIGINAL ME	ASUREMENTS:		
(1) Fluoranthene; C ₁₆ H ₁₀ ;	[206-44-0]	Shinomiya, C.			
<pre>(2) 2,4-Dinitrophenol; C_i</pre>		-	oc. Japan <u>1940</u> , 15, 259-270.		
[51-28-5]	542-57	······································			
VARIABLES:		PREPARED BY	:		
Temperature		W.E. Acree, Jr.			
T/K	¥.	Υ.	Solid Phase		
386.7	*2 1.000	*1 0.000	(2)		
379.2	0.874	0.126	(2)		
375.0	0.790	0.210	(2)		
367.2	0.695	0.305	(2)		
360.2	0.622	0.378	1:1 Compound		
360.7	0.600	0.400	1:1 Compound		
	0.505	0.400	1:1 Compound		
364.2					
365.2	0.491	0.509	1:1 Compound		
361.2	0.395	0.605	1:1 Compound		
351.4	0.303	0.697	(1)		
356.2	0.276	0.724	(1)		
356.2	0.275	0.725	(1)		
372.2	0.155	0.845	(1)		
378.2	0.053	0.947	(1) (1)		
molecular compound ha	aving a melting po	int temperatur	-dinitrophenol yellow e of 365.2 K. Two eutectic = 0.688 and T/K = 348.2.		
	AUXILIAR	Y INFORMATION			
ETHOD: APPARATUS/PROCEDUS			PURITY OF MATERIALS:		
•	Æ	(1) Purity	PURITY OF MATERIALS: and chemical source were not ied in paper.		
•	Æ	(1) Purity specif (2) Purity	and chemical source were not		
ETHOD: APPARATUS/PROCEDUM	Æ	(1) Purity specif (2) Purity	and chemical source were not ied in paper. and chemical source were not ied in paper.		

COMPONENTS :		ORIGINAL M	ORIGINAL MEASUREMENTS:		
(1) Fluoranthene; C ₁₆ H ₁₀ ; [2	206-44-0]	Shinomiya, C.			
(2) 2,4,6-Trinitromethylber C ₇ H ₅ N ₃ O ₆ ; [118-96-7]	nzene;	J. Chem. Soc. Japan <u>1940</u> , 15, 259-270.			
ARIABLES:		PREPARED BY:			
Temperature		W.E. Acree	, Jr.		
EXPERIMENTAL VALUES					
T/K	<i>x</i> 2	x 1	Solid Phase		
354.7	1.000	0.000	(2)		
368.2	0.792	0.208	1:1 Compound		
387.2	0.708	0.292	1:1 Compound		
399.2	0.639	0.361	1:1 Compound		
405.2	0.567	0.433	1:1 Compound		
404.7	0.443	0.557	1:1 Compound		
405.2	0.436	0.564	1:1 Compound		
386.2	0.285	0.715	1:1 Compound		
380.2	0.263	0.737	1:1 Compound		
363.2	0.212	0.788	Eutectic		
373.4	0.138	0.862	(1)		
382.7 Author reports formatic	0.000 on of a 1:1 fluc a melting point	1.000 pranthene - 2,4 t temperature o	(1) ,6-trinitromethylbenzene f 406.2 K. Two eutectic points		
382.7 Author reports formatic yellow compound having	0.000 on of a 1:1 fluc a melting point	1.000 pranthene - 2,4 t temperature o	(1) ,6-trinitromethylbenzene f 406.2 K. Two eutectic points		
382.7 Author reports formatic yellow compound having occur at $x_1 = 0.150$ and	0.000 on of a 1:1 fluc a melting point 1 T/K = 345.7, a	1.000 pranthene - 2,4 t temperature o	(1) ,6-trinitromethylbenzene f 406.2 K. Two eutectic points		
382.7 Author reports formatic yellow compound having occur at $x_1 = 0.150$ and	0.000 on of a 1:1 fluc a melting point 1 T/K = 345.7, a	1.000 pranthene - 2,4 t temperature o and at x ₁ = 0.78 RY INFORMATION	(1) ,6-trinitromethylbenzene f 406.2 K. Two eutectic points		
382.7 Author reports formatic yellow compound having	0.000 on of a 1:1 fluc a melting point 1 T/K = 345.7, a AUXILIAR	1.000 Dranthene - 2,4 t temperature o and at x ₁ = 0.78 XY INFORMATION SOURCE AND (1) Purity	<pre>(1) ,6-trinitromethylbenzene f 406.2 K. Two eutectic points B8 and T/K = 362.2.</pre>		
382.7 Author reports formatic yellow compound having occur at x ₁ = 0.150 and OCCUR at x ₁ = 0.150 and	0.000 on of a 1:1 fluc a melting point 1 T/K = 345.7, a AUXILIAR	1.000 Dranthene - 2,4 t temperature o and at x ₁ = 0.78 XY INFORMATION SOURCE AND (1) Purity specif (2) Purity	<pre>(1) ,6-trinitromethylbenzene f 406.2 K. Two eutectic points B8 and T/K = 362.2. PURITY OF MATERIALS: and chemical source were not</pre>		
382.7 Author reports formatic yellow compound having occur at x ₁ = 0.150 and	0.000 on of a 1:1 fluc a melting point 1 T/K = 345.7, a AUXILIAR	1.000 Dranthene - 2,4 t temperature o and at x ₁ = 0.78 XY INFORMATION SOURCE AND (1) Purity specif (2) Purity	<pre>(1) ,6-trinitromethylbenzene f 406.2 K. Two eutectic points B8 and T/K = 362.2. PURITY OF MATERIALS: and chemical source were not ied in paper. and chemical source were not ied in paper.</pre>		

COMPONENTS:	<u> </u>	ORIGINAL M	EASUREMENTS:		
	6-44-01	Shinomiya			
(1) Fluoranthene; $C_{16}H_{10}$; [20]		-			
(2) 2,4,6-Trinitromethoxyben C ₇ H ₅ N ₃ O ₇ ; [606-35-9]	zener	J. Chem. Soc. Japan <u>1940</u> , 15, 259-270. PREPARED BY:			
ARIABLES:					
Temperature		W.E. Acree, Jr.			
PERIMENTAL VALUES					
	ν.	Υ.	' Solid Phase		
	x ₂ 1.000	*1 0.000	(2)		
	0.928	0.072	(2)		
	0.865	0.135	(2)		
	0.792	0.208	1:1 Compound		
	0.755	0.245	1:1 Compound		
			-		
	0.647	0.353	1:1 Compound		
	0.627	0.372	1:1 Compound		
-	0.537	0.463	1:1 Compound		
	0.512	0.488	1:1 Compound		
	0.454	0.546	1:1 Compound		
	0.338	0.662	(1)		
359.7	0.280	0.720	(1)		
374.7	0.127	0.873	(1)		
points occur at x ₁ = 0.18	35 and 1/K = 321	8.2, and at :	re of 348.2 K. Two eutectic x ₁ = 0.630 and T/K = 341.7. /		
	AUXILIARY	INFORMATION			
ETHOD: APPARATUS/PROCEDURE	······································	SOURCE AND	PURITY OF MATERIALS:		
No experimental details give:	n in paper.	(1) Purit speci	y and chemical source were not fied in paper.		
		speci	y and chemical source were not fied in paper.		
			ERRORS: ision <u>+</u> 0.2 (Compiler). D2 (Compiler).		
		ļ			

omponents:		ORIGINAL MEASUREMENTS:			
(1) Fluoranthene; C ₁₆ H ₁₀ ; [20	06-44-01	Shinomiya,	с.		
(2) 2,4,6-Trinitroaniline; ([489-98-5]		J. Chem. Soc. Japan <u>1940</u> , 15, 259-270.			
ARIABLES: Temperature		PREPARED BY:			
		W.E. Acree, Jr.			
XPERIMENTAL VALUES					
T/K	<i>x</i> ₂	× ₁	Solid Phase		
461.7	1.000	0.000	(2)		
444.7	0.777	0.223	(2)		
453.7	0.648	0.352	1:1 Compound		
464.2	0.515	0.485	1:1 Compound		
464.2	0.482	0.518	1:1 Compound		
460.7	0.384	0.616	1:1 Compound		
459.2	0.352	0.648	1:1 Compound		
441.2	0.262	0.738	1:1 Compound		
	0.158	0.842	1:1 Compound		
390.7	0.099	0.901	1:1 Compound		
378.2	0.053	0.947	(1)		
382.7 Author reports formation	melting point	t temperature o	<pre>(1) (1) ,6-trinitroaniline brownish- f 464.7 K. Two eutectic point 8 and T/K = 375.2.</pre>	ts	
382.7 Author reports formation yellow compound having a	0.000 n of a 1:1 flue melting point	1.000 oranthene - 2,4 t temperature o	(1) ,6-trinitroaniline brownish . f 464.7 K. Two eutectic point	ts	
382.7 Author reports formation yellow compound having a occur at $x_1 = 0.267$ and	0.000 n of a 1:1 flua melting point T/K = 439.2, d	1.000 oranthene - 2,4 t temperature o and at x ₁ = 0.92 ry information	<pre>(1) ,6-trinitroaniline brownish- f 464.7 K. Two eutectic point 8 and T/K = 375.2.</pre>		
382.7 Author reports formation yellow compound having a occur at x ₁ = 0.267 and	0.000 n of a 1:1 flux melting point T/K = 439.2, a AUXILIAN	1.000 oranthene - 2,4 t temperature o and at x ₁ = 0.92 ry information Source and i	<pre>(1) ,6-trinitroaniline brownish- f 464.7 K. Two eutectic point 8 and T/K = 375.2. PURITY OF MATERIALS:</pre>		
382.7 Author reports formation yellow compound having a	0.000 n of a 1:1 flux melting point T/K = 439.2, a AUXILIAN	1.000 oranthene - 2,4 t temperature o and at x ₁ = 0.92 RY INFORMATION SOURCE AND I (1) Purity	<pre>(1) ,6-trinitroaniline brownish- f 464.7 K. Two eutectic point 8 and T/K = 375.2.</pre>		
382.7 Author reports formation yellow compound having a occur at x ₁ = 0.267 and	0.000 n of a 1:1 flux melting point T/K = 439.2, a AUXILIAN	1.000 oranthene - 2,4 t temperature o and at x ₁ = 0.92 RY INFORMATION SOURCE AND I (1) Purity specif: (2) Purity	<pre>(1) ,6-trinitroaniline brownish- f 464.7 K. Two eutectic point 8 and T/K = 375.2. PURITY OF MATERIALS: and chemical source were not</pre>		
382.7 Author reports formation yellow compound having a occur at x ₁ = 0.267 and	0.000 n of a 1:1 flux melting point T/K = 439.2, a AUXILIAN	1.000 oranthene - 2,4 t temperature o and at x ₁ = 0.92 RY INFORMATION SOURCE AND I (1) Purity specif: (2) Purity	<pre>(1) ,6-trinitroaniline brownish- f 464.7 K. Two eutectic point 8 and T/K = 375.2. PURITY OF MATERIALS: and chemical source were not led in paper. and chemical source were not led in paper.</pre>		

COMPONENTS :		ORIGINAL ME	ASUREMENTS:			
(1) Fluoranthene; $C_{16}H_{10}$; [206-44-0]			Shinomiya, C.			
<pre>(2) 2-Chloro-1,3,5-trinit C₆H₂ClN₃O₆; [88-88-0]</pre>	robenzene;	J. Chem. Soc. Japan <u>1940</u> , 15, 259-270.				
ARIABLES:		PREPARED BY:				
Temperature		W.E. Acree	ə, Jr.			
EXPERIMENTAL VALUES						
T/K	x2	<i>x</i> 1	Solid Phase			
356.2	1.000	0.000	(2)			
346.7	0.827	0.173	1:1 Compound			
370.2	0.739	0.261	1:1 Compound			
384.2	0.636	0.364	1:1 Compound			
390.2	0.574	0.426	1:1 Compound			
- 392.2	0.464	0.536	1:1 Compound			
392.2	0.460	0.540	1:1 Compound			
385.2	0.375	0.625	1:1 Compound			
379.2	0.330	0.670	1:1 Compound			
379.2	0.154	0.846	(1)			
382.7	0.000	1.000	(1)			
AUXILIARY INFORMATION METHOD: APPARATUS/PROCEDURE SOURCE AND PURITY OF MATERIALS:						
THOD: APPARATOS/PROCEDURE			PURITY OF MATERIALS:			
	5	SOURCE AND (1) Purity	PURITY OF MATERIALS: and chemical source were not ied in paper.			
	5	SOURCE AND (1) Purity specif (2) Purity	and chemical source were not			
	5	SOURCE AND (1) Purity specif (2) Purity	y and chemical source were not Fied in paper. y and chemical source were not Fied in paper.			
	5	SOURCE AND (1) Purity specif (2) Purity specif ESTIMATED E T/K: preci	y and chemical source were not Fied in paper. y and chemical source were not Fied in paper.			

MPONENTS:		ORIGINAL MEASUREMENTS:			
(1) Fluoranthene; C ₁₆ H	₁₀ ; [206-44-0]	Shinomiya,	с.		
(2) 3-Methyl-2,4,6-tri C ₇ H ₅ N ₃ O ₇ ; [602-99-3	nitrophenol;	J. Chem. Soc. Japan <u>1940</u> , 15, 259-270.			
ARIABLES:		PREPARED BY:			
Temperature		W.E. Acree, Jr.			
					T/K
381.7	1.000	0.000	(2)		
383.2	0.890	0.110	1:1 Compound		
412.2	0.677	0.323	1:1 Compound		
416.2	0.569	0.431	1:1 Compound		
417.2	0.483	0.517	1:1 Compound		
416.2	0.432	0.568	1:1 Compound		
412.2	0.364	0.636	1:1 Compound		
399.7	0.214	0.786	1:1 Compound		
385.2	0.138	0.862	1:1 Compound		
378.2	0.117	0.883	1:1 Compound		
			-		
381.0	0.038	0.962	(1)		
381.0 382.7 Author reports for yellow compound ha	0.000 mation of a 1:1 flue	1.000 oranthene - 3-me t of 417.2 K. 5	<pre>(1) (1) athyl-2,4,6-trinitrophenol Ewo eutectic points occur at = 374.2.</pre>		
381.0 382.7 Author reports for yellow compound ha	0.000 mation of a 1:1 fluv ving a melting poin	1.000 oranthene - 3-me t of 417.2 K. 5	(1) athyl-2,4,6-trinitrophenol Two eutectic points occur at		
381.0 382.7 Author reports for yellow compound ha $x_1 = 0.082$ and T/K	0.000 mation of a 1:1 flux ving a melting poin = 374.2, and at x ₁	1.000 oranthene - 3-ma t of 417.2 K. " = 0.890 and T/K = 0.890 and T/K	(1) athyl-2,4,6-trinitrophenol Two eutectic points occur at		
381.0 382.7 Author reports for yellow compound ha x ₁ = 0.082 and T/K	0.000 mation of a 1:1 fluving a melting point = 374.2, and at x ₁	1.000 oranthene - 3-ma t of 417.2 K. " = 0.890 and T/K = 0.890 and T/K RY INFORMATION SOURCE AND F (1) Purity specifi (2) Purity	<pre>(1) Put the second second</pre>		
381.0 382.7 Author reports for yellow compound ha	0.000 mation of a 1:1 fluving a melting point = 374.2, and at x ₁	1.000 oranthene - 3-ma t of 417.2 K. " = 0.890 and T/K = 0.890 and T/K RY INFORMATION SOURCE AND F (1) Purity specifi (2) Purity	(1) Purity of MATERIALS: and chemical source were not led in paper. and chemical source were not led in paper.		

FLUORENE SOLUBILITIES IN PURE AND BINARY SOLVENT MIXTURES

A. <u>Saturated Hydrocarbons (including cycloalkanes)</u>

cyclohexane decahydronaphthalene

- B. <u>Alkenes</u>
- C. Aromatic Hydrocarbons
 - benzene
 methylbenzene
 1,2,3,4-tetrahydronaphthalene
 ethylbenzene
 1,3-dimethylbenzene
 1,4-dimethylbenzene
 1,2,4,5-tetramethylbenzene
 naphthalene
 2-methylnaphthalene
 2,7-dimethylnaphthalene
 fluoranthene
 acenaphthene
 chrysene
- D. <u>Esters</u>
- E. <u>Ethers</u>
- F. Haloalkanes and Haloaromatic Hydrocarbons

tetrachloromethane chlorobenzene

G. <u>Alcohols</u>

methanol ethanol 1-octanol

- H. Ketones
- I. <u>Miscellaneous Pure Solvents</u>
 - nitrobenzene pyridine aniline thiophene 1,2-dinitrobenzene 1,3-dinitrobenzene 1,4-dinitrobenzene 1,2,3,5-trinitrobenzene 2,4-dinitromethylbenzene 2,4,6-trinitromethylbenzene 2,4-dinitrophenol

2,4,6-trinitrophenol 6-methyl-2,3,4-trinitrophenol

J. Binary Solvent Mixtures

1	34			
1	COMP	onents:		
	(1)	Fluorene;	с _{13^н10} ;	[86-73

COMPONENTS:	omponents:		ORIGINAL MEASUREMENTS:				
	1) Fluorene; C ₁₃ H ₁₀ ; [86-73-7]		Choi, P.B.; Williams, C.P.; Buehring, K.G.; McLaughlin, E. J. Chem. Eng. Data <u>1985</u> , 30, 403-409.				
(2) Cyclohexa	?) Cyclohexane; C ₆ H ₁₂ ; [110-82-7]						
VARIABLES:			PREPARED B	Y:			
Temperature			W.E. Acre	e, Jr.			
EXPERIMENTAL V	ALUES			<u></u>			
T/K	<i>x</i> 2	*1	T/K	*2	<i>*</i> 1		
310,95	0.9467	0.0537	331.85	0.8616	0.1384		
316.25	0.9316	0.0684	336.45	0.8267	0.1733		
321.75	0.9129	0.0871	341.45 0.780	0.7800	7800 0.2200		
327.35	0.8878	0.1122	346.25	0.7213	0.2787		
<u></u>		AUXILIARY	INFORMATION				
METHOD: APPARA	TUS/PROCEDUR	E	SOURCE AND PURITY OF MATERIALS:				
Constant temperature bath and a precision thermometer. Mixtures of known concentrations sealed in glass ampoules and placed in constant			 (1) 97.9 %, Eastern Chemical Company, Smithtown, New York, USA, was passed over activated alumina and recrystal- lized from toluene. (2) Gold Label, 99.9+ %, Aldrich Chemical 				
temperature to were rotated increased. So	o equilibrat while bath t lubility det	e. Samples emperature slowly ermined by visual	Compa	ny, was used	as received.		
trace of solid		which the last appeared.	ESTIMATED	ision + 0.1			

T/K: precision ± 0.1. x_1 : ± 0.0003.

COMPONENTS:		ORIGINAL MEASUREMENTS:			
(1) Fluorene; C ₁₃ H ₁₀ ; [86-73-7] (2) Cyclohexane; C ₆ H ₁₂ ; [110-82-7]		McLaughlin, E.; Zainal, H.A.			
		J. Chem. Soc. <u>1960</u> , 3854-3857.			
VARIABLES:		PREPARED BY:			
Temperature		W.E. Acree, Jr.			
EXPERIMENTAL VALUES					
T/K	×2	×1			
306.2	0.9498	0.0502			
319.8	0.9090	0.0910			
331.8	0.8485	0.1515			
342.2	0.7565	0.2435			
	AUXILIARY	INFORMATION			
ETHOD: APPARATUS/PRO	CEDURE	SOURCE AND PURITY OF MATERIALS:			
Constant temperature bath and a precision thermometer. Mixtures of known concentrations sealed in glass ampoules and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly increased. Solubility determined by visual		 Purity not given, Gesellschaft fur Teerverwertung, was passed over an alumina column with benzene as eluant. Purity, source and purification method was not specified. 			
noting the temperatu trace of solid solut	re at which the last	ESTIMATED ERRORS: T/K : precision \pm 0.1. x_1 : \pm 0.0003 (compiler).			

COMPONENTS:	COMPONENTS:			ORIGINAL MEASUREMENTS:				
(1) Fluorene	; C ₁₃ H ₁₀ ; [86-	73-7]	Coon, J.H	S.; Auwaerter	;, J.E.; McLaughlin, E.			
<pre>(2) Decahydronaphthalene; C₁₀H₁₈; [91-17-8]</pre>			Fluid Phase Equilibr. <u>1989</u> , 44, 305-345.					
VARIABLES:	RIABLES:			PREPARED BY:				
Temperature			W.E. Acre	e, Jr.				
EXPERIMENTAL	VALUES				,			
T/K	<i>x</i> 2	x 1	T/K	×2	<i>x</i> 1			
306.1	0.9157	0.0843	353.0	0.5555	0.4445			
321.3	0.8509	0.1491	366.2	0.3329	0.6671			
331.6	0.7756	0.2244						
342.9	0.6856	0.3144						
		AUXILIARY	INFORMATION	τ				
METHOD: APPAR	ATUS/PROCEDUR	E	SOURCE ANI	PURITY OF M	IATERIALS:			
Constant temperature bath and a precision thermometer. Mixtures of known concentrations sealed in glass ampoules and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly increased. Solubility determined by visual			wauke over then (2) 99+ % isome	ee, Wisconsin an activated recrystalliz , Aldrich Ch er ratio of 6	Chemical Company, Mil- A, USA, was passed A alumina column and ted from solution. Hemical Company, having 50.6 % cis and 39.4 % er molecular sieves.			
	emperature at id solute dis	which the last appeared.	ESTIMATED	ERRORS:				
			T/K: pred	cision + 0.1.				

T/K: precision \pm 0.1. x_1 : \pm 0.0003.

COMPONENTS:	MPONENTS :		ORIGINAL MEASUREMENTS:			
	 Fluorene; C₁₃H₁₀; [86-73-7] Benzene; C₆H₆; [71-43-2] 		Choi, P.B.; Williams, C.P.; Buehring, K.G.; McLaughlin, E. J. Chem. Eng. Data <u>1985</u> , 30, 403-409.			
VARIABLES:			PREPARED E	Y:		
Temperature	Temperature		W.E. Acree, Jr.			
EXPERIMENTAL V	ALUES			<u></u>		
T/K	*2	<i>x</i> 1	T/K	×2	*1	
307.75	0.8335	0.1665	336.25	0.6475	0.3525	
313.45	0.8050	0.1950	340.65	0.6043	0.3957	
318.15	0.7785	0.2215	348.35	0.5256	0.4744	
323.05	0.7472	0.2528	354.85	0.4523	0.5477	
330.45	0.6945	0.3055				

AUXILIARY INFORMATION					
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:				
Constant temperature bath and a precision thermometer. Mixtures of known concentrations sealed in glass ampoules and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly increased. Solubility determined by visual	 97.9 %, Eastern Chemical Company, Smithtown, New York, USA, was passed over activated alumina and recrystal- lized from toluene. Gold Label, 99.9+ %, Aldrich Chemical Company, was used as received. 				
noting the temperature at which the last trace of solid solute disappeared.	ESTIMATED ERRORS:				
	T/K: precision ± 0.1. x_1 : ± 0.0003.				

ſ	COMPONENTS :	EVALU
	(1) Fluorene; C ₁₃ H ₁₀ ; [86-73-7]	W.E. Depa
	(2) Benzene; C ₆ H ₆ ; [71-43-2]	Univ

EVALUATOR:

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W.E. Acree, Jr.
Department of Chemistry
University of North Texas
Denton, Texas 76203-5068 (USA)
August, 1994
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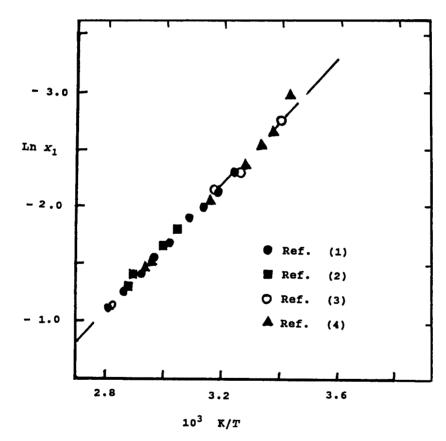
CRITICAL EVALUATION:

Fluorene solubilities in benzene were retrieved from papers by Choi et al. (1), McLaughlin and Zainal (2), Mortimer (3) and Domanska et al. (4). All four studies values at several temperatures. There is no a prior reason to exclude any of the four studies from the critical evaluation.

Regressional analysis of the experimental data as $\text{Ln } x_1$ versus 1/T yielded the following mathematical relationship:

$$\ln x_1 = -2668.6 (1/T) + 6.8891$$
 (r = 0.9995)

for variation of fluorene solubility with absolute temperature (see graph below).



Graphical plot of Ln x_1 versus 1/T

REFERENCES

- Choi, P.B.; Williams, C.P.; Buehring, K.G.; McLaughlin, E. J. Chem. Eng. Data 1985, 30, 403-409.
- 2. McLaughlin, E.; Zainal, H.A. J. Chem. Soc. 1959, 863-867.
- 3. Mortimer, F.S. J. Am. Chem. Soc. <u>1923</u>, 45, 633-641.
- Domanska, U.; Groves, F.R., Jr.; McLaughlin, E. J. Chem. Eng. Data <u>1993</u>, 38, 88-94.

COMPONENTS :			ORIGINAL MEASUREMENTS: McLaughlin, E.; Zainal, H.A.				
(1) Fluorene;	; C ₁₃ H ₁₀ ; [86-	73-7]					
(2) Benzene; C ₆ H ₆ ; [71-43-2]			J. Chem. Soc. <u>1959</u> , 863-867.				
VARIABLES:	ARIABLES:			PREPARED BY:			
Temperature			W.E. Acree, Jr.				
EXPERIMENTAL V	ALUES						
T/K	×2	×1	<i>т/</i> К	*2	*1		
306.8	0.8396	0.1604	342.6	0.5941	0.4059		
327.6	0.7222	0.2778	346.0	0.5595	0.4405		
331.6	0.6905	0.3095					
		AUXILIARY	INFORMATION	1	<u></u>		
ETHOD: APPAR	TUS/PROCEDUR	E	SOURCE ANI	PURITY OF M	ATERIALS:		
Constant temperature bath and a precision thermometer. Mixtures of known concentrations sealed in glass ampoules and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly increased. Solubility determined by visual			 Purity not specified, Gesellschaft fur Teerverwertung, was passed over an alumina column with benzene eluant. "AnalaR", was dried over sodium wire and freshly distilled before use. 				
	emperature at	which the last	ESTIMATED	ERRORS:	· · · · · · · · · · · · · · · · · · ·		
			T/K: precision \pm 0.1. x_1 : \pm 0.0003 (compiler).				

COMPONENTS:			ORIGINAL MEASUREMENTS:			
(1) Fluoren	e; C ₁₃ H ₁₀ ; [86-	-73-7]	Mortime	r, F.S.		
<pre>(2) Benzene; C₆H₆; [71-43-2] VARIABLES: Temperature</pre>			J. Am. Chem. Soc. <u>1923</u> , 45, 633-641. PREPARED BY:			
			EXPERIMENTAL	VALUES		
T/K	x 2	×1	T/K	x 2	×1	
273	0.946	0.054	353	0.489	0.511	
293	0.895	0.105				
313	0.810	0.190				
333	0.676	0.324				
		AUXILIARY	INFORMATIO	N		
ETHOD: APPAR	RATUS/PROCEDU	\E	SOURCE AN	ND PURITY OF I	MATERIALS:	
Experimental procedure not given in the reference. Compiler speculates that the experimental values were, in all likeli- hood, determined by a gravimetric method, which was common practice during this era. The method probably involved equili- brating excess solute and solvent in sealed containers, transfer of weighed			 Purity and chemical source not given. Paper states only that the solute was carefully purified. Purity and chemical source not given. Paper states only that the solvent was carefully purified. 			
weighing of	solid residue	that remained.	T/K: ± 2 (by compiler). x ₁ : ± 8 % (relative error, by compiler).			

COMPONENTS:		ORIGINAL MEA	SUREMENTS :		
(1) Fluorene; C ₁₃ H ₁₀ ; [8	6-73-7]	Domanska, U.; Groves, F.R., Jr.; McLaughlin E. J. Chem. Eng. Data <u>1993</u> , 38, 88-94.			
 (2) Benzene; C₆H₆; [71-4 					
VARIABLES:		PREPARED BY:			
Temperature		W.E. Acree, Jr.			
EXPERIMENTAL VALUES					
T/K	*2	x 1	Solid Phase		
278.7	1.0000	0.000	(2)		
277.5	0.9798	0.0202	(2)		
277.0	0.9593	0.0407	(2)		
275.8	0.9465	0.0535	(2)		
275.3	0.9369	0.0631	(1)		
278.1	0.9286	0.0714	(1)		
283.1	0.9174	0.0826	(1)		
288.9	0.9014	0.0986	(1)		
290.7	0.8960	0.1040	(1)		
295.0	0.8819	0.1181	(1)		
298.4	0.8699	0.1301	(1)		
304.7	0.8452	0.1548	(1)		
308.7	0.8277	0.1723	(1)		
315.2	0.7938	0.2062	(1)		
324.5	0.7391	0.2609	(1)		
331.6	0.6856	0.3144	(1)		
337.5	0.6435	0.3565	(1)		
339.7	0.6208	0.3792	(1)		
344.5	0.5747	0.4253	(1)		
347.7	0.5462	0.4538	(1)		
349.2	0.5312	0.4688	(1)		
388.0	0.0000	1.0000	(1)		
Authors repor	t eutectic point occu	ars at $x_1 = 0$.	063 and T/K = 275.3.		
<u> </u>	AUXILIARY	INFORMATION			
METHOD: APPARATUS/PROCED	URE	SOURCE AND P	URITY OF MATERIALS:		
Constant temperature bath and a precision thermometer.		 (1) 99 %, Aldrich Chemical Company, Milwau- kee, Wisconsin, USA, was recrystallized from toluene. 			
Mixtures of known conce in glass ampoules and p temperature to equilibr were rotated while bath increased. Solubility d	laced in constant ate. Samples temperature slowly	(2) 99+ %, Aldrich Chemical Company, was fractionally distilled and stored over molecular sieves.			
noting the temperature trace of solid solute d	at which the last	ESTIMATED ER	RORS:		
crace of solid soluce d	reapheared.	$T/K:$ precis $x_1: \pm 0.000$			

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COMPONENTS:			ORIGINAL MEASUREMENTS:									
(1) Fluorene	e; C ₁₃ H ₁₀ ; [86•	-73-7]	Mortimer, F.S.									
(2) Methylbenzene; C ₇ H ₈ ; [108-88-3] VARIABLES: Temperature			J. Am. Chem. Soc. <u>1923</u> , 45, 633-641. PREPARED BY: W.E. Acree, Jr.									
							EXPERIMENTAL	VALUES	· · · · · · · · · · · · · · · · · · ·	ļ		
							T/K	x 2	×1	T/K	<i>x</i> 2	x 1
273	0.946	0.054	353	0.489	0.511							
293	0.894	0.106										
313	0.809	0.191										
333	0.676	0.324										
	<u> </u>	AUXILIARY	INFORMATIC	DN								
METHOD: APPAI	RATUS/PROCEDU	RE.	SOURCE AN	D PURITY OF 1	ATERIALS:							
reference. experimental	Experimental procedure not given in the reference. Compiler speculates that the experimental values were, in all likeli-			 Purity and chemical source not given. Paper states only that the solute was carefully purified. 								
hood, determined by a gravimetric method, which was common practice during this era. The method probably involved equili- brating excess solute and solvent in sealed containers, transfer of weighed			(2) Purity and chemical source not given. Paper states only that the solvent was carefully purified.									
aliquots of	saturated sol	Lution to tared of solvent, and	ESTIMATEI	ERRORS:								
weighing of	solid residue	e that remained.	$T/K: \pm 2$ (by compiler). $x_1: \pm 8$ % (relative error, by compiler).									

COMPONENTS: (1) Fluorene; C ₁₃ H ₁₀ ; [86-73-7] (2) 1,2,3,4-Tetrahydronaphthalene; C ₁₀ H ₁₂ ; [119-64-2] VARIABLES: Temperature			ORIGINAL MEASUREMENTS: Coon, J.E.; Auwaerter, J.E.; McLaughlin, E. Fluid Phase Equilibr. <u>1989</u> , 44, 305-345. PREPARED BY:									
							W.E. Acree, Jr.					
							EXPERIMENTAL	VALUES				
							T/K	*2	x 1	T/K	<i>x</i> 2	×1
			303.6	0.8328	0.1672	335.7	0.6298	0.3702				
311.7	0.7925	0.2075	343.0	0.5666	0.4334							
322.8	0.7305	0.2695	356.3	0.4272	0.5728							
325.7	0.7139	0.2861										
		AUXILIARY	INFORMATION	đ								
ETHOD: APPAR	ATUS/PROCEDUR	E	SOURCE ANI	PURITY OF M	ATERIALS:							
Constant temperature bath and a precision thermometer. Mixtures of known concentrations sealed in glass ampoules and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly increased. Solubility determined by visual noting the temperature at which the last			 99.6 %, Aldrich Chemical Company, Mil waukee, Wisconsin, USA, was passed over an activated alumina column and then recrystallized from solution. 99.6+ %, Aldrich Chemical Company, wa stored over molecular sieves to remov trace water. 									
						trace of sol	emperature at Ld solute dis	which the last appeared.	ESTIMATED	ERRORS :		
			$\begin{array}{c} T/K: \text{ prec}\\ x_1: \pm 0.0 \end{array}$	cision \pm 0.1.								

10						
COMPONENTS:		ORIGINAL MEASUREMENTS:				
(1) Fluorene; C ₁₃ H ₁₀ ; [86-73-7]	Kravchenko, V.M. J. Appl. Chem. U.S.S.R. <u>1952</u> , 25, 1015- 1022. (English translation) PREPARED BY: W.E. Acree, Jr.				
(2) Ethylbenzene; C ₈ H ₁₀	; [100-41-4]					
VARIABLES:						
Temperature						
EXPERIMENTAL VALUES						
T/K	*2	× ₁	Solid Phase			
178.8	1.000	0.000	(2)			
178.2	0.990	0.010	Eutectic			
209.2	0.979	0.021	(1)			
253.2	0.951	0.046	(1)			
281.8	0.900	0.100	(1)			
308.4	0.801	0.199	(1)			
325.9	0.702	0.298	(1)			
339.0	0.602	0.398	(1)			
349.2	0.498	0.502	(1)			
357.2	0.404	0.596	(1)			
365.9	0.300	0.700	(1)			
374.2	0.182	0.818	(1)			
379.5	0.102	0.898	(1)			
387.2	0.000	1.000	(1)			
		INFORMATION				
ETHOD: APPARATUS/PROCE			PURITY OF MATERIALS:			
Phase diagram was deter thermal analysis method detail in V.M. Kravcher U.S.S.R. <u>1939</u> , 13, 133	d (described in nko, J. Phys. Chem.		 and chemical source were not ied in paper, was recrystallized use. 			
visual observations.	,,)	(2) Purity specif before	and chemical source were not ied in paper, was distilled use.			
		ESTIMATED E	RRORS:			
			sion <u>+</u> 0.2 (Compiler). 2 (Compiler).			
		ļ				

COMPONENTS:		ORIGINAL ME	ASUREMENTS:	
(1) Fluorene; C ₁₃ H ₁₀ ; [86-73-71	Kravchenko	. V.M.	
<pre>(2) 1,3-Dimethylbenzer [108-38-3]</pre>		J. Appl. C	hem. U.S.S.R. <u>1952</u> , 25, 1015- ish translation)	
VARIABLES:		PREPARED BY	8	
Temperature		W.E. Acree, Jr.		
EXPERIMENTAL VALUES				
T/K	<i>x</i> 2	* 1	Solid Phase	
225.8	1.000	0.000	(2)	
224.6	0.973	0.027	Eutectic	
270.9	0.949	0.051	(1)	
280.3	0.900	0.100	(1)	
308.7	0.795	0.205	(1)	
325.8	0.702	0.298	(1)	
338.8	0.602	0.398	(1)	
349.6	0.500	0.500	(1)	
357.0	0.410	0.590	(1)	
365.7	0.298	0.702	(1)	
373.7	0.197	0.803	(1)	
380.2	0.091	0.900	(1)	
387.2	0.000	1.000	(1)	
		Y INFORMATION		
	DURE	SOURCE AND	PURITY OF MATERIALS:	
METHOD: APPARATUS/PROCE Phase diagram was dete thermal analysis metho detail in V.M. Kravche U.S.S.R. <u>1939</u> , 13, 13 Visual observations.	DURE ermined using a od (described in enko, J. Phys. Chem.	SOURCE AND (1) Purity specif before (2) Purity	and chemical source were not ied in paper, was recrystallized use. and chemical source were not	
Phase diagram was dete thermal analysis metho detail in V.M. Kravche U.S.S.R. <u>1939</u> , <i>13</i> , 13	DURE ermined using a od (described in enko, J. Phys. Chem.	SOURCE AND (1) Purity specif before (2) Purity	and chemical source were not ied in paper, was recrystallized use. and chemical source were not ied in paper, was distilled	
thermal analysis metho detail in V.M. Kravche U.S.S.R. <u>1939</u> , 13, 13	DURE ermined using a od (described in enko, J. Phys. Chem.	(1) Purity specif before (2) Purity specif	and chemical source were not ied in paper, was recrystallized use. and chemical source were not ied in paper, was distilled use.	

COMPONENTS:			ORIGINAL	ORIGINAL MEASUREMENTS:			
(1) Fluorene	e; C ₁₃ H ₁₀ ; [86-	73-7]	Mortime	Mortimer, F.S.			
<pre>(2) 1,4-Dimethylbenzene; C₈H₁₀; [106-42-3] VARIABLES: Temperature</pre>			J. Am. 0	J. Am. Chem. Soc. <u>1923</u> , 45, 633-641.			
			PREPARED	BY:	····		
			W.E. Act	W.E. Acree, Jr.			
EXPERIMENTAL	VALUES						
T/K	×2	*1	T/K	x2	<i>*</i> 1		
273	0.945	0.055	353	0.487	0.513		
293	0.888	0.112					
313	0.807	0.193					
333	0.673	0.327					
		AUXILIA	RY INFORMATIC	N			
ETHOD: APPAR	RATUS/PROCEDUR	E	SOURCE AN	D PURITY OF	MATERIALS:		
Experimental procedure not given in the reference. Compiler speculates that the experimental values were, in all likeli- hood, determined by a gravimetric method, which was common practice during this era. The method probably involved equili- brating excess solute and solvent in sealed containers, transfer of weighed			Pape	 (1) Purity and chemical source not given. Paper states only that the solute was carefully purified. (2) Purity and chemical source not given. Paper states only that the solvent was carefully purified. 			
			(2) Puri - Pape				
aliquots of containers,	saturated sol evaporation c	ution to tared of solvent, and that remained.	$T/K: \pm 2$	ESTIMATED ERRORS: $T/K: \pm 2$ (by compiler). $x_1: \pm 8$ % (relative error, by compiler).			

		ORIGINAL MEASUREMENTS:			
(1) Fluorene; C ₁₃ H ₁₀ ; [86-73-7]	Kravchenko	, V.M.		
(2) 1,2,4,5-Tetramethy [95-93-2]	lbenzene; C ₁₀ H ₁₄ ;	J. Appl. Chem. U.S.S.R. <u>1952</u> , 25, 1015- 1022. (English translation)			
ARIABLES:		PREPARED BY:			
Temperature		W.E. Acree	, Jr.		
EXPERIMENTAL VALUES	<u></u>				
T/K	x 2	× 1	Solid Phase		
352.2	1.000	0.000	(2)		
347.6	0.918	0.082	(2)		
345.0	0.871	0.129	(2)		
342.4	0.820	0.180	(2)		
340.6	0.782	0.218	(2)		
338.5	0.748	0.252	(2)		
335.2	0.696	0.304	(2)		
333.7	0.652	0.348	Eutectic		
343.4	0.554	0.446	(1)		
354.1	0.450	0.550	(1)		
363.1	0.333	0.667	(1)		
371.1	0.224	0.776	(1)		
377.8	0.127	0.873	(1)		
387.2	0.000	1.000	(1)		
		Y INFORMATION			
	DURE	SOURCE AND	PURITY OF MATERIALS:		
Phase diagram was dete thermal analysis metho detail in V.M. Kravche U.S.S.R. <u>1939</u> , <i>13</i> , 13	DURE rmined using a d (described in ako, J. Phys. Chem.	SOURCE AND 1 (1) Purity specific before (2) Purity	and chemical source were not ied in paper, was recrystallized use. and chemical source were not		
Phase diagram was dete thermal analysis metho detail in V.M. Kravche U.S.S.R. <u>1939</u> , <i>13</i> , 13	DURE rmined using a d (described in ako, J. Phys. Chem.	SOURCE AND 1 (1) Purity specific before (2) Purity	and chemical source were not ied in paper, was recrystallized use. and chemical source were not ied in paper, was recrystallized		
ETHOD: APPARATUS/PROCE Phase diagram was dete thermal analysis metho detail in V.M. Kravche U.S.S.R. <u>1939</u> , 13, 13 visual observations.	DURE rmined using a d (described in ako, J. Phys. Chem.	(1) Purity specific before (2) Purity specific	and chemical source were not ied in paper, was recrystallized use. and chemical source were not ied in paper, was recrystallized use.		

COMPONENTS:		ORIGINAL ME	ORIGINAL MEASUREMENTS:			
(1) Fluorene; C ₁₃ H ₁₀ ; [86-73-7] (2) Naphthalene; C ₁₀ H ₈ ; [91-20-3]		86-73-7]	Kravchenko	, V.M.		
		J. Appl. Chem. U.S.S.R. <u>1952</u> , 25, 1015- 1022. (English translation)				
ARIABLES:			PREPARED BY	PREPARED BY:		
Temperature		W.E. Acree	W.E. Acree, Jr.			
XPERIMENTA	L VALUES					
	T/K	*2	×i	Solid Phase		
	353.2	1.000	0.000	(2)		
	347.5	0.921	0.079	(2)		
	342.4	0.844	0.156	(2)		
	335.7	0.755	0.245	(2)		
	329.4	0.658	0.342	(2)		
	328.2	0.625	0.375	(1)		
	329.7	0.612	0.388	(1)		
	337.0	0.564	0.436	(1)		
	348.7	0.466	0.534	(1)		
	358.6	0.359	0.641	(1)		
	368.5	0.247	0.753	(1)		
	377.6	0.121	0.879	(1)		
	387.2	0.000				
	Author repor		1.000 ccurs at x ₁ = 0.	(1) .365 and T/K = 328.2.		
	Author repor					
	Author repor	ts eutectic point o				
	Author repor	ts eutectic point o	CCUIS AT $x_1 = 0$			
ETHOD: APP Phase diag thermal an detail in U.S.S.R.	ARATUS/PROCE ram was dete alysis metho V.M. Kravche 1939, 13, 13	ts eutectic point o	CCUIS AT X1 = 0. RY INFORMATION SOURCE AND 1 (1) Purity specifi before	.365 and T/K = 328.2. PURITY OF MATERIALS: and chemical source were not ied in paper, was recrystallized use.		
ETHOD: APP. Phase diag thermal an detail in	ARATUS/PROCE ram was dete alysis metho V.M. Kravche 1939, 13, 13	AUXILIA DURE rmined using a d (described in nko, J. Phys. Chem.	CCUIS AT X1 = 0. RY INFORMATION SOURCE AND I (1) Purity specif: before (2) Purity	.365 and T/K = 328.2. PURITY OF MATERIALS: and chemical source were not ied in paper, was recrystallized use. and chemical source were not ied in paper, was recrystallized		
ETHOD: APP Phase diag thermal an detail in U.S.S.R.	ARATUS/PROCE ram was dete alysis metho V.M. Kravche 1939, 13, 13	AUXILIA DURE rmined using a d (described in nko, J. Phys. Chem.	CCUIS AT X1 = 0. RY INFORMATION SOURCE AND I (1) Purity specific before (2) Purity specific	.365 and T/K = 328.2. PURITY OF MATERIALS: and chemical source were not ied in paper, was recrystallized use. and chemical source were not ied in paper, was recrystallized use.		

Components:		ORIGINAL ME	ORIGINAL MEASUREMENTS:			
(1) Fluorene; C ₁₃ H ₁₀ ;	[86-73-7]	Kravchenko	Kravchenko, V.M. J. Appl. Chem. U.S.S.R. <u>1952</u> , 25, 1015- 1022. (English translation)			
(2) 2-Methylnaphthale [91-57-6]	ne; C ₁₁ H ₁₀ ;	J. Appl. C 1022. (Eng				
ARIABLES:		PREPARED BY	\$			
Temperature	Temperature		, Jr.			
XPERIMENTAL VALUES		<u> </u>				
T/K	*2	×1	Solid Phase			
307.2	1.000	0.000	(2)			
306.6	0.980	0.020	(2)			
305.2	0.965	0.035	(2)			
310.7	0.908	0.092	(1)			
317.2	0.818	0.182	(1)			
321.0	0.778	0.222	(1)			
326.5	0.726	0.274	(1)			
331.1	0.684	0.316	(1)			
336.2	0.646	0.354	(1)			
340.7	0.591	0.409	(1)			
351.1	0.486	0.514	(1)			
356.8	0.434	0.566	(1)			
366.4	0.312	0.688	(1)			
372.5	0.232	0.768	(1)			
378.7	0.124	0.876	(1)			
387.2	0.000	1.000	(1)			
			0.038 and T/K = 304.8.			
	AUXILIA	RY INFORMATION				
ETHOD: APPARATUS/PROCE	DURE	SOURCE AND I	PURITY OF MATERIALS:			
Phase diagram was determined using a thermal analysis method (described in detail in V.M. Kravchenko, J. Phys. Chem. U.S.S.R. <u>1939</u> , 13, 133), supplemented by visual observations.		specif: before (2) Purity specif: before	 (1) Purity and chemical source were not specified in paper, was recrystallized before use. (2) Purity and chemical source were not specified in paper, was distilled before use. 			
		T/VI Prosi	sion \pm 0.2 (Compiler).			

OMPONENTS:			ORIGINAL ME	ASUREMENTS:		
(1) Fluorene; C ₁₃ H ₁₀ ; [86-73-7]						
	<pre>(1) Flucience; C₁₃H₁₀; [00 / 5 /] (2) 2,7-Dimethylnaphthalene; C₁₂H₁₂; [582-16-1]</pre>		Kravchenko, V.M. J. Appl. Chem. U.S.S.R. <u>1952</u> , 25, 1015- 1022. (English translation)			
	ARIABLES:		PREPARED BY:			
	Temperature		W.E. Acree, Jr.			
remper						
EXPERIM	ENTAL VALUES					
	T/K	*2	<i>x</i> ₁	Solid Phase		
	370.2	1.000	0.000	(2)		
	361.6	0.864	0.136	(2)		
	352.7	0.740	0.260	(2)		
	347.7	0.689	0.311	(2)		
	343.0	0.642	0.358	(2)		
	337.7	0.599	0.401	(2)		
	335.2	0.580	0.420	Eutectic		
	338.2	0.547	0.453	(1)		
	342.7	0.500	0.500	(1)		
	348.3	0.444	0.556	(1)		
	353.7	0.397	0.603	(1)		
	363.8	0.295	0.705	(1)		
	371.7	0.198	0.802	(1)		
	379.7	0.100	0.900	(1)		
	387.2	0.000	1.000	(1)		
		ts eutectic occurs at				
		AUXILIARY	INFORMATION			
	APPARATUS/PROCE	DURE	SOURCE AND	PURITY OF MATERIALS:		
AETHOD:	METHOD: APPARATUS/PROCEDURE Phase diagram was determined using a thermal analysis method (described in detail in V.M. Kravchenko, J. Phys. Chem. U.S.S.R. <u>1939</u> , 13, 133), supplemented by		 Purity and chemical source were not specified in paper, was recrystallized before use. 			
Phase therma detail U.S.S.	l analysis metho in V.M. Kravche	nko, J. Phys. Chem.	before	use. and chemical source were not		
Phase therma detail U.S.S.	<pre>1 analysis metho in V.M. Kravche R. <u>1939</u>, 13, 13</pre>	nko, J. Phys. Chem.	(2) Purity specif. before	and chemical source were not ied in paper, was recrystallized use.		
Phase therma detail U.S.S.	<pre>1 analysis metho in V.M. Kravche R. <u>1939</u>, 13, 13</pre>	nko, J. Phys. Chem.	before (2) Purity specif. before ESTIMATED E	and chemical source were not ied in paper, was recrystallized use.		

COMPONENT	ONPONENTS :		ORIGINAL ME	ASUREMENTS:	
(1) Fluo	orene; C ₁₃ H ₁₀ ; [86-73-7]	Kravchenko	, V.M.; Pastukhova, I.S.	
	pranthene; C ₁₆ H		J. Gen. Chem. U.S.S.R. <u>1959</u> , 29, 29-34. (English translation) PREPARED BY:		
ARIABLES	1				
Temperat	Temperature		W.E. Acree, Jr.		
XPERIMEN	TAL VALUES				
	T/K	<i>x</i> 2	x 1	Solid Phase	
	383.2	1.000	0.000	(2)	
	376.3	0.905	0.095	(2)	
	368.1	0.797	0.203	(2)	
	360.0	0.704	0.296	(2)	
	352.6	0.625	0.375	(2)	
	347.9	0.571	0.429	(2)	
	343.1	0.530	0.470	(2)	
	342.2	0.519	0.481	Eutectic	
	345.3	0.477	0.523	(1)	
	353.8	0.389	0.611	(1)	
	363.7	0.298	0.702	(1)	
	373.2	0.195	0.805	(1)	
	380.7	0.099	0.901	(1)	
	387.2	0.000	1.000	(1)	
			INFORMATION		
ETHOD: A	PPARATUS/PROCE			PURITY OF MATERIALS:	
Phase diagram was determined using a thermal analysis method (described in detail in V.M. Kravchenko, J. Phys. Chem.		d (described in nko, J. Phys. Chem.	specif: before		
thermal detail i U.S.S.R.	.S.S.R. <u>1939</u> , 13, 133), supplemented by isual observations.		(2) Purity and chemical source were not specified in paper, was recrystallize before use.		
thermal detail i U.S.S.R.	<u>1939</u> , <i>13</i> , 13		specif.	ied in paper, was recrystallized	
thermal detail i U.S.S.R.	<u>1939</u> , <i>13</i> , 13		specif.	<pre>ied in paper, was recrystallized use.</pre>	

		ORIGINAL ME	ORIGINAL MEASUREMENTS:			
COMPONENTS: (1) Fluorene; C ₁₆ H ₁₀ ; [86-73-7] (2) Acenaphthene; C ₁₂ H ₁₀ ; [83-32-9]		Kravchenko	Kravchenko, V.M.; Pastukhova, I.S. Zhur. Fiz. Khim. <u>1957</u> , 31, 1802-1811.			
		Zhur. Fiz.				
			-			
VARIABLES:			PREPARED BY: W.E. Acree, Jr.			
Temperature	Temperature		, JE.			
EXPERIMENTAL VAL	UES					
T/K	*2	<i>x</i> 1	Solid Phase			
368.3	-	0.000	(2)			
361.7	0.897	0.103	(2)			
355.6	0.806	0.194	(2)			
348.2	0.707	0.293	(2)			
340.9	0.618	0.382	(2)			
337.8	0.582	0.418	Eutectic			
. 339.3	0.562	0.438	(1)			
348.1	0.472	0.528	(1)			
356.0	0.381	0.619	(1)			
367.9	0.254	0.746	(1)			
379.6	0.111	0.889	(1)			
387.2	0.000	1.000	(1)			
	AUXILI	ARY INFORMATION				
ETHOD: APPARATUS			PURITY OF MATERIALS:			
Phase diagram wa thermal analysis detail in V.M. H U.S.S.R. <u>1939</u> ,	S/PROCEDURE as determined using a s method (described in Kravchenko, J. Phys. Chem 13, 133), supplemented by	SOURCE AND (1) Purity specif before (2) Purity	and chemical source were not ied in paper, was recrystallized use. and chemical source were not			
thermal analysis detail in V.M. H	S/PROCEDURE as determined using a s method (described in Kravchenko, J. Phys. Chem 13, 133), supplemented by	SOURCE AND (1) Purity specif before (2) Purity	and chemical source were not ied in paper, was recrystallized use. and chemical source were not ied in paper, was recrystallized			
Phase diagram wa thermal analysis detail in V.M. F U.S.S.R. <u>1939</u> ,	S/PROCEDURE as determined using a s method (described in Kravchenko, J. Phys. Chem 13, 133), supplemented by	(1) Purity specif before (2) Purity specif	and chemical source were not ied in paper, was recrystallized use. and chemical source were not ied in paper, was recrystallized use.			

Components:	ORIGINAL MEASUREMENTS:
(1) Fluorene; C ₁₃ H ₁₀ ; [86-73-7]	Kravchenko, V.M.; Pastukhova, I.S.
(2) Chrysene; C ₁₈ H ₁₂ ; [218-01-9]	Proc. Acad. Sci. U.S.S.R., Sect. Chem. 1956, 111, 667-669. (English translation)
ARIABLES:	PREPARED BY:
Temperature	W.E. Acree, Jr.
XPERIMENTAL VALUES	
T/K ×2	x ₁ Solid Phase
528.2 1.000	0.000 (2)
513.9 0.861	0.139 (2)
504.2 0.754	0.246 (2)
491.6 0.650	0.350 (2)
480.2 0.555	0.445 (2)
458.7 0.403	0.597 (2)
445.4 0.320	0.680 (2)
419.5 0.205	0.795 (2)
395.7 0.129	0.871 (2)
381.2 0.098	0.902 Eutectic
384.4 0.052	0.948 (1)
387.2 0.000	1.000 (1)
· · · · · · · · · · · · · · · · · · ·	ILIARY INFORMATION
ETHOD: APPARATUS/PROCEDURE	
Phase diagram was determined using a thermal analysis method (described i detail in V.M. Kravchenko, J. Phys. U.S.S.R. <u>1939</u> , 13, 133), supplement visual observations.	hem. before use.
	ESTIMATED ERRORS:
	T/K: precision \pm 0.2 (Compiler). x_1 : \pm 0.002 (Compiler).

COMPONENTS:			ORIGINAL MEASUREMENTS:				
(1) Fluorene; C ₁₃ H ₁₀ ; [86-73-7]			McLaughlin, E.; Zainal, H.A.				
<pre>(2) Tetrachloromethane; CCl₄; [56-23-5]</pre>		J. Chem. Soc. <u>1960</u> , 2485-2488.					
VARIABLES:	VARIABLES:			PREPARED BY:			
Temperature		W.E. Acre	e, Jr.				
EXPERIMENTAL V	ALUES	· · · · · · · · · · · · · · · · · · ·					
T/K	<i>x</i> 2	×1	T/K	*2	×1		
311.4	0.8381	0.1619	337.8	0.6564	0.3436		
319.8	0.7931	0.2069					
326.0	0.7501	0.2499					
331.4	0.7121	0.2879					
		AUXILIARY	INFORMATION		<u>a algia</u> ,		
METHOD: APPARA	TUS/PROCEDUR	E	SOURCE AND PURITY OF MATERIALS:				
thermometer.	Constant temperature bath and a precision			(1) Purity not given, Gesellschaft fur Teerverwertung, was passed over an alumina column with benzene as eluant.			
in glass ampo temperature t were rotated	oules and pla co equilibrate while bath to	rations sealed ced in constant e. Samples emperature slowly ermined by visual	(2) AnalaR grade, source not given, was dried over anhydrous calcium chloride and distilled before use.				
	emperature at	which the last	ESTIMATED	ERRORS :			
CIACE OF BOID	ta boruce dib	ibboared.		ision ± 0.1. 003 (compiler	c).		

COMPONENTS:			ORIGINAL MEASUREMENTS:				
(1) Fluoren	e; C ₁₃ H ₁₀ ; [86-	-73-7]	Mortimer, F.S.				
(2) Chlorobenzene; C ₆ H ₅ Cl; [108-90-7]			J. Am. Chem. Soc. <u>1923</u> , 45, 633-641.				
VARIABLES:	/ARIABLES:			PREPARED BY:			
Temperature	Temperature			ree, Jr.			
EXPERIMENTAL	VALUES						
T/K	<i>x</i> 2	<i>*</i> 1	T/K	*2	x 1		
273	0.934	0.066	353	0.467	0.533		
293	0.876	0.124					
313	0.786	0.214					
333	0.651	0.349					
	<u>t</u>	AUXILIARY	INFORMATIO	 ИС			
METHOD: APPA	RATUS/PROCEDU	ξE	SOURCE AL	ND PURITY OF 1	ATERIALS:		
METHOD: APPARATUS/PROCEDURE Experimental procedure not given in the reference. Compiler speculates that the experimental values were, in all likeli- hood, determined by a gravimetric method, which was common practice during this era. The method probably involved equili- brating excess solute and solvent in sealed containers, transfer of weighed			Pape care (2) Pur: Pape	er states only efully purific ity and chemic	cal source not given. I that the solvent was		
aliquots of containers,	saturated sol evaporation of	et of weighted of solvent, and that remained.		2 (by compile)	:). rror, by compiler).		

COMPONENTS:		ORIGINAL MEASUREMENTS:			
(1) Fluorene; C ₁₃ H ₁₀ ; [86-73-7]		Mortimer, F.S.			
(2) Methanol; CH ₄ O; [67-56-1]		J. Am. Chem. Soc. <u>1923</u> , 45, 633-641.			
ARIABLES:		PREPARED BY:			
Temperature		W.E. Acree, Jr.			
EXPERIMENTAL VALUES					
T/K	*2	×1			
293	0.9965	0.0035			
313	0.9942	0.0058			
333	0.9890	0.0110			
	AUXILIARY	INFORMATION			
METHOD: APPARATUS/PROC	CEDURE	SOURCE AND PURITY OF MATERIALS:			
Experimental procedure not given in the reference. Compiler speculates that the experimental values were, in all likeli- hood, determined by a gravimetric method, which was common practice during this era. The method probably involved equili- brating excess solute and solvent in		 (1) Purity and chemical source not given. Paper states only that the solute was carefully purified. (2) Purity and chemical source not given. Paper states only that the solvent was carefully purified. 			
sealed containers, tr aliquots of saturated	solution to tared	ESTIMATED ERRORS:			
containers, evaporati weighing of solid res		T/K: ± 2 (by compiler). $x_1: \pm 8$ % (relative error, by compiler).			

COMPONENTS:			ORIGINAL MEASUREMENTS:		
(1) Fluorene; C ₁₃ H	1 ₁₀ ; [86-73-7]		Mortimer, F.S.		
(2) Ethanol; C ₂ H ₆ O; [64-17-5]			J. Am. Chem. Soc. <u>1923</u> , 45, 633-641.		
VARIABLES:			PREPARED BY:		
Temperature			W.E. Acree, Jr.		
EXPERIMENTAL VALUE	5				
T/K	*2	<i>x</i> 1			
293	0.9950	0.00	50		
313	0.9915	0.00	1085		
333	0.9824	0.01)176		
353	0.9540	0.04	60		
		AUXILIARY	INFORMATION		
METHOD: APPARATUS/	PROCEDURE	ĭ	SOURCE AND PURITY OF MATERIALS:		
Experimental procedure not given in the reference. Compiler speculates that the experimental values were, in all likeli- hood, determined by a gravimetric method, which was common practice during this era. The method probably involved equili- brating excess solute and solvent in sealed containers, transfer of weighed			 Purity and chemical source not given. Paper states only that the solute was carefully purified. Purity and chemical source not given. Paper states only that the solvent was carefully purified. 		
aliquots of satur containers, evapo weighing of solid	ated solution to ration of solvent	tared , and	ESTIMATED ERRORS: $T/K: \pm 2$ (by compiler). $x_1: \pm 8$ % (relative error, by compiler).		

COMPONENTS: ORIGINAL MEASUREMENTS: Miller, M.M.; Wasik, S.P.; Huang, G.-L.; Shiu, W.-Y.; Mackay, D. (1) Fluorene; C₁₃H₁₀; [86-73-7] (2) 1-Octanol; C₈H₁₈O; [111-87-5] Environ. Sci. Technol. <u>1985</u>, 19, 522-529. PREPARED BY: VARIABLES: T/K = 298W.E. Acree, Jr. EXPERIMENTAL VALUES $c_1/(\text{mol dm}^{-3})$ t/°C 25.0 0.2082 AUXILIARY INFORMATION SOURCE AND PURITY OF MATERIALS: METHOD: APPARATUS/PROCEDURE Highest available commercial purity, specific chemical supplier not given, was used as received. Constant temperature bath, rotator, thermometer, and a gas-liquid chromato-graph with flame ionization detection. (2) 99+ %, Aldrich Chemical Company, Milwaukee, Wisconsin, USA, was used as Excess solute and solvent placed in glass vials and allowed to equilibrate for 24 hours with gentle agitation, and left to settle for 48 hours before analreceived. ysis. Aliquots of saturated solutions were removed and concentrations were determined with flame ionization detector and on 10 % SE30 ultraphase column. ESTIMATED ERRORS: T/K: \pm 0.1 (compiler). c₁: \pm 3 % (relative error; compiler).

COMPONENTS:	Components:			MEASUREMENTS	l		
(1) Fluoren	e; C ₁₃ H ₁₀ ; (86-	-73-7]	Mortimer, F.S.				
(2) Nitrobe	(2) Nitrobenzene; C ₆ H ₅ NO ₂ ; [98-95-3]			J. Am. Chem. Soc. <u>1923</u> , 45, 633-641.			
VARIABLES:	RIABLES:			PREPARED BY:			
Temperature	Temperature			cee, Jr.			
EXPERIMENTAL	VALUES		ļ				
T/K	*2	* 1	T/K	*2	<i>x</i> 1		
273	0,937	0.063	353	0.475	0.525		
293	0.882	0.118					
313	0.794	0.206					
333	0.659	0.341					
		AUXILIARY	INFORMATIC	N			
METHOD: APPA	RATUS/PROCEDUR	LE	SOURCE AN	D PURITY OF	ATERIALS:		
Experimental procedure not given in the reference. Compiler speculates that the experimental values were, in all likeli- hood, determined by a gravimetric method, which was common practice during this era. The method probably involved equili- brating excess solute and solvent in			 (1) Purity and chemical source not given. Paper states only that the solute was carefully purified. (2) Purity and chemical source not given. Paper states only that the solvent was carefully purified. 				
sealed conta aliquots of containers,	ainers, transf saturated sol evaporation c	er of weighed ution to tared of solvent, and that remained.	ESTIMATED T/K: ± 2	ERRORS:			

COMPONENTS:	OMPONENTS:		ORIGINAL MEASUREMENTS:				
(1) Fluorene; C ₁₃ H ₁₀ ; [86-73-7]		Choi, P.B.; McLaughlin, E.					
(2) Pyridine;	<pre>(2) Pyridine; C₅H₅N; [110-86-1] ARIABLES: Temperature</pre>		Ind. Chem. Eng. Fundam. <u>1983</u> , 22, 46-51. PREPARED BY:				
VARIABLES:							
Temperature			W.E. Acre	e, Jr.			
EXPERIMENTAL V	ALUES						
T/K	*2	×1	T/K	*2	<i>x</i> 1		
311.5	0.8021	0.1979	359.2	0.3873	0.6127		
327.1	0.7064	0.2936					
340.2	0.5998	0.4002					
349.0	0.5091	0.4909					
<u></u>		AUXILIARY	INFORMATION	I			
ETHOD: APPARA	TUS/PROCEDUR	E	SOURCE AND	PURITY OF M	ATERIALS:		
Constant temperature bath and a precision thermometer. Mixtures of known concentrations sealed in glass ampoules and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly increased. Solubility determined by visual		Smith over lized (2) Gold	town, New Yo activated al from toluen Label, 99.9+	hemical Company, rk, USA, was passed umina and recrystal- e. %, Aldrich Chemical as received.			
		ESTIMATED T/K: prec x1: ± 0.0	ision <u>+</u> 0.1.				

COMPONENTS :	(1) Fluorene; C ₁₃ H ₁₀ ; [86-73-7] (2) Pyridine; C ₅ H ₅ N; [110-86-1]		ORIGINAL MEASUREMENTS:				
(1) Fluoren			Mortimer, F.S. J. Am. Chem. Soc. <u>1923</u> , 45, 633-641. PREPARED BY: W.E. Acree, Jr.				
(2) Pyridin							
VARIABLES:							
Temperature							
EXPERIMENTAL	VALUES		Į				
T/K	*2	x 1	T/K	×2	×1		
273	0.949	0.051	353	0.501	0.499		
293	0.899	0.101					
313	0.817	0.183					
333	0.686	0.314					
		AUXILIARY	INFORMATIC	אכ	· · · · · · · · · · · · · · · · · · ·		
ETHOD: APPA	RATUS/PROCEDU	<u>۔</u>	SOURCE AN	ND PURITY OF 1	MATERIALS:		
reference. experimental	Compiler spec l values were,	ot given in the culates that the in all likeli-	Pape		cal source not given. Y that the solute was ed.		
hood, determined by a gravimetric method, which was common practice during this era. The method probably involved equili- brating excess solute and solvent in scaled containers transfor of weighed		(2) Purity and chemical source not given. Paper states only that the solvent was carefully purified.					
sealed containers, transfer of weighed aliquots of saturated solution to tared containers, evaporation of solvent, and weighing of solid residue that remained.			2 (by compile:	r). error, by compiler).			

COMPONENTS:	COMPONENTS:		ORIGINAL	ORIGINAL MEASUREMENTS:			
(1) Fluorene; C ₁₃ H ₁₀ ; [86-73-7] (2) Aniline; C ₆ H ₇ N; [62-53-3] VARIABLES:		Mortime	Mortimer, F.S. J. Am. Chem. Soc. <u>1923</u> , 45, 633-641. PREPARED BY:				
		J. Am. (
		PREPARED					
Temperature			W.E. Acı	W.E. Acree, Jr.			
EXPERIMENTAL	VALUES						
T/K	×2	×1	T/K	x 2	x 1		
273	0.976	0.024	353	0.573	0.427		
293	0.944	0.056					
313	0.883	0.117					
333	0.768	0.232					
		AUXILIAN	Y INFORMATIC	N			
ETHOD: APPAI	RATUS/PROCEDUI	E	SOURCE AN	D PURITY OF 1	ATERIALS:		
Experimental procedure not given in the reference. Compiler speculates that the experimental values were, in all likeli-			Pape	(1) Purity and chemical source not given. Paper states only that the solute was carefully purified.			
hood, determined by a gravimetric method, which was common practice during this era. The method probably involved equili- brating excess solute and solvent in sealed containers, transfer of weighed		Pape	(2) Purity and chemical source not given. Paper states only that the solvent was carefully purified.				
aliquots of	saturated sol	ution to tared of solvent, and	ESTIMATEL	ERRORS:			
		that remained.		l (by compiler % (relative e	c). error, by compiler).		

COMPONENTS:)MPONENTS :		ORIGINAL MEASUREMENTS:				
(1) Fluorene; C ₁₃ H ₁₀ ; [86-73-7]		Choi, P.B.; McLaughlin, E.					
(2) Thiophene			Ind. Chem. Eng. Fundam. <u>1983</u> , 22, 46-51. PREPARED BY:				
VARIABLES:							
Temperature			W.E. Acre	e, Jr.			
EXPERIMENTAL V	ALUES				<u></u>		
T/K	x 2	×1	T/K	x 2	x 1		
303.6	0.8156	0.1844	357.5	0.4046	0.5954		
321.0	0.7238	0.2762					
335.5	0.6198	0.3802					
350.2	0.4854	0.5146					
		AUXILIAR	INFORMATION	1			
ETHOD: APPARA	TUS/PROCEDUR	E.	SOURCE AND	PURITY OF M	ATERIALS:		
Constant temperature bath and a precision thermometer. Mixtures of known concentrations sealed in glass ampoules and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly increased. Solubility determined by visual		Smith over lized (2) Gold	activated al from toluen Label, 99.9+	hemical Company, rk, USA, was passed umina and recrystal- e. %, Aldrich Chemical as received.			
noting the te	mperature at	which the last	ESTIMATED	ERRORS :			
noting the temperature at which the last trace of solid solute disappeared.		T/K: prec $x_1: \pm 0.0$	ision <u>+</u> 0.1. 003.				

COMPONEN	ITS:		ORIGINAL MEASUR	ements:	
(1) Flu	orene; C ₁₃ H ₁₀ ;	[86-73-7]	Kremann, R.		
(2) 1,2 [52	2-Dinitrobenzen 28-29-0]	e; C ₆ H ₄ N ₂ O ₄ ;	Monatsch. Chem. <u>1911</u> , 32, 609-617. PREPARED BY:		
ARIABLI	s:				
Temperature		W.E. Acree, Jr.			
XPERIM	ENTAL VALUES				
	T/K	×2	<i>*</i> 1	Solid Phase	
	388.2	1.000	0.000	(2)	
	385.0	0.931	0.069	(2)	
	382.8	0.872	0.128	(2)	
	378.2	0.785	0.215	(2)	
	371.2	0.701	0.299	(2)	
	365.7	0.629	0.371	(2)	
	361.6	0.576	0.424	(2)	
	356.4	0.518	0.482	(2)	
	352.3	0.457	0.543	(2)	
	357.2	0.393	0.607	(1)	
	365.2	0.299	0.701	(1)	
	371.2	0.217	0.783	(1)	
	375.2	0.163	0.837	(1)	
	378.2	0.114	0.886	(1)	
	382.2	0.060	0.940	(1)	
	385.7	0.000	1.000	(1)	
				(-)	
	<u> </u>	AUXILIARY	INFORMATION		
ETHOD:	APPARATUS/PROCE	LDURE	SOURCE AND PURI	TY OF MATERIALS:	
the exp in the upon qu sample tempera diagram	inary mixtures prepared by weight. While the experimental details were not given in the paper, compiler speculates (based pon quantity of material used) that the ample was sealed in a glass container, emperature slowly varied, and the phase liagram determined by visually noting the		specified	chemical source were not	
	ture at which t of solid disar	ppeared/appeared.	ESTIMATED ERROR	S:	
-			1		

DO COMPONENTS:		ORIGINAL MEASUREMENTS:			
	06-77-71	Kremann, R.			
(1) Fluorene; C ₁₃ H ₁₀ ; [
(2) 1,3-Dinitrobenzene [99-65-0]	3; C ₆ H ₄ N ₂ O ₄ ;	Monatsch. Chem. <u>1911</u> , 32, 609-617. PREPARED BY:			
VARIABLES:					
Temperature		W.E. Acree	, Jr.		
EXPERIMENTAL VALUES					
T/K	* ₂	<i>x</i> 1	Solid Phase		
362.2	1.000	0.000	(2)		
357.7	0.929	0.071	(2)		
352.7	0.837	0.163	(2)		
345.7	0.764	0.236	(2)		
339.7	0.672	0.328	(2)		
332.2	0.606	0.394	(2)		
329.2	0.579	0.421	Eutectic		
332.7	0.547	0.453	(1)		
338.2	0.511	0.489	(1)		
341.7	0.485	0.515	(1)		
345.7	0.466	0.534	(1)		
350.7	0.415	0.585	(1)		
356.2	0.370	0.630	(1)		
362.7	0.315	0.685	(1)		
365.2	0.260	0.740	(1)		
374.7	0.152	0.848	(1)		
378.2	0.104	0.896	(1)		
382.2	0.050	0.950	(1)		
385.7	0.000	1.000	(1)		
		INFORMATION			
METHOD: APPARATUS/PROCE			PURITY OF MATERIALS:		
Binary mixtures prepar the experimental detai in the paper, compiler upon quantity of mater	ls were not given speculates (based		and chemical source were not ied in paper.		
sample was sealed in a temperature slowly var diagram determined by	glass container, ied, and the phase visually noting the		and chemical source were not ied in paper.		
temperature at which t crystal of solid disap		ESTIMATED E	RRORS :		
	_ ,	T/K: preci	sion <u>+</u> 0.2 (Compiler). 2 (Compiler).		
			······································		

OMPONENTS :		ORIGINAL ME	A SUDEMENTS :	
	· • • • •			
(1) Fluorene; C ₁₃ H ₁₀ ; [8		Kremann, R. Monatsch. Chem. <u>1911</u> , 32, 609-617.		
(2) 1,4-Dinitrobenzene; [100-25-4]	C ₆ H ₄ N ₂ O ₄ ;			
ARIABLES:		PREPARED BY	8	
Temperature		W.E. Acree	, Jr.	
EXPERIMENTAL VALUES		-		
T/K	*2	x 1	Solid Phase	
445.2	1.000	0.000	(2)	
437.2	0.871	0.129	(2)	
431.2	0.792	0.208	(2)	
425.2	0.714	0.286	(2)	
413.2	0.581	0.419	(2)	
395.2	0.431	0.569	(2)	
389.2	0.396	0.606	(2)	
382.7	0.359	0.641	(2)	
376.7	0.329	0.671	(2)	
368.7	0.298	0.702	(2)	
364.7	0.259			
		0.741	(1)	
366.2	0.238	0.762	(1)	
368.2	0.220	0.780	(1)	
376.2	0.131	0.869	(1)	
380.2	0.080	0.920	(1)	
384.2	0.028	0.972	(1)	
387.7	0.000	1.000	(1)	
			0.729 and at <i>T/K</i> = 363.1.	
	AUXILIARY	INFORMATION	******	
ETHOD: APPARATUS/PROCEDU	RE	SOURCE AND P	PURITY OF MATERIALS:	
Binary mixtures prepared the experimental details in the paper, compiler s upon quantity of materia	were not given	(1) Purity specifi	and chemical source were no ed in paper.	t
upon quantity of material used) that the sample was sealed in a glass container, temperature slowly varied, and the phase diagram determined by visually noting the temperature at which the last/first crystal of solid disappeared/appeared.			and chemical source were no ed in paper.	t
		ESTIMATED ERRORS:		
temperature at which the		ESTIMATED EF	RORS:	,

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COMPONENTS:		ORIGINAL M	EASUREMENTS:		
(1) Fluorene: C. H. [(1) Fluorene; C ₁₃ H ₁₀ ; [86-73-7]		Kremann, R.		
(2) 1,3,5-Trinitrobenz		Monatsch. Chem. <u>1911</u> , 32, 609-617.			
[99-35-4]					
VARIABLES:		PREPARED BY:			
Temperature	emperature		e, Jr.		
EXPERIMENTAL VALUES		•]			
T/K	*2	x 1	Solid Phase		
394.2	1.000	0.000	(2)		
392.7	0.963	0.037	(2)		
385.7	0.895	0.105	(2)		
378.2	0.801	0.199	(2)		
373.7	0.732	0.268	1:1 Compound		
377.7	0.666	0.334	1:1 Compound		
378.2	0.611	0.389	1:1 Compound		
377.2	0.563	0.437	1:1 Compound		
376.2	0.514	0.486	1:1 Compound		
374.2	0.456	0.544	1:1 Compound		
371.2	0.407	0.593	1:1 Compound		
369.2	0.387	0.613	1:1 Compound		
366.2	0.351	0.649	1:1 Compound		
360.2	0.314	0.686	1:1 Compound		
363.7	0.256	0.744	(1)		
369.2	0.195	0.805	(1)		
374.2	0.139	0.861	(1)		
379.2	0.076	0.924	(1)		
382.2	0.034	0.966	(1)		
385.7	0.000	1.000	(1)		
nitrobenzene	hase diagram indicate molecular compound, and $T/K = 373.2$, and at	with the two	of a 1:1 fluorene - 1,3,5-tri- eutectic points at about and $T/K = 358.8$.		
	AUXILIARY	INFORMATION			
METHOD: APPARATUS/PROCE	DURE	SOURCE AND	PURITY OF MATERIALS:		
Binary mixtures prepared by weight. While the experimental details were not given in the paper, compiler speculates (based upon quantity of material used) that the sample was sealed in a glass container, temperature slowly varied, and the phase diagram determined by visually noting the temperature at which the last/first crystal of solid disappeared/appeared.		specif (2) Purity	y and chemical source were not fied in paper. y and chemical source were not fied in paper.		
-		T/K: preci x ₁ : <u>+</u> 0.00	sion <u>+</u> 0.5 (Compiler). 2 (Compiler).		

COMPONENTS :	ORIGINAL MEASUREMENTS:
(1) Fluorene; C ₁₃ H ₁₀ ; [86-73-7]	Shinomiya, C.
(2) 1,2,3,5-Tetranitrobenzene; C ₈ H ₂ N ₄ O ₈ ; [3698-53-1]	J. Chem. Soc. Japan <u>1940</u> , 15, 259-270.
VARIABLES:	PREPARED BY:
Temperature	W.E. Acree, Jr.
EXPERIMENTAL VALUES	
т/к * ₂	x ₁ Solid Phase
399.2 1.0	00 0.000 (2)
393.7 0.9	0.097 (2)
398.2 0.8	24 0.176 1:2 Compound
402.2 0.7	25 0.275 1:2 Compound
403.2 0.6	74 0.326 1:2 Compound
403.2 0.6	19 0.351 1:2 Compound
402.2 0.6	06 0.394 1:2 Compound
402.7 0.6	02 0.398 1:2 Compound
401.5 0.5	13 0.457 1:2 Compound
397.7 0.4	0 0.550 1:2 Compound
381.2 0.2	-
370.2 0.2	
373.4 0.1	-
382.2 0.0	
389.2 0.0	
red compound having a melti occur at x ₁ = 0.120 and <i>T/K</i>	ag point temperature of 403.2 K. Two eutectic points = 390.7, and at $x_1 = 0.780$ and $T/K = 364.2$.
ETHOD: APPARATUS/PROCEDURE No experimental details given in	AUXILIARY INFORMATION SOURCE AND PURITY OF MATERIALS: (1) Purity and chemical source were not specified in paper. (2) Purity and chemical source were not specified in paper.
·	 paper. (1) Purity and chemical source were not specified in paper. (2) Purity and chemical source were not

		OPTOTNAL M	PA CITE FUENTE .		
COMPONENTS:		ORIGINAL MEASUREMENTS:			
(1) Fluorene; C ₁₃ H ₁₀ ; (Kremann, I			
(2) 2,4-Dinitro-1-meth C ₇ H ₆ N ₂ O ₄ ; [121-14-2	nylbenzene; ?]	Monatsch. Chem. <u>1911</u> , 32, 609-617.			
VARIABLES:		PREPARED BY	£:		
Temperature		W.E. Acree	ə, Jr.		
EXPERIMENTAL VALUES			and a second		
T/K	x 2	*1	Solid Phase		
341.2	1.000	0.000	(2)		
338.2	0.913	0.087	(2)		
329.2	0.732	0.268	(2)		
319.2	0.614	0.386	(2)		
318.8	0.585	0.415	(1)		
329.2	0.536	0.464	(1)		
340.2	0.474	0.526	(1)		
349.7	0.402	0.598	(1)		
357.2	0.345	0.655	(1)		
366.4	0.238	0.762	(1)		
372.2	0.167	0.833	(1)		
385.7	0.000	1.000	(1)		
	AUXILIARY	INFORMATION			
ETHOD: APPARATUS/PROCE	DURE	SOURCE AND	PURITY OF MATERIALS:		
the experimental detai in the paper, compiler upon quantity of mater sample was sealed in a	inary mixtures prepared by weight. While he experimental details were not given in the paper, compiler speculates (based pon quantity of material used) that the ample was sealed in a glass container, emperature slowly varied, and the phase		and chemical source were not ied in paper. and chemical source were not ied in paper.		
temperature at which t crystal of solid disap	he last/first	ESTIMATED E	RRORS		
	ar abbourer.	T/K: preci	sion <u>+</u> 0.2 (Compiler). 2 (Compiler).		
	·····				

COMPONENTS:		ORIGINAL ME	ASUREMENTS:	
(1) Fluorene; C ₁₃ H ₁₀ ; [86-73-71	Kremann, R		
(2) 2,4,6-Trinitro-1-r			<i>Chem</i> . <u>1911</u> , <i>32</i> , 609-617.	
C7H5N306; [118-96-7		PREPARED BY:		
VARIABLES:				
Temperature		W.E. Acree	, Jr.	
EXPERIMENTAL VALUES				
T/K	×2	x 1	Solid Phase	
355.2	1.000	0.000	(2)	
348.7	0.859	0.141	(2)	
350.2	0.736	0.264	1:1 Compound	
354.2	0.689	0.311	1:1 Compound	
356.2	0.643	0.357	1:1 Compound	
357.7	0.590	0.410	1:1 Compound	
357.7	0.536	0.464	1:1 Compound	
358.2	0.517	0.483	1:1 Compound	
358.2	0.493	0.507	1:1 Compound	
357.7	0.467	0.533	1:1 Compound	
357.2	0.436	0.564	1:1 Compound	
355.7	0.399	0.601	1:1 Compound	
354.2	0.371	0.629	1:1 Compound	
354.2	0.336	0.664	1:1 Compound	
356.7	0.308	0.692	1:1 Compound	
364.2	0.248	0.752	(1)	
372.2	0.168	0.832	(1)	
376.2	0.114	0.886	(1)	
383.0	0.077	0.923	(1)	
385.7	0.000	1.000	(1)	
nitromethylb	enzene molecular comp nts occur at about x ₁	ound melting a	f a 1:1 fluorene - 2,4,6-tri- at about <i>T/K</i> = 358.5. Two /K = 345.5 and at x ₁ = 0.71	
	AUXILIARY	INFORMATION		
ETHOD: APPARATUS/PROCE	DURE	SOURCE AND I	PURITY OF MATERIALS:	
Binary mixtures prepar the experimental detai in the paper, compiler upon quantity of mater	ls were not given speculates (based ial used) that the	specif	and chemical source were not ied in paper.	
sample was sealed in a temperature slowly var diagram determined by temperature at which t	ied, and the phase visually noting the he last/first	specif	and chemical source were not ied in paper.	
crystal of solid disap	peared/appeared.	ESTIMATED E		
		T/K: precision \pm 0.2 (Compiler). x ₁ : \pm 0.002 (Compiler).		

62					
COMPONENTS:		ORIGINAL MEASUREMENTS:			
(1) Fluorene; C ₁₃ H ₁₀ ; [86-73-	-7]	Kremann, R.			
(2) 2,4-Dinitrophenol; C ₆ H ₄ N [51-28-5]	2 ⁰ 5;	Monatsch. Chem. <u>1911</u> , 32, 609-617. PREPARED BY:			
VARIABLES:					
Temperature	Temperature		, Jr		
EXPERIMENTAL VALUES					
T/K	*2	x 1	Solid Phase		
385.2	1.000	0.000	(2)		
378.2	0.872	0.128	(2)		
373.2	0.775	0.225	(2)		
368.7	0.711	0.289	(2)		
365.2	0.660	0,340	(2)		
362.7	0.620	0.380	(2)		
358.7	0.579	0.421	(2)		
355.2	0.538	0.462	(2)		
352.2	0.512	0.488	(2)		
350.2	0.488	0.512	(2)		
349.7	0.484	0.516	(2)		
348.2	0.466	0.534	(2) .		
347.2	0.455	0.545	Eutectic		
349.2	0.431	0.569	(1)		
350.7	0.427	0.573	(1)		
352.2	0.409	0.591	(1)		
355.7	0.376	0.624	(1)		
363.2	0.304	0.696	(1)		
375.2	0.177	0.823	(1)		
385.7	0.000	1.000	(1)		
	AUXILIARY	INFORMATION			
METHOD: APPARATUS/PROCEDURE	····	SOURCE AND P	PURITY OF MATERIALS:		
Binary mixtures prepared by the experimental details wer in the paper, compiler spece	e not given lates (based		and chemical source were not ed in paper.		
upon quantity of material us sample was sealed in a glass temperature slowly varied, a diagram determined by visual	container, nd the phase ly noting the		and chemical source were not ed in paper.		
temperature at which the las crystal of solid disappeared		ESTIMATED ER	RORS :		

T/K: precision \pm 0.2 (Compiler). x₁: \pm 0.002 (Compiler).

COMPONENTS: (1) Fluorene; C ₁₃ H ₁₀ ; [86-73-7] (2) 2,4,6-Trinitrophenol; C ₆ H ₃ N ₃ O ₇ ; [88-89-1] VARIABLES: Temperature		ORIGINAL MEASUREMENTS: Kremann, R. Monatsch. Chem. <u>1911</u> , 32, 609-617.				
					PREPARED BY:	
					W.E. Acree,	Jr.
		EXPERIMENTAL VALUES				
		<i>т/</i> к	×2	* 1	Solid Phase	
395.2	1.000	0.000	(2)			
384.2	0.866	0.134	(2)			
376.2	0.771	0.229	(2)			
369.2	0.707	0.293	(2)			
357.2	0.605	0.395	(2)			
355.2	0.554	0.446	1:1 Compound			
356.7	0.522	0.478	1:1 Compound			
357.2	0.474	0.526	1:1 Compound			
357.2	0.434	0.566	1:1 Compound			
355.2	0.394	0.606	1:1 Compound			
354.2	0.362	0.638	Eutectic (?)			
359.2	0.297	0.703	(1)			
365.7	0.234	0.766	(1)			
372.2	0.168	0.832	(1)			
378.7	0.103	0.897	(1)			
383.2	0.041	0.959	(1)			
385.7	0.000	1.000	(1)			
<i>T/K = 353.4</i>	4 and at x ₁ = 0.64 and	<i>T/K</i> = 353.8.				
	AUXILIAR	Y INFORMATION				
ETHOD: APPARATUS/PROC			RITY OF MATERIALS:			
the experimental deta in the paper, compile upon quantity of mate sample was sealed in temperature slowly va diagram determined by	EDURE ared by weight. While alls were not given by speculates (based rial used) that the a glass container, ried, and the phase y visually noting the	SOURCE AND PU (1) Purity a specific (2) Purity a	RITY OF MATERIALS: and chemical source were not ed in paper. and chemical source were not ed in paper.			
Binary mixtures prepa the experimental deta in the paper, compile upon quantity of mate sample was sealed in temperature slowly va	EDURE ared by weight. While tils were not given or speculates (based trial used) that the a glass container, tried, and the phase visually noting the the last/first	SOURCE AND PU (1) Purity a specific (2) Purity a	and chemical source were not ed in paper. and chemical source were not ed in paper.			

Components :	ORIGINAL MEASUREMENTS:		
(1) Fluorene; C ₁₃ H ₁₀ ; [86-73-7]	Efremov, N.N.; Fikhomirova, A.N.		
<pre>(2) 6-Methyl-2,3,4-trinitrophenol; C₇H₅N₃O₇; [89793-90-8]</pre>	J. Russ. Phys. Chem. Soc. <u>1927</u> , 57, 373- 390.		
VARIABLES:	PREPARED BY:		
	W.E. Acree, Jr.		
EXPERIMENTAL VALUES			
Phase equilibrium data not given in ci	ted paper. Authors report formation of a		
1:1 fluorene = 6-methyl=2.3.4-trinitro	obenol molecular compound. The two eutectic		
• • • •	phenol molecular compound. The two eutectic		
1:1 fluorene - 6-methyl-2,3,4-trinitrop points occur at $x_1 = 0.190$ and $T/K = 35$	•		
• • • •	•		
points occur at $x_1 = 0.190$ and $T/K = 35$	•		
points occur at $x_1 = 0.190$ and $T/K = 35$	58.6 and at $x_1 = 0.751$ and $T/K = 363.7$.		
points occur at x ₁ = 0.190 and T/K = 35 AUXILIARS METHOD: APPARATUS/PROCEDURE Experimental details not given in paper.	58.6 and at $x_1 = 0.751$ and $T/K = 363.7$. X INFORMATION		
points occur at x ₁ = 0.190 and T/K = 35 AUXILIAR METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS: (1) Purity and chemical source were not		
points occur at x ₁ = 0.190 and T/K = 35 AUXILIAR: METHOD: APPARATUS/PROCEDURE Experimental details not given in paper. determined using a Toshiniwal Melting Point Apparatus equipped with a precision	<pre>S8.6 and at x₁ = 0.751 and T/K = 363.7. Y INFORMATION SOURCE AND PURITY OF MATERIALS: (1) Purity and chemical source were not specified in paper. (2) Purity and chemical source were not</pre>		

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INDOLE SOLUBILITIES IN PURE AND BINARY SOLVENT MIXTURES
         Α.
                Saturated Hydrocarbons (including cycloalkanes)
         в.
                Alkenes
         c.
                Aromatic Hydrocarbons
               benzene
               biphenyl
                1-methylnaphthalene
                2-methylnaphthalene
                2,6-dimethylnaphthalene
         D.
               <u>Esters</u>
         E.
               <u>Ethers</u>
               diphenyl ether
         F.
               Haloalkanes and Haloaromatic Hydrocarbons
         G.
               Alcohols
               ethanol
         н.
               <u>Ketones</u>
         I.
               Miscellaneous Pure Solvents
               quinoline
               2-methylindole
               5-methylindole
         J.
               Binary Solvent Mixtures
```

	OMPONENTS :		ORIGINAL MEASUREMENTS:		
(1) Indole; C ₈ H ₇ N; [120-72-9] (2) Benzene; C ₆ H ₆ ; [71-43-2]		-72-91	Yokoyama, C.; Ebina, T.; Takahashi, S.		
		J. Chem. Eng	7. Data <u>1993</u> , <i>38</i> , 583-586.		
VARIABLES:			PREPARED BY:		
Temperatu	ire		W.E. Acree, Jr.		
Experiment	CAL VALUES	······································	Į		
	T/K	*2	* 1	Solid Phase	
	278.73	1.0000	0.0000	(2)	
	275.05	0.9479	0.0521	(2)	
	268.31	0.8000	0.2000	(2)	
	266.37	0.7490	0.2510	(2)	
	269.32	0.7190	0.2810	(1)	
	274.58	0.6510	0.3490	(1)	
	279.40	0.5990	0.4010	(1)	
	288.54	0.4990	0.5010	(1)	
	303.68	0.2850	0.7150	(1)	
	309.88	0.2080	0.7920	(1)	
	317.59	0.0980	0.9020	(1)	
	326.26	0.0000	1.0000	(1)	
		AUXILIARY	INFORMATION		
ETHOD: AP	PARATUS/PROCE			RITY OF MATERIALS:	
Constant t thermomet Mixtures (in glass (temperature ba er. of known conce ampoules and p	DURE ath and a precision entrations sealed placed in constant	SOURCE AND PL (1) 99.9 %, waukee, received	Aldrich Chemical Company, Mil- Wisconsin, USA, was used as	
Constant i thermomet Mixtures i in glass i temperatu: were rotai increased	temperature ba er. of known conce ampoules and p re to equilibr ted while bath . Solubility c	DURE ath and a precision entrations sealed placed in constant	SOURCE AND PL (1) 99.9 %, waukee, received (2) 99.9 %,	Aldrich Chemical Company, Mil- Wisconsin, USA, was used as I. Wako Pure Chemical Ind Ltd., d over molecular sieves prior	

COMPONENT	[5 :		ORIGINAL MEASUREMENTS:		
(1) Indo	ole; C ₈ H ₇ N; [120)-72-9]	Yokoyama, C.; Ebina, T.; Takahashi, S.		
(2) Biphenyl; C ₁₂ H ₁₀ ; [92-52-4]		J. Chem. Eng. Data <u>1993</u> , 38, 583-586.			
ARIABLES	3:		PREPARED BY:		
Temperat	Temperature		W.E. Acree, Jr.		
EXPERIMEN	NTAL VALUES		Į		
	T/K	*2	<i>x</i> 1	Solid Phase	
	343.13	1.0000	0.0000	(2)	
	335.36	0.8564	0.1436	(2)	
	328.51	0.7136	0.2864	(2)	
	323.66	0.6291	0.3709	(2)	
	318.19	0.5363	0.4637	(2)	
	312.57	0.4435	0.5565	(2)	
	308.08	0.3902	0.6098	(2)	
	304.01	0.3462	0.6538	(2)	
	301.45	0.3174	0.6826	(1)	
	301.76	0.3005	0.6995		
	306.45	0.2470		(1)	
			0.7530	(1)	
	310.08	0.1998	0.8002	(1)	
	317.55	0.1022	0.8978	(1)	
	326.26	0.0000	1.0000	(1)	
			INFORMATION		
	PPARATUS/PROCE			URITY OF MATERIALS:	
	Constant temperature bath and a precision thermometer.			Aldrich Chemical Company, Mil- Wisconsin, USA, was used as ed.	
Constant thermome Mixtures	thermometer. Mixtures of known concentrations sealed in glass ampoules and placed in constant temperature to equilibrate. Samples				
Constant thermome Mixtures in glass temperat were rot increase	of known conce ampoules and p ure to equilibrated while bath d. Solubility of	placed in constant rate. Samples n temperature slowly determined by visual	was use	Wako Pure Chemical Ind Ltd., d as received.	
Constant thermome Mixtures in glass temperat were rot increase noting t	of known conce ampoules and p ure to equilibrated while bath d. Solubility of	placed in constant rate. Samples a temperature slowly determined by visual at which the last	(2) 99.8 %, was use ESTIMATED ER	d as received.	

COMPONENTS:		ORIGINAL MEASUREMENTS:							
<pre>(1) Indole; C₈H₇N; [120-72-9] (2) Biphenyl; C₁₂H₁₀; [92-52-4] VARIABLES:</pre>		Szafranski, A.M.; Wyrzykowska-Stankiewicz, D. Int. DATA Ser., Ser. A <u>1984</u> , 46. PREPARED BY:							
					Temperature		W.E. Acree, Jr.		
					•				
SXPERIMENTAL VALUES									
T/K	*2	* 1	Solid Phase						
341.99	1.0000	0.000	(2)						
337.00	0.8973	0.1027	(2)						
335.75	0.8724	0.1276	(2)						
333.90	0.8356	0.1644	(2)						
329.75	0.7524	0.2476	(2)						
323.85	0.6393	0.3607	(2)						
317.65	0.5326	0.4674	(2)						
310.95	0.4317	0.5683	(2)						
302.70	0.3362	0.6638	(2)						
302.05	0.3055	0.6945	(1)						
306.45	0.2456	0.7544	(1)						
312.65	0.1596	0.8404	(1)						
318.75	0.0778	0.9222	(1)						
324.95	0.0000	1.0000	(1)						
	AUXILIARY	INFORMATION							
ETHOD: APPARATUS/PROCE	DURE	SOURCE AND H	PURITY OF MATERIALS:						
Constant temperature be thermometer. Mixtures of known conce	entrations sealed	Wegla, lized t	rade, Inst. Chem. Przerobki Zabrze, Poland, was recrystal- thrice from methanol.						
in glass ampoules and p temperature to equilib were rocked while bath increased. Solubility (rate. Samples temperature slowly determined by visual	USSR, w methanc	rade, Glovkhimreaktiv, Khartov, was recrystallized thrice from ol and zone refined.						
noting the temperature trace of solid solute (ESTIMATED EN T/K: precis $x_1: \pm 0.000$	sion ± 0.1.						

OMPONENTS:		ORIGINAL MER	ASUREMENTS :	
(1) Indole; C ₈ H ₇ N; [120-72	!-9]	Yokoyama, C.; Ebina, T.; Takahashi, S.		
(2) 1-Methylnaphthalene; C ₁₁ H ₁₀ ; [90-12-0]		J. Chem. Eng. Data <u>1993</u> , 38, 583-586.		
ARIABLES:		PREPARED BY:		
Temperature		W.E. Acree, Jr.		
XPERIMENTAL VALUES	· · · · · · · · · · · · · · · · · · ·			
T/K	x2	<i>x</i> ₁	Solid Phase	
242.45	1.0000	0.0000	(2)	
239.55	0.9660	0.0340	(2)	
239.57	0.9586	0.0414	(2)	
237.20	0.9308	0.0692	(2)	
236.00	0.9088	0.0912	(2)	
237.78	0.8973	0.1027	(1)	
253.91	0.8292	0.1708	(1)	
266.53	0.7440	0.2560	(1)	
271.73	0.6980	0.3020	(1)	
280.09	0.6048	0.3952	(1)	
300.43	0.4048	0.5952	(1)	
311.68	0.2018	0.7982	(1)	
319.24	0.0773	0.9227	(1)	
326.26	0.0000	1.0000	(1)	
		INFORMATION		
ETHOD: APPARATUS/PROCEDUR Constant temperature bath thermometer. Mixtures of known concent in glass ampoules and pla temperature to equilibrat were rotated while bath t increased. Solubility det noting the temperature at trace of solid solute dis	and a precision rations sealed ced in constant e. Samples emperature slowly ermined by visual which the last	(1) 99.9 %, waukee, receive (2) 99.9 %,	, Aldrich Chemical Comapny, was over molecular sieves prior to	
			sion <u>+</u> 0.02.	

COMPONENTS:		OPTOTNAL WE	SIDEMENTS					
COMPONENTS: (1) Indole; C ₈ H ₇ N; [120-72-9] (2) 2-Methylnaphthalene; C ₁₁ H ₁₀ ; [91-57-6] VARIABLES:		ORIGINAL MEASUREMENTS: Yokoyama, C.; Ebina, T.; Takahashi, S. J. Chem. Eng. Data <u>1993</u> , 38, 583-586. PREPARED BY:						
					Temperature		W.E. Acree, Jr.	
					EXPERIMENTAL VALUES	<u> </u>		
					T/K	*2	× ₁	Solid Phase
307.09	1.0000	0.0000	(2)					
299.28	0.8566	0.1434	(2)					
295.28	0.7821	0.2179	(2)					
290.53	0.6832	0.3168	(2)					
286.44	0.6151	0.3849	(2)					
283.13	0.5574	0.4426	(1)					
286.75	0.5024	0.4976	(1)					
296.06	0.3964	0.6036	(1)					
303.62	0.2962	0.7038	(1)					
310.38	0.2030	0.7970	(1)					
317.82	0.1007	0.8993	(1)					
326.26	0.0000	1.0000	(1)					
	AUXILIARY	INFORMATION						
ÆTHOD: APPARATUS/PROCE			URITY OF MATERIALS:					
AETHOD: APPARATUS/PROCE Constant temperature by thermometer. Mixtures of known conce in glass ampoules and p temperature to equilib	DURE ath and a precision entrations sealed placed in constant rate. Samples	SOURCE AND P (1) 99.9 %, waukee, receive (2) 99.8 %,	Aldrich Chemical Company, Mil- Wisconsin, USA, was used as					
Constant temperature by thermometer. Mixtures of known conce in glass ampoules and p	DURE ath and a precision entrations sealed placed in constant rate. Samples h temperature slowly determined by visual	SOURCE AND P (1) 99.9 %, waukee, receive (2) 99.8 %,	Aldrich Chemical Company, Mil- Wisconsin, USA, was used as d. Aldrich Chemical Comapny, was received from manufacturer.					

COMPONENTS:		ORIGINAL MEASUREMENTS:		
(1) Indole; C _g H ₇ N; [120-72-9]		Szafranski, A.M.; Wyrzykowska-Stankiewicz,		
(2) 2-Methylnaphthalene; $C_{11}H_{10}$;		D.	,	- 7
[91-57-6]		Int. DATA Ser., Ser. A <u>1984</u> , 48. PREPARED BY:		
VARIABLES:				
Temperature		W.E. Acree, Jr.		
EXPERIMENTAL VALUES	· · · · · · · · · · · · · · · · · · ·	-		
т/к ×2		×1	Solid Phase	
307.69 1.0	000	0.0000	(2)	
301.75 0.8	812	0.1188	(2)	
296.05 0.7	672	0.2328	(2)	
290.45 0.6	578	0.3422	(2)	
284.75 0.5	527	0.4473	(2)	
284.50 0.5	322	0.4678	(1)	
285.65 0.5	185	0.4815	(1)	
290.65 0.4	517	0.5483	(1)	
298.65 0.3	545	0.6455	(1)	
305.55 0.2	609	0.7391	(1)	
311.95 0.1	708	0.8292	(1)	
	839	0.9161	(1)	
	000 oint occurs a	1.0000	(1) 0.466 and $T/K = 284.3.$	
		1.0000	(1)	
	oint occurs	1.0000	(1)	
Compiler: Eutectic p	oint occurs	1.0000 at about x ₁ = INFORMATION	(1)	
Compiler: Eutectic p ETHOD: APPARATUS/PROCEDURE Constant temperature bath and a thermometer. Mixtures of known concentration	AUXILIARY precision s sealed	1.0000 at about x ₁ = INFORMATION SOURCE AND P (1) Pure Gr Wegla, lized t	<pre>(1) 0.466 and T/K = 284.3 URITY OF MATERIALS: ade, Inst. Chem. Przerobki Zabrze, Poland, was recrystal- hrice from aqueous-methanol.</pre>	
	AUXILIARY precision s sealed constant ples ure slowly d by visual	1.0000 at about x ₁ = INFORMATION SOURCE AND P (1) Pure Gr Wegla, lized t (2) Pure Gr	<pre>(1) 0.466 and T/K = 284.3 URITY OF MATERIALS: ade, Inst. Chem. Przerobki Zabrze, Poland, was recrystal- hrice from aqueous-methanol. ade, Inst. Chem. Przerobki was recrystallized thrice from 1.</pre>	

OMPONENTS :		ORIGINAL	ORIGINAL MEASUREMENTS:		
(1) Indole; C ₈ H ₇	•	D.	Szafranski, A.M.; Wyrzykowska-Stankiewicz, D.		
<pre>(2) 2,6-Dimethylnaphthalene; C₁₂H₁₂; [581-42-0]]</pre>		2 [;] Int. DAT	Int. DATA Ser., Ser. A <u>1984</u> , 49.		
ARIABLES:		PREPARED	PREPARED BY:		
Temperature		W.E. Acr	W.E. Acree, Jr.		
XPERIMENTAL VAL	JUES				
T/K	×2	×1	Solid Phase		
383.3	1.0000	0.0000	(2)		
376.7	5 0.8709	9 0.1291	(2)		
371.7	5 0.7497	7 0.2503	(2)		
360.3	5 0.5294	4 0.4706	(2)		
354.3	5 0.4285	5 0.5715	(2)		
347.5	5 0.3333	3 0.6667	(2)		
338.5	5 0.2432	2 0.7568	(2)		
327.2	5 0.1579	9 0.8421	(2)		
318.1	.5 0.1169	9 0.8831	(2)		
. 316.1	5 0.1100	0.8900	Eutectic		
316.9			(1)		
317.9			(1)		
318.7			(1)		
324.9			(1)		
		AUXILIARY INFORMATIO	4		
THOD: APPARATUS			N D PURITY OF MATERIALS:		
constant tempera hermometer. dixtures of know n glass ampoule emperature to e ere rocked whil ncreased. Solub oting the tempe		secision (1) Pure Wegl lize ealed mstant (2) Pure secision (2) Pure was slowly crys y visual e last ESTIMATED	D PURITY OF MATERIALS: Grade, Inst. Chem. Prze a, Zabrze, Poland, was r d thrice from aqueous-me Grade, Schuchardt, Munc sodium-refined and fract tallized.	ecrystal- thanol.	

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COMPONENTS:		ORIGINAL MEASUREMENTS:			
(1) Indole	∋; C ₈ H ₇ N; [:	120-72-9]	Szafranski, A.M.; Wyrzykowska-Stankiewicz,		
(2) Diphenyl ether; C ₁₂ H ₁₀ O; [101-84-8]		D.			
ARIABLES:			Int. DATA Ser., Ser. A <u>1984</u> , 50. PREPARED BY: W.E. Acree, Jr.		
Temperatur	re				

IPERIMENT	AL VALUES				
	T/K	* 2	×1	Solid Phase	
	300.00	1.0000	0.0000	(2)	
	294.15	0.8610	0.1390	(2)	
	291.55	0.7959	0.2041	(2)	
	289.05	0.7336	0.2664	(2)	
	283.75	0.6163	0.3837	(2)	
	282.35	0.5884	0.4116	(2)	
	281.75	0.5611	0.4389	(1)	
	286.15	0.5080	0.4920	(1)	
	294.55	0.4077	0.5923	(1)	
	301.15	0.3145	0.6855	(1)	
	307.95	0.2278	0.7722	(1)	
	313.85	0.1468	0.8532	(1)	
	324.95	0.0000	1.0000	(1)	
ETHOD: APP			INFORMATION		
Constant t	ARATUS/PRO emperature		SOURCE AND P (1) Pure Gr Wegla,	URITY OF MATERIALS: ade, Inst. Chem. Przerobki Zabrze, Poland, was recrystal-	
Constant t thermomete Mixtures o in glass a temperatur were rocke	emperature r. f known co mpoules an e to equil d while ba	CEDURE bath and a precision ncentrations sealed d placed in constant ibrate. Samples th temperature slowly	SOURCE AND P (1) Pure Gr Wegla, lized t (2) Pure Gr	ade, Inst. Chem. Przerobki	
Constant t thermomete Mixtures o in glass a temperatur were rocke increased. noting the	emperature r. f known co mpoules an e to equil d while ba Solubilit temperatu	CEDURE bath and a precision ncentrations sealed d placed in constant ibrate. Samples	(1) Pure Gr Wegla, lized t (2) Pure Gr Gliwice	ade, Inst. Chem. Przerobki Zabrze, Poland, was recrystal- hrice from aqueous-methanol. ade, Fabryka Odczynnikow Chem., , Poland, was distilled before	

COMPONENTS:	ORIGINAL MEASUREMENTS:
COMPORTATIS:	
(1) Indole; C ₈ H ₇ N; [120-72-9]	Pucher, G.; Dehn, W.M.
(2) Ethanol; C ₂ H ₆ O; [64-17-5]	J. Am. Chem. Soc. <u>1921</u> , 43, 1753-1758.
VARIABLES:	PREPARED BY:
Ambient Room Temperature	W.E. Acree, Jr.
EXPERIMENTAL VALUES	
x ₂ ^a x ₁ ^a	
0.876 0.13	24
^a computed by compiler from published so solubilities, which were expressed as we solute per 100 grams of solvent.	
AUXILIARY	INFORMATION
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:
Excess solute and solvent equilibrated at ambient room temperature. Solution was filtered rapidly into a tared crucible.	 Purity and source not given, was used as received.
Solvent was evaporated. Solubility deter- mined from weights of solid residue and evaporated solvent.	(2) Absolute, chemical source not given, was dried over calcium carbide and distilled before use.
	ESTIMATED ERRORS:
	T/K: Unknown. $x_1: \pm 8$ % (relative error; compiler).

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Indole; C ₈ H ₇ N; [120-72-9]	Pucher, G.; Dehn, W.M.
(2) Quinoline; C ₉ H ₇ N; [91-22-5]	J. Am. Chem. Soc. <u>1921</u> , 43, 1753-1758.
VARIABLES:	PREPARED BY:
Ambient Room Temperature	W.E. Acree, Jr.
EXPERIMENTAL VALUES	<u>↓</u>
x2 ^a x1 ^a	
0.888 0.1	12
⁸ computed by compiler from published so solubilities, which were expressed as we solute per 100 grams of solvent.	olvent compositions and solute eight percent and grams of
AUXILIARY	INFORMATION
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:
Excess solute and solvent equilibrated at ambient room temperature. Solution was filtered rapidly into a tared crucible.	 Purity and source not given, was used as received.
Solvent was evaporated. Solubility deter- mined from weights of solid residue and evaporated solvent.	(2) Purity and chemical source not given, was dried over potassium hydroxide and and sodium metal and distilled
	ESTIMATED ERRORS:
	T/K: Unknown. $x_1: \pm 8$ % (relative error; compiler).

	OPTOTNAL MEACHIPPHENTS .		
COMPONENTS:	ORIGINAL MEASUREMENTS: Yokoyama, C.; Ebina, T.; Takahashi, S.		
(1) Indole; C ₈ H ₇ N; [120-72-9]			
<pre>(2) 2-Methylindole; C_gH_gN; [95-20-5]</pre>	J. Chem. Eng. Data <u>1993</u> , 38, 583-586.		
VARIABLES:	PREPARED BY:		
Temperature	W.E. Acree, Jr.		
EXPERIMENTAL VALUES			
T/K ×2	x ₁ Solid Phase		
332.77 1.0000	0.0000 (2)		
325.03 0.8875	0.1125 (2)		
318.87 0.7974	0.2026 (2)		
311.01 0.6988	0.3012 (2)		
302.02 0.5982	0.4018 (2)		
292.89 0.5001	0.4999 (2)		
289.52 0.3995	0.6005 (1)		
300.39 0.2985	0.7015 (1)		
310.05 0.1999	0.8001 (1)		
318.18 0.0967	0.9033 (1)		
326.26 0.0000	1.0000 (1)		
AUXILI	ARY INFORMATION		
	ARY INFORMATION SOURCE AND PURITY OF MATERIALS:		
AUXILIA METHOD: APPARATUS/PROCEDURE Constant temperature bath and a precision thermometer. Mixtures of known concentrations sealed	SOURCE AND PURITY OF MATERIALS:		

CONDONENTIC -		ODTOTURT MER	SUPEMENTS :				
COMPONENTS: (1) Indole; C ₈ H ₇ N; [120-72-9] (2) 5-Methylindole; C ₉ H ₉ N; [614-96-0] VARIABLES: Temperature		ORIGINAL MEASUREMENTS: Yokoyama, C.; Ebina, T.; Takahashi, S. J. Chem. Eng. Data <u>1993</u> , 38, 583-586. PREPARED BY: W.E. Acree, Jr.					
				EXPERIMENTAL VALUES			
				T/K	*2	×1	Solid Phase
				333.74	1.0000	0.0000	(2)
				327.70	0.8949	0.1051	(2)
				321.45	0.7994	0.2006	(2)
315.52	0.6979	0.3021	(2)				
307.85	0.6002	0.3998	(2)				
298.72	0.4993	0.5007	(2)				
289.20	0.4010	0,5990	(1)				
300.78	0.2994	0.7006	(1)				
310.37	0.2001	0.7999	(1)				
317.99	0.1004	0.8996	(1)				
326.26	0.0000	1.0000	(1)				
	eutectic occurs at	x ₁ = 0.5915 a	nd at T/K = 289.63.				
	eutectic occurs at	<i>x</i> ₁ = 0.5915 a	nd at T/K = 289.63.				
		<pre>x₁ = 0.5915 a INFORMATION</pre>	nd at T/K = 289.63.				
Authors report	AUXILIARY	INFORMATION	nd at T/K = 289.63. URITY OF MATERIALS:				
Authors report ETHOD: APPARATUS/PROCEDUR Constant temperature bath thermometer.	AUXILIARY E and a precision	INFORMATION SOURCE AND P (1) 99.9 %,	URITY OF MATERIALS: Aldrich Chemical Company, Mil- Wisconsin, USA, was used as				
Authors report ETHOD: APPARATUS/PROCEDUR Constant temperature bath thermometer. Mixtures of known concent: in glass ampoules and plac temperature to equilibrate were rotated while bath te	AUXILIARY E and a precision rations sealed ced in constant e. Samples emperature slowly	INFORMATION SOURCE AND P (1) 99.9 %, waukee, receive (2) 99.0 %,	URITY OF MATERIALS: Aldrich Chemical Company, Mil- Wisconsin, USA, was used as				
Authors report ETHOD: APPARATUS/PROCEDUR Constant temperature bath thermometer. Mixtures of known concent: in glass ampoules and plas temperature to equilibrate	AUXILIARY E and a precision rations sealed ced in constant s. Samples emperature slowly ermined by visual which the last	INFORMATION SOURCE AND P (1) 99.9 %, waukee, receive (2) 99.0 %,	URITY OF MATERIALS: Aldrich Chemical Company, Mil- Wisconsin, USA, was used as d. Aldrich Chemical Comapny, was received from manufacturer.				

NAPHTHACENE SOLUBILITIES IN PURE AND BINARY SOLVENT MIXTURES

A. <u>Saturated Hydrocarbons (including cycloalkanes)</u>

n-heptane

- B. <u>Alkenes</u>
- C. Aromatic Hydrocarbons

benzene

- D. <u>Esters</u>
- E. Ethers
- F. Haloalkanes_and_Haloaromatic_Hydrocarbons
- G. Alcohols

1-octanol

- H. Ketones
- I. <u>Miscellaneous Pure Solvents</u>
- J. Binary_Solvent_Mixtures

70			
Components :	ORIGINAL MEASUREMENTS:		
(1) Naphthacene; C ₁₈ H ₁₂ ; [92-24-0]	Lissi, E.A.; Abuin, E.B.		
(2) n-Heptane; C ₇ H ₁₆ ; [142-82-5]	Bol. Soc. Chil. Quim. <u>1981</u> , 26, 19-34.		
VARIABLES:	PREPARED BY:		
<i>T/</i> K = 293	W.E. Acree, Jr.		
EXPERIMENTAL VALUES			
t/°C	$c_1/(mol dm^{-3})$		
20.0 0.0	0.00016		
AUXILIARY	INFORMATION		
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:		
Constant temperature bath, centrifuge, thermometer, and an uv/visible spectro-photometer.	 Purity not given, commercial sample of unspecified source, was used as received. 		
Excess solute and solvent were placed in glass vials, pre-equilibrated for several hours at 60-80 °C, and then equilibrated at 20 °C for several additional hours. After equilibration and centrifugation, concentrations determined from the mea- sured absorbance using the Beer-Lambert law.	(2) Purity and chemical source not given, purification procedure not specified.		
	ESTIMATED ERRORS:		
	$T/K: \pm 2.$ $C_1: unknown.$		

COMPONENTS :	ORIGINAL MEASUREMENTS:			
(1) Naphthacene; C ₁₈ H ₁₂ ; [92-24-0]	Mishra, D.S.; Yalkowsky, S.H.			
(2) Benzene; C ₆ H ₆ ; [71-43-2]	Ind. Eng. Chem. Res., <u>1990</u> , 29, 2278-2283.			
VARIABLES:	PREPARED BY:			
T/K = 296	W.E. Acree, Jr.			
EXPERIMENTAL VALUES				
t/°C x ₂	×1			
23.0 0.9857	0.0143			
AUXILIARY INFORMATION				
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:			
Constant temperature bath, rotator, thermometer, and an uv/visible spectro- photometer.	(1) Reagent grade, source not specified, was used as received.			
Excess solute and solvent placed in screw-capped test tube and allowed to equilibrate for 3 days with gentle agita- tion in a constant temperature bath. Samples centrifuged for 30 minutes and concentrations were determined spectro- photometrically. Attainment of equili- brium verified by repetitive measurements	(2) Reagent grade, source not specified, was used as received.			
4 days later.	ESTIMATED ERRORS:			
	$T/K: \pm 0.1$ (compiler). $x_1: \pm 5$ % (relative error; compiler).			

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COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Naphthacene; C ₁₈ H ₁₂ ; [92-24-0]	Miller, M.M.; Wasik, S.P.; Huang, GL.; Shiu, WY.; Mackay, D.
(2) 1-Octanol; C ₈ H ₁₈ O; [111-87-5]	Environ. Sci. Technol. <u>1985</u> , 19, 522-529.
VARIABLES:	PREPARED BY:
<i>T/</i> K = 298	W.E. Acree, Jr.
EIPERIMENTAL VALUES	
t/°C c	1/(mol dm ⁻³)
25.0 0	.00530
AUXILIA	RY INFORMATION
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:
Constant temperature bath, rotator, thermometer, and a gas-liquid chromato- graph with flame ionization detection.	(1) Highest available commercial purity, specific chemical supplier not given, was used as received.
Excess solute and solvent placed in glass vials and allowed to equilibrate for 24 hours with gentle agitation, and left to settle for 48 hours before anal- ysis. Aliquots of saturated solutions were removed and concentrations were determined using a gas-liquid chromatograph equipped with flame ionization detector and on 10 %	3
SE30 ultraphase column.	ESTIMATED ERRORS:
	$T/K: \pm 0.1$ (compiler). $c_1: \pm 3$ % (relative error; compiler).

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NAPHTHALENE SOLUBILITIES IN PURE AND BINARY SOLVENT MIXTURES

- A. <u>Saturated Hydrocarbons (including cycloalkanes)</u>
 - n-hexane n-heptane n-octane n-hexadecane cyclohexane methylcyclohexane trans-1,2-dimethylcyclohexane trans-1,4-dimethylcyclohexane cis-1,3-dimethylcyclohexane decahydronaphthalene
- B. <u>Alkenes</u>
- C. <u>Aromatic Hydrocarbons</u>

benzene methylbenzene ethylbenzene 1,2-dimethylbenzene 1,3-dimethylbenzene 1,4-dimethylbenzene biphenyl 1,2-diphenylethane 1,2,3,4-tetrahydronaphthalene 4-isopropyl methylbenzene indene fluoranthene fluorene chrysene pyrene acenaphthene

D. <u>Esters</u>

furfuryl acetate methyl 2-furoate ethyl 2-furoate n-propyl 2-furoate n-butyl 2-furoate

E. Ethers

1,1-oxybisethane 1,1-oxybisbutane 1-ethoxypropane 2-ethoxypropane 2,2-dimethyloxetane 3,3-dimethyloxetane tetrahydropyran

F. Haloalkanes and Haloaromatic Hydrocarbons

- dichloromethane trichloromethane tetrachloromethane trichloroethylene diiodomethane 1,1-dibromoethane 1,2-dibromoethane 1,2-dichloroethane chlorobenzene 1,4-dichlorobenzene hexafluorobenzene octafluoronaphthalene
- G. Alcohols

```
methanol
ethanol
1-propanol
2-propanol
1-butanol
2-butanol
2-methyl-1-propanol
2-methy1-2-propanol
1-pentanol
1-hexanol
1-octanol
cyclohexanol
methylcyclohexanol
1,4-benzenediol
1,2-benzenediol
1,3-benzenediol
furfuryl alcohol
```

H. Ketones

2-propanone

I. <u>Miscellaneous Pure Solvents</u>

```
carbon disulfide
nitrobenzene
aniline
thiophene
pyridine
2-nitrobenzaldehyde
3-nitrobenzaldehyde
4-nitrobenzaldehyde
1-chloro-3-nitrobenzene
1-chloro-4-nitrobenzene
2,4-dinitroaniline
3,5-dinitrobenzoic acid
1,3,5-trimethyl-2,4,6-trinitrobenzene
4-nitro-1-methylbenzene
1,3-dinitrobenzene
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1,3,5-trinitrobenzene 2-nitrophenol 4-nitrophenol 2,4-dinitro-1-methylbenzene 2,4-dinitrophenol 2,4,6-trinitrophenol isoquinoline perfluoro-dibutyl ether perfluoro-tripropylamine

J. Binary Solvent Mixtures

benzene + methylbenzene benzene + 1,3-dimethylbenzene benzene + isoquinoline acetonitrile + water methanol + water 1-propanol + water 1-hexanol + water 2-propanone + water 1,2-ethanediol + water ethyl ethanoate + water pyridine + water

COMPONENTS:

1. 2.

- (1) Naphthalene; C10H8; [91-20-3]
- (2) n-Hexane; C₆H_{1/}; [110-54-3]

EVALUATOR:

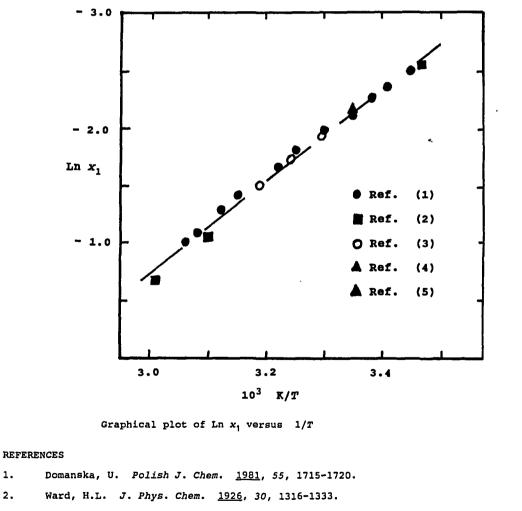
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W.E. Acree, Jr.
Department of Chemistry
University of North Texas
Denton, Texas 76203-5068
                                              (USA)
August, 1994
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CRITICAL EVALUATION:

Naphthalene solubilities in n-hexane were retrieved from papers by Domanska (1), Ward (2), Acree et al. (3), Heric and Posey (4), and Chang (5). The first two studies report values at several temperatures, Acree et al. determined values at 303, 308 and 313 K, and both Heric and Posey and Chang measured only the mole fraction solubility at 298 K. There is no a prior reason to exclude any of the five studies from the critical evaluation.

Regressional analysis of the experimental data as $Ln x_1$ versus 1/T yielded the following mathematical relationship:

 $Ln x_1 = -3849.6 (1/T) +$ (r = 0.9964)10.789 for variation of naphthalene solubility with absolute temperature (see graph below).



- Acree, W.E., Jr.; Pontikos, N.M.; Judy, C.L. Int. J. Pharm. 1986, 31, 225-230. з.
- Heric, E.L.; Posey, C.D. J. Chem. Eng. Data 1964, 9, 35-43. 4.
- Chang, W., Ph.D. Dissertation, North Dakota State University, North Dakota, 1969. 5.

COMPONENTS :	ORIGINAL MEASUREMENTS:		
(1) Naphthalene; C ₁₀ H ₈ ; [91-20-3]	Heric, E.L.; Posey, C.D. J. Chem. Eng. Data <u>1964</u> , 9, 35-43.		
(2) n-Hexane; C ₆ H ₁₄ ; [110-54-3]			
VARIABLES:	PREPARED BY:		
T/K = 298	W.E. Acree, Jr.		
EXPERIMENTAL VALUES			
t/°C x ₂	x 1		
25.0 0.8832	0.1168		
AUXILIARY	INFORMATION		
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:		
Constant temperature bath, thermometer, and a precision refractometer.	 Eastman Chemical Company, Rochester, New York, USA, was used as received. 		
Excess solute and solvent placed in glass bottles and allowed to equilibrate with gentle agitation for several days at constant temperature. Refractive indices of saturated solutions were measured and solubilities obtained using a calibration curve. Attainment of equilibrium verified	(2) Spectroquality, Matheson, Coleman and Bell, USA, was dried over phosphorous pentoxide and distilled to a final purity of 99.99 %.		
by making repetitive measurements after several additional days.	ESTIMATED ERRORS:		
	T/K: precision \pm 0.01. x_1 : precision \pm 0.0005.		
	I		

Components :	ORIGINAL MEASUREMENTS:		
(1) Naphthalene; C ₁₀ H ₈ ; [91-20-3]	Chang, W.		
(2) n-Hexane; C ₆ H ₁₄ ; [110-54-3]	Ph.D Dissertation, North Dakota State Uni- versity, North Dakota, USA (1969).		
VARIABLES:	PREPARED BY:		
<i>T/</i> K = 298	W.E. Acree, Jr.		
EXPERIMENTAL VALUES	· · · · · · · · · · · · · · · · · · ·		
t/°C x ₂	×1		
25.0 0.878	0.122		
ETHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:		
Constant temperature bath and a precisi thermometer.			
Mixtures of known concentrations sealed in glass ampoules and placed in constan temperature to equilibrate. Samples were rotated while bath temperature slo increased. Solubility determined by vis	t Bartlesville, Oklahoma, USA, was used as received.		
noting the temperature at which the las trace of solid solute disappeared. Sol	t ESTIMATED ERRORS:		
ubilities at 298 K interpolated from	T/K : precision \pm 0.1.		
experimental values using $\ln x_1$ versus $1/T$ graph.	$x_1: \pm 2$ % (relative error; compiler).		

COMPONENTS :		ORIGINAL MEASUREMENTS:
(1) Naphthalene;	C. H.; [91-20-3]	Domanska, U.
(2) n-Hexane; C ₆ H		Polish J. Chem. <u>1981</u> , 55, 1715-1720. (numerical values obtained through personal correspondence with author.)
VARIABLES:		PREPARED BY:
Temperature		W.E. Acree, Jr.
EXPERIMENTAL VALU	55	
T/K	×2	×1
282.05	0.937	0.063
286.35	0.928	0.072
289.55	0.916	0.084
289.85	0.918	0.082
292.45	0.906	0.094
295.45	0.894	0.104
298.65	0.881	0.119
302.45	0.862	0.138
306.75	0,837	0.163
310.25	0.811	0.189
317.05	0.757	0.243
319.25	0.723	0.277
319.65	0.724	0.276
324.15	0.660	0.340
325.75	0,632	0.368
	AUXILI	ARY INFORMATION
METHOD: APPARATUS/	PROCEDURE	SOURCE AND PURITY OF MATERIALS:
thermometer.	ure bath and a precisio	n (1) Purity not specified, P.O.Ch., Gliwice, Poland, was vacuum sublimed to a melting temperature of 80.25 °C.
dynamic method. M trations were sea glass ampoules an temperature to eq ture was slowly i hour. Solubility	measured using a ixtures of known concen led in thick-walled d placed in a constant uilibrate. Bath tempera ncreased by 2 K per determined by visually ature at which the last lute disappeared.	Poland, was dried over phosphorous pentoxide and fractionally distilled - to a final purity of 99.9+ %.
		ESTIMATED ERRORS:

COMPONENTS: (1) Naphthalene; C ₁₀ H ₈ ; [91-20-3] (2) n-Hexane; C ₆ H ₁₄ ; [110-54-3] VARIABLES: Temperature		ORIGINAL MEASUREMENTS:			
		Ward, H.L.			
		J. Phys. Chem. <u>1926</u> , 30, 1316-1333.			
		PREPARED BY:			
		W.E. Acree, Jr.			
EXPERIMENTAL V	ALUES		ļ		
T/K	*2	×1	T/K	×2	x1
288.0	0.921	0.0792	331.6	0.492	0.508
301.7	0.865	0.135			
322.8	0.661	0.339			
		AUXILIARY	INFORMATION		ar
METHOD: APPARATUS/PROCEDURE		SOURCE ANI	PURITY OF	MATERIALS:	
Constant temperature bath and a precision thermometer. Mixtures of known concentrations sealed in glass tubes and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly increased. Solubility determined by visual		recry anol 80.05 (2) Purit Roche	vstallized so to give a mo 5-80.10 °C. ty not given	e not specified, was everal times from meth- elting temperature of , Eastman Kodak Company, ork, USA, was distilled	
noting the temperature at which the last trace of solid solute disappeared. Meas- urements repeated several times to verify results.			cision ± 0.1	figs. (compiler).	

COMPONENTS :			ORIGINAL	ORIGINAL MEASUREMENTS:			
<pre>(1) Naphthalene; C₁₀H₈; [91-20-3] (2) n-Hexane; C₆H₁₄; [110-54-3] VARIABLES:</pre>			C.L.	Acree, W.E., Jr.; Pontikos, N.M.; Judy, C.L. Int. J. Pharm. <u>1986</u> , 31, 225-230.			
			PREPARED	PREPARED BY:			
T/K = 303, 3	/K = 303, 308 and 313		W.E. Acr	W.E. Acree, Jr.			
EXPERIMENTAL	VALUES		• • • • • • • • • • • • • • • • • • •				
t/° C	x 2	* 1	t/°C	*2	×i		
30.0	0.8585	0.1415	40.0	0.7784	0.2216		
35.0	0.8237	0.1763					
		AUXILIA	NY INFORMATION	И			
METHOD: APPARATUS/PROCEDURE			SOURCE AND	D PURITY OF M	ATERIALS:		
Constant temperature bath, calorimetric thermometer, and gas chromatograph.		Milwa		mical Company, sin, USA, recrystal- m methanol.			

Excess solute and solvent placed in amber glass bottles and allowed to equilibrate for several days at constant temperature. Attainment of equilibrium verified by repetitive measurements. Aliquots of saturated solutions transferred through a coarse filter into tared volumetric flasks, weighed and diluted with cyclohexane. Concentrations determined chromatographically.

(2) 99 %, Aldrich Chemical Company, was stored over molecular sieves and distilled shortly before use.

ESTIMATED ERRORS:

 $T/K: \pm 0.05.$ $x_1: \pm 1$ % (relative error).

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COMPONENTS:	ORIGINAL MEASUREMENTS:		
(1) Naphthalene; C ₁₀ H ₈ ; [91-20-3]	Chang, W. Ph.D Dissertation, North Dakota State Uni- versity, North Dakota, USA (1969).		
(2) n-Heptane; C ₇ H ₁₆ ; [142-82-5]			
VARIABLES:	PREPARED BY:		
T/K = 298	W.E. Acree, Jr.		
EXPERIMENTAL VALUES	<u></u>		
t/°C x ₂	×1		
25.0 0.870	0.130		
AUXILIARY	INFORMATION		
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:		
Constant temperature bath and a precision thermometer.	 Purity, source and purification proce- dures not specified. 		
Mixtures of known concentrations sealed in glass ampoules and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly increased. Solubility determined by visual	(2) 99 %, Phillips Petroleum Company, Bartlesville, Oklahoma, USA, was used as received.		
noting the temperature at which the last trace of solid solute disappeared. Sol- ubilities at 298 K interpolated from experimental values using $\ln x_1$ versus $1/T$ graph.	ESTIMATED ERRORS: T/K : precision \pm 0.1. x_1 : \pm 2 % (relative error; compiler).		

COMPONENTS:	ORIGINAL MEASUREMENTS:			
(1) Naphthalene; C ₁₀ H ₈ ; [91-20-3]	Lissi, E.A.; Abuin, E.B.			
(2) n-Heptane; C ₇ H ₁₆ ; [142-82-5]	Bol. Soc. Chil. Quim. <u>1981</u> , 26, 19-34.			
VARIABLES:	PREPARED BY:			
T/K = 293 W.E. Acree, Jr.				
EXPERIMENTAL VALUES				
t/°C	(mol dm ⁻³)			
20.0 0.6	50			
AUXILIAR) METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:			
Constant temperature bath, centrifuge,	(1) Purity not given, commercial sample of			
thermometer, and a spectrofluorimeter.	unspecified source, was used as received.			
thermometer, and a spectrofluorimeter. Solubility determined indirectly from measured aqueous solubility and solute partition coefficient between n-heptane and water. Solute concentration in both phases, after equilibration and centrifu- gation, determined from the fluorescence intensity. This indirect method computes the solubility that is expected assuming				

 $T/K: \pm 2.$ $c_1:$ unknown.

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COMPONENTS:		ORIGINAL MEASUREMENTS:		
(1) Naphthalene; C ₁₀ H ₈ ; [91-20-3]		Chang, W.		
(2) n-Octane; C ₈ H ₁₈ ; []	.11-65-9]	Ph.D Dissertation, North Dakota State Uni- versity, North Dakota, USA (1969).		
VARIABLES:		PREPARED BY:		
T/K = 298		W.E. Acree, Jr.		
EXPERIMENTAL VALUES				
t/°C	*2	×1		
25.0	0.858	0.142		
	AUXILIARY	INFORMATION		
METHOD: APPARATUS/PROCE	DURE	SOURCE AND PURITY OF MATERIALS:		
Constant temperature b thermometer.	ath and a precision	 Purity, source and purification proce- dures not specified. 		
Mixtures of known concentrations sealed in glass ampoules and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly increased. Solubility determined by visual		(2) 99 %, Phillips Petroleum Company, Bartlesville, Oklahoma, USA, was used as received.		
noting the temperature at which the last trace of solid solute disappeared. Sol- ubilities at 298 K interpolated from experimental values using $\ln x_1$ versus 1/T graph.		ESTIMATED ERRORS: T/K : precision \pm 0.1. x_1 : \pm 2 % (relative error; compiler).		

COMPONENTS: ORIGINAL MEASUREMENTS: (1) Naphthalene; C10H8; [91-20-3] Heric, E.L.; Posey, C.D. (2) n-Hexadecane; $C_{16}H_{34}$; [544-76-3] J. Chem. Eng. Data <u>1964</u>, 9, 35-43. VARIABLES: PREPARED BY: T/K = 298W.E. Acree, Jr. EXPERIMENTAL VALUES t/°C ×2 x, 0.7957 25.0 0.2043 AUXILIARY INFORMATION METHOD: APPARATUS/PROCEDURE SOURCE AND PURITY OF MATERIALS: Constant temperature bath, thermometer, and a precision refractometer. (1) Eastman Chemical Company, Rochester, New York, USA, was used as received. (2) Practical Grade, Eastman Chemical Company, was dried over phosphorous pentoxide and distilled to a final purity of 99.1 %. Excess solute and solvent placed in glass bottles and allowed to equilibrate with gentle agitation for several days at constant temperature. Refractive indices of saturated solutions were measured and solubilities obtained using a calibration curve. Attainment of equilibrium verified by making repetitive measurements after several additional days. ESTIMATED ERRORS: T/K: precision \pm 0.01. x_1 : precision \pm 0.0005.

Components:		ORIGINAL MEASUREMENTS: Djordjevic, N.M. Thermochim. Acta <u>1991</u> , 177, 109-118.				
(1) Naphthalene; C ₁₀ H ₈ ; [91-20-3]						
(2) n-Octadecane; C ₁₈ H ₃₈ ; [593-45-3]						
VARIABLES:			PREPARED BY: W.E. Acree, Jr.			
Temperature						
EXPERIMENTAL	VALUES	<u> </u>	<u> </u>	·		
T/K	*2	x 1	T/K	*2	×1	
325.1	0.4776	0.5224	346.0	0.1350	0.8650	
330.0	0.4044	0.5956	347.0	0,1150	0.8850	
342.5	0.2004	0.7996	348.7	0.0816	0.9184	
		AUXILIARY	INFORMATION			
METHOD: APPARI	ATUS/PROCEDUR	E	SOURCE AND	PURITY OF M	ATERIALS:	
Differential scanning calorimeter. Mixtures (1.5 - 2.0 mg) of known concen- tration were weighed into aluminum pans, which were then crimped to preclude sample loss during the heating process. Solubil- ities determined by measuring melting		Compa	Label, 99+ %, ny, Milwaukee as received.	, Aldrich Chemical 2, Wisconsin, USA, was		
points of bir	nary mixtures	using a Perkin-	ESTIMATED	ERRORS :	· • • • • • • • • • • • • • • • • • • •	
Elmer DSC-2 differential scanning calori- meter and scan rate of 5 K/min.			ision <u>+</u> 0.3 (003 (compiler			

OMPONENTS :		ORIGINAL MEASUREMENTS:			
(1) Naphthalene; C ₁₀ H ₈ ; [91-20-3] (2) Cyclohexane; C ₆ H ₁₂ ; [110-82-7]		Acree, W.E., Jr.; Pontikos, N.M.; Judy, C.L. Int. J. Pharm. <u>1986</u> , 31, 225-230. PREPARED BY: W.E. Acree, Jr.			
VARIABLES:					
T/K = 303, 308 and 313					
EXPERIMENTAL	VALUES				
t/°C	<i>x</i> 2	x 1	t/° C	<i>x</i> 2	x 1
	0.8175	0.1825	40.0	0.7233	0.2767
30.0	0.01/5				

METHOD: APPARATUS/PROCEDURE Constant temperature bath, calorimetric thermometer, and gas chromatograph. Excess solute and solvent placed in amber glass bottles and allowed to equilibrate for several days at constant temperature. Attainment of equilibrium verified by repetitive measurements. Aliquots of saturated solutions transferred through a coarse filter into tared volumetric flasks, weighed and diluted with cyclohexane. Concentrations determined SOURCE AND PURITY OF MATERIALS: (1) 99 %, Aldrich Chemical Company, Milwaukee, Wisconsin, USA, recrystallized 3 times from methanol. (2) Gold Label, Aldrich Chemical Company, was stored over molecular sieves and distilled shortly before use.

chromatographically.

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COMPONENTS:
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(1) Naphthalene; C₁₀H₈; [91-20-3] (2) Cyclohexane; C₆H₁₂; [110-82-7]

EVALUATOR:

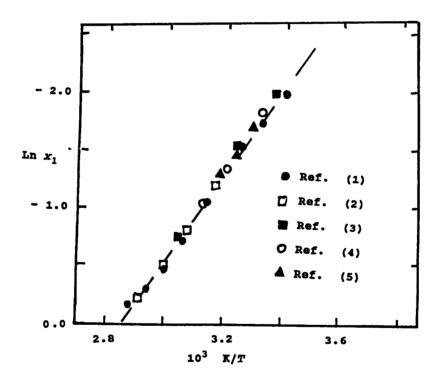
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W.E. Acree, Jr.
Department of Chemistry
University of North Texas
Denton, Texas
August, 1994
                  76203-5068
                                  (USA)
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CRITICAL EVALUATION:

Naphthalene solubilities in cyclohexane were retrieved from papers by Heric and Yeh (1), Choi et al. (2), Domanska (3), McLaughlin (4), Acree et al. (5), Heric and Posey (6) and Chang (7). The first four studies report solubilities at several temperatures, Acree et al. determined values at 303, 308 and 313 K, and the latter two studies measured the mole fraction solubility at a single temperature of 298 K. There is no a prior reason to exclude any of the seven studies from the critical evaluation.

Regressional analysis of the experimental data as Ln x, versus 1/T yielded the following mathematical relationship:

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Ln x_1 = -3916.1 (1/T) + 11.2291
                                                                    (r = 0.9984)
for variation of naphthalene solubility with absolute temperature (see graph below).
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Graphical plot of Ln x_1 versus 1/T

REFERENCES

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Heric, E.L.; Yeh, K.-N. J. Chem. Eng. Data <u>1970</u>, 15, 13-17.
Choi, P.B.; Williams, C.P.; Buehring, K.G.; McLaughlin, E. J. Chem. Eng. Data
1.
2.
                       Choi, P.B.; Williams, C.P.; Buenring, K.G.; Holaughin, E. J. Chom. Lug. Let.

<u>1985</u>, 30, 403-409.

Domanska, U. Polish J. Chem. <u>1981</u>, 55, 1715-1720.

McLaughlin, E.; Zainal, H.A. J. Chem. Soc. <u>1960</u>, 3854-3857.

Acree, W.E., Jr.; Pontikos, N.M.; Judy, C.L. Int. J. Pharm. <u>1986</u>, 31, 225-230.

Heric, E.L.; Posey, C.D. J. Chem. Eng. Data <u>1964</u>, 9, 35-43.

Chang, W., Ph.D. Dissertation, North Dakota State University, North Dakota, 1969.
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4.
5.
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6. 7.

COMPONENTS :	· · · · · · · · · · · · · · · · · · ·	ORIGINAL MEASUREMENTS:			
 (1) Naphthalene; C₁₀H₈; [91-20-3] (2) Cyclohexane; C₆H₁₂; [110-82-7] 		Heric, E.L.; Posey, C.D.			
		J. Chem. Eng. Data <u>1964</u> , 9, 35-43.			
VARIABLES:	28.7.8 <u></u>	PREPARED BY:			
T/K = 298		W.E. Acree, Jr.			
EXPERIMENTAL VALUES		· · · · · · · · · · · · · · · · · · ·			
t/°C	*2	x 1			
25.0	0.8513	0.1487			
	AUXILIARY	INFORMATION			
METHOD: APPARATUS/PROCED	JRE	SOURCE AND PURITY OF MATERIALS:			
Constant temperature bat and a precision refracto		 Eastman Chemical Company, Rochester, New York, USA, was used as received. 			
Excess solute and solvent placed in glass bottles and allowed to equilibrate with gentle agitation for several days at constant temperature. Refractive indices of saturated solutions were measured and solubilities obtained using a calibration curve. Attainment of equilibrium verified		(2) Spectroquality, Matheson, Coleman and Bell, USA, was dried over phosphorous pentoxide and distilled to a final purity of 99.8 %.			
by making repetitive measures several additional days.		ESTIMATED ERRORS:			

COMPONENTS: (1) Naphthalene; C ₁₀ H ₈ ; [91-20-3]			ORIGINAL MEASUREMENTS:		
			Heric, E. L; Yeh, KN. J. Chem. Eng. Data <u>1970</u> , 15, 13-17. PREPARED BY:		
<pre>(2) Cyclohexane; C₆H₁₂; [110-82-7] VARIABLES: Temperature</pre>					
		W.E. Acree, Jr.			
		EXPERIMENTAL V	ALUES		
T/K	×2	×1	T/K	*2	x 1
292.95	0.8655	0.1345	326.75	0.5151	0.4849
301.83	0.8280	0.1720	334.01	0.3756	0.6244
306.71	0.7878	0.2122	340.06	0.2545	0.7455
318.28	0.6537	0.3463	346.75	0.1238	0.8762
		AUXILIARY	INFORMATION		
METHOD: APPARA	TUS/PROCEDUR	E	SOURCE AND	PURITY OF M	ATERIALS:
Constant temp thermometer.	erature bath	and a precision	 Reagent Grade, Baker Chemical Company, USA, was used as received. 		
Mixtures of known concentrations sealed in glass ampoules and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly increased. Solubility determined by visual		(2) Reagent Grade, Baker Chemical Company, was stored over phosphorous pentoxide and distilled shortly before use.			
noting the te	mperature at	which the last	ESTIMATED	ERRORS:	
trace of solid solute disappeared.		T/K: precision \pm 0.03. $x_1: \pm$ 0.0001.			

COMPONENTS:		ORIGINAL MEASUREMENTS:			
<pre>(1) Naphthalene; C₁₀H₈; [91-20-3] (2) Cyclohexane; C₆H₁₂; [110-82-7] VARIABLES:</pre>		Choi, P.B.; Williams, C.P.; Buehring, K.G.; McLaughlin, E. J. Chem. Eng. Data <u>1985</u> , 30, 403-409. PREPARED BY:			
					Temperature
EXPERIMENTAL V	ALUES		ļ		
T/K	<i>x</i> 2	×1	T/K	*2	x 1
300.15	0.8403	0.1597	325.45	0.5388	0.4612
308.25	0.7746	0.2254	333.15	0.3927	0.6073
315.15	0.6975	0.3025	343.05	0.1918	0.8082
		AUXILIARY	INFORMATION	·	
METHOD: APPARA	TUS/PROCEDUR	E	SOURCE AND	PURITY OF M	ATERIALS:
Constant temperature bath and a precision thermometer. Mixtures of known concentrations sealed in glass ampoules and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly increased. Solubility determined by visual		Roche over talli (2) Gold	ster, New Yo activated al zed from tol Label, 99.9+	odiak Chemical Company, rk, USA, was passed umina and then recrys- uene. %, Aldrich Chemical as received.	
increased. Solubility determined by visual noting the temperature at which the last trace of solid solute disappeared.		ESTIMATED T/K: prec $x_1: \pm 0.00$	ision <u>+</u> 0.1.		

COMPONENTS: (1) Naphthalene; C ₈ H ₁₀ ; [91-20-3] (2) Cyclohexane; C ₆ H ₁₂ ; [110-82-7] VARIABLES:			ORIGINAL MEASUREMENTS: Domanska, U. Polish J. Chem. <u>1981</u> , 55, 1715-1720. (numerical values obtained through personal communication with author.) PREPARED BY:								
						Temperature			W.E. Acree, Jr.		
						EXPERIMENTAL V	ALUES	·····	ļ		
T/K	*2	<i>*</i> 1	T/K	*2	x ₁						
326.75	0.515	0.485	301.85	0.828	0.172						
319.40	0.642	0.358	301.55	0.830	0.170						
318.25	0.654	0.346	295.95	0.866	0.134						
306.75	0.788	0.212	295.50	0.869	0.131						
306.35	0.792	0.208									
		AUXILIARY	INFORMATION	1							
METHOD: APPARA	TUS/PROCEDUR	E	SOURCE AND	PURITY OF M	ATERIALS:						
Constant temperature bath and a precision thermometer. Mixtures of known concentrations sealed in glass ampoules and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly increased. Solubility determined by visual			 Purity not specified, P.O.Ch., Gliwice, Poland, was vacuum sublimed to a melting temperature of 80.25 °C. Initial purity not specified, P.O.Ch., was dried over sodium metal and frac- tionally distilled to 99.9+ % purity. 								
								which the last appeared.	ESTIMATED	ERRORS:	
trace of solid solute disappeared.			T/K: precision \pm 0.1. x_1 : to 3 significant figs. (compiler).								

COMPONENTS:	ORIGINAL MEASUREMENTS:		
(1) Naphthalene; C ₁₀ H ₈ ; [91-20-3]	Chang, W.		
(2) Cyclohexane; C ₆ H ₁₂ ; [110-82-7]	Ph.D Dissertation, North Dakota State Uni- versity, North Dakota, USA (1969).		
VARIABLES:	PREPARED BY:		
T/K = 298	W.E. Acree, Jr.		
EXPERIMENTAL VALUES			
t/°C x ₂	<i>x</i> 1		
25.0 0.853	0.147		
AUXILIAR	Y INFORMATION		
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:		
Constant temperature bath and a precision thermometer.	 Purity, source and purification proce- dures not specified. 		
Mixtures of known concentrations sealed in glass ampoules and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly increased. Solubility determined by visual	(2) Reagent Grade, Eastman Organic Chem- ical, USA, was used as received.		
noting the temperature at which the last			
	ESTIMATED ERRORS:		
trace of solid solute disappeared. Sol- ubilities at 298 K interpolated from experimental values using $\ln x_1$ versus $1/T$ graph.	ESTIMATED ERRORS: T/K : precision \pm 0.1. x_1 : \pm 2 % (relative error; compiler).		

COMPONENTS:			ORIGINAL N	EASUREMENTS :	· · · · · · · · · · · · · · · · · · ·	
(1) Naphthalene; C ₁₀ H; [91-20-3]			McLaughlin, E.; Zainal, H.A.			
(2) Cyclohexane; C ₆ H ₁₂ ; [110-82-7] VARIABLES:		J. Chem. Soc. <u>1960</u> , 3854-3857. PREPARED BY:				
						Temperature
EXPERIMENTAL	VALUES					
T/K	x2	×1	T/K	*2	* ₁	
300.2	0.8459	0.1541	329.6	0.4620	0.5380	
311.2	0.7480	0.2520				
318.8	0.6521	0.3479				
325.4	0.5424	0.4576				
		AUXILIARY	INFORMATION			
METHOD: APPARI	ATUS/PROCEDUR	E	SOURCE AND	PURITY OF M	ATERIALS:	
Constant temperature bath and a precision thermometer. Mixtures of known concentrations sealed in glass ampoules and placed in constant temperature to equilibrate. Samples			Unite alumi (2) Purit	d Kingdom, w na column wi	British Drug Houses, as passed over an th benzene as eluant. d purification method	
increased. So	olubility dete	emperature slowly ermined by visual				
		which the last appeared.	ESTIMATED			
_	trace of solid solute disappeared.			T/K: precision \pm 0.1. x_1 : \pm 0.0003 (compiler).		

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COMPONENTS:	ORIGINAL MEASUREMENTS:			
(1) Naphthalene; C ₁₀ H ₈ ; [91-20-3]	Chang, W.			
(2) Methylcyclohexane; C ₇ H ₁₄ ; [108-87-2]	Ph.D Dissertation, North Dakota State Uni- versity, North Dakota, USA (1969).			
VARIABLES:	PREPARED BY:			
T/K = 298	W.E. Acree, Jr.			
EXPERIMENTAL VALUES				
t/°C x ₂	<i>x</i> 1			
25.0 0.853	0.147			
AUXILIARY	INFORMATION			
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:			
Constant temperature bath and a precision thermometer.	 Purity, source and purification proce- dures not specified. 			
Mixtures of known concentrations sealed in glass ampoules and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly increased. Solubility determined by visual	(2) Reagent Grade, Eastman Organic Chemical Company, USA, was used as received.			
noting the temperature at which the last trace of solid solute disappeared. Sol-	ESTIMATED ERRORS:			
ubilities at 298 K interpolated from experimental values using $\ln x_1$ versus $1/T$ graph.	T/K: precision \pm 0.1. x_1 : \pm 2 % (relative error; compiler).			

COMPONENTS :		ORIGINAL MEASUREMENTS:		
<pre>(1) Naphthalene; C₁₀H₈; [91-20-3] (2) cis-1,2-Dimethylcyclohexane; C₈H₁₆; [2207-01-4]</pre>		Chang, W.		
		Ph.D Dissertation, North Dakota State Uni- versity, North Dakota, USA (1969).		
VARIABLES:		PREPARED BY:		
T/K = 298		W.E. Acree, Jr.		
EXPERIMENTAL VALUES				
t/°C	x 2	<i>x</i> 1		
25.0	0.837	0.163		
ETHOD: APPARATUS/PROCE		INFORMATION SOURCE AND PURITY OF MATERIALS:		
Constant temperature bathermometer.		 Purity, source and purification proce- dures not specified. 		
Mixtures of known conc in glass ampoules and temperature to equilib were rotated while bat increased. Solubility (placed in constant rate. Samples h temperature slowly	(2) 99 %, Phillips Petroleum Company, Bartlesville, Oklahoma, USA, was used as received.		
noting the temperature trace of solid solute of ubilities at 298 K into experimental values us: 1/T graph.	at which the last disappeared. Sol- erpolated from	ESTIMATED ERRORS: T/K : precision \pm 0.1. x_1 : \pm 2 % (relative error; compiler).		
1/T grapn.	-			

T				
COMPONENTS :	ORIGINAL MEASUREMENTS:			
(1) Naphthalene; C ₁₀ H ₈ ; [91-20-3]	Chang, W.			
(2) trans-1,2-Dimethylcyclohexane; C ₈ H ₁₆ ; [6876-23-9]	Ph.D Dissertation, North Dakota State Uni- versity, North Dakota, USA (1969).			
VARIABLES:	PREPARED BY:			
T/K = 298	W.E. Acree, Jr.			
EXPERIMENTAL VALUES				
t/°C x ₂	<i>x</i> ₁			
25.0 0.847	0.153			
AUXILIARY	INFORMATION			
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:			
Constant temperature bath and a precision thermometer.	 Purity, source and purification proce- dures not specified. 			
Mixtures of known concentrations sealed in glass ampoules and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly increased. Solubility determined by visual	(2) 99 %, Phillips Petroleum Company, Bartlesville, Oklahoma, USA, was used as received.			
noting the temperature at which the last trace of solid solute disappeared. Sol- ublities at 298 K interpolated from experimental values using $\ln x_1$ versus 1/T graph.	ESTIMATED ERRORS: T/K : precision \pm 0.1. x_1 : \pm 2 % (relative error; compiler).			

COMPONENTS:		ORIGINAL MEASUREMENTS:			
(1) Naphthalene; C ₁₀ Hg	; [91-20-3]	Chang, W.			
(2) trans-1,4-Dimethy C ₈ H ₁₆ ; [2207-04-7]	lcyclohexane;	Ph.D Dissertation, North Dakota State Uni- versity, North Dakota, USA (1969).			
VARIABLES:		PREPARED BY:			
T/K = 298		W.E. Acree, Jr.			
EXPERIMENTAL VALUES					
t/°C	*2	×1			
25.0	0.850	0.150			
	AUXILIARY	INFORMATION			
METHOD: APPARATUS/PROC	EDURE	SOURCE AND PURITY OF MATERIALS:			
Constant temperature thermometer.	bath and a precision	 Purity, source and purification proce- dures not specified. 			
Mixtures of known con in glass ampoules and temperature to equili were rotated while ba increased. Solubility	placed in constant brate. Samples th temperature slowly	(2) Reagent Grade, Aldrich Chemical Company, Milwaukee, Wisconsin, USA, was used as received.			
noting the temperature trace of solid solute ubilities at 298 K in experimental values up 1/T graph.	e at which the last disappeared. Sol- terpolated from	ESTIMATED ERRORS: T/K : precision \pm 0.1. x_1 : \pm 2 % (relative error; compiler).			

	ORIGINAL MEASUREMENTS:		COMPONENTS:	
	Chang, W.	(1) Naphthalene; C ₁₀ H ₈ ; [91-20-3]		
	Ph.D Dissertation, North Dakota State Un versity, North Dakota, USA (1969).	(2) cim-1,4-Dimethylcyclohexane; C ₈ H ₁₆ ; [624-29-3]		
	PREPARED BY:	· · · · · · · · · · · · · · · · · · ·	VARIABLES:	
	W.E. Acree, Jr.	T/K = 298		
			EXPERIMENTAL VALUES	
	×1	x 2	t∕°C	
	0.153	0.847	25.0	
	Y INFORMATION	AUXILIARY		
	SOURCE AND PURITY OF MATERIALS:	EDURE	METHOD: APPARATUS/PROCE	
n proce-	 Purity, source and purification proc dures not specified. 	bath and a precision	Constant temperature by thermometer.	
		placed in constant brate. Samples th temperature slowly	Mixtures of known conc in glass ampoules and temperature to equilib were rotated while bat increased. Solubility	
er).	ESTIMATED ERRORS: T/K : precision \pm 0.1. x_1 : \pm 2 % (relative error; compiler).	increased. Solubility determined by visual noting the temperature at which the last trace of solid solute disappeared. Sol- ubilities at 298 K interpolated from experimental values using $\ln x_1$ versus $1/T$ graph.		
e	T/K : precision \pm 0.1.	disappeared. Sol- terpolated from	trace of solid solute of ubilities at 298 K into experimental values us	

COMPONENTS :	ORIGINAL MEASUREMENTS:			
(1) Naphthalene; C ₁₀ H ₈ ; [91-20-3]	Chang, W.			
<pre>(2) cis-1,3-Dimethylcyclohexane; C₈H₁₆; [638-04-0]</pre>	Ph.D Dissertation, North Dakota State Uni- versity, North Dakota, USA (1969). PREPARED BY:			
VARIABLES:				
T/K = 298	W.E. Acree, Jr.			
EXPERIMENTAL VALUES				
t/°C x ₂	×1			
25.0 0.845	0.155			
	INFORMATION			
NETHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:			
Constant temperature bath and a precision thermometer.	 Purity, source and purification proce- dures not specified. 			
Mixtures of known concentrations sealed in glass ampoules and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly increased. Solubility determined by visual	(2) Reagent Grade, Aldrich Chemical Company, Milwaukee, Wisconsin, USA, was used as received.			
noting the temperature at which the last trace of solid solute disappeared. Sol-	ESTIMATED ERRORS:			
ubilities at 298 K interpolated from experimental values using $\ln x_1$ versus $1/T$ graph.	T/K: precision \pm 0.1. x_1 : \pm 2 % (relative error; compiler).			

COMPONENTS:	· · · · · · · · · · · · · · · · · · ·		ORIGINAL N	EASUREMENTS:	
 (1) Naphthalene; C₁₀H₈; [91-20-3] (2) Decahydronaphthalene; C₁₀H₁₈; [91-17-8] VARIABLES: 		Coon, J.I	E.; Auwaerter	, J.E.; McLaughlin, E.	
		Fluid Phase Equilibr. <u>1989</u> , 44, 305-345. PREPARED BY:			
					Temperature
EXPERIMENTAL V	VALUES	·····			
T/K	*2	<i>x</i> 1	T/K	ж ₂ .	<i>x</i> ₁
302.9	0.7738	0.2262	324.3	0.5297	0.4703
307.7	0.7295	0.2705	329.7	0.4377	0.5623
311.7	0.6819	0.3181	335.6	0.3275	0.6725
319.0	0.6040	0.3960			
	<u></u> .	AUXILIARY	INFORMATION	1	
METHOD: APPARI	ATUS/PROCEDUR	E	SOURCE AND	PURITY OF M	ATERIALS:
Constant temperature bath and a precision thermometer.			 (1) 99.2 %, Aldrich Chemical Company, Mil- waukee, Wisconsin, USA, was passed over an activated alumina column and then recrystallized from solution. (2) 99+ %, Aldrich Chemical Company, having isomer ratio of 60.6 % cis and 39.4 % trans, stored over molecular sieves. 		
Mixtures of known concentrations sealed in glass ampoules and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly increased. Solubility determined by visual					
noting the te	emperature at	which the last	ESTIMATED	ERRORS :	
trace of solid solute disappeared.		$\frac{T/K: \text{ prec}}{x_1: \pm 0.00}$	ision <u>+</u> 0.1. 003.		

Components:			ORIGINAL	ORIGINAL MEASUREMENTS:		
<pre>(1) Naphthalene; C₁₀H₈; [91-20-3] (2) Benzene; C₆H₆; [71-43-2]</pre>		C.L.	Acree, W.E., Jr.; Pontikos, N.M.; Judy, C.L. Int. J. Pharm. <u>1986</u> , 31, 225-230. PREPARED BY:			
VARIABLES:						
T/K = 303, 308 and 313		W.E. Acr	W.E. Acree, Jr.			
EXPERIMENTAL	VALUES		······································			
t/°C	x2	<i>x</i> 1	t/ ^o C	*2	×1	
30.0 0.6682 0.3318		40.0	0.5757	0.4243		
35.0	0.6211	0.3789				
		AUXIL	IARY INFORMATION	¥		
METHOD: APPAR	ATUS/PROCEDUR	E	SOURCE ANI	D PURITY OF M	ATERIALS:	

Constant temperature bath, calorimetric thermometer, and gas chromatograph.

Excess solute and solvent placed in amber glass bottles and allowed to equilibrate for several days at constant temperature. Attainment of equilibrium verified by repetitive measurements. Aliquots of saturated solutions transferred through a coarse filter into tared volumetric flasks, weighed and diluted with cyclo-hexane. Concentrations determined chromatographically.

(1) 99 %, Aldrich Chemical Company, Milwaukee, Wisconsin, USA, recrystal-lized 3 times from methanol.

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(2) Gold Label, Aldrich Chemical Company, was stored over molecular sieves and distilled shortly before use.

ESTIMATED ERRORS:

 $T/K: \pm 0.05.$ $x_1: \pm 1$ % (relative error).

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COMPONENTS:
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(1) Naphthalene; C₁₀H₈; [91-20-3]

(2) Benzene; C₆H₆; [71-43-2]

EVALUATOR:

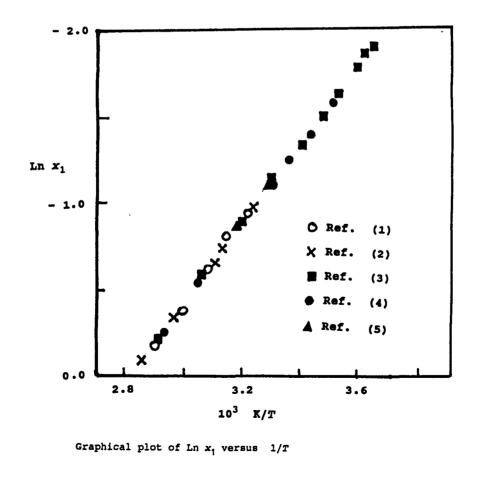
W.E. Acree, Jr. Department of Chemistry University of North Texas Denton, Texas 76203-5068 (USA) August, 1994

CRITICAL EVALUATION:

Naphthalene solubilities in benzene were retrieved from papers by Choi et al. (1), McLaughlin and Zainal (2), Ward (3), Kravchenko (4), Acree et al. (5), Heric and Posey (6) and Chang (7). The first four studies report values at several temperatures, Acree et al. determined values at 303, 308 and 313 K, and both Heric and Posey and Chang measured the mole fraction solubility at the single temperature of 298 K. There is no a prior reason to exclude any of the six studies from the critical evaluation.

Regressional analysis of the experimental data as $Ln x_i$ versus 1/T yielded the following mathematical relationship:

 $Ln x_1 = -2301.9 (1/T) + 6.5066 \qquad (r = 0.9996)$ for variation of naphthalene solubility with absolute temperature (see graph below). Back-calculated solubility at 298 K is $x_1 = 0.2974$, and differs by less than 2 % from experimental values of $x_1 = 0.2946$ (6) and $x_1 = 0.292$ (7).



(Continued on next page)

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COMPONENTS:

(1) Naphthalene; C<sub>10</sub>H<sub>8</sub>; [91-20-3]

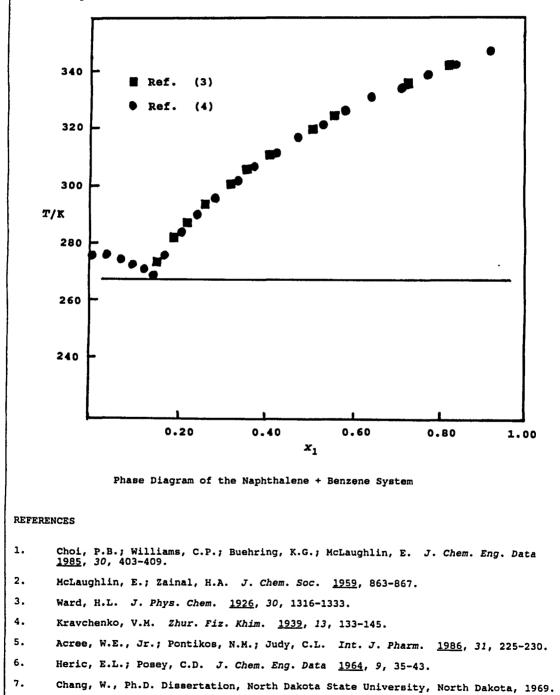
(2) Benzene; C<sub>6</sub>H<sub>6</sub>; [71-43-2]
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EVALUATOR:

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W.E. Acree, Jr.
Department of Chemistry
University of North Texas
Denton, Texas 76203-5068 (USA)
August, 1994
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CRITICAL EVALUATION: (Continued from previous page)

Experimental data from papers by Ward and Kravchenko were used to construct the phase diagram shown below. Binary mixtures of naphthalene and benzene exhibit a simple eutectic system.



COMPONENTS:		ORIGINAL MEASUREMENTS:		
(1) Naphthalene; C ₁₀ H ₈ ; [91-20-3]		Heric, E.L.; Posey, C.D.		
(2) Benzene; C ₆ H ₆ ; [71-4	43-2]	J. Chem. Eng. Data <u>1964</u> , 9, 35-43.		
VARIABLES:		PREPARED BY:		
T/K = 298		W.E. Acree, Jr.		
EXPERIMENTAL VALUES				
t/°C	*2	<i>x</i> ₁		
25.0	0.7054	0.2946		
METHOD: APPARATUS/PROCEI		INFORMATION SOURCE AND PURITY OF MATERIALS:		
METHOD: APPARATUS/PROCED Constant temperature ba	th, thermometer,	(1) Eastman Chemical Company, Rochester,		
and a precision refract Excess solute and solve bottles and allowed to gentle agitation for se constant temperature. R of saturated solutions solubilities obtained u curve. Attainment of e	ent placed in glass equilibrate with overal days at lefractive indices were measured and sing a calibration	New York, USA, was used as received. (2) Spectroquality, Matheson, Coleman and Bell, USA, was dried over metallic sodium distilled to a final purity of 99.95 %.		
by making repetitive me several additional days	asurements after	ESTIMATED ERRORS:		
		T/K : precision \pm 0.01.		

COMPONENTS :			ORIGINAL MEASUREMENTS:			
<pre>(1) Naphthalene; C₁₀H₈; [91-20-3] (2) Benzene; C₆H₆; [71-43-2] VARIABLES:</pre>		Choi, P.B.; Williams, C.P.; Buehring, K.G.; McLaughlin, E. J. Chem. Eng. Data <u>1985</u> , 30, 403-409.				
		PREPARED B	IY:			
Temperature		W.E. Acre	e, Jr.			
EXPERIMENTAL V	ALUES		ļ			
T/K	<i>x</i> 2	<i>x</i> 1	T/K	*2	×1	
310.35	0.6036	0.3964	334.35	0.3115	0.6885	
315.55	0.5506	0.4494	344.15	0.1578	0.8422	
323.45	0.4609	0.5391				
		AUXILIARY	INFORMATION			
METHOD: APPARA	TUS/PROCEDUR	E	SOURCE AND	PURITY OF M	ATERIALS:	
Constant temperature bath and a precision thermometer. Mixtures of known concentrations sealed in glass ampoules and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly increased. Solubility determined by visual noting the temperature at which the last trace of solid solute disappeared.		 (1) 99.2 %, Eastman Kodiak Chemical Compar Rochester, New York, USA, was passed over activated alumina and then recrys tallized from toluene. (2) Gold Label, 99.9+ %, Aldrich Chemical Company, was used as received. 		rk, USA, was passed umina and then recrys- uene. %, Aldrich Chemical		
		ESTIMATED	ERRORS:	· · · · · · · · · · · · · · · · · · ·		
		$\begin{array}{c} T/K: \text{ prec} \\ x_1: \pm 0.00 \end{array}$	ision <u>+</u> 0.1. 003.			

COMPONENTS:		ORIGINAL MEASUREMENTS:
(1) Naphthalene; C ₁₀ H ₈ ;	[91-20-3]	Chang, W.
(2) Benzene; C ₆ H ₆ ; [71-	43-2]	Ph.D Dissertation, North Dakota State Uni- versity, North Dakota, USA (1969).
VARIABLES:		PREPARED BY:
T/K ≈ 298		W.E. Acree, Jr.
EXPERIMENTAL VALUES		
t/°C	*2	x 1
25.0	0.708	0.292
METHOD: APPARATUS/PROCED		INFORMATION SOURCE AND PURITY OF MATERIALS:
Constant temperature ba thermometer.	ath and a precision	 Purity, source and purification proce- dures not specified.
Mixtures of known conce in glass ampoules and p temperature to equilibr were rotated while bath increased. Solubility d	placed in constant ate. Samples a temperature slowly	(2) Spectroanalyzed, Eastman Organic Chem- ical Company, USA, was used as received.
noting the temperature trace of solid solute d ubilities at 298 K inte experimental values usi 1/T graph.	at which the last lisappeared. Sol- erpolated from	ESTIMATED ERRORS: T/K : precision \pm 0.1. x_1 : \pm 2 % (relative error; compiler).

COMPONENTS:			ORIGINAL MEASUREMENTS:		
 Naphthalene; C₁₀H₈; [91-20-3] Benzene; C₆H₆; [71-43-2] 		McLaughlin, E.; Zainal, H.A.			
		J. Chem.	soc. <u>1959</u> ,	863-867.	
VARIABLES:		PREPARED E	3Y:		
Temperature		W.E. Acre	e, Jr.		
EXPERIMENTAL	VALUES		ļ		<u></u>
T/K	x2	x 1	T/K	<i>x</i> 2	<i>x</i> 1
308.2	0.6234	0.3766	349.0	0.0820	0.9180
318.2	0.5194	0.4806			
320.6	0.4906	0.5094			
336.4	0.2881	0.7119			
		AUXILIARY	INFORMATION	ſ	
METHOD: APPAR	ATUS/PROCEDUR	E	SOURCE AND	PURITY OF M	ATERIALS:
thermometer.	-	and a precision	Unite	d Kingdom, w	British Drug Houses, as passed over an th benzene as eluant.
in glass amp temperature f were rotated increased. Se	oules and pla to equilibrat while bath t olubility det	emperature slowly ermined by visual			ed over sodium wire lled before use.
noting the to	emperature at id solute dis	which the last	ESTIMATED	ERRORS:	
				cision <u>+</u> 0.1. 003 (compile	

102 r		Г		
Components :		ORIGINAL MEASUREMENTS:		
(1) Naphthalene; C ₁₀ H ₈ ;		Ward, H.L.		
(2) Benzene; C ₆ H ₆ ; [71-43-2]		J. Phys. Chem. <u>1926</u> , 30, 1316-1333.		
VARIABLES:		PREPARED BY:		
Temperature		W.E. Acree, Jr.		
EXPERIMENTAL VALUES		<u> </u>		
T/K	*2	*1		
273.2	0.849	0.151		
273.3	0.849	0.151		
276.4	0.840	0.160		
277.7	0.834	0.166		
282.2	0.810	0.190		
287.1	0.782	0.218		
294.1	0.738	0.262		
301.9	0.678	0.322		
303.3	0.667	0.333		
305.9	0.641	0.359		
307.5	0.628	0.372		
311.8	0.587	0.413		
321.1	0.484	0.516		
324.9	0.439	0.561		
333.9	0.317	0.683		
336.9	0.273	0.727		
343.5	0.167	0.833		
	AUXILIARY	INFORMATION		
METHOD: APPARATUS/PROCE	DURE	SOURCE AND PURITY OF MATERIALS:		
Constant temperature bath and a precision thermometer. Solubilities were measured using a dynamic method. Mixtures of known concen- trations were sealed in thick-walled glass tubes and placed in a constant temperature to equilibrate with gentle rotation to thoroughly mix contents. Bath temperature was slowly increased and solu- bility visually determined by noting the temperature at which the last trace of solid solute disappeared. Measurements repeated several times to verify results.		 (1) Purity and source not specified, was recrystallized several times from meth- anol to give a melting temperature of 80.05-80.10 °C. (2) Purity not specified, synthesized by 		
		authors, recrystallized several times times until freezing point showed no further rise in temperature. Melting point temperature of sample was 5.5 °C.		
		ESTIMATED ERRORS: T/K : precision \pm 0.1. x_1 : to 3 significant figs. (compiler).		

COMPONENTS :		ORIGINAL ME	EASUREMENTS :	_	
(1) Naphthalene; C ₁₀ H ₈ ;	[91-20-3]	Kravchenko, V.M.			
(2) Benzene; C ₆ H ₆ ; [71-4		Zhur. Fiz. Khim. <u>1939</u> , 13, 133-145.			
VARIABLES:		PREPARED BY	[1		
Temperature		W.E. Acree, Jr.			
EIPERIMENTAL VALUES	· · · · · · · · · · · · · · · · · · ·				
T/K	x 2	x 1	Solid Phase		
276.5	0.969	0.031	(2)		
274.3	0.934	0.066	(2)		
273.2	0.919	0.081	(2)		
272.2	0.905	0.095	(2)		
270.7	0.880	0.120	(2)		
269.6	0.866	0.134	Eutectic		
269.7	0.859	0.141	(1)		
277.2	0.831	0.169	(1)		
283.8	0.793	0.207	(1)		
290.4	0.752	0.248	(1)		
296.2	0.711	0.289	(1)		
301.7	0.668	0.332	(1)		
307.4	0.620	0.380	(1)		
312.8	0.572	0.428	(1)		
317.7	0.524	0.476	(1)		
322.2	0.469	0.531	(1)		
327.2	0.411	0.589	(1)		
331.4	0.352	0.648	(1)		
335.4	0.289	0.711	(1)		
340.2	0.224	0.776	(1)		
344.2	0.155	0.845	(1)		
349.7	0.079	0.921	(1)		
343.7	0.079	0.921	(-)		
	AUXILIARY	INFORMATION			
METHOD: APPARATUS/PROCED	URE	SOURCE AND	PURITY OF MATERIALS:		
Phase diagram was deter thermal analysis method detail in V.M. Kravchen U.S.S.P. 1939, 13, 133	(described in ko, J. Phys. Chem.		, and chemical source were not Fied in paper, was recrystalliz a use.	ed	
U.S.S.R. <u>1939</u> , 13, 133 visual observations.	,, suppremented by	(2) Purity specif before	y and chemical source were not fied in paper, was distilled a use.		
		ESTIMATED H	ERRORS :		
		$\begin{array}{c c} T/K: & \text{precise} \\ x_1: \pm 0.00 \end{array}$	ision <u>+</u> 0.2 (Compiler). 2 (Compiler).		
		<u> </u>			

COMPONENTS:

- (1) Naphthalene; C₁₀H₈; [91-20-3]
- (2) Methylbenzene; C₇H₈; [108-88-3]

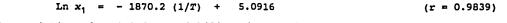
EVALUATOR:

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W.E. Acree, Jr.
Department of Chemistry
University of North Texas
Denton, Texas 76203-5068 (USA)
August, 1994
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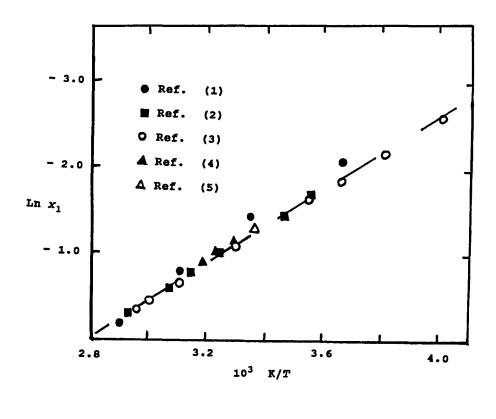
CRITICAL EVALUATION:

Naphthalene solubilities in methylbenzene were retrieved from papers by Speyers (1), Ward (2), Kravchenko (3), Acree et al. (4), Heric and Posey (5), and Chang (6). The first three studies report values at several temperatures, Acree et al. determined values at 303, 308 and 313 K, and both Heric and Posey and Chang measured the mole fraction solubility at the single temperature of 298 K. There is no a prior reason to exclude any of the six studies from the critical evaluation.

Regressional analysis of the experimental data as $\ln x_1$ versus 1/T yielded the following mathematical relationship:



for variation of naphthalene solubility with absolute temperature (see graph below).



Graphical plot of Ln x_1 versus 1/T

REFERENCES

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    Speyers, C.L. Am. J. Sci. <u>1902</u>, 14, 293-302.
    Ward, H.L. J. Phys. Chem. <u>1926</u>, 30, 1316-1333.
    Kravchenko, V.M. Zhur. Fiz. Khim. <u>1939</u>, 13, 133-145.
    Acree, W.E., Jr.; Pontikos, N.M.; Judy, C.L. Int. J. Pharm. <u>1986</u>, 31, 225-230.
    Heric, E.L.; Posey, C.D. J. Chem. Eng. Data <u>1964</u>, 9, 35-43.
    Chang, W., Ph.D. Dissertation, North Dakota State University, North Dakota, 1969.
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and a precision refractometer. New York, USA, was used as received. Excess solute and solvent placed in glass (2) ACS Grade, Matheson, Coleman and Bell					
(2) Methylbenzene; C ₇ H ₈ ; [108-88-3] J. Chem. Eng. Data <u>1964</u> , 9, 35-43. VARIABLES: PREPARED BY: T/K = 298 W.E. Acree, Jr. EIPERIMENTAL VALUES x1 25.0 0.7080 AUXILIARY INFORMATION METHOD: APPARATUS/PROCEDURE Constant temperature bath, thermometer, and a precision refractometer. Excess solute and solvent placed in glass bottles and allowed to equilibrate with gentle agitation for several days at constant temperature. Refractive indices of saturated solutions were measured and solubilities obtained using a calibration curve. Attainment of equilibrium verified by making repetitive measurements after	COMPONENTS:		ORIGINAL MEASUREMENTS:		
VARIABLES: PREPARED BY: T/K = 298 W.E. Acree, Jr. EXPERIMENTAL VALUES t/°C t/°C x2 25.0 0.7080 AUXILIARY INFORMATION RETHOD: APPARATUS/PROCEDURE Constant temperature bath, thermometer, and a precision refractometer. Excess solute and solvent placed in glass bottles and allowed to equilibrate with gentle agitation for several days at constant temperature. Refractive indices of saturated solutions were measured and solubilities obtained using a calibration curve. Attainment of equilibrium verified by making repetitive measurements after	(1) Naphthalene; C ₁₀ H ₈ ; [91-20-3]		Heric, E.L.; Posey, C.D.		
T/K = 298 W.E. Acree, Jr. EIPERIMENTAL VALUES t/°C x2 t/°C x2 x1 25.0 0.7080 0.2920 AUXILIARY INFORMATION METHOD: APPARATUS/PROCEDURE Constant temperature bath, thermometer, and a precision refractometer. Excess solute and solvent placed in glass bottles and allowed to equilibrate with gentle agitation for several days at constant temperature. Refractive indices of saturated solutions were measured and solubilities obtained using a calibration curve. Attainment of equilibrium verified by making repetitive measurements after SURCE AND PURITY OF MATERIALS:	(2) Methylbenzene; C ₇ H ₈ ; [108-88-3]		J. Chem. Eng. Data <u>1964</u> , 9, 35-43.		
EIPERIMENTAL VALUES t/°C x2 x1 25.0 0.7080 0.2920 AUXILIARY INFORMATION METHOD: APPARATUS/PROCEDURE SOURCE AND PURITY OF MATERIALS: Constant temperature bath, thermometer, and a precision refractometer. Excess solute and solvent placed in glass bottles and allowed to equilibrate with gentle agitation for several days at constant temperature. Refractive indices of saturated solutions were measured and solubilities obtained using a calibration curve. Attainment of equilibrium verified by making repetitive measurements after (2) ACS Grade, Matheson, Coleman and Belwas dried over phosphorous pentoxide and distilled to a final purity of 99.99 %.	VARIABLES:		PREPARED BY:		
t/°Cx2x125.00.70800.2920AUXILIARY INFORMATIONMETHOD: APPARATUS/PROCEDURESOURCE AND PURITY OF MATERIALS:Constant temperature bath, thermometer, and a precision refractometer.SOURCE AND PURITY OF MATERIALS:Constant temperature bath, thermometer, and a precision refractometer.(1) Eastman Chemical Company, Rochester, New York, USA, was used as received.Excess solute and solvent placed in glass 	T/K = 298		W.E. Acree, Jr.		
25.0 0.7080 0.2920 AUXILIARY INFORMATION METHOD: APPARATUS/PROCEDURE Constant temperature bath, thermometer, and a precision refractometer. Excess solute and solvent placed in glass bottles and allowed to equilibrate with gentle agitation for several days at constant temperature. Refractive indices of saturated solutions were measured and solubilities obtained using a calibration curve. Attainment of equilibrium verified by making repetitive measurements after	EXPERIMENTAL VALUES		<u> </u>		
AUXILIARY INFORMATION METHOD: APPARATUS/PROCEDURE SOURCE AND PURITY OF MATERIALS: Constant temperature bath, thermometer, and a precision refractometer. (1) Eastman Chemical Company, Rochester. New York, USA, was used as received. Excess solute and solvent placed in glass bottles and allowed to equilibrate with gentle agitation for several days at Constant temperature. Refractive indices of saturated solutions were measured and solubilities obtained using a calibration curve. Attainment of equilibrium verified by making repetitive measurements after (2) ACS Grade, Matheson, Coleman and Bel was dried over phosphorous pentoxide and distilled to a final purity of 99.99 %.	t/°C	<i>x</i> 2	<i>x</i> 1		
METHOD: APPARATUS/PROCEDURESOURCE AND PURITY OF MATERIALS:Constant temperature bath, thermometer, and a precision refractometer.(1) Eastman Chemical Company, Rochester, New York, USA, was used as received.Excess solute and solvent placed in glass bottles and allowed to equilibrate with gentle agitation for several days at constant temperature. Refractive indices of saturated solutions were measured and solubilities obtained using a calibration curve. Attainment of equilibrium verified by making repetitive measurements afterSOURCE AND PURITY OF MATERIALS: (1) Eastman Chemical Company, Rochester, New York, USA, was used as received.(2) ACS Grade, Matheson, Coleman and Bel was dried over phosphorous pentoxide and distilled to a final purity of 99.99 %.	25.0	0.7080	0.2920		
 Constant temperature bath, thermometer, and a precision refractometer. Excess solute and solvent placed in glass bottles and allowed to equilibrate with gentle agitation for several days at constant temperature. Refractive indices of saturated solutions were measured and solubilities obtained using a calibration curve. Attainment of equilibrium verified by making repetitive measurements after (1) Eastman Chemical Company, Rochester, New York, USA, was used as received. (1) Eastman Chemical Company, Rochester, New York, USA, was used as received. (2) ACS Grade, Matheson, Coleman and Belwas dried over phosphorous pentoxide and distilled to a final purity of 99.99 %. 		AUXILIARY	INFORMATION		
 and a precision refractometer. Excess solute and solvent placed in glass bottles and allowed to equilibrate with gentle agitation for several days at constant temperature. Refractive indices of saturated solutions were measured and solubilities obtained using a calibration curve. Attainment of equilibrium verified by making repetitive measurements after New York, USA, was used as received. (2) ACS Grade, Matheson, Coleman and Bel was dried over phosphorous pentoxide and distilled to a final purity of 99.99 %. 	METHOD: APPARATUS/PROCE	DURE	SOURCE AND PURITY OF MATERIALS:		
bottles and allowed to equilibrate with gentle agitation for several days at constant temperature. Refractive indices of saturated solutions were measured and solubilities obtained using a calibration curve. Attainment of equilibrium verified by making repetitive measurements after			 Eastman Chemical Company, Rochester, New York, USA, was used as received. 		
	bottles and allowed to gentle agitation for s constant temperature. of saturated solutions solubilities obtained	equilibrate with everal days at Refractive indices were measured and using a calibration			
			ESTIMATED ERRORS:		
T/K: precision \pm 0.01. x_1 : precision \pm 0.0005.					

COMPONENTS:	·	ORIGINAL MEASUREMENTS:
(1) Naphthalene; C ₁₀ H ₈	; [91-20-3]	Chang, W.
(2) Methylbenzene; C ₇ H	4 ₈ ; [108-88-3]	Ph.D Dissertation, North Dakota State Uni- versity, North Dakota, USA (1969).
VARIABLES:		PREPARED BY:
T/K = 298		W.E. Acree, Jr.
EXPERIMENTAL VALUES		·
t/°C	<i>x</i> 2	×1
25.0	0.708	0.292
METHOD: APPARATUS/PROCI		INFORMATION SOURCE AND PURITY OF MATERIALS:
Constant temperature) thermometer.		 (1) Purity, source and purification proce- dures not specified.
Mixtures of known con in glass ampoules and temperature to equili were rotated while bat increased. Solubility	placed in constant prate. Samples th temperature slowly	(2) Reagent Grade, Eastman Organic Chem- ical, USA, was used as received.
noting the temperature trace of solid solute ubilities at 298 K int experimental values us 1/T graph.	e at which the last disappeared. Sol- terpolated from	ESTIMATED ERRORS: T/K : precision \pm 0.1. x_1 : \pm 2 % (relative error; compiler).

COMPONENTS: (1) Naphthalene; C ₁₀ H ₈ ; [91-20-3] (2) Methylbenzene; C ₇ H ₈ ; [108-88-3] VARIABLES:		ORIGINAL MEASUREMENTS: Ward, H.L.			
		PREPARED BY:			
		Temperature			W.E. Acre
EXPERIMENTAL	VALUES		ļ		······································
T/K	*2	*1	T/K	<i>x</i> 2	*1
281.4	0.817	0.183	317.1	0.535	0.465
290.5	0.765	0.235	325.3	0.439	0.561
308.0 0.630 0.370		340.6	0.263	0.737	
		AUXILIARY	INFORMATION	1	
METHOD: APPAR	TUS/PROCEDUF	E	SOURCE ANI	D PURITY OF I	MATERIALS:
Constant temperature bath and a precision thermometer. Mixtures of known concentrations sealed in glass tubes and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly increased. Solubility determined by visual noting the temperature at which the last trace of solid solute disappeared. Meas-		 (1) Purity and source not specified, was recrystallized several times from met anol to give a melting temperature of 80.05-80.10 °C. (2) Analyzed Grade, source not given, wat fractionally distilled before use. 		everal times from meth- elting temperature of source not given, was	
		Iract	.ionally dist	TITEN DELOTE ABE.	
		ESTIMATED	ERRORS:		
		appeared. Meas- times to verify	T/K: precision \pm 0.1. x ₁ : to 3 significant figs. (compiler).		

COMPONENTS:			ORIGINAL N	EASUREMENTS :	
<pre>(1) Naphthalene; C₁₀H₈; [91-20-3] (2) Methylbenzene; C₇H₈; [108-88-3] VARIABLES: Temperature</pre>		Speyers, C.L.			
		Am. J. Sci. <u>1902</u> , 14, 293-302.			
		PREPARED I	BY:		
		W.E. Acre	ee, Jr.		
EXPERIMENTAL	VALUES				
T/K	<i>x</i> 2	×1	T/K	×2	<i>x</i> 1
273.2	0.8718	0.1282	342.7	0.1557	0.8443
298.4	0.7674	0.2326			
319.5	0.5263	0.4737			
<u></u>		AUXILIARY	INFORMATION		
METHOD: APPAR	ATUS/PROCEDURI	E	SOURCE AND	PURITY OF M	ATERIALS:
Experimental procedure only marginally described by author. Excess solute and solvent were equilibrated in a constant temperature water bath for between 10-30 minutes. Saturated solution was with- drawn through a coarse filter and anal- yzed by specific gravity. Author noted that evaporation to dryness and weighing		 (1) Purity not given, Kahlbaum, was recrystallized from alcohol to a melting point temperature of 80.1 °C. (2) Purity not given, Kahlbaum, was distilled before use. 		ohol to a melting of 80.1 °C. Kahlbaum, was dis-	
	was subject to			ision <u>+</u> 0.1.	rror, compiler).

COMPONENTS :		ORIGINAL ME	ASUREMENTS:		
(1) Naphthalene; C ₁₀ H ₈ ;	(91-20-31	Kravchenko			
 (2) Methylbenzene; C₇H 			Zhur. Fiz. Khim. <u>1939</u> , 13, 133-145.		
(2) Mechylbenzene; C7n	3, [109-90-9]	2//11/20	2010F. FIZ. KULM. <u>1939</u> , 13, 133-143.		
VARIABLES:		PREPARED BY	3		
Temperature		W.E. Acree	, Jr.		
EXPERIMENTAL VALUES					
T/K	×2	* 1	Solid Phase		
177.7	0.988	0.012	(2)		
177.2	0.978	0.022	Eutectic		
188.2	0.975	0.025	(1)		
200.7	0.971	0.029	(1)		
214.2	0,963	0.037	(1)		
217.7	0.956	0.044	(1)		
227.1	0.948	0.052	(1)		
246.6	0.925	0.075	(1)		
261.9	0.887	0.113	(1)		
273.0	0.845	0.155	(1)		
281.2	0.806	0.194	(1)		
289.1	0.763	0.237	(1)		
296.2	0.720	0.280	(1)		
303.2	0.675	0.325	(1)		
307.5	0.628	0.372	(1)		
313.4	0.587	0.413	(1)		
317.7	0.531	0.469	(1)		
321.4	0.483	0.517	(1)		
331.2	0.373	0.627	(1)		
338.2	0.256	0.744	(1)		
346.4	0.121	0.879	(1)		
Author report	s eutectic point	occurs at $x_1 = 0$.	.022 and $T/K = 177.2$.		
······································	AUXILI	ARY INFORMATION			
ETHOD: APPARATUS/PROCE	DURE	SOURCE AND I	PURITY OF MATERIALS:		
Phase diagram was determined using a thermal analysis method (described in detail in V.M. Kravchenko, J. Phys. Chem. U.S.S.R. <u>1939</u> , 13, 133), supplemented by visual observations.		. specif: before	and chemical source were not ied in paper, was recrystallized use.		
		(2) Purity	and chemical source were not ied in paper, was distilled use.		
		ESTIMATED E	RRORS :		
			sion <u>+</u> 0.2 (Compiler). 2 (Compiler).		

1	0	8
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COMPONENTS:		ORIGINAL MEASUREMENTS:			
<pre>(1) Naphthalene; C₁₀H₈; [91-20-3] (2) Methylbenzene; C₇H₈; [108-88-3] VARIABLES:</pre>		Acree, W.E., Jr.; Pontikos, N.M.; Judy, C.L. Int. J. Pharm. <u>1986</u> , 31, 225-230. PREPARED BY:			
					T/K = 303, 308 and 313
EXPERIMENTAL	VALUES		•		
t/°C	×2	×1	t/°C	*2	* 1
30.0	0.6709	0.3291	40.0	0.5784	0.4216
35.0	0.6289	0.3711			
			INFORMATION		
METHOD: APPAR	ATUS/PROCEDUR	E	SOURCE AND	PURITY OF N	ATERIALS:
Constant temperature bath, calorimetric thermometer, and gas chromatograph.		 (1) 99 %, Aldrich Chemical Company, Milwaukee, Wisconsin, USA, recrystal- lized 3 times from methanol. 			
Excess solute and solvent placed in amber glass bottles and allowed to equilibrate for several days at constant temperature. Attainment of equilibrium verified by repetitive measurements. Aliquots of sat- urated solutions transferred through a coarse filter into tared volumetric flasks, weighed and diluted with cyclo- hexane. Concentrations determined chromatographically.		was s	tored over n	ich Chemical Company, molecular sieves and y before use.	
		ESTIMATED $T/K: \pm 0.$		error).	

COMPONENTS:		ORIGINAL MEASUREMENTS:			
(1) Naphthalene; C ₁₀ H ₈ ; [91-20-3]		Heric, E.L.; Posey, C.D.			
(2) Ethylbenzene; C ₈ H ₁₀ ;	[100-41-4]	J. Chem. Eng. Data <u>1964</u> , 9, 35-43. PREPARED BY:			
VARIABLES:					
<i>T</i> /K = 298		W.E. Acree, Jr.			
EXPERIMENTAL VALUES		<u></u>			
t/°C	*2	×1			
25.0	0.7074	0.2926			
METHOD: APPARATUS/PROCED	URE	SOURCE AND PURITY OF MATERIALS:			
METHOD: APPARATUS/PROCEDURE Constant temperature bath, thermometer,		(1) Eastman Chemical Company, Rochester,			
and a precision refract		New York, USA, was used as received.			
Excess solute and solvent placed in glass bottles and allowed to equilibrate with gentle agitation for several days at constant temperature. Refractive indices of saturated solutions were measured and solubilities obtained using a calibration curve. Attainment of equilibrium verified		(2) ACS Grade, Matheson, Coleman and Bell, USA, was dried over calcium hydride and distilled to a final purity of 99.8 %.			
gentle agitation for se constant temperature. R of saturated solutions solubilities obtained u curve. Attainment of e	efractive indices were measured and sing a calibration quilibrium verified				
gentle agitation for se constant temperature. R of saturated solutions solubilities obtained u	efractive indices were measured and sing a calibration quilibrium verified asurements after	ESTIMATED ERRORS:			

COMPONENTS:

(1) Naphthalene; C₁₀H₈; [91-20-3]
 (2) Ethylbenzene; C₈H₁₀; [100-41-4]

EVALUATOR:

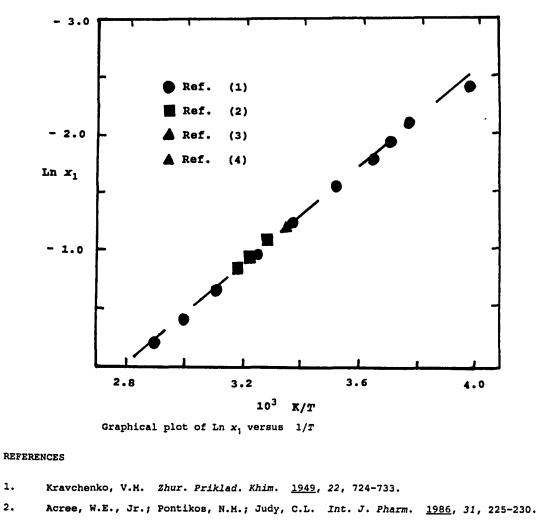
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W.E. Acree, Jr.
Department of Chemistry
University of North Texas
Denton, Texas 76203-5068 (USA)
August, 1994
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CRITICAL EVALUATION:

Naphthalene solubilities in ethylbenzene were retrieved from papers by Kravchenko (1), Acree et al. (2), Heric and Posey (3), and Chang (4). The first study reports values at several temperatures, Acree et al. determined values at 303, 308 and 313 K, and both Heric and Posey and Chang measured only the mole fraction solubility at 298 K. There is no a prior reason to exclude any of the four studies from the critical evaluation.

Regressional analysis of the experimental data as $\ln x_1$ versus 1/T yielded the following mathematical relationship:

 $\text{Ln } x_1 = -2162.0 \ (1/T) + 6.0544 \qquad (r = 0.9979)$ for variation of naphthalene solubility with absolute temperature (see graph below).



3. Heric, E.L.; Posey, C.D. J. Chem. Eng. Data <u>1964</u>, 9, 35-43.

4. Chang, W., Ph.D. Dissertation, North Dakota State University, North Dakota, 1969.

Components:	ORIGINAL MEASUREMENTS:		
(1) Naphthalene; C ₁₀ H ₈ ; [91-20-3]	Chang, W. Ph.D Dissertation, North Dakota State Uni- versity, North Dakota, USA (1969).		
(2) Ethylbenzene; C ₈ H ₁₀ ; [100-41-4]			
VARIABLES:	PREPARED BY:		
<i>T/</i> K = 298	W.E. Acree, Jr.		
EXPERIMENTAL VALUES			
t/°C x ₂	×1		
25.0 0.711	0,289		
AUXILIARY	INFORMATION		
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:		
Constant temperature bath and a precision thermometer.	 Purity, source and purification proce- dures not specified. 		
Mixtures of known concentrations sealed in glass ampoules and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly increased. Solubility determined by visual	(2) Reagent Grade, Eastman Organic Chem- ical, USA, was used as received.		
noting the temperature at which the last trace of solid solute disappeared. Sol-	ESTIMATED ERRORS:		
ubilities at 298 K interpolated from experimental values using $\ln x_1$ versus $1/T$ graph.	T/K: precision \pm 0.1. x ₁ : \pm 2 % (relative error; compiler).		

COMPONENTS:		ORIGINAL MEASUREMENTS:								
<pre>(1) Naphthalene; C₁₀H₈; [91-20-3] (2) Ethylbenzene; C₈H₁₀; [100-14-4] VARIABLES: T/K = 303, 308 and 313</pre>		Acree, W.E., Jr.; Pontikos, N.M.; Judy, C.L. Int. J. Pharm. <u>1986</u> , 31, 225-230. PREPARED BY: W.E. Acree, Jr.								
					EXPERIMENTAL	VALUES				
					t/°C	*2	×1	t/°C	×2	<i>x</i> 1
30.0	0.6712	0.3288	40.0	0.5767	0.4233					
35.0	0.6295	0.3705								
		AUXILIARY	INFORMATION	<u> </u>						
METHOD: APPAR	ATUS/PROCEDUR	E	SOURCE AND	PURITY OF M	ATERIALS:					
Constant temperature bath, calorimetric thermometer, and gas chromatograph.		(1) 99 %, Aldrich Chemical Company, Milwaukee, Wisconsin, USA, recrystal- lized 3 times from methanol.								
Excess solute and solvent placed in amber glass bottles and allowed to equilibrate for several days at constant temperature. Attainment of equilibrium verified by repetitive measurements. Aliquots of sat- urated solutions transferred through a		store	Aldrich Che d over molec d shortly be	mical Company, was ular sieves and dis- fore use.						
urated solutions transferred through a coarse filter into tared volumetric flasks, weighed and diluted with cyclo- hexane. Concentrations determined chromatographically.			ESTIMATED $T/K: \pm 0.$ $x_1: \pm 1$ %		rror).					

Components:	ORIGINAL MEASUREMENTS:		
(1) Naphthalene; C ₁₀ H ₈ ; [91-20-3]	Kravchenko, V.M. Zhur. Priklad. Khim. <u>1949</u> , 22, 724-733. PREPARED BY: W.E. Acree, Jr.		
(2) Ethylbenzene; C ₈ H ₁₀ ; [100-41-4]			
VARIABLES:			
Temperature			
XPERIMENTAL VALUES	- 		
T/K x ₂	×i	Solid Phase	
178.8 1.000	0.000	(2)	
179.2 0.986	0.0142	(2)	
178.2 0.983	0.0174	Eutectic	
186.2 0.979	0.0210	(1)	
203.2 0.974	0.0258	(1)	
221.7 0.965	0.0351	(1)	
241.7 0.939	0.0613	(1)	
251.2 0.914	0.0860	(1)	
265.2 0.881	0.119	(1)	
270.7 0.860	0.140	(1)	
274.7 0.837	0.163	(1)	
283.4 0.793	0.207	(1)	
296.2 0.713	0.287	(1)	
307.2 0.623	0.377	(1)	
320.7 0.489	0.511	(1)	
332.2 0.331	0.669	(1)	
343.7 0.168	0.832	(1)	
353.2 0.000	1.000	(1)	
Author reports eutectic occurs at			
AUXILIARY	INFORMATION		
ETHOD: APPARATUS/PROCEDURE	SOURCE AND P	URITY OF MATERIALS:	
Phase diagram was determined using a thermal analysis method (described in detail in V.M. Kravchenko, J. Phys. Chem. U.S.S.R. <u>1939</u> , 13, 133), supplemented by visual observations.	(2) Purity specifi	and chemical source were not ed in paper, was distilled	
	before		
		RORS: ion <u>+</u> 0.2 (Compiler). (Compiler).	

COMPONENTS:		ORIGINAL ME	asurements:		
<pre>(1) Naphthalene; C₁₀H₈; [91-20-3] (2) 1,2-Dimethylbenzene; C₈H₁₀; [95-47-6] VARIABLES:</pre>		Kravchenko, V.M. Zhur. Priklad. Khim. <u>1949</u> , 22, 724-733.			
					2mut . FIIA
		PREPARED BY	۲۶ ۲۶		
		Temperature		W.E. Acree, Jr.	
EXPERIMENTAL VALUES			<u> </u>		
T/K	<i>x</i> 2	x 1	Solid Phase		
247.7	1.000	0.000	(2)		
246.2	0.963	0.037	(2)		
245.7	0.945	0.055	(2)		
245.2	0.934	0.066	Eutectic		
249.2	0.926	0.074	(1)		
259.2	0.899	0.101	(1)		
272.7	0.848	0.152	(1)		
282.7	0.797	0.203	(1)		
298.7	0.689	0.311	(1)		
309.2	0.594	0.406	(1)		
313.9	0.548	0.452	(1)		
318.5	0.493	0.507	(1)		
326.2	0.401	0.599	(1)		
332.2	0.316	0.684	(1)		
340.2	0.198	0.802	(1)		
346.4	0.103	0.897	(1)		
353.2	0.000	1.000	(1)		
555.2	01000	11000	(-)		
	AUXILIARY	INFORMATION	·····		
METHOD: APPARATUS/PROCED	URE	SOURCE AND	PURITY OF MATERIALS:		
Phase diagram was determined using a thermal analysis method (described in detail in V.M. Kravchenko, J. Phys. Chem.		 Purity and chemical source were not specified in paper, was recrystallized before use. 			
U.S.S.R. <u>1939</u> , <i>13</i> , 133 visual observations.), supplemented by	(2) Purity and chemical source were not specified in paper, was distilled before use.			
		ESTIMATED E	RRORS :		
			T/K: precision \pm 0.2 (Compiler). $x_1: \pm 0.002$ (Compiler).		

Components:		ORIGINAL ME	EASUREMENTS :		
<pre>(1) Naphthalene; C₁₀H₈; [91-20-3] (2) 1,3-Dimethylbenzene; C₈H₁₀; [108-38-3] VARIABLES: Temperature</pre>		Kravchenko, V.M.			
		Zhur. Fiz.	Zhur. Fiz. Khim. <u>1939</u> , 13, 989-1000.		
		PREPARED BY	[]		
		W.E. Acree	ə, Jr.		
SIPERIMENTAL VALUES					
T/K	* 2	* 1	Solid Phase		
224.7	0.975	0.025	(2)		
224.2	0.964	0.036	Eutectic		
231.0	0.958	0.042	(1)		
239.7	0.941	0.059	(1)		
252.7	0.916	0.084	(1)		
265.0	0.876	0.124	(1)		
277.2	0.828	0.172	(1)		
285.7	0.785	0.215	(1)		
292.8	0.738	0.262	(1)		
298.2	0.695	0.305	(1)		
305.2	0.648	0.352	(1)		
310.9	0.595	0.405	(1)		
315.2	0.549	0.451	(1)		
324.7	0.447	0.553	(1)		
331.2	0.354	0.646	(1)		
339.2	0.231	0.769	(1)		
346.0	0.117	0.883	(1)		
			x ₁ = 0.036 and T/K = 224.2.		
	AUXILIAR	Y INFORMATION			
ETHOD: APPARATUS/PROCE	DURE	SOURCE AND	PURITY OF MATERIALS:		
Phase diagram was determined using a thermal analysis method (described in detail in V.M. Kravchenko, J. Phys. Chem. U.S.S.R. <u>1939</u> , 13, 133), supplemented by		(1) Purity and chemical source were not specified in paper, was recrystallized before use.			
thermal analysis method detail in V.M. Kravcher U.S.S.R. <u>1939</u> , 13, 13	d (described in nko, J. Phys. Chem.	before	<pre>ied in paper, was recrystallized use.</pre>		
thermal analysis method detail in V.M. Kravches	d (described in nko, J. Phys. Chem.	before (2) Purity specif before	<pre>ied in paper, was recrystallized use. and chemical source were not ied in paper, was distilled use.</pre>		
thermal analysis method detail in V.M. Kravcher U.S.S.R. <u>1939</u> , 13, 13	d (described in nko, J. Phys. Chem.	before (2) Purity specif before ESTIMATED E	<pre>ied in paper, was recrystallized use. and chemical source were not ied in paper, was distilled use.</pre>		

COMPONENTS:		ORIGINAL MEASUREMENTS:						
<pre>(1) Naphthalene; C₁₀H₈; [91-20-3] (2) 1,4-Dimethylbenzene; C₈H₁₀; [106-42-3] VARIABLES: Temperature</pre>		Kravchenko, V.M. Zhur. Priklad. Khim. <u>1949</u> , 22, 724-733. PREPARED BY:						
					W.E. Acree	W.E. Acree, Jr.		
					EXPERIME	NTAL VALUES		
			T/K	*2	×1	Solid Phase		
	286.5	1.000	0.000	(2)				
	283.8	0.949	0.051	(2)				
	281.2	0.893	0.107	(2)				
	279.2	0.850	0.150	(2)				
	277.4	0.818	0.182	Eutectic				
	281.2	0.799	0.201	(1)				
	290.5	0.746	0.254	(1)				
	297.2	0.698	0.302	(1)				
	310.2	0.590	0.410	(1)				
	318.4	0.497	0.503	(1)				
	325.0	0.406	0.594	(1)				
	333.2	0.299	0.701	(1)				
	339.8	0.203	0.797	(1)				
	347.2	0.098	0.902	(1)				
	353.2	0.000	1.000	(1)				
			RY INFORMATION					
	APPARATUS/PROCE			PURITY OF MATERIALS:				
thermal detail : U.S.S.R	analysis metho in V.M. Kravche . <u>1939</u> , 13, 13	ermined using a od (described in enko, J. Phys. Chem. 33), supplemented by	specif before					
visual d	observations.	-	(2) Purity specif	(2) Purity and chemical source were not specified in paper, was distilled before use.				
			ESTIMATED E	RRORS :				
		T/K: precision \pm 0.2 (Compiler). x_1 : \pm 0.002 (Compiler).						

Components :		ORIGINAL MEASUREMENTS:		
<pre>(1) Naphthalene; C₁₀H₈; [91-20-3] (2) Biphenyl; C₁₂H₁₀; [92-52-4] VARIABLES:</pre>		Lee, H.H.;	Warner, J.C.	
		J. Am. Chem. Soc. <u>1935</u> , 57, 318-321. PREPARED BY:		
SIPERIMENTAL VALUES				
T/K	*2	<i>x</i> 1	Solid Phase	
342.2	1.000	0.000	(2)	
336.7	0.898	0.102	(2)	
331.0	0.806	0.194	(2)	
323.5	0.700	0.300	(2)	
321.0	0.657	0.343	(2)	
316.1	0.600	0.400	(2)	
315.7	0.573	0.427	(2)	
313.0	0.556	0.444	(2)	
312.8	0.555	0.445		
312.9	0.553	0.447	(1)	
313.2	0.552	0.448	(1)	
313.0	0.550	0.450	(1)	
314.2	0.541	0.459	(1)	
315.7	0.526	0.474	(1) -	
318.6	0.500	0.500	(1)	
322.8	0.449	0.551	(1)	
326.8	0.400	0.600	(1)	
327.5	0.393	0.607	(1)	
334.3	0.303	0.697	(1)	
334.0	0.300	0.700	(1)	
339.3	0.230	0.770	(1)	
353.3	0.000	1.000	(1)	
ETHOD: APPARATUS/PROCE		INFORMATION	URITY OF MATERIALS:	
Constant temperature ba			Purity, Eastman Chemicals, was	
thermometer. Mixtures of known conce in glass ampoules and y temperature to equiliby were rotated while bath	entrations sealed placed in constant rate. Samples n temperature slowly	(2) Highest	allized.	
increased. Solubility of noting the temperature	at which the last	ESTIMATED ER	RORS:	
noting the temperature at which the last trace of solid solute disappeared.		$T/K: \text{ precis} x_1: \pm 0.001$		

		ORIGINAL MEASUREMENTS:		
<pre>(1) Naphthalene; C₁₀H₈; [91-20-3] (2) 1,2-Diphenylethane; C₁₄H₁₄; [103-29-7]</pre>		Lee, H.H.; Warner, J.C. J. Am. Chem. Soc. <u>1935</u> , 57, 318-321.		
Temperature		W.E. Acree, Jr.		
EXPERIMENTAL VALUES		<u></u>		
T/K	*2	x 1	Solid Phase	
324.5	1.000	0.000	(2)	
320.2	0.900	0.100	(2)	
315.5	0.799	0.201	(2)	
310.7	0.701	0.299	(2)	
307.9	0.649	0.351	(2)	
306.1	0.620	0.380	(2)	
305.7	0.614	0.386	Eutectic	
306.2	0.610	0.390	(1)	
309.7	0.580	0.420	(1)	
318.6	0.490	0.510	(1)	
327.1	0.390	0.610	(1)	
339.6	0.228	0.772	(1)	
341.3	0.199	0.801	(1)	
353.3	0.000	1.000	(1)	
		INFORMATION		
	DURE	SOURCE AND	PURITY OF MATERIALS:	
Constant temperature ba thermometer.	DURE ath and a precision	SOURCE AND (1) Highes		
Constant temperature by thermometer. Mixtures of known conce in glass ampoules and p temperature to equilib were rotated while bath	DURE ath and a precision entrations sealed placed in constant rate. Samples h temperature slowly	SOURCE AND (1) Highes recrys (2) Highes	t Purity, Eastman Chemicals, was tallized	
ETHOD: APPARATUS/PROCES Constant temperature bathermometer. Mixtures of known conce in glass ampoules and p temperature to equilibs were rotated while bath increased. Solubility of noting the temperature trace of solid solute of	DURE ath and a precision entrations sealed placed in constant rate. Samples h temperature slowly determined by visual at which the last	SOURCE AND (1) Highes recrys (2) Highes	t Purity, Eastman Chemicals, was tallized t Purity, Eastman Chemicals, was tallized.	

COMPONENTS:	omponents :		ORIGINAL	MEASUREMENTS	
 Naphthalene; C₁₀H₈; [91-20-3] 1,2,3,4-Tetrahydronaphthalene; C₁₀H₁₂; [119-64-2] 		Coon, J.E.; Auwaerter, J.E.; McLaughlin, E			
		Fluid Phase Equilibr. <u>1989</u> , 44, 305-345.			
ARIABLES:		PREPARED BY:			
Temperature	Temperature		W.E. Acro	ee, Jr.	
EXPERIMENTAL V	VALUES		· [
T/K	x2	×1	T/K	<i>x</i> 2	x ₁
306.6	0.6365	0.3635	330.1	0.3728	0.6272
311.7	0.5859	0.4141			
318.4	0.5180	0.4820			
323.7	0.4494	0.5506			
		AUXILIARY	INFORMATIO	Ň	
METHOD: APPARI	ATUS/PROCEDUR	E	SOURCE AN	D PURITY OF M	ATERIALS:
Constant temperature bath and a precision thermometer. Mixtures of known concentrations sealed in glass ampoules and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly increased. Solubility determined by visual		wauko over then (2) 99.6- store	ee, Wisconsin an activated recrystalliz + %, Aldrich	themical Company, Mil- a, USA, was passed alumina column and ed from solution. Chemical Company, was ular sieves to remove	
noting the te	emperature at	which the last	ESTIMATED	ERRORS:	
trace of sol	ra solute dis	appeared.	$\frac{T/K: \text{ pred}}{x_1: \pm 0.0}$	cision <u>+</u> 0.1. 0003.	

COMPONENTS:		ORIGINAL MEASUREMENTS:			
(1) Naphthalene; C ₁₀ H ₈ ; [91-20-3]		Wheeler, A.S.			
(2) 4-Isopropyl methyl [99-87-6]	benzene; C ₁₀ H ₁₄ ;	J. Am. Chem. Soc. <u>1920</u> , 42, 1842-1846.			
VARIABLES:		PREPARED BY:			
T/K = 303.2		W.E. Acree, Jr.			
EXPERIMENTAL VALUES					
T/K	*2	x1			
30.0 0.8704		0.1296			
	AUXILIARY	INFORMATION			
METHOD: APPARATUS/PROCEI		INFORMATION SOURCE AND PURITY OF MATERIALS:			
Constant temperature ba	DURE ath, thermometer,				
· · · · · ·	DURE ath, thermometer,	SOURCE AND PURITY OF MATERIALS: (1) Purity and source not given.			
Constant temperature ba and a precision balance Excess solute and solve glass containers and al brate for several hours	DURE ath, thermometer, a. ent placed in closed llowed to equili- s at constant	SOURCE AND PURITY OF MATERIALS:			
Constant temperature ba and a precision balance Excess solute and solve glass containers and al brate for several hours temperature. Aliquots of tions transferred into	DURE ath, thermometer, a. ant placed in closed llowed to equili- s at constant of saturatured solu- tared containers	SOURCE AND PURITY OF MATERIALS: (1) Purity and source not given. (2) Purity and source not given.			
Constant temperature ba and a precision balance Excess solute and solve glass containers and al brate for several hours temperature. Aliquots of	DURE ath, thermometer, b. ent placed in closed llowed to equili- s at constant of saturatured solu- tared containers ties calculated from b which remained	SOURCE AND PURITY OF MATERIALS: (1) Purity and source not given.			

	COMPONENTS:		ORIGINAL MEASUREMENTS:		
(1) Naphthalene; C ₁₀ H ₈ ; [91-20-3] (2) Indene; C ₉ H ₈ ; [95-13-6]		Kravchenko,	Kravchenko, V.M.; Pastukhova, I.S. J. Appl. Chem. U.S.S.R. <u>1952</u> , 25, 343- 350. (English translation)		
VARIABLES:		PREPARED BY:	PREPARED BY:		
Temperature	Temperature		W.E. Acree, Jr.		
EXPERIMENTAL VALUES ^a	<u> </u>	<u>_</u>			
τ _{in} /κ	T_{fin}/K	*2	x 1		
271.4	271.4	1.000	0,000		
272.2	271.7	0.964	0.036		
273.2	272.2	0.951	0.049		
278.2	275.2	0.907	0.093		
282.4	277.2	0.870	0.130		
288.2	282.2	0.820	0.180		
290.3	283.2	0.799	0.201		
297.0	290.2	0.739	0.261		
298.7	291.2	0.720	0.280		
307.7	300.2	0.625	0.375		
316.7	307.2	0.540	0.460		
317.2	308.2	0.530	0.470		
326.3	316.2	0.426	0.574		
326.4	317.2	0.423	0.577		
332.5	325.2	0.332	0.668		
339.7	326.2	0.228	0.772		
353.2	353.2	0.000	1.000		
^a Phase diagram, g	aclutions Meltin	at paper, snows to	mation of a complete		
⁸ Phase diagram, g series of solid those of the two crystallization of the solid sol	solutions. Melti pure components. begins; T _{fin} is the ution concludes.	ar paper, anows no og points of binary T _{in} refers to the a temperature at wi	matton of a complete v mixtures lie between temperature at which hich crystallization		
series of solid those of the two crystallization of the solid sol	solutions. Meltir pure components. begins; T _{fin} is the ution concludes. AUXILI	ng points of binary T _{in} refers to the a temperature at wh a temperature at temperature at temperature at the temperature a temperature at temperature at temperature at the temperat	<pre>v mixtures lie between temperature at which hich crystallization</pre>		
series of solid those of the two crystallization of the solid sol	solutions. Meltir pure components. begins; T _{fin} is the ution concludes. AUXILI	ng points of binary T _{in} refers to the a temperature at wh ARY INFORMATION	RITY OF MATERIALS:		
series of solid those of the two crystallization of the solid sol etteop: APPARATUS/PROCE Phase diagram was dete thermal analysis metho detail in V.M. Kravche U.S.S.R. <u>1939</u> , <i>13</i> , 13	solutions. Meltir pure components. begins; T _{fin} is the ution concludes. AUXILI DURE rmined using a d (described in nko, J. Phys. Chem	ARY INFORMATION SOURCE AND PU (1) Purity a specifie before u	RITY OF MATERIALS: nd chemical source were not d in paper, was recrystallized se.		
^a Phase diagram, g series of solid those of the two crystallization of the solid sol of the solid sol etail in C.M. Kravche Phase diagram was dete thermal analysis metho detail in V.M. Kravche U.S.S.R. <u>1939</u> , <i>13</i> , 13 visual observations.	solutions. Meltir pure components. begins; T _{fin} is the ution concludes. AUXILI DURE rmined using a d (described in nko, J. Phys. Chem	ARY INFORMATION SOURCE AND PU (1) Purity a specific before u (2) Purity a	RITY OF MATERIALS: nd chemical source were not d in paper, was recrystallized se. nd chemical source were not d in paper, was distilled		
series of solid those of the two crystallization of the solid sol etterno: APPARATUS/PROCE Phase diagram was dete thermal analysis metho detail in V.M. Kravche U.S.S.R. <u>1939</u> , <i>13</i> , 13	solutions. Meltir pure components. begins; T _{fin} is the ution concludes. AUXILI DURE rmined using a d (described in nko, J. Phys. Chem	ARY INFORMATION SOURCE AND PU (1) Purity a specific before u Y (2) Purity a specific	RITY OF MATERIALS: nd chemical source were not d in paper, was recrystallized se. nd chemical source were not d in paper, was distilled se.		

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COMPONENTS :		ORIGINAL ME	ASUREMENTS:		
(1) Naphthalene; C ₁₀ H ₈ ; [91-20-3] (2) Fluoranthene; C ₁₆ H ₁₀ ; [206-44-0] VARIABLES:		Kravchenko, V.M.; Pastukhova, I.S. J. Gen. Chem. U.S.S.R. <u>1959</u> , 29, 29-34. (English translation)			
					PREPARED BY
		Temperature	Temperature		W.E. Acree, Jr.
EXPERIMENTAL VALUES					
T/K	*2	x 1	Solid Phase		
383.2	1.000	0.000	(2)		
374.2	0.875	0.125	(2)		
361.4	0.707	0.293	(2)		
352.8	0.614	0.386	(2)		
343.5	0.519	0.471	(2)		
337.1	0.461	0.539	(2)		
330.9	0.411	0.589	(2)		
329.0	0.390	0.610	Eutectic		
332.2	0.337	0.663	(1)		
338.5	0.247	0.753	(1)		
346.3	0.117	0.883	(1)		
353.4	0.000	1.000	(1)		
METHOD: APPARATUS/PROCEDURE Phase diagram was determin thermal analysis method (d detail in V.M. Kravchenko, U.S.S.R. <u>1939</u> , 13, 133), visual observations.	ed using a lescribed in J. Phys. Chem.	(1) Purity specif before (2) Purity specif before ESTIMATED E	and chemical source were not ied in paper, was recrystallized use.		
			2 (Compiler).		

COMPONENTS: (1) Naphthalene; C ₁₀ H ₈ ; [91-20-3] (2) Fluorene; C ₁₃ H ₁₀ ; [86-73-7] VARIABLES: Temperature			ORIGINAL MEASUREMENTS: Kravchenko, V.M. J. Appl. Chem. U.S.S.R. <u>1952</u> , 25, 1015- 1022. (English translation) PREPARED BY: W.E. Acree, Jr.		
		J. Appl. C 1022. (Eng			
		PREPARED BY			
		W.E. Acree			
XPERIMENTAL VALUE	25				
T/K	*2	x 1	Solid Phase		
387.2	1.000	0.000	(2)		
377.6	0.879	0.121	(2)		
368.5	0.753	0.247	(2)		
358.6	0.641	0.359	(2)		
348.7	0.534	0.466	(2)		
337.0	0.436	0.564	(2)		
329.7	0.388	0.612	(2)		
328.2	0.375	0.625	(2)		
329.4	0.342	0.658	(1)		
335.7	0.245	0.755	(1)		
342.4	0.156	0.844	(1)		
347.5	0.079	0.921	(1)		
353.2	0.000				
		1.000 occurs at $x_1 = 0$	(1) .635 and at T/K = 328.2.		
	reports eutectic point				
Author	reports eutectic point	occurs at $x_1 = 0$			
Author GETHOD: APPARATUS/ Phase diagram was thermal analysis detail in V.M. Kr	REPORTS EUTECTIC POINT AUXILI PROCEDURE 5 determined using a method (described in ravchenko, J. Phys. Chen 3, 133), supplemented th	OCCUIPS at $x_1 = 0$ IARY INFORMATION SOURCE AND (1) Purity specif before	.635 and at T/K = 328.2. PURITY OF MATERIALS: r and chemical source were not ied in paper, was recrystallized use.		
Author METHOD: APPARATUS/ Phase diagram was thermal analysis detail in V.M. Xr U.S.S.R. <u>1939</u> , 1	REPORTS EUTECTIC POINT AUXILI PROCEDURE 5 determined using a method (described in ravchenko, J. Phys. Chen 3, 133), supplemented th	occurs at x ₁ = 0 IARY INFORMATION (1) Purity specif before (2) Purity specif before	.635 and at T/K = 328.2. PURITY OF MATERIALS: r and chemical source were not ied in paper, was recrystallized use. r and chemical source were not ied in paper, was recrystallized		
Author ETHOD: APPARATUS/ Phase diagram was thermal analysis detail in V.M. Kr U.S.S.R. 1939, 1	REPORTS EUTECTIC POINT AUXILI PROCEDURE 5 determined using a method (described in ravchenko, J. Phys. Chen 3, 133), supplemented th	OCCUIS AT X ₁ = 0 IARY INFORMATION (1) Purity specif before (2) Purity specif before ESTIMATED E	.635 and at T/K = 328.2. PURITY OF MATERIALS: r and chemical source were not lied in paper, was recrystallized use. r and chemical source were not lied in paper, was recrystallized use.		

components:	ORIGINAL MEASUREMENTS:		
(1) Naphthalene; C ₁₀ H ₈ ; [91-20-3]	Kravchenko, V.M.; Pastukhova, I.S. Proc. Acad. Sci. U.S.S.R., Sect. Chem. <u>1956</u> , 111, 667-669. (English translation) PREPARED BY: W.E. Acree, Jr.		
(2) Chrysene; C ₁₈ H ₁₂ ; [218-01-9]			
VARIABLES:			
Temperature			
XPERIMENTAL VALUES			
т/к ×2	x ₁ Solid Phase		
528.2 1.000	0.000 (2)		
520.2 0.903	0.097 (2)		
511.4 0.817	0.183 (2)		
500.2 0.702	0.298 (2)		
487.5 0.593	0.407 (2)		
476.2 0.504	0.496 (2)		
459.7 0.407	0.593 (2)		
442.4 0.290	0.710 (2)		
417.8 0.202	0.798 (2)		
406.2 0.157	0.843 (2)		
388.4 0.103	0.897 (2)		
351.0 0.042	0.958 Eutectic		
351.7 0.025	0.975 (1)		
353.2 0.000	1.000 (1)		
	IARY INFORMATION		
ETHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:		
Phase diagram was determined using a thermal analysis method (described in detail in V.M. Kravchenko, J. Phys. Chen U.S.S.R. <u>1939</u> , 13, 133), supplemented b visual observations.			

	······		
COMPONENTS:	ORIGINAL MEASUREMENTS:		
(1) Naphthalene; C ₁₀ H ₈ ; [91-20-3] (2) Pyrene; C ₁₆ H ₁₀ ; [129-00-0]	Miyagishi, S.; Isomi, A.; Iwata, T.; Asakawa, T.; Nishida, M. Bull. Chem. Soc. Japan <u>1985</u> , 58, 3643- 3644.		
VARIABLES:	PREPARED BY:		
	W.E. Acree, Jr.		
EXPERIMENTAL VALUES			
Phase diagram, given in the original pa	per, shows that the system is a simple		
eutectic system. The eutectic point oc	curs at circa $x_2 = 0.22$ and $T/K = 335.7$.		
AUXILIARY	INFORMATION		
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:		
Differential scanning calorimeter and an analytical balance.	(1) Analytical grade, Katayama Chemicals, Japan, was used as received.		
Binary mixtures were prepared by weight. Melting point temperatures and phase diagram determined using differential scanning calorimetric techniques.	(2) Reagent grade, Katayama Chemicals, Japan, was used as received.		
	ESTIMATED ERRORS:		
· · ·	T/K: precision \pm 0.3 (Compiler). x_1 : \pm 0.02 (Compiler).		

COMPONENTS:		ORIGINAL MEASUREMENTS:				
(1) Naphthalene; C ₁₀ H ₈ ; [91-20-3]		Kravchenko, V.M.; Pastukhova, I.S. Zhur. Fiz. Khim. <u>1957</u> , 31, 1802-1811. PREPARED BY:				
(2) Acenaphthene; C ₁₂ H ₁₀ ; [83-32-9] ARIABLES:						
						Temperature
XPERIMENTAL	VALUES					
T/K	x 2	* 1	T/K	x 2	×1	
368.3	1.000	0.000	323.2	0.417	0.583	
361.8	0.893	0.107	325.0	0.396	0.604	
351.3	0.743	0.257	329.2	0.346	0.654	
344.7	0.656	0.344	334.1	0.282	0.718	
335.7	0.550	0.450	343.3	0.151	0.849	
327.0	0.459	0.541	353.2	0.000 1.000	1.000	
		AUXILIARY	INFORMATION			
ETHOD: APPARI	ATUS/PROCEDUI	λΕ.	SOURCE AND PURIS	TY OF MATERIA	ALS:	
	vsis method	ined using a described in , J. Phys. Chem.	(1) Purity and chemical source were not specified in paper.(2) Purity and chemical source were not specified in paper.			
	<u>39, 13, 133)</u>	supplemented by				
			ESTIMATED ERRORS	:		
			T/K: precision $x_1: \pm 0.002$ (Co		iler).	

COMPONENTS:	ORIGINAL MEASUREMENTS:				
(1) Naphthalene; C ₁₀ H _B ; [91-20-3]	Sunier, A.A. J. Phys. Chem. <u>1931</u> , 35, 1756-1761. PREPARED BY: W.E. Acree, Jr.				
(2) Furfuryl Acetate; $C_7H_8O_3;$ [623-17-6]					
VARIABLES:					
Temperature					
EXPERIMENTAL VALUES					
T/K x ₂	<i>x</i> ₁				
292.6 0.804	0.196				
310.6 0.659	0.341				
314.1 0.622	0.378				
319.4 0.562	0.438				
321.5 0.534	0.466				
321.5 0.528	0.472				
329.4 0.416	0.584				
334.6 0.338	0.662				
338.4 0.271	0.729				
343.2 0.184	0.816				
AUXILIARY	INFORMATION				
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:				
Constant temperature bath and a precision thermometer. Mixtures of known concentrations sealed in glass tubes and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly increased. Solubility determined by visual	 Purity not specified, Eastman Kodak Company, Rochester, New York, USA, was recrystallized several times from meth- anol. Purity not given, Eastman Kodak Company, was used as received. 				
noting the temperature at which the last trace of solid solute disappeared. Meas- urements repeated several times to verify results.	ESTIMATED ERRORS: T/K : precision \pm 0.1. x_1 : \pm 0.0002. (compiler).				

COMPONENTS: (1) Naphthalene; C ₁₀ H ₈ ; [91-20-3] (2) Methyl 2-furoate; C ₆ H ₆ O ₃ ; [611-13-2]		ORIGINAL MEASUREMENTS:				
		Sunier, A.A. J. Phys. Chem. <u>1931</u> , 35, 1756-1761.				
						VARIABLES:
Temperature	W.E. Acree, Jr.					
EXPERIMENTAL	VALUES		ļ			
T/K	*2	×1	T/K	*2	* 1	
300.9	0.7516	0.2484	330.0	0.408	0.592	
308.2	0.687	0.313	341.1	0.220	0.780	
315.5	0.608	0.392				
325.0	0.484	0.516				
		AUXILIARY	INFORMATION	ł		
METHOD: APPAR	ATUS/PROCEDUR	E	SOURCE ANI	PURITY OF	ATERIALS:	
Constant temperature bath and a precision thermometer. Mixtures of known concentrations sealed in glass tubes and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly increased. Solubility determined by visual		Compa recry anol (2) Purit	ny, Rocheste stallized se	fied, Eastman Kodak er, New York, USA, was everal times from meth- , Eastman Kodak Company lved.		
noting the te trace of soli	emperature at id solute dis	which the last appeared. Meas- times to verify		ERRORS: cision <u>+</u> 0.1. 002. (compil		

COMPONENTS: (1) Naphthalene; C ₁₀ H ₈ ; [91-20-3] (2) Ethyl 2-furoate; C ₇ H ₈ O ₃ ; [614-99-3] VARIABLES: Temperature		ORIGINAL I	ORIGINAL MEASUREMENTS:		
		Sunier, A.A.			
		J. Phys.	J. Phys. Chem. <u>1931</u> , 35, 1756-1761. PREPARED BY: W.E. Acree, Jr.		
		PREPARED			
		W.E. Acro			
EXPERIMENTAL V	ALUES				
T/K	×2	×1	T/K	×2	x 1
298.8	0.712	0.288	336.7	0.277	0.723
307.0	0.647	0.353	340.0	0.224	0.776
318.1	0.530	0.470			
328.7	0.396	0.604			
		AUXILIAR	Y INFORMATION	ſ	an a
METHOD: APPARA	TUS/PROCEDU	æ	SOURCE ANI	PURITY OF	MATERIALS:
Constant temperature bath and a precision thermometer. Mixtures of known concentrations sealed in glass tubes and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly increased. Solubility determined by visual noting the temperature at which the last trace of solid solute disappeared. Meas-		(1) Purity not specified, Eastman Kodak Company, Rochester, New York, USA, was recrystallized several times from meth-			
		anol. (2) Purity not given, Eastman Kodak Compa was used as received.		, Eastman Kodak Company,	
		ESTIMATED	ERRORS :		
urements repeated several times to verify results.			sision \pm 0.1 002. (compi)		

COMPONENTS: (1) Naphthalene; C ₁₀ H ₈ ; [91-20-3] (2) n-Propyl 2-furoate; C ₈ H ₁₀ O ₃ ; [615-10-1] VARIABLES: Temperature		ORIGINAL	ORIGINAL MEASUREMENTS:		
		Sunier, A.A. J. Phys. Chem. <u>1931</u> , 35, 1756-1761.			
					PREPARED
		W.E. Acro	ee, Jr.		
		EXPERIMENTAL	VALUES		
T/K	×2	<i>*</i> 1	T/K	<i>x</i> 2	×1
298.8	0.697	0.303	333.1	0.326	0.674
309.6	0.607	0.393	341.1	0.108	0.791
318.5	0.519	0.481			
323.4	0.456	0.544			
		AUXILIARY	INFORMATION		*-*
METHOD: APPARI	METHOD: APPARATUS/PROCEDURE			D PURITY OF	MATERIALS:
Constant temperature bath and a precision thermometer. Mixtures of known concentrations sealed in glass tubes and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly increased. Solubility determined by visual		Compa recry anol (2) Purit was t	any, Rocheste ystallized se y not given, used as recei	fied, Eastman Kodak er, New York, USA, was everal times from meth- , Eastman Kodak Company, ived.	
Increased. Solubility determined by visual i noting the temperature at which the last trace of solid solute disappeared. Meas- urements repeated several times to verify results.			ERRORS: cision <u>+</u> 0.1. 002. (compil		

COMPONENTS:			ORIGINAL	ORIGINAL MEASUREMENTS: Sunier, A.A. J. Phys. Chem. <u>1931</u> , 35, 1756-1761. PREPARED BY: W.E. Acree, Jr.		
(1) Naphthalene; C ₁₀ H ₈ ; [91-20-3]		Sunier,				
(2) n-Butyl 2-furoate; C ₉ H ₁₂ O ₃ ; [583-33-5] VARIABLES:			J. Phys.			
			PREPARED			
Temperature		W.E. Acr				
EXPERIMENTAL	VALUES					
T/K	<i>*</i> 2	x 1	T/K	*2	×1	
294.5	0.768	0.232	328.1	0.385	0.615	
307.1	0.617	0.383	338.1	0.246	0.754	
312.4	0.566	0.434				
320.9	0.477	0.523				
		AUXILIAR	Y INFORMATION	4		
METHOD: APPARATUS/PROCEDURE			SOURCE ANI	D PURITY OF	MATERIALS:	
Constant temperature bath and a precision thermometer. Mixtures of known concentrations sealed in glass tubes and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly increased. Solubility determined by visual			 Purity not specified, Eastman Kodak Company, Rochester, New York, USA, was recrystallized several times from meth- anol. Purity not given, Eastman Kodak Company was used as received. 			
noting the temperature at which the last trace of solid solute disappeared. Meas- urements repeated several times to verify results.			ESTIMATED ERRORS:			
		T/K: precision ± 0.1. x_1 : ± 0.0002. (compiler).				

COMPONENTS :		ORIGINAL MEASUREMENTS:	
(1) Naphthalene; C ₁₀ H ₈ ; [91-20-3]		Mahieu, J.	
(2) 1,1-Oxybisethane; C ₄ H ₁₍ [60-29-7]	9 0;	Bull. Soc. Chim. Belgique <u>1936</u> , 4 5, 667-677.	
VARIABLES:		PREPARED BY:	
T/K = 298		W.E. Acree, Jr.	
EXPERIMENTAL VALUES	1941 me 1910 - 92 Benne 1920 - 1930 - 1930 - 1930 - 1930 - 1930 - 1930 - 1930 - 1930 - 1930 - 1930 - 1930 - 19	I	
t/°C	x2 ⁸	×1 ^a	
		0.247	
^a computed by compiler	from published so pre expressed as w of solvent.	olvent compositions and solute eight percent and grams of	
^a computed by compiler solubilities, which we solute per 100 grams c	from published so pre expressed as w of solvent. AUXILIARY	Divent compositions and solute eight percent and grams of INFORMATION	
^a computed by compiler solubilities, which we	from published so pre expressed as w of solvent. AUXILIARY thermometer, placed in closed red to equili- constant	olvent compositions and solute eight percent and grams of	

COMPONENTS: (1) Naphthalene; C ₁₀ H ₈ ; [91-20-3]		ORIGINAL MEASUREMENTS:		
		Bennett, G.M.; Philip, W.G.		
(2) 1,1-Oxybisbutane; [142-96-1]	C ₈ H ₁₈ O;	J. Chem. Soc. <u>1928</u> , 1937-1942. PREPARED BY:		
VARIABLES:				
Temperature		W.E. Acree, Jr.		
EXPERIMENTAL VALUES				
T/K	*2	×1		
315.8	0.6227	0.3773		
318.9	0.5847	0.4153		
326.1	0.4922	0.5078		
	AUXILIARY	INFORMATION		
ETHOD: APPARATUS/PROCE	DURE	SOURCE AND PURITY OF MATERIALS:		
Constant temperature b thermometer.	ath and a precision	 Purity and chemical source was not specified in paper. 		
Mixtures of known concentrations sealed in glass tubes and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly increased. Solubility determined by visual		(2) Synthesized by authors, was purified by distillation.		
noting the temperature at which the last trace of solid solute disappeared. Meas- urements repeated several times to verify results.		ESTIMATED ERRORS: T/K : precision \pm 0.1. x_1 : 0.0001. (compiler).		

Components :		ORIGINAL MEASUREMENTS:	
<pre>(1) Naphthalene; C₁₀H₈; [91-20-3] (2) 1-Ethoxypropane; C₅H₁₂O; [628-32-0]</pre>		Bennett, G.M.; Philip, W.G. J. Chem. Soc. <u>1928</u> , 1937-1942.	
Temperature		W.E. Acree, Jr.	
EXPERIMENTAL VALUES			
T/K	*2	×1	
303.1	0.7292	0.2708	
312.9	0.6350	0.3650	
315.5	0.6064	0.3936	
	AUXILIARY	INFORMATION	
METHOD: APPARATUS/PROC	EDURE	SOURCE AND PURITY OF MATERIALS:	
Constant temperature thermometer.	bath and a precision	 Purity and chemical source was not specified in paper. 	
Mixtures of known concentrations sealed in glass tubes and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly increased. Solubility determined by visual		(2) Synthesized by authors, was purified by distillation.	
increased. Solubility determined by visual noting the temperature at which the last trace of solid solute disappeared. Meas- urements repeated several times to verify results.		ESTIMATED ERRORS: T/K: precision ± 0.1. x ₁ : 0.0001. (compiler).	
were rotated while bath temperature slowly increased. Solubility determined by visual noting the temperature at which the last trace of solid solute disappeared. Meas- urements repeated several times to verify		T/K : precision \pm 0.1.	

COMPONENTS: (1) Naphthalene; C ₁₀ H ₈ ; [91-20-3] (2) 2-Ethoxypropane; C ₅ H ₁₂ O; [625-54-7]		ORIGINAL MEASUREMENTS:	
		Bennett, G.M.; Philip, W.G. J. Chem. Soc. <u>1928</u> , 1937-1942.	
Temperature		W.E. Acree, Jr.	
EXPERIMENTAL VALUES	· <u>····································</u>	_	
<i>т/</i> к	*2	<i>x</i> `1	
317.1	0.5974	0.4026	
325.5 0.4864		0.5136	
	AUXILIARY	INFORMATION	
METHOD: APPARATUS/PROCES	URE	SOURCE AND PURITY OF MATERIALS:	
Constant temperature ba thermometer.	th and a precision	 Purity and chemical source was not specified in paper. 	
Mixtures of known concentrations sealed in glass tubes and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly increased. Solubility determined by visual		(2) Synthesized by authors, was purified by distillation.	
increased. Solubility determined by visual noting the temperature at which the last trace of solid solute disappeared. Meas- urements repeated several times to verify results.		ESTIMATED ERRORS: T/K : precision \pm 0.1. x_1 : 0.0001. (compiler).	

COMPONENTS :		ORIGINAL MEASUREMENTS:	
 Naphthalene; C₁₀H₈; [91-20-3] 2,2-Dimethyloxetane; C₅H₁₀O; [6245-99-4] 		Bennett, G.M.; Philip, W.G. J. Chem. Soc. <u>1928</u> , 1937-1942.	
Temperature		W.E. Acree, Jr.	
EXPERIMENTAL VALUES			
T/K	×2	×1	
307.0	0.6990	0.3010	
313.1	0.5913	0.4087	
317.9	0.5443	0.4557	
	AUXILIARY	INFORMATION	
ETHOD: APPARATUS/PRO	CEDURE	SOURCE AND PURITY OF MATERIALS:	
Constant temperature thermometer.	bath and a precision	 Purity and chemical source was not specified in paper. 	
Mixtures of known concentrations sealed in glass tubes and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly increased. Solubility determined by visual		(2) Synthesized by authors, was purified by distillation.	
increased. Solubility determined by visual noting the temperature at which the last trace of solid solute disappeared. Meas- urements repeated several times to verify results.		ESTIMATED ERRORS: T/K: precision <u>+</u> 0.1. x ₁ : 0.0001. (compiler).	

CONPONENTS:			ORIGINAL MEASUREMENTS:	
<pre>(1) Naphthalene; C₁₀H₈; [91-20-3] (2) 3,3-Dimethyloxetane; C₅H₁₀O; [6921-35-3]</pre>		; [91-20-3]	Bennett, G.M.; Philip, W.G.	
		ne; C ₅ H ₁₀ O;	J. Chem. Soc. <u>1928</u> , 1937-1942.	
VARIABLES:			PREPARED BY:	
Temperature			W.E. Acree, Jr.	
EXPERIMENT	AL VALUES			
	T/K	x 2	×1	
	302.4	0.6540	0.3460	
	312.1	0.5827	0.4173	
		AUXILIARY	INFORMATION	
METHOD: AP	PARATUS/PROCE	DURE	SOURCE AND PURITY OF MATERIALS:	
Constant thermometer		bath and a precision	(1) Purity and chemical source was not specified in paper.	
Mixtures of known concentrations sealed in glass tubes and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly increased. Solubility determined by visual noting the temperature at which the last trace of solid solute disappeared. Meas- urements repeated several times to verify results.		ced in constant brate. Samples th temperature slowly	(2) Synthesized by authors, was purified by distillation.	
		at which the last	ESTIMATED ERRORS:	
			T/K: precision \pm 0.1. x_1 : 0.0001. (compiler).	

COMPONENTS:		ORIGINAL MEASUREMENTS:	
(1) Naphthalene; C ₁₀ H ₈ ; [91-20-3]		Bennett, G.M.; Philip, W.G.	
(2) Tetrahydropyran; C	5 ^H 10 ^{O;} [142-68-7]	J. Chem. Soc. <u>1928</u> , 1937-1942. PREPARED BY:	
VARIABLES:			
Temperature		W.E. Acree, Jr.	
EXPERIMENTAL VALUES			
T/K	×2	x ₁	
299.6	0.6579	0.3421	
303.3	0.6295	0.3705	
313.4	0.5392	0.4608	
	AUXILIARY	INFORMATION	
METHOD: APPARATUS/PROCE	DURE	SOURCE AND PURITY OF MATERIALS:	
Constant temperature by thermometer.	ath and a precision	(1) Purity and chemical source was not specified in paper.	
Mixtures of known concentrations sealed in glass tubes and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly increased. Solubility determined by visual		(2) Synthesized by authors, was purified by distillation.	
were rotated while bath temperature slowly increased. Solubility determined by visual noting the temperature at which the last trace of solid solute disappeared. Meas- urements repeated several times to verify results.		ESTIMATED ERRORS: T/K: precision <u>+</u> 0.1. x ₁ : 0.0001. (compiler).	

COMPONENTS :	ORIGINAL MEASUREMENTS:		
(1) Naphthalene; C ₁₀ H ₈ ; [91-20-3]	Chang, W.		
(2) Dichloromethane; CH ₂ Cl ₂ ; [75-09-2]	Ph.D Dissertation, North Dakota State Uni- versity, North Dakota, USA (1969).		
VARIABLES:	PREPARED BY:		
T/K ≖ 298	W.E. Acree, Jr.		
EXPERIMENTAL VALUES			
t/°C x ₂	<i>x</i> 1		
25.0 0.670	0.330		
AUXILIARY	INFORMATION		
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:		
Constant temperature bath and a precision thermometer.	 Purity, source and purification proce- dures not specified. 		
Mixtures of known concentrations sealed in glass ampoules and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly increased. Solubility determined by visual	(2) Reagent Grade, J. T. Baker Chemical Company, USA, was used as received.		
noting the temperature at which the last trace of solid solute disappeared. Sol-	ESTIMATED ERRORS:		
ubilities at 298 K interpolated from experimental values using $\ln x_1$ versus $1/T$ graph.	T/K: precision \pm 0.1. x ₁ : \pm 2 % (relative error; compiler).		

COMPONENTS:	ORIGINAL MEASUREMENTS:		
(1) Naphthalene; C ₁₀ H ₈ ; [91-20-3]	Chang, W.		
<pre>(2) Trichloromethane; CHCl₃; [67-66-3]</pre>	Ph.D Dissertation, North Dakota State Uni- versity, North Dakota, USA (1969).		
VARIABLES:	PREPARED BY:		
<i>T/K</i> ≈ 298	W.E. Acree, Jr.		
EXPERIMENTAL VALUES			
t/°C x ₂	×1		
25.0 0.661	0.339		
AUXILI	ARY INFORMATION		
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:		
Constant temperature bath and a precisio thermometer.	(1) Purity, source and purification proce- dures not specified.		
Mixtures of known concentrations sealed in glass ampoules and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slow increased. Solubility determined by visu	ly		
noting the temperature at which the last trace of solid solute disappeared. Sol-	ESTIMATED ERRORS:		
trace of solid solute disappeared. Solutibilities at 298 K interpolated from experimental values using $\ln x_1$ versus $1/T$ graph.	T/K: precision \pm 0.1. x_1 : \pm 2 % (relative error; compiler).		

COMPONENTS :	ORIGINAL MEASUREMENTS:				
(1) Naphthalene; C ₁₀ H ₈ ; [91-20-3]	Mahieu, J.				
<pre>(2) Trichloromethane; CHCl₃; [67-66-3]</pre>	Bull. Soc. Chim. Belgique <u>1936</u> , 45, 667-677.				
VARIABLES:	PREPARED BY:				
<i>T/K</i> = 298	W.E. Acree, Jr.				
EXPERIMENTAL VALUES					
t/°C x2 ⁸	<i>x</i> 1 ^a				
25.0 0.660	0.340				
^a computed by compiler from published so solubilities, which were expressed as w solute per 100 grams of solvent.	olvent compositions and solute eight percent and grams of				
AUXILIARY	INFORMATION				
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:				
Constant temperature bath, thermometer, and a precision balance.	(1) Purity and source not given.(2) Purity and source not given.				
Excess solute and solvent placed in closed glass containers and allowed to equili- brate for several hours at constant temperature. Aliquots of saturatured solu-	(2) rully and boards not given.				
tions transferred into tared containers and weighed. Solubiliites calculated from weight of solid residue which remained	ESTIMATED ERRORS:				
after solvent had evaporated.	T/K: precision \pm 0.5 (compiler). x ₁ : \pm 5 % (relative error; compiler).				

COMPONENTS:		ORIGINAL MEASUREMENTS:				
(1) Naphthalene; C ₁₀ H ₈ ;	[91-20-3]	Speyers, C.L.				
(2) Trichloromethane; CHCl ₃ ; [67-66-3]		Am. J. Sci. <u>1902</u> , 14, 293-302.				
VARIABLES:	<u></u>	PREPARED BY:				
Temperature		W.E. Acree, Jr.				
EXPERIMENTAL VALUES						
T/K	*2	× ₁				
273.0	0.8042	0.1958				
283.8	0.7686	0.2314				
303.5	0.6147	0.3853				
325.7	0.4260	0.5740				
	AUXILIARY	INFORMATION				
METHOD: APPARATUS/PROCE	DURE	SOURCE AND PURITY OF MATERIALS:				
Experimental procedure only marginally described by author. Excess solute and solvent were equilibrated in a constant temperature water bath for between 10-30 minutes. Saturated solution was with- drawn through a coarse filter and anal- yzed by specific gravity. Author noted that evaporation to dryness and weighing the residue was subject to too much decomposition.		 Purity not given, Kahlbaum, was recrystallized from alcohol to a melting point temperature of 80.1 °C. Purity unknown, several sources listed, washed with water, sulfuric acid, dried over calcium chloride and distilled. 				
		ESTIMATED ERRORS:				
		T/K: precision \pm 0.1. x_1 : \pm 8 % (relative error, compiler).				

COMPONENTS:	ORIGINAL MEASUREMENTS:				
(1) Naphthalene; C ₁₀ H ₈ ; [91-20-3]	Heric, E.L.; Posey, C.D.				
<pre>(2) Tetrachloromethane; CCl₄; [56-23-5]</pre>	J. Chem. Eng. Data <u>1964</u> , 9, 35-43.				
VARIABLES:	PREPARED BY:				
T/K = 298	W.E. Acree, Jr.				
EXPERIMENTAL VALUES	<u>↓</u>				
t/°C ×2	x 1				
25.0 0.7409	0.2591				
AUXILIARY	INFORMATION				
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:				
Constant temperature bath, thermometer, and a precision refractometer.	 Eastman Chemical Company, Rochester, New York, USA, was used as received. 				
Excess solute and solvent placed in glass bottles and allowed to equilibrate with gentle agitation for several days at constant temperature. Refractive indices of saturated solutions were measured and solubilities obtained using a calibration curve. Attainment of equilibrium verified	(2) Spectroquality, Matheson, Coleman and Bell, USA, was dried over phosphorous pentoxide and distilled to a final purity of 99.99 %.				
by making repetitive measurements after several additional days.	ESTIMATED ERRORS:				
	T/K: precision \pm 0.01. x_1 : precision \pm 0.0005.				

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COMPONENTS:
(1) Naphthalene; C<sub>10</sub>H<sub>8</sub>; [91-20-3]
(2) Tetrachloromethane; CCl<sub>4</sub>;
[56-23-5]
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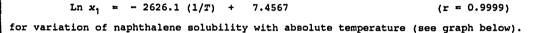
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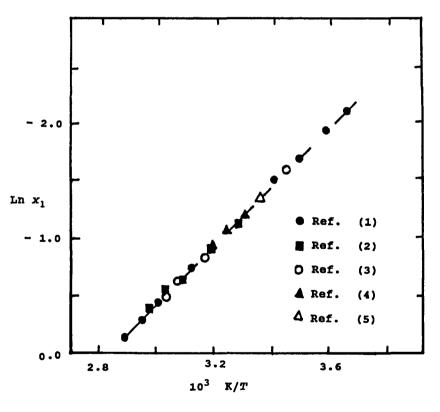
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W.E. Acree, Jr.
Department of Chemistry
University of North Texas
Denton, Texas 76203-5068 (USA)
August, 1994
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CRITICAL EVALUATION:

Naphthalene solubilities in tetrachloromethane were retrieved from papers by Ward (1), McLaughlin and Zainal (2), Heric and Yeh (3), Acree et al. (4), Heric and Posey (5) and Chang (6). The first three studies report values at several temperatures, Acree et al. determined values at 303, 308 and 313 K, and both Heric and Posey and Chang measured the mole fraction solubility at the single temperature of 298 K. There is no a prior reason to exclude any of the six studies from the critical evaluation.

Regressional analysis of the experimental data as $\text{Ln } x_1$ versus 1/T yielded the following mathematical relationship:





Graphical plot of Ln x_1 versus 1/T

REFERENCES

```
    Ward, H.L. J. Phys. Chem. <u>1926</u>, 30, 1316-1333.
    McLaughlin, E.; Zainal, H.A. J. Chem. Soc. <u>1960</u>, 2485-2488.
    Heric, E.L.; Yeh, K.-N. J. Chem. Eng. Data <u>1970</u>, 15, 13-17.
    Acree, W.E., Jr.; Pontikos, N.M.; Judy, C.L. Int. J. Pharm. <u>1986</u>, 31, 225-230.
    Heric, E.L.; Posey, C.D. J. Chem. Eng. Data <u>1964</u>, 9, 35-43.
    Chang, W., Ph.D. Dissertation, North Dakota State University, North Dakota, 1969.
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Components :			ORIGINAL MEASUREMENTS: Heric, E. L; Yeh, KN. J. Chem. Eng. Data <u>1970</u> , 15, 13-17.			
 Naphthalene; C₁₀H₈; [91-20-3] Tetrachloromethane; CCl₄; [56-23-5] 						
		VARIABLES:				
Temperature			W.E. Acree, Jr.			
EIPERIMENTAL V	ALUES		ļ			
T/K	x2	<i>x</i> 1	T/K	*2	x 1	
286.64	0.8188	0.1812	323.84	0.4731	0.5269	
290.51	0.7961	0.2039	328.58	0.4085	0.5915	
300.17	0.7262	0.2738	334.92	0.3120	0.6880	
316.25	0.5671	0.4329	342.33	0.1935	0.8065	
		AUXILIARY	INFORMATION			
METHOD: APPARA	TUS/PROCEDUR	E	SOURCE AND	PURITY OF M	ATERIALS:	
Constant temp thermometer.	erature bath	and a precision		nt Grade, Ba was used as	ker Chemical Company, received.	
Mixtures of known concentrations sealed in glass ampoules and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly increased. Solubility determined by visual		wass	tored over p	ker Chemical Company, hosphorous pentoxide rtly before use.		
noting the te	mperature at	which the last	ESTIMATED	ERRORS:	·····	
trace of solid solute disappeared.		$T/K: \text{ prec} x_1: \pm 0.00$	ision <u>+</u> 0.03 001.	•		

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COMPONENTS :	ORIGINAL MEASUREMENTS:			
(1) Naphthalene; C ₁₀ H ₈ ; [91-20-3]	Chang, W.			
<pre>(2) Tetrachloromethane; CCl₄; [56-23-5]</pre>	Ph.D Dissertation, North Dakota State Uni- versity, North Dakota, USA (1969).			
VARIABLES:	PREPARED BY:			
<i>T</i> /K = 298	W.E. Acree, Jr.			
EXPERIMENTAL VALUES				
t/°C x ₂	<i>×</i> 1			
25.0 0.745	0.255			
	Y INFORMATION			
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:			
Constant temperature bath and a precision thermometer.	(1) Purity, source and purification proce- dures not specified.			
Mixtures of known concentrations sealed in glass ampoules and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly increased. Solubility determined by visual	(2) Reagent Grade, Eastman Organic Chem- ical, USA, was used as received.			
noting the temperature at which the last trace of solid solute disappeared. Sol- ubilities at 298 K interpolated from experimental values using $\ln x_1$ versus $1/T$ graph.	ESTIMATED ERRORS: T/K : precision \pm 0.1. x_1 : \pm 2 % (relative error; compiler).			

COMPONENTS:	:omponents :		ORIGINAL MEASUREMENTS:			
 Naphthalene; C₁₀H₈; [91-20-3] Tetrachloromethane; CCl₄; [56-23-5] 		Ward, H.L. J. Phys. Chem. <u>1926</u> , 30, 1316-1333.				
						VARIABLES:
Temperature			W.E. Acr	ee, Jr.		
EXPERIMENTAL	VALUES					
T/K	*2	×1	T/K	<i>*</i> 1		
273.6	0.880	0.120	312.7	0.611	0.389	
279.2	0.857	0.143	320.1	0.525	0.475	
286.2	0.822	0.178	331.5 0.369 0.631		0.631	
292.7	0.783	0.217	338.0	0.269	0.731	
301.4	0.718	0.282	345.6	0.142	0.858	
		AUXILIARY	INFORMATIO	4		
METHOD: APPAR	ATUS/PROCEDU	RE	SOURCE ANI	D PURITY OF	MATERIALS:	
Constant temperature bath and a precision thermometer. Mixtures of known concentrations sealed in glass tubes and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly		anol 80.09 (2) Purit fract	ystallized s to give a m 5-80.10 °C. ty and source	e not specified, was everal times from meth- elting temperature of e not specified, was tilled twice, collecting 0-76.75 °C.		

in glass tubes and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly increased. Solubility determined by visual noting the temperature at which the last trace of solid solute disappeared. Measurements repeated several times to verify results.

ESTIMATED ERRORS:	
T/K : precision ± 0.1 .	(
x_1 : to 3 significant figs.	(compiler).

1

COMPONENTS:	<u>,</u>	····	ORIGINAL MEASUREMENTS:				
(1) Naphthalene; C ₁₀ H; [91-20-3]			McLaughlin, E.; Zainal, H.A.				
<pre>(2) Tetrachloromethane; CCl₄; [56-23-5]</pre>			J. Chem. Soc. <u>1960</u> , 2485-2488.				
VARIABLES:	<u> </u>	- <u></u>	PREPARED BY:				
Temperature			W.E. Acree, Jr.				
EXPERIMENTAL	VALUES						
T/K	*2	×1	T/K	×2	×1		
304.8	0.6871	0.3129	336.0	0.3008	0.6992		
314.2	0.5954	0.4046					
322.8	0.4868	0.5132					
329.2	0.3990	0.6010					
		AUXILIARY	INFORMATION	1	<u> </u>		
METHOD: APPAR	ATUS/PROCEDUR	E	SOURCE AND	PURITY OF M	ATERIALS:		
thermometer.	Constant temperature bath and a precision thermometer.			(1) Purity not given, British Drug Houses, United Kingdom, was passed over an alumina column with benzene as eluant.			
Mixtures of known concentrations sealed in glass ampoules and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly increased. Solubility determined by visual		(2) AnalaR grade, source not given, was dried over anhydrous calcium chloride and distilled before use.					
noting the te	noting the temperature at which the last trace of solid solute disappeared.		ESTIMATED	ERRORS:			
trace or solid solute disappeared.			T/K: precision \pm 0.1. x ₁ : \pm 0.0003 (compiler).				

Components :			ORIGINAL MEASUREMENTS:			
 Naphthalene; C₁₀H₈; [91-20-3] Tetrachloromethane; CCl₄; [56-23-5] 			Acree, W.E., Jr.; Pontikos, N.M.; Judy, C.L. Int. J. Pharm. <u>1986</u> , 31, 225-230.			
VARIABLES:			PREPARED BY:			
T/K = 303, 30	08 and 313		W.E. Acree, Jr.			
EXPERIMENTAL V	ALUES					
t/° C	<i>*</i> 2	×1	t/°C	*2	×1	
30.0	0.6988	0.3012	40.0	0.6019	0.3981	
35.0	0.6538	0.3462				
		AUXILIARY	INFORMATION			
METHOD: APPARI	ATUS/PROCEDUR	E	SOURCE AND	PURITY OF N	MATERIALS:	
Constant temp thermometer,		, calorimetric matograph.	 (1) 99 %, Aldrich Chemical Company, Milwaukee, Wisconsin, USA, recrysta lized 3 times from methanol. 			
Excess solute and solvent placed in amber glass bottles and allowed to equilibrate for several days at constant temperature. Attainment of equilibrium verified by repetitive measurements. Aliquots of sat- urated solutions transferred through a			(2) Spectroanalyzed, Fisher Scientific Chemical Company, Pittsburgh, Pennsyl- vania, USA, was stored over molecular sieves and distilled shortly before use.			
urated solutions transferred through a coarse filter into tared volumetric flasks, weighed and diluted with cyclo- hexane. Concentrations determined chromatographically.			ESTIMATED $T/K: \pm 0.$ $x_1: \pm 1$ %		error).	

Components :	ORIGINAL MEASUREMENTS:				
(1) Naphthalene; C ₁₀ H ₈ ; [91-20-3]	Pinal, R.; Rao, P.S.C.; Lee, L.S; Cline, P.V.; Yalkowsky, S.H.				
<pre>(2) Trichloroethylene; C₂HCl₃; [79-01-6]</pre>	Environ. Sci. Technol. <u>1990</u> , 24, 639-646.				
VARIABLES:	PREPARED BY:				
<i>T</i> /K = 296	W.E. Acree, Jr.				
EXPERIMENTAL VALUES	•				
t/°C	(mol dm ⁻³)				
23.0 3.46					
AUXILIARY	INFORMATION				
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:				
Constant temperature bath, centrifuge, thermometer, and an HPLC equipped with uv absorption and fluorescence detection.	 (1) Purity not given, commercial sample of unspecified source, was used as received. 				
Excess solute and solvent were placed in glass vials and allowed to equilibrate with rotation for 12-24 hours in a con- stant temperature bath. Prior to analysis samples were centrifuged at a minimum of 300 RCF for 15 minutes. The clear super- natant solution was analyzed by reversed-	(2) Purity and chemical source not given, purification procedure not specified.				
phase liquid chromatography with either					
	ESTIMATED ERRORS:				

COMPONENTS:	COMPONENTS:			ORIGINAL MEASUREMENTS:			
(1) Naphthalene; C ₈ H ₁₀ ; [91-20-3] (2) Diiodomethane; CH ₂ I ₂ ; [75-11-6]			Domanska, U. Polish J. Chem. <u>1981</u> , 55, 1715-1720. (numerical values obtained through personal communication with author.)				
VARIABLES:	VARIABLES:			Y :			
Temperature			W.E. Acre	e, Jr.			
EXPERIMENTAL V	ALUES						
T/K	*2	* ₁	T/K	*2	×1		
321.85	0.5619	0.4381	295.85	0.8407	0.1593		
319.10	0.6033	0.3967	291.00	0.8690	0.1310		
313.00	0.6858	0.3142	286.55	0.8906	0.1094		
307.00	0.7515	0.2485	281.75	0.9096	0.0904		
301.85	0.7983	0.2017					
		AUXILIARY	INFORMATION				
METHOD: APPARA	METHOD: APPARATUS/PROCEDURE			PURITY OF M	ATERIALS:		
Constant temperature bath and a precision thermometer. Mixtures of known concentrations sealed in glass ampoules and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly			Polan melti (2) Initi	d, was vacuu ng temperatu al purity no	ied, P.O.Ch., Gliwice, m sublimed to a re of 80.25 °C. t specified, Chemapol, as received.		
increased. Solubility determined by visual noting the temperature at which the last trace of solid solute disappeared.			ESTIMATED T/K: prec x ₁ : to 3 s	ision <u>+</u> 0.1.	figs. (compiler).		

COMPONENTS :	COMPONENTS :			ORIGINAL MEASUREMENTS:			
(1) Naphthalene; C ₁₀ H ₈ ; [91-20-3]		Sunier, A.A.; Rosenblum, C.					
<pre>(2) 1,1-Dibromoethane; C₂H₄Br₂; [557-91-5] VARIABLES:</pre>			J. Phys. Chem. <u>1928</u> , 32, 1047-1055. PREPARED BY:				
							Temperature
EXPERIMENTAL	VALUES		 				
T/K	×2	<i>x</i> 1	T/K	x2	×1		
297.1	0.685	0.315	336.2	0.274	0.726		
317.3	0.504	0.496	341.7	0.193	0.807		
321.6	0.455	0.545	347.5	0.102	0.898		
326.9	0.396	0.606					
		AUXILIARY	INFORMATION	4			
METHOD: APPAR	ATUS/PROCEDUF	LE	SOURCE ANI	D PURITY OF N	ATERIALS:		
Constant temperature bath and a precision thermometer.			 Purity not specified, Eastman Kodak Company, Rochester, New York, USA, was recrystallized several times from meth- anol. Purity not given, Eastman Kodak Company, was distilled shortly before use. 				
Mixtures of known concentrations sealed in glass tubes and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly increased. Solubility determined by visual noting the temperature at which the last trace of solid solute disappeared. Meas-							
		ESTIMATED	ERRORS:				
urements repeated several times to verify results.			cision ± 0.1. 02. (compile				

Components :	ORIGINAL MEASUREMENTS:			
(1) Naphthalene; C ₁₀ H ₈ ; [91-20-3]	Chang, W. Ph.D Dissertation, North Dakota State Uni- versity, North Dakota, USA (1969).			
<pre>(2) 1,2-Dibromoethane; C₂H₄Br₂; [106-93-4]</pre>				
VARIABLES:	PREPARED BY:			
T/K = 298	W.E. Acree, Jr.			
BIPERIMENTAL VALUES				
t/°C x ₂	×1			
25.0 0.697	0.303			
AUXILIARY	INFORMATION			
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:			
Constant temperature bath and a precision thermometer.	 Purity, source and purification proce- dures not specified. 			
Mixtures of known concentrations sealed in glass ampoules and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly increased. Solubility determined by visual	(2) Reagent Grade, Eastman Organic Chem- ical, USA, was used as received.			
noting the temperature at which the last trace of solid solute disappeared. Sol- ubilities at 298 K interpolated from experimental values using $\ln x_1$ versus $1/T$ graph.	ESTIMATED ERRORS: T/K : precision \pm 0.1. x_1 : \pm 2 % (relative error; compiler).			

COMPONENTS: (1) Naphthalene; C ₁₀ H ₈ ; [91-20-3] (2) 1,2-Dibromoethane; C ₂ H ₄ Br ₂ ; [106-93-4] VARIABLES:		ORIGINAL MEASUREMENTS: Sunier, A.A.; Rosenblum, C. J. Phys. Chem. <u>1928</u> , 32, 1047-1055. PREPARED BY:									
						Temperature	Temperature		W.E. Acree, Jr.		
						EXPERIMENTAL	VALUES		ļ		
						<i>т/</i> к	<i>*</i> 2	×1	T/K	*2	<i>x</i> 1
293.9	0.732	0.268	334.9	0.295	0.705						
308.5	0.608	0.392	342.1	0.190	0.810						
317.6	0.515	0.485	350.0	0.054	0.946						
328.3	0.386	0.616									
		AUXILIARY	INFORMATION	4							
METHOD: APPAR	METHOD: APPARATUS/PROCEDURE			D PURITY OF I	ATERIALS:						
Constant temperature bath and a precision thermometer. Mixtures of known concentrations sealed in glass tubes and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly		Compa recry anol. (2) Purit	any, Rocheste stallized se by not given,	fied, Eastman Kodak ar, New York, USA, was everal times from meth- , Eastman Kodak Company, Drtly before use.							
increased. Solubility determined by visual noting the temperature at which the last trace of solid solute disappeared. Meas- urements repeated several times to verify results.			ERRORS: cision ± 0.1 02. (compile								

ORIGINAL MEASUREMENTS: COMPONENTS: (1) Naphthalene; C₁₀H₈; [91-20-3] Chang, W. Ph.D Dissertation, North Dakota State Uni-versity, North Dakota, USA (1969). (2) 1,1-Dichloroethane; C₂H₄Cl₂; [75-34-3] PREPARED BY: VARIABLES: T/K = 298W.E. Acree, Jr. EXPERIMENTAL VALUES t/°C x2 x₁ 0.691 0.309 25.0 AUXILIARY INFORMATION METHOD: APPARATUS/PROCEDURE SOURCE AND PURITY OF MATERIALS: (1) Purity, source and purification proce-dures not specified. Constant temperature bath and a precision thermometer. Mixtures of known concentrations sealed in glass ampoules and placed in constant (2) Reagent Grade, Matheson, Coleman and Bell, USA, was used as received. in glass ampoules and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly increased. Solubility determined by visual noting the temperature at which the last trace of solid solute disappeared. Sol-ubilities at 298 K interpolated from experimental values using ln x₁ versus 1/7 graph. ESTIMATED ERRORS: T/K: precision \pm 0.1. x₁: \pm 2 % (relative error; compiler). 1/T graph.

COMPONENTS:			ORIGINAL	ORIGINAL MEASUREMENTS:				
<pre>(1) Naphthalene; C₁₀H₈; [91-20-3] (2) 1,1-Dichloroethane; C₂H₄Cl₂; [75-34-3] VARIABLES: Temperature</pre>		Sunier, A.A.; Rosenblum, C. J. Phys. Chem. <u>1928</u> , 32, 1047-1055. PREPARED BY:						
						W.E. Acree, Jr.		
						EXPERIMENTAL	VALUES	
		T/K	*2	<i>*</i> 1	T/K	*2	×1	
306.2	0.626	0.374	335.8	0.290	0.710			
316.5	0,530	0.470	343.0	0.176	0.824			
324.0	0.445	0.555	348.8	0.081	0.919			
331.8	0,346	0.654						
		AUXILIARY	INFORMATION					
METHOD: APPARATUS/PROCEDURE			SOURCE ANI	D PURITY OF	MATERIALS:			
Constant temperature bath and a precision thermometer. Mixtures of known concentrations sealed in glass tubes and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly increased. Solubility determined by visual		(1) Purity not specified, Eastman Kodak Company, Rochester, New York, USA, was recrystallized several times from meth anol.						
		(2) Purity not given, Eastman Kodak Compa was distilled shortly before use.						
noting the te	noting the temperature at which the last		ESTIMATED	ERRORS:	······································			
trace of solid solute disappeared. Meas- urements repeated several times to verify results.		T/K: precision \pm 0.1. $x_i: \pm$ 0.002. (compiler).						

Components:	ORIGINAL MEASUREMENTS:			
(1) Naphthalene; C ₁₀ H ₈ ; [91-20-3]	Chang, W.			
(2) 1,2-Dichloroethane; C ₂ H ₄ Cl ₂ ; [107-06-2]	Ph.D Dissertation, North Dakota State Uni- versity, North Dakota, USA (1969).			
VARIABLES:	PREPARED BY:			
T/K = 298	W.E. Acree, Jr.			
EXPERIMENTAL VALUES				
t/°C x ₂	<i>x</i> 1			
25.0 0.680	0.320			
AUXILIARY	INFORMATION			
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:			
Constant temperature bath and a precision thermometer.	 Purity, source and purification proce- dures not specified. 			
Mixtures of known concentrations sealed in glass ampoules and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly increased. Solubility determined by visual	(2) Reagent Grade, Matheson, Coleman and Bell, USA, was used as received.			
noting the temperature at which the last trace of solid solute disappeared. Sol- ubilities at 298 K interpolated from experimental values using $\ln x_1$ versus $1/T$ graph.	ESTIMATED ERRORS: T/K : precision \pm 0.1. x_1 : \pm 2 % (relative error; compiler).			

COMPONENTS: (1) Naphthalene; C ₁₀ H ₈ ; [91-20-3] (2) 1,2-Dichloroethane; C ₂ H ₄ Cl ₂ ; [107-06-2] VARIABLES:		ORIGINAL MEASUREMENTS: Sunier, A.A.; Rosenblum, C. J. Phys. Chem. <u>1928</u> , 32, 1047-1055. PREPARED BY:									
						Temperature	Temperature		W.E. Acree, Jr.		
						EXPERIMENTAL	VALUES		ļ		
						T/K	x 2	×1	T/K	×2	x 1 ,
300.4	0.664	0.336	332.6	0.322	0.678						
309.7	0.581	0.419	342.9	0.173	0.827						
319.3	0.485	0.515	348.9	0.082	0.918						
324.3	0.428	0.572									
<u> </u>		AUXILIARY	INFORMATION	N							
METHOD: APPARI	ETHOD: APPARATUS/PROCEDURE		SOURCE ANI	D PURITY OF	MATERIALS:						
Constant temperature bath and a precision thermometer. Mixtures of known concentrations sealed in glass tubes and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly increased. Solubility determined by visual noting the temperature at which the last trace of solid solute disappeared. Meas- urements repeated several times to verify results.		 Purity not specified, Eastman Kodak Company, Rochester, New York, USA, was recrystallized several times from meth anol. Purity not given, Eastman Kodak Compan was distilled shortly before use. 		er, New York, USA, was everal times from meth- , Eastman Kodak Company,							
			ERRORS: cision ± 0.1 002. (compile								

COMPONENTS: ORIGINAL MEASUREMENTS: (1) Naphthalene; C₁₀H₈; [91-20-3] Chang, W. Ph.D Dissertation, North Dakota State Uni-versity, North Dakota, USA (1969). (2) Chlorobenzene; C₄H₅Cl; [108-90-7] VARIABLES: PREPARED BY: T/K = 298W.E. Acree, Jr. EXPERIMENTAL VALUES t/°C ×2 ×1 25.0 0.689 0.311 AUXILIARY INFORMATION SOURCE AND PURITY OF MATERIALS: METHOD: APPARATUS/PROCEDURE (1) Purity, source and purification proce-dures not specified. Constant temperature bath and a precision thermometer. Mixtures of known concentrations sealed in glass ampoules and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly increased. Solubility determined by visual noting the temperature at which the last trace of solid solute disappeared. Sol-ubilities at 298 K interpolated from experimental values using $\ln x_1$ versus 1/T oraph. (2) Reagent Grade, Eastman Organic Chemical Company, USA, was used as received. ESTIMATED ERRORS: T/K: precision \pm 0.1. x: ± 2 % (relative error; compiler). $1/\bar{T}$ graph.

COMPONENTS:	Components :		ORIGINAL MEASUREMENTS:								
 (1) Naphthalene; C₁₀H₈; [91-20-3] (2) Chlorobenzene; C₆H₅Cl; [108-90-7] VARIABLES: 		Ward, H.L. J. Phys. Chem. <u>1926</u> , 30, 1316-1333. PREPARED BY:									
						Temperature	Temperature		W.E. Acree, Jr.		
						EXPERIMENTAL	VALUES				
<i>т/</i> к	×2	<i>x</i> ₁	T/K	x2	×1						
277.4	0.815	0.185	316.0	0.527	0.473						
282.0	0.792	0.208	322.2	0.460	0.540						
295.3	0.708	0.292	335.8	0.284	0.716						
302.6	0.651	0.349									
		AUXILIARY	INFORMATION	ł							
METHOD: APPARJ	ATUS/PROCEDUP	E	SOURCE AND	PURITY OF M	MATERIALS:						
Constant temperature bath and a precision thermometer. Mixtures of known concentrations sealed in glass tubes and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly		 (1) Purity and source not specified, was recrystallized several times from meth- anol to give a melting temperature of 80.05-80.10 °C. (2) Purity and commercial supplier not given, was fractionally distilled threatimes through a Hempel column. 									
were rotated while bath temperature slowly increased. Solubility determined by visual noting the temperature at which the last trace of solid solute disappeared. Meas- urements repeated several times to verify results.		ESTIMATED T/K: prec	ERRORS: ision ± 0.1.	-							

Components :	ORIGINAL MEASUREMENTS:
(1) Naphthalene; C ₁₀ H ₈ ; [91-20-3]	Morris, R.E.; Cook, W.A.
 (2) 1,4-Dichlorobenzene; C₆H₄Cl₂; 	J. Am. Chem. Soc. <u>1935</u> , 57, 2403-2406.
[106-46-7]	
VARIABLES:	PREPARED BY:
Temperature	W.E. Acree, Jr.
EXPERIMENTAL VALUES	
т/к ×2	x ₁ Solid Phase
326.4 1.000	0.000 (2)
323.7 0.950	0.050 (2)
319.6 0.881	0.119 (2)
313.3 0.771	0.229 (2)
308.8 0.699	0.301 (2)
305.0 0.652	0.348 (2)
304.3 0.639	0.361 (2)
304.1 0.632	0.368 (2)
303.4 0.606	0.396
304.8 0.591	0.409 (1)
311.7 0.531	0.469 (1)
316.5 0.490	0.510 (1)
320.5 0.447	0.553 (1)
326.6 0.378	0.622 (1)
332.9 0.308	0.692 (1)
342.1 0.182	0.818 (1)
347.0 0.106	0.894 (1)
353.2 0.000	1.000 (1)
	UXILIARY INFORMATION
ETHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:
Constant temperature bath and a pr thermometer.	<pre>specified, was purified by distilla- lation.</pre>
Mixtures of known concentrations s in glass ampoules and placed in co temperature to equilibrate. Sample were rotated while bath temperatur	stant (2) Purity and chemical source were not specified, was purified by distilla- slowly tion.
increased. Solubility determined b noting the temperature at which th	
trace of solid solute disappeared.	T/K: precision ± 0.1. x_1 : ± 0.001.

COMPONENTS:		ORIGINAL MEASUREMENTS:				
(1) Naphthalene; C ₁₀ H ₈ ; [91-20-3]		McLaughlin, E.; Messer, C.E.				
(2) Hexafluorobenzene;	C ₆ F ₆ ; [392-56-3]	J. Chem. Soc., Sect. A <u>1966</u> , 1106-1110.				
VARIABLES:	·····	PREPARED BY:				
Temperature		W.E. Acree, Jr.				
EXPERIMENTAL VALUES	<u></u>					
T/K	*2	*1				
346.80	0.1177	0.8823				
348.30	0.0895	0.9105				
349.80	0.0647	0.9353				
351.75	0.0293	0.9707				
	AUXILIARY	INFORMATION				
METHOD: APPARATUS/PROCED	URE	SOURCE AND PURITY OF MATERIALS:				
Constant temperature ba thermometer.	-	 Molecular Weight Grade, Hopkin and Williams, was passed over an alumina column, recrystallized and sublimed. 				
Mixtures of known concentrations sealed in glass ampoules and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly increased. Solubility determined by visual		(2) Purity not given, Imperial Smelting, Ltd., Avonmouth, Bristol, was dried over anhydrous calcium sulfate.				
noting the temperature trace of solid solute d	at which the last	ESTIMATED ERRORS:				
	erabbearew.	T/K: precision \pm 0.1. x_1 : \pm 0.0003 (compiler).				

COMPONENTS:	ORIGINAL MEASUREMENTS:	
(1) Naphthalene; C ₁₀ H ₈ ; [91-20-3]	Miyagishi, S.; Isomi, A.; Iwata, T.; Asakawa, T.; Nishida, M.	
<pre>(2) Octafluoronaphthalene; C₁₀F₈; [313-72-4]</pre>	Bull. Chem. Soc. Japan <u>1985</u> , 58, 3643- 3644.	
VARIABLES:	PREPARED BY:	_
	W.E. Acree, Jr.	
		_

EXPERIMENTAL VALUES

Phase diagram, given in the original paper, shows formation of a 1:1 naphthalene - octafluoronaphthalene molecular compound having a melting point of circa 408.2 K. Two eutectic points occur at about $x_2 = 0.09$ and T/K = 350.2, and at about $x_2 = 0.88$ and T/K = 358.2.

AUXILIARY INFORMATION				
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:			
Differential scanning calorimeter and an analytical balance.	 Analytical grade, Katayama Chemicals, Japan, was used as received. 			
Binary mixtures were prepared by weight. Melting point temperatures and phase diagram determined using differential scanning calorimetric techniques.	(2) Reagent grade, Tokyo Chemical Company, Japan, was recrystallized from meth- anol before use.			
	ESTIMATED ERRORS:			
	T/K: precision \pm 0.3 (Compiler). x ₁ : \pm 0.02 (Compiler).			

COMPONENTS:

Naphthalene; C₁₀H₈; [91-20-3]
 Methanol; CH₂O; [67-56-1]

EVALUATOR:

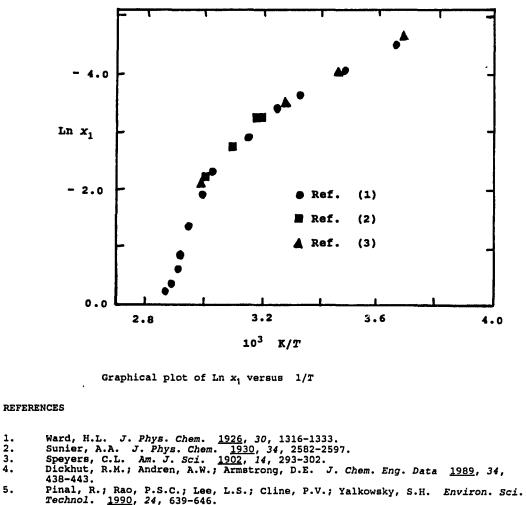
W.E. Acree, Jr. Department of Chemistry University of North Texas Denton, Texas 76203-5068 (USA) August, 1994 143

CRITICAL EVALUATION:

Naphthalene solubilities in methanol were retrieved from papers by Ward (1), Sunier (2), Speyers (3), Dickhut et al. (4) and Pinal et al. (5). The first three studies report values at several temperatures, whereas Dickhut et al. and Pinal et al. measured only the mole fraction solubility at a single temperature of 298 K and 296 K, respectively. There is no a prior reason to exclude any of the five studies from the critical evaluation.

Regressional analysis of the experimental data as $\text{Ln } x_1$ versus 1/T yielded the following mathematical relationship:

 $\label{eq:Ln x_1 = -5574.0 (1/T) + 14.998} (r = 0.9280)$ for variation of naphthalene solubility with absolute temperature (see graph below). Nonlinear behavior indicates a nonconstant enthalpy of solution, probably caused by self-associating hydrogen-bonding character of methanol.



COMPONENTS:		ORIGINAL MEASUREMENTS:		
(1) Naphthalene; $C_{10}H_{a}$; [91-20-3]		Ward, H.L.		
(2) Methanol; CH ₂ O; [67-56-1]		J. Phys. Chem. <u>1926</u> , 30, 1316-1333.		
	50-1j			
VARIABLES:		PREPARED BY:		
Temperature		W.E. Acree, Jr.		
EXPERIMENTAL VALUES		4		
T/K	×2	×1		
274.0	0.989	0.0107		
286.7	0.984	0.0163		
299.5	0.974	0.0255		
306.8	0.967	0.0333		
310.6	0.961	0.0390		
317.1	0.948	0.052		
329.9	0.898	0.102		
334.0	0.857	0.143		
338.9	0.745	0.255		
341.6	0.613	0.387		
342.7	0.503	0.497		
344.9	0.334	0.666		
346.0	0.268	0.732		
347.1	0.206	0.794		
347.5	0.180	0.820		
	AUXILIARY	INFORMATION		
METHOD: APPARATUS/PROCEDU	RE	SOURCE AND PURITY OF MATERIALS:		
Constant temperature bat thermometer. Solubilities were measur	ed using a	(1) Purity and source not specified, was recrystallized several times from meth- anol to give a melting temperature of 80.05-80.10 °C.		
dynamic method. Mixtures trations were sealed in glass tubes and placed i temperature to equilibra rotation to thoroughly m temperature was slowly i bility visually determin temperature at which the solid solute disappeared repeated several times t	thick-walled n a constant te with gentle ix contents. Bath ncreased and solu- ed by noting the last trace of . Measurements	(2) Absolute, commercial supplier not iden- tified, fractionally distilled over sodium metal, collecting the fraction at 64.7-64.8 °C.		
		ESTIMATED ERRORS:		
		T/K: precision \pm 0.1. x_1 : to 3 significant figs. (compiler).		

COMPONENTS: (1) Naphthalene; C ₁₀ H ₈ ; [91-20-3] (2) Methanol; CH ₄ O; [67-56-1] VARIABLES:		ORIGINAL MEASUREMENTS:									
		Sunier, A.A. J. Phys. Chem. <u>1930</u> , 34, 2582-2597. PREPARED BY:									
						Temperature			W.E. Acree, Jr.		
						EXPERIMENTAL Y	VALUES				
T/K	*2	x 1	T/K	*2	×1						
313.4	0.9610	0.0390	341.8	0.6093	0.3907						
322.1	0.9412	0.0588									
331.6	0.8980	0.1020									
<u>.</u>		AUXILIARY	INFORMATION	٩							
METHOD: APPAR	ATUS/PROCEDUR	E	SOURCE ANI	D PURITY OF N	AATERIALS:						
Constant temperature bath and a precision thermometer.			 Purity not specified, Eastman Kodak Company, Rochester, New York, USA, was recrystallized several times from meth anol. C.P. Grade, source not given, was refluxed over lime once and distilled before use. 								
Mixtures of known concentrations sealed in glass tubes and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly increased. Solubility determined by visual											
noting the te	emperature at	which the last	ESTIMATED	ERRORS:	<u></u>						
trace of solid solute disappeared. Meas- urements repeated several times to verify results.		T/K: precision \pm 0.1. x ₁ : \pm 0.0002. (compiler).									

COMPONENTS: (1) Naphthalene; C ₁₀ H ₈ ; [91-20-3] (2) Methanol; CH ₄ O; [67-56-1] VARIABLES:			ORIGINAL MEASUREMENTS: Sunier, A.A. J. Phys. Chem. <u>1930</u> , 34, 2582-2597. PREPARED BY: W.E. Acree, Jr.									
							Temperature					
							EXPERIMENTAL	VALUES				
							T/K	<i>x</i> 2	×1	T/K	*2	×1
310.8	0.9626	0.0374					313.3	0.9583	0.0417			
321.0	0.9413	0.0587	320.8	0.9418	0.0582							
331.1	0.8938	0.1062	330.6	0.8976	0.1024							
		AUXILIARY	INFORMATION									
METHOD: APPARATUS/PROCEDURE			SOURCE AND	PURITY OF M	ATERIALS:							
Constant temperature bath and a precision thermometer. Mixtures of known concentrations sealed in glass tubes and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly increased. Solubility determined by visual			 Purity not specified, Eastman Kodak Company, Rochester, New York, USA, was recrystallized several times from meth- anol. C.P. Grade, source not given, was refluxed over lime twice and distilled before use. 									
increased. Solubility determined by visual noting the temperature at which the last trace of solid solute disappeared. Meas- urements repeated several times to verify results.			ESTIMATED ERRORS: T/K : precision \pm 0.1. x_1 : \pm 0.0002. (compiler).									

COMPONENTS: ORIGINAL MEASUREMENTS: Dickhut, R.M.; Andren, A.W.; Armstrong, (1) Naphthalene; C10H8; [91-20-3] D.E. (2) Methanol; CH₄O; [67-56-1] J. Chem. Eng. Data 1989, 34, 438-443. VARIABLES: PREPARED BY: T/K = 298W.E. Acree, Jr. EXPERIMENTAL VALUES t/°C *x*2 ×1 0.0235 25.0 0.9765 AUXILIARY INFORMATION METHOD: APPARATUS/PROCEDURE SOURCE AND PURITY OF MATERIALS: Constant temperature bath, thermometer, (1) Scintillation grade, 99 %, source not and an ultraviolet spectrophotometer. given. Excess solute and solvent placed in closed (2) 99.9 %, source not given. glass bottles, mixed at room temperature for 24 hours on magnetic stirrers and temperature equilibrated for an additional 24 hours in a constant temperature water

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COMPONENTS:	ORIGINAL MEASUREMENTS:
photometric analysis at 254 nm.	ESTIMATED ERRORS: T/K : precision \pm 0.05 (compiler). x_1 : \pm 5 % (relative error; compiler).
quots of saturated solution were removed and diluted quantitatively for spectro-	

T/K = 296W.E. Acree, Jr. EXPERIMENTAL VALUES t/°C $c_1/(\text{mol dm}^{-3})$ 23.0 0.616 AUXILIARY INFORMATION METHOD: APPARATUS/PROCEDURE SOURCE AND PURITY OF MATERIALS: Purity not given, commercial sample of unspecified source, was used as Constant temperature bath, centrifuge, thermometer, and an HPLC equipped with uv absorption and fluorescence detection. received. Excess solute and solvent were placed in glass vials and allowed to equilibrate (2) Purity and chemical source not given, purification procedure not specified. with rotation for 12-24 hours in a con-stant temperature bath. Prior to analysis samples were centrifuged at a minimum of 300 RCF for 15 minutes. The clear supernatant solution was analyzed by reversed-phase liquid chromatography with either fluorescence or uv detection. ESTIMATED ERRORS:

$T/K: \pm 1.$

 c_1 : \pm 5% (relative error; compiler).

COMPONENTS: (1) Naphthalene; C ₁₀ H ₈ ; [91-20-3] (2) Methanol; CH ₄ O; [67-56-1] VARIABLES: Temperature			ORIGINAL MEASUREMENTS: Speyers, C.L. Am. J. Sci. <u>1902</u> , 14, 293-302. PREPARED BY: W.E. Acree, Jr.									
							EXPERIMENTAL	VALUES		_[
							T/K	×2	×1	T/K	*2	×1
							273.2	0.9913	0.0087	321.2	0.9417	0.0583
							287.8	0.9832	0.0168	333.1	0.8766	0.1234
305.0	0.9703	0.0297										
		AUXILIARY	INFORMATION		/							
ETHOD: APPARATUS/PROCEDURE			SOURCE ANI	PURITY OF M	ATERIALS:							
Experimental procedure only marginally described by author. Excess solute and solvent were equilibrated in a constant temperature water bath for between 10-30 minutes. Saturated solution was with- drawn through a coarse filter and anal- yzed by specific gravity. Author noted that evaporation to dryness and weighing the residue was subject to too much decomposition.			 (1) Purity not given, Kahlbaum, was recrystallized from alcohol to a melting point temperature of 80.1 °C. (2) Marked "Acetonfrei", from Kahlbaum, dried over calcium oxide and distilled before use. ESTIMATED ERRORS: 									
							T/K: precision \pm 0.1. x_1 : \pm 8 % (relative error, compiler).					

COMPONENTS: (1) Naphthalene; C ₁₀ H ₈ ; [91-20-3] (2) Ethanol; C ₂ H ₆ O; [64-17-5] VARIABLES: Temperature			ORIGINAL MEASUREMENTS: Speyers, C.L. Am. J. Sci. <u>1902</u> , 14, 293-302. PREPARED BY: W.E. Acree, Jr.									
							EXPERIMENTAL	VALUES		<u> </u>	<u> </u>	<u></u>
							T/K	*2	×1	T/K	*2	* ₁
							273.2	0.9820	0.0180	320.1	0.9030	0.0970
							281.8	0.9787	0.0213	343.0	0.3577	0.6423
305.0	0.9518	0.0482										
<u> </u>		AUXILIARY	INFORMATION	1								
METHOD: APPARATUS/PROCEDURE			SOURCE ANI	PURITY OF M	ATERIALS:							
Experimental procedure only marginally described by author. Excess solute and solvent were equilibrated in a constant temperature water bath for between 10-30 minutes. Saturated solution was with- drawn through a coarse filter and anal- yzed by specific gravity. Author noted that evaporation to dryness and weighing the residue was subject to too much decomposition.			 Purity not given, Kahlbaum, was recrys- tallized from alcohol to a melting point temperature of 80.1 °C. 									
			 (2) Marked absolute, from Eimer and Amend and Chas. Cooper and Co., dried over calcium oxide and distilled before use. ESTIMATED ERRORS: 									
							T/K: precision \pm 0.1. x ₁ : \pm 8 % (relative error, compiler).					

COMPONENTS:

(1) Naphthalene; C₁₀H₈; [91-20-3]
 (2) Ethanol; C₂H₆O; [64-17-5]

EVALUATOR:

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W.E. Acree, Jr.
Department of Chemistry
University of North Texas
Denton, Texas 76203-5068 (USA)
August, 1994
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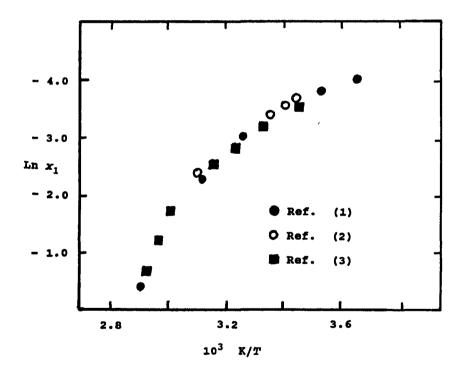
CRITICAL EVALUATION:

Naphthalene solubilities in ethanol were retrieved from papers by Speyers (1), Domanska (2), Sunier (3) and Dickhut *et al.* (4). The first three studies report values at several temperatures, whereas Dickhut *et al.* (4) measured only the mole fraction solubility at 298 K. There is no a prior reason to exclude any of the four studies from the critical evaluation.

Regressional analysis of the experimental data as $\ln x_1$ versus 1/T yielded the following mathematical relationship:

 $Ln x_1 = -4761.8 (1/T) + 12.740 \qquad (r = 0.9461)$

for variation of naphthalene solubility with absolute temperature (see graph below). Nonlinear behavior indicates a nonconstant enthalpy of solution, probably caused by self-associating hydrogen-bonding character of ethanol.



Graphical plot of Ln x_1 versus 1/T

REFERENCES

- 1. Speyers, C.L. Am. J. Sci. <u>1902</u>, 14, 293-302.
- 2. Domanska, U. Polish J. Chem. <u>1981</u>, 55, 1715-1720.

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3. Sunier, A.A. J. Phys. Chem. <u>1930</u>, 34, 2582-2597.
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 Dickhut, R.M.; Andren, A.W.; Armstrong, D.E. J. Chem. Eng. Data <u>1989</u>, 34, 438-443.

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COMPONENTS: (1) Naphthalene; C ₁₀ H ₈ ; [91-20-3] (2) Ethanol; C ₂ H ₆ O; [64-17-5] VARIABLES: Temperature			ORIGINAL MEASUREMENTS:									
			Domanska, U. Polish J. Chem. <u>1981</u> , 55, 1715-1720. (numerical values obtained through personal correspondence with author.) PREPARED BY: W.E. Acree, Jr.									
							EXPERIMENTAL V	ALUES				
							T/K	x2	<i>x</i> 1	T/K	×2	×1
							290.50	0.976	0.024	305.65	0.958	0.042
294.30	0.972	0.028	308.80	0.952	0.048							
298.15	0.968	0.032	322.20	0.913	0.087							
302.20	0.963	0.037										
		AUXILIARY	INFORMATION	· · · · · · · · · · · · · · · · · · ·								
METHOD: APPARATUS/PROCEDURE			SOURCE AND	PURITY OF N	AATERIALS:							
Constant temperature bath and a precision thermometer. Mixtures of known concentrations were sealed in ampoules and placed in constant temperature to equilibrate. Bath tempera- ture was slowly increased. Solubility determined by visually noting temperature			 Purity not specified, P.O.Ch., Gliwice, Poland, was vacuum sublimed to a melting temperature of 80.25 °C. Initial purity not specified, Reachim., Poland, was dried over phosphorous pen- toxide and fractionally distilled to a final purity of 99.9+ %. 									
at which last trace of solid disappeared.		ESTIMATED ERRORS:										
		T/K: precision \pm 0.1. x_1 : to 3 significant figs. (compiler).										

COMPONENTS: (1) Naphthalene; C ₁₀ H ₈ ; [91-20-3] (2) Ethanol; C ₂ H ₆ O; [64-17-5] VARIABLES: Temperature			ORIGINAL MEASUREMENTS: Sunier, A.A. J. Phys. Chem. <u>1930</u> , 34, 2582-2597. PREPARED BY: W.E. Acree, Jr.									
							EXPERIMENTAL	VALUES		-		
							T/K	×2	<i>*</i> 1	T/K	<i>x</i> 2	x 1
							288.9	0.9708	0.0292	320.2	0.9000	0.1000
							299.0	0.9578	0.0422	330.3	0.8184	0.1816
308.4	0.9405	0.0595	336.2	0.7006	0.2994							
316.3	0.9171	0.0829	340.9	0.5035	0.4965							
· · · · · · · · · · · · · · · · · · ·		AUXILIARY	INFORMATION	N								
METHOD: APPAR	ETHOD: APPARATUS/PROCEDURE			D PURITY OF N	ATERIALS:							
Constant temperature bath and a precision thermometer. Mixtures of known concentrations sealed in glass tubes and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly increased. Solubility determined by visual			 Purity not specified, Eastman Kodak Company, Rochester, New York, USA, was recrystallized several times from meth- anol. 95 %, source not specified, was refluxed by the part distilled before used. 									
			over lime and distilled before use.									
noting the temperature at which the last trace of solid solute disappeared. Meas- urements repeated several times to verify results.			ESTIMATED ERRORS: T/K : precision \pm 0.1. x_1 : \pm 0.0002. (compiler).									
			1									

ORIGINAL MEASUREMENTS: COMPONENTS: Dickhut, R.M.; Andren, A.W.; Armstrong, (1) Naphthalene; C₁₀H₈; [91-20-3] D.E. (2) Ethanol; C₂H₆O; [64-17-5] J. Chem. Eng. Data <u>1989</u>, 34, 438-443. VARIABLES: PREPARED BY: T/K = 298W.E. Acree, Jr. EXPERIMENTAL VALUES t/°C ×2 ×₁ 25.0 0.9602 0.0398 AUXILIARY INFORMATION METHOD: APPARATUS/PROCEDURE SOURCE AND PURITY OF MATERIALS: Constant temperature bath, thermometer, and an ultraviolet spectrophotometer. (1) Scintillation grade, 99 %, source not given. Excess solute and solvent placed in closed glass bottles, mixed at room temperature (2) 200 Proof, source not given. for 24 hours on magnetic stirrers and temperature equilibrated for an additional 24 hours in a constant temperature water bath. After equilibrium was obtained aliquots of saturated solution were removed and diluted quantitatively for spectro-photometric analysis at 254 nm. ESTIMATED ERRORS: T/K: precision \pm 0.05 (compiler). x₁: \pm 5 % (relative error; compiler).

COMPONENTS: (1) Naphthalene; C ₁₀ H ₈ ; [91-20-3] (2) 1-Propanol; C ₃ H ₈ O; [71-23-8] VARIABLES: Temperature			ORIGINAL MEASUREMENTS: Sunier, A.A. J. Phys. Chem. <u>1930</u> , 34, 2582-2597. PREPARED BY: W.E. Acree, Jr.									
							EXPERIMENTAL	VALUES	······································	- 		
							T/K	x 2	<i>*</i> 1	T/K	x2	x ₁
							296.1	0.9524	0.0476	323.0	0.8491	0.1509
							301.1	0.9429	0.0571	327.0	0.8074	0.1926
309.2	0.9208	0.0792	332.5	0.7209	0.2791							
310.4	0.9168	0.0832	340.1	0.4751	0.5249							
314.9	0.8983	0.1017	342.7	0.3495	0.6505							
·····		AUXILIARY	INFORMATION	8								
ETHOD: APPAR	ETHOD: APPARATUS/PROCEDURE			D PURITY OF M	ATERIALS:							
Constant temperature bath and a precision thermometer. Mixtures of known concentrations sealed in glass tubes and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly increased. Solubility determined by visual noting the temperature at which the last trace of solid solute disappeared. Meas- urements repeated several times to verify results.			 Purity not specified, Eastman Kodak Company, Rochester, New York, USA, was recrystallized several times from meth- anol. Purity not given, Eastman Kodak Company was distilled shortly before use. 									
						ESTIMATED ERRORS:						
			T/K: precision \pm 0.1. x_1 : \pm 0.0002. (compiler).									

COMPONENTS:

(1) Naphthalene; C₁₀H₈; [91-20-3]

(2) 1-Propanol; C₃H₈O; [71-23-8]

EVALUATOR:

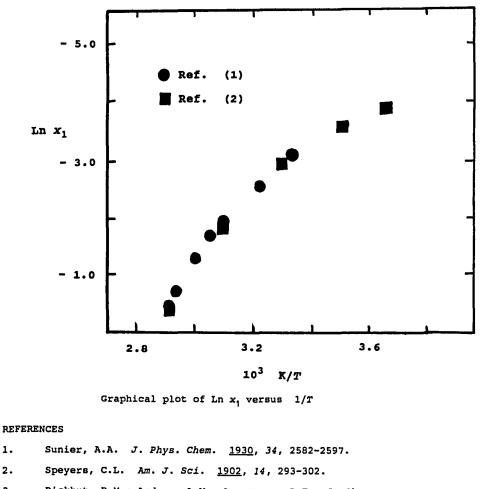
W.E. Acree, Jr. Department of Chemistry University of North Texas Denton, Texas 76203-5068 (USA) August, 1994

CRITICAL EVALUATION:

Naphthalene solubilities in 1-propanol were retrieved from papers by Sunier (1), Speyers (2) and Dickhut *et al.* (3). The first two studies report observed values at several temperatures, whereas Dickhut *et al.* determined only a single mole fraction solubility for 298 K. There is no a prior reason to exclude any of the three studies from the critical evaluation.

Regressional analysis of the experimental data as $Ln x_1$ versus 1/T yielded the following mathematical relationship:

Ln $x_1 = -4803.1 (1/T) + 13.193$ (r = 0.9694) for variation of naphthalene solubility with absolute temperature (see graph below). Nonlinear behavior indicates a nonconstant enthalpy of solution, probably caused by self-associating hydrogen-bonding character of 1-propanol.



 Dickhut, R.M.; Andren, A.W.; Armstrong, D.E. J. Chem. Eng. Data <u>1989</u>, 34, 438-443.

COMPONENTS:		ORIGINAL MEASUREMENTS:		
(1) Naphthalene; C ₁₀ H ₈ ;	[91-20-3]	Dickhut, R.M.; Andren, A.W.; Armstrong, D.E.		
(2) 1-Propanol; C ₃ H ₈ O; [71-23-8]		J. Chem. Eng. Data <u>1989</u> , 34, 438-443.		
VARIABLES:		PREPARED BY:		
T/K = 298		W.E. Acree, Jr.		
EXPERIMENTAL VALUES				
t/°C	*2	×1		
25.0	0.9495	0.0505		
METHOD: APPARATUS/PROCE	DURE	SOURCE AND PURITY OF MATERIALS:		
Constant temperature h and an ultraviolet spe		(1) Scintillation grade, 99 %, source not given.		
Excess solute and solv glass bottles, mixed a for 24 hours on magnet temperature equilibrat 24 hours in a constant bath. After equilibri quots of saturated sol and diluted quantitati	at room temperature tic stirrers and ed for an additional temperature water um was obtained ali- ution were removed	(2) 99.5 %, source not given.		
photometric analysis a		ESTIMATED ERRORS:		
		T/K: precision \pm 0.05 (compiler). $x_1: \pm 5$ % (relative error; compiler).		

COMPONENTS:			ORIGINAL MEASUREMENTS: Speyers, C.L.			
(1) Naphthal	ene; C ₁₀ H ₈ ; [9	91-20-3}				
(2) 1-Propanol; C ₃ H ₈ O; [71-23-8] VARIABLES: Temperature			Am. J. Sci. <u>1902</u> , 14, 293-302.			
			PREPARED BY: W.E. Acree, Jr.			
						EXPERIMENTAL
T/K	*2	×1	T/K	*2	×1	
273.2	0.9791	0.0209	323.5	0.8466	0.1534	
283.6	0.9730	0.0270	341.7	0.3710	0.6290	
303.5	0.9466	0.0534				
		AUXILIAR	(INFORMATION	₹		
METHOD: APPAR	ATUS/PROCEDUR	E	SOURCE ANI	PURITY OF M	ATERIALS:	
Experimental procedure only marginally described by author. Excess solute and solvent were equilibrated in a constant temperature water bath for between 10-30			talli		Kahlbaum, was recrys- cohol to a melting cof 80.1 °C.	
minutes. Saturated solution was with- drawn through a coarse filter and anal- yzed by specific gravity. Author noted that evaporation to dryness and weighing		(2) Purity not given, Kahlbaum, was dried over calcium oxide and distilled before use.				
the residue v decomposition	was subject to	o too much	ESTIMATED	ERRORS:	······	
•				ision <u>+</u> 0.1. (relative e	rror, compiler).	

COMPONENTS :	ORIGINAL MEASUREMENTS:
(1) Naphthalene; C ₁₀ H ₈ ; [91-20-3]	Sunier, A.A.
(2) 2-Propanol; C_3H_80 ; [67-63-0]	J. Phys. Chem. <u>1930</u> , 34, 2582-2597.
ARIABLES:	PREPARED BY:
Temperature	W.E. Acree, Jr.
XPERIMENTAL VALUES	
T/K x ₂	x 1
297.6 0.9629	9 0.0371
304.1 0.9508	8 0.0492
308.5 0.9392	2 0.0608
311.0 0.9312	2 0.0688
316.0 0.9115	5 0.0885
318.4 0.8988	8 0.1012
324.9 0.8503	3 0.1497
328.1 0.8122	2 0.1878
333.4 0.7124	4 0.2876
339.0 0.5227	7 0.4773
343.1 0.3295	
THOD: APPARATUS/PROCEDURE Constant temperature bath and a pr hermometer. Mixtures of known concentrations s in glass tubes and placed in const emperature to equilibrate. Sample were rotated while bath temperatur increased. Solubility determined b	Company, Rochester, New York, USA, was recrystallized several times from meth- anol. (2) Purity not given, Eastman Kodak Company was stored over lime and distilled shortly before use.
noting the temperature at which th trace of solid solute disappeared. arements repeated several times to	Meas-

COMPONENTS:

(1) Naphthalene; C₁₀H₈; [91-20-3]

(2) 1-Butanol; C₄H₁₀O; [71-36-3]

EVALUATOR:

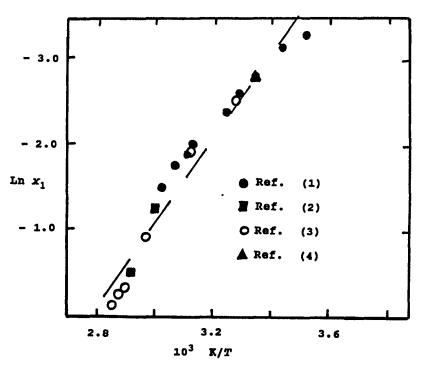
W.E. Acree, Jr. Department of Chemistry University of North Texas Denton, Texas 76203-5068 (USA) August, 1994

CRITICAL EVALUATION:

Naphthalene solubilities in 1-butanol were retrieved from papers by Domanska (1), Sunier (2), Ward (3) and Dickhut et al. (4). The first three studies report values at several temperatures, whereas Dickhut et al. (4) measured only the mole fraction solubility at 298 K. There is no a prior reason to exclude any of the four studies from the critical evaluation.

Regressional analysis of the experimental data as $Ln x_1$ versus 1/T yielded the following mathematical relationship:

 $Ln x_1 = -4963.6 (1/T) + 13.865 \qquad (r = 0.9814)$ for variation of naphthalene solubility with absolute temperature (see graph below). Nonlinear behavior indicates a nonconstant enthalpy of solution, probably caused by self-associating hydrogen-bonding character of 1-butanol.



Graphical plot of Ln x_1 versus 1/T

REFERENCES

- 1. Domanska, U. Polish J. Chem. <u>1981</u>, 55, 1715-1720.
- 2. Sunier, A.A. J. Phys. Chem. <u>1930</u>, 34, 2582-2597.
- 3. Ward, H.L. J. Phys. Chem. <u>1926</u>, 30, 1316-1333.
- 4. Dickhut, R.M.; Andren, A.W.; Armstrong, D.E. J. Chem. Eng. Data <u>1989</u>, 34, 438-443.

COMPONENTS:		ORIGINAL MEASUREMENTS:			
(1) Naphthalene; C ₁₀	H + [91-20-31				
(2) 1-Butanol; C ₄ H ₁₀ O; [71-36-3]		Domanska, U. Polish J. Chem. <u>1981</u> , 55, 1715-1720. (numerical values obtained through personal correspondence with author.)			
VARIABLES:		PREPARED BY:			
Temperature		W.E. Acree, Jr.			
EXPERIMENTAL VALUES					
T/K	*2	×ı			
284.05	0.962	0.038			
289.05	0.955	0.045			
291.95	0.950	0.050			
295.35	0.942	0.058			
298.25	0.934	0.066			
303.25	0.923	0.077			
307,95	0.909	0.091			
313.45	0.887	0.113			
317.35	0.860	0.140			
319.75	0.844	0.156			
323.55	0.824	0.176			
330.45	0.772	0.228			
	AUXILIARY	INFORMATION			
ÆTHOD: APPARATUS/PRO		INFORMATION SOURCE AND PURITY OF MATERIALS:			
thermometer.	CEDURE bath and a precision				
Constant temperature thermometer. Solubilities were me dynamic method. Mixtu trations were sealed glass ampoules and p	CEDURE bath and a precision asured using a ures of known concen- in thick-walled laced in a constant ibrate. Bath tempera- eased by 2 K per termined by visually re at which the last	SOURCE AND PURITY OF MATERIALS: (1) Purity not specified, P.O.Ch., Gliwice, Poland, was vacuum sublimed			
Constant temperature thermometer. Solubilities were me dynamic method. Mixtu trations were sealed glass ampoules and p temperature to equil ture was slowly incra hour. Solubility de noting the temperature	CEDURE bath and a precision asured using a ures of known concen- in thick-walled laced in a constant ibrate. Bath tempera- eased by 2 K per termined by visually re at which the last	 SOURCE AND PURITY OF MATERIALS: (1) Purity not specified, P.O.Ch., Gliwice, Poland, was vacuum sublimed to a melting temperature of 80.25 °C. (2) Initial purity not specified, P.O.Ch., was dried over sodium carbonate and fractionally distilled to a final 			

COMPONENTS:	(01 00-3)	ORIGINAL MEASUREMENTS: Ward, H.L.			
(1) Naphthalene; C ₁₀ H ₈ ;		Ward, H.L. J. Phys. Chem. <u>1926</u> , 30, 1316-1333.			
(2) 1-Butanol; C ₄ H ₁₀ O; (71-36-3]	5. FNYS. CHEM. <u>1920</u> , 56, 1510-1555.			
VARIABLES:		PREPARED BY:			
Temperature		W.E. Acree, Jr.			
EXPERIMENTAL VALUES					
T/K	<i>x</i> ₂	x,			
295.2	0.942	0.058			
297.5	0.938	0.062			
304.8	0.918	0.082			
308.8	0.905	0.095			
319.7	0.842	0.158			
325.5	0.789	0.211			
330.1	0.724	0.276			
336.4	0.568	0.432			
341.3	0.391	0.609			
343.3	0.300	0.700			
344.9	0.238	0.762			
347.1 349.2	0.163 0.095	0.837 0.905			
	AUXILIARY	INFORMATION			
METHOD: APPARATUS/PROCED	URE	SOURCE AND PURITY OF MATERIALS:			
Constant temperature bath and a precision thermometer. Solubilities were measured using a dynamic method. Mixtures of known concen- trations were sealed in thick-walled glass tubes and placed in a constant temperature to equilibrate with gentle rotation to thoroughly mix contents. Bath temperature was slowly increased and solu- bility visually determined by noting the temperature at which the last trace of solid solute disappeared. Measurements repeated several times to verify results.		 Purity and source not specified, was recrystallized several times from meth- anol to give a melting temperature of 80.05-80.10 °C. Purity not specified, from fermentation processes, fractionally distilled four times, collecting the last fraction at 117.6-117.8 °C. 			
		ESTIMATED ERRORS: T/K : precision \pm 0.1. x_1 : to 3 significant figs. (compiler).			

COMPONENTS:			ORIGINAL MEASUREMENTS: Sunier, A.A.			
(1) Naphthale	ene; C ₁₀ H ₈ ; [9	1-20-3]				
(2) 1-Butanol; C ₄ H ₁₀ O; [71-36-3]			J. Phys. Chem. <u>1930</u> , 34, 2582-2597.			
VARIABLES:	ARIABLES:		PREPARED BY:			
Temperature		W.E. Acree, Jr.				
EXPERIMENTAL V	VALUES					
T/K	x 2	<i>x</i> 1	T/K	×2	<i>x</i> ₁	
307.9	0.9061	0.0939	341.6	0.3745	0.6255	
320.8	0.8348	0.1652				
331.0	0.7063	0.2937				
	<u></u>	AUXILIARY	INFORMATION	 I		
METHOD: APPARI	ATUS/PROCEDUR	E	SOURCE AND	PURITY OF M	ATERIALS:	
Constant temperature bath and a precision thermometer. Mixtures of known concentrations sealed in glass tubes and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly		 Purity not specified, Eastman Kodak Company, Rochester, New York, USA, way recrystallized several times from methanol. Purity not given, Eastman Kodak Company was distilled shortly before use. 				
increased. So noting the te trace of soli	enperature at solute dis	ermined by visual which the last appeared. Meas- times to verify		ERRORS: tision ± 0.1. 002. (compile		

COMPONENTS:	ORIGINAL MEASUREMENTS:		
<pre>(1) Naphthalene; C₁₀H₈; [91-20-3] (2) 1-Butanol; C₄H₁₀O; [71-36-3]</pre>	Dickhut, R.M.; Andren, A.W.; Armstrong, D.E. J. Chem. Eng. Data <u>1989</u> , 34, 438-443.		
VARIABLES:	PREPARED BY:		
T/K = 298	W.E. Acree, Jr.		
EXPERIMENTAL VALUES			
t/°C x ₂	<i>x</i> ₁		
25.0 0.9334	0.0666		
METHOD: APPARATUS/PROCEDURE Constant temperature bath, thermometer, and an ultraviolet spectrophotometer. Excess solute and solvent placed in closed glass bottles, mixed at room temperature for 24 hours on magnetic stirrers and temperature equilibrated for an additional 24 hours in a constant temperature water bath. After equilibrium was obtained ali- quots of saturated solution were removed and diluted quantitatively for spectro-	SOURCE AND PURITY OF MATERIALS: (1) Scintillation grade, 99 %, source not given. (2) 99.9 %, source not given.		
photometric analysis at 254 nm.	ESTIMATED ERRORS: T/K : precision \pm 0.05 (compiler). x_1 : \pm 5 % (relative error; compiler).		

COMPONENTS:			ORIGINAL MEASUREMENTS: Sunier, A.A.			
(1) Naphthale	ene; C ₁₀ H ₈ ; [9	1-20-3]				
(2) 2-Butano]			J. Phys. Chem. <u>1930</u> , 34, 2582-2597. PREPARED BY:			
VARIABLES:						
Temperature			W.E. Acre	ee, Jr.		
EXPERIMENTAL V	VALUES	·····	<u> </u>		<u> </u>	
T/K	×2	×1	T/K	* 2	x1	
301.9	0.9344	0.0656	319.6	0.8381	0.1619	
308.1	0.9116	0.0884	330.5	0.6757	0.3243	
313.7	0.8830	0.1170	333.8	0.5952	0.4048	
318.6	0.8477	0.1523	342.0 0.3894		0.6106	
		AUXILIARY	INFORMATION	N		
METHOD: APPARJ	ATUS/PROCEDUR	E	SOURCE ANI	D PURITY OF M	ATERIALS:	
Constant temperature bath and a precision thermometer. Mixtures of known concentrations sealed in glass tubes and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly increased. Solubility determined by visual		Compa recry anol. (2) Purit	any, Rocheste /stallized se .y not given,	ied, Eastman Kodak r, New York, USA, was veral times from meth- Eastman Kodak Company rtly before use.		
noting the te	emperature at	which the last appeared. Meas-	ESTIMATED	ERRORS:		
		times to verify		cision \pm 0.1. 002. (compile		

COMPONENTS:			ORIGINAL MEASUREMENTS:			
<pre>(1) Naphthalene; C₁₀H₈; [91-20-3] (2) 2-Methy1-1-propanol; C₄H₁₀O; [78-83-1]</pre>		Sunier, A.A. J. Phys. Chem. <u>1930</u> , 34, 2582-2597.				
						VARIABLES:
Temperature	W.E. Acree, Jr.					
EXPERIMENTAL '	VALUES	<u> </u>	Į	·····		
T/K	*2	* 1	T/K	<i>*</i> 2	* ₁	
292.7	0.9620	0.0380	323.6	0.8392	0.1608	
309.5	0.9220	0.0780	333.5	0.6779	0.3221	
310.8	0.9174	0.0826	336.3	0.5946	0.4054	
314.1	0.9036	0.0964	343.4	0.2908	0.7092	
322.8	0.8471	0.1529				
		AUXILIARY	INFORMATION	¥		
ETHOD: APPAR	ATUS/PROCEDUR	E	SOURCE ANI	D PURITY OF M	ATERIALS:	
thermometer. Mixtures of } in glass tube temperature t	known concent as and placed to equilibrat		Compa recry anol (2) Purit was s	any, Rocheste ystallized se y not given,	ied, Eastman Kodak r, New York, USA, was veral times from meth- Eastman Kodak Company, ime and distilled	
increased. So noting the te trace of soli	olubility dete emperature at id solute dis	ermined by visual which the last appeared. Meas- times to verify	ESTIMATED T/K: prec		er).	

COMPONENTS:			ORIGINAL MEASUREMENTS:				
(1) Naphthal	ene; C ₁₀ H ₈ ; [9	91-20-3]	Sunier, A.A.				
(2) 2-Methyl [75-65-0	<pre>(2) 2-Methyl-2-propanol; C₄H₁₀O; [75-65-0]</pre>			J. Phys. Chem. <u>1930</u> , 34, 2582-2597.			
VARIABLES:	 _		PREPARED BY: W.E. Acree, Jr.				
Temperature							
EXPERIMENTAL Y	VALUES	<u></u>	ļ				
T/K	<i>x</i> 2	<i>x</i> 1	T/K	*2	x 1		
295.3	0.9614	0.0386	323.4	0.8181	0.1819		
304.8	0.9348	0.0652	331.0	0.6910	0.3090		
311.0	0.9107	0.0893	335.6	0.5630	0.4370		
314.9	0.8896	0.1104	339.8	0.4604	0.5396		
320.5	0.8483	0.1517					
		AUXILIARY	INFORMATION	4			
METHOD: APPAR	ATUS/PROCEDUR	LE	SOURCE ANI	D PURITY OF M	ATERIALS:		
thermometer.	Constant temperature bath and a precision thermometer.		(1) Purity not specified, Eastman Kodak Company, Rochester, New York, USA, was recrystallized several times from meth anol.		r, New York, USA, was		
Mixtures of known concentrations sealed in glass tubes and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly increased. Solubility determined by visual		(2) Purity not given, Eastman Kodak Comp was distilled shortly before use.					
noting the te trace of soli	emperature at Ld solute dis	which the last appeared. Meas- times to verify	ESTIMATED ERRORS: T/K : precision \pm 0.1. x_{i} : + 0.0002. (compiler).				

results.

ESTIMATED ERRORS:

T/K: precision \pm 0.1. x₁: \pm 0.0002. (compiler).

.

COMPONENTS :		ORIGINAL MEASUREMENTS:			
(1) Naphthalene; C ₁₀ H ₈ ; [91-20-3]	Dickhut, R.M.; Andren, A.W.; Armstrong, D.E.			
(2) 1-Pentanol; C ₅ H ₁₀ O; [71-41-0]	J. Chem. Eng. Data <u>1989</u> , 34, 438-443.			
VARIABLES:		PREPARED BY:			
T/K = 298		W.E. Acree, Jr.			
EXPERIMENTAL VALUES					
t/°C	*2	~ ~ × 1			
25.0	0.9189	0.0811			
	AUXILIARY	INFORMATION			
	AUXILIARY	INFORMATION			
Constant temperature bat	RE h, thermometer,	SOURCE AND PURITY OF MATERIALS: (1) Scintillation grade, 99 %, source not			
METHOD: APPARATUS/PROCEDU Constant temperature bat and an ultraviolet spect	RE h, thermometer,	SOURCE AND PURITY OF MATERIALS:			
Constant temperature bath and an ultraviolet spectr Excess solute and solven for 24 hours on magnetic temperature equilibrated 24 hours in a constant to bath. After equilibrium quots of saturated solut: and diluted quantitative	RE h, thermometer, rophotometer. t placed in closed room temperature stirrers and for an additional emperature water was obtained ali- ion were removed ly for spectro-	SOURCE AND PURITY OF MATERIALS: (1) Scintillation grade, 99 %, source not			
Constant temperature bath and an ultraviolet spects Excess solute and solven glass bottles, mixed at for 24 hours on magnetic temperature equilibrated 24 hours in a constant to bath. After equilibrium quots of saturated soluti	RE h, thermometer, rophotometer. t placed in closed room temperature stirrers and for an additional emperature water was obtained ali- ion were removed ly for spectro-	SOURCE AND FURITY OF MATERIALS: (1) Scintillation grade, 99 %, source not given.			

		ORIGINAL MEASUREMENTS: Domanska, U. Polish J. Chem., <u>1981</u> , 55, 1715-1720. (numerical values obtained through personal correspondence with author.)		
(1) Naphthalene; C ₁₀ H ₈ ;	[91-20-3]			
(2) 1-Hexanol; C ₆ H ₁₄ O;	[111-27-3]			
VARIABLES:		PREPARED BY:		
Temperature		W.E. Acree, Jr.		
EXPERIMENTAL VALUES	la na standar a di sa standar di si si sa standar sa standar sa standar sa standar sa standar sa standar sa st	4		
T/K	×2	×1		
282.30	0.946	0.054		
286.35	0.936	0.062		
290.35	0.927	0.073		
296.05	0.914	0.086		
299.95	0.899	0.101		
305.75	0.880	0.120		
310.85	0.853	0.147		
314.95	0.825	0.175		
318.95	0.799	0.201		
321.45	0.776	0.224		
331.55	0.632	0.368		
	AUXILIARY	INFORMATION		
ETHOD: APPARATUS/PROCEL		INFORMATION SOURCE AND PURITY OF MATERIALS:		
Constant temperature ba thermometer.	DURE ath and a precision	Г		
Constant temperature ba	DURE ath and a precision ared using a as of known concen- a thick-walled red in a constant rate. Bath tempera- red by 2 K per mined by visually at which the last	 SOURCE AND PURITY OF MATERIALS: (1) Purity not specified, P.O.Ch., Gliwice, Poland, was vacuum sublimed to a melting temperature of 80.25 °C. (2) Initial purity not specified, Reachim, 		
Constant temperature ba thermometer. Solubilities were measu dynamic method. Mixture trations were sealed in glass ampoules and plac temperature to equilibr ture was slowly increas hour. Solubility deter noting the temperature	DURE ath and a precision ared using a as of known concen- a thick-walled red in a constant rate. Bath tempera- red by 2 K per mined by visually at which the last	 SOURCE AND PURITY OF MATERIALS: (1) Purity not specified, P.O.Ch., Gliwice, Poland, was vacuum sublimed to a melting temperature of 80.25 °C. (2) Initial purity not specified, Reachim, Poland, was dried over sodium carbonate and fractionally distilled to a final 		

COMPONENTS:		ORIGINAL MEASUREMENTS:		
	(91-20-3)	Domanska, U. Polish J. Chem., <u>1981</u> , 55, 1715-1720. (numerical values obtained through personal correspondence with author.)		
(1) Naphthalene; $C_{10}H_8$;				
(2) 1-Octanol; C ₈ H ₁₈ O;				
VARIABLES:		PREPARED BY:		
Temperature		W.E. Acree, Jr.		
EXPERIMENTAL VALUES		+		
T/K	*2	×1		
280.95	0.931	0.069		
284.35	0.923	0.077		
286.75	0.916	0.084		
289.95	0.908	0.092		
291.95	0.901	0.099		
294.15	0.892	0.108		
295.55	0.884	0.116		
298.55 0.976		0.124		
302.35	0.861	0.139		
305.15	0.847	0.153		
308.25	0.831	0.169		
311.95	0.806	0.194		
315.45	0.779	0.221		
317.45	0.760	0.240		
320.65	0.733	0.267		
323.35	0.701	0.299		
325.95	0.672	0.328		
331.55	0.578	0.422		
	AUXILIARY	INFORMATION		
ETHOD: APPARATUS/PROCED	URE	SOURCE AND PURITY OF MATERIALS:		
Constant temperature ba thermometer.	-	(1) Purity not specified, P.O.Ch., Gliwice, Poland, was vacuum sublimed to a melting temperature of 80.25 °C.		
Solubilities were measured using a dynamic method. Mixtures of known concen- trations were sealed in thick-walled glass ampoules and placed in a constant temperature to equilibrate. Bath tempera- ture was slowly increased by 2 K per hour. Solubility determined by visually noting the temperature at which the last trace of solid solute disappeared.		(2) Initial purity not specified, Koch-, Light, was used as received.		
		ESTIMATED ERRORS:		
		T/K: precision \pm 0.1. x ₁ : to 3 significant figs. (compiler).		

COMPONENTS: ORIGINAL MEASUREMENTS: (1) Naphthalene; $C_{10}H_8$; [91-20-3] Miller, M.M.; Wasik, S.P.; Huang, G.-L.; Shiu, W.-Y.; Mackay, D. (2) 1-Octanol; $C_8H_{18}O$; [111-87-5] Miller, M.M.; Wasik, S.P.; Huang, G.-L.; Shiu, W.-Y.; Mackay, D. VARIABLES: PREPARED BY: T/K = 298 W.E. Acree, Jr. EXPERIMENTAL VALUES $c_1/(mol dm^{-3})$ 25.0 0.9589

25.0 0.	9589	
AUXILIARY INFORMATION		
METHOD: APPARATUS/PROCEDURE Constant temperature bath, rotator, thermometer, and a gas-liquid chromato- graph with flame ionization detection. Excess solute and solvent placed in glass vials and allowed to equilibrate for 24 hours with gentle agitation, and left to settle for 48 hours before anal- ysis. Aliquots of saturated solutions were removed and concentrations were determined using a gas-liquid chromatograph equipped with flame ionization detector and on 10 %		
SE30 ultraphase column.	ESTIMATED ERRORS: $T/K: \pm 0.1$ (compiler). $c_1: \pm 3$ % (relative error; compiler).	

e; C ₁₀ H ₈ ; [
<pre>(1) Naphthalene; C₁₀H₈; [91-20-3] (2) Cyclohexanol; C₆H₁₂O; [108-93-0] VARIABLES: Temperature</pre>			Weissenberger, G. Z. Angew Chem. <u>1927</u> , 40, 776. PREPARED BY:						
							W.E. Acree, Jr.		
							LUES		
			2	<i></i> 1	T/K	<i>x</i> 2	×1		
0.960	0.040	313	0.768	0.232					
0.906	0.094	323	0.700	0.300					
0.842	0.158								
<u></u>	AUXILIA	RY INFORMATION							
US/PROCEDUR	E	SOURCE AND PURI	TY OF MATERIA	ALS:					
Experimental details were not given in paper.		specified (2) Purity and	in paper. I chemical sou						
		T/K: precision	1 <u>+</u> 0.5. (com	piler)					
	x2 0.960 0.906 0.842 US/PROCEDUR	x ₂ x ₁ 0.960 0.040 0.906 0.094 0.842 0.158 AUXILIAN	W.E. Acree, Jr Weight of the specified William Specified (2) Purity and specified ESTIMATED ERROF T/K: precision	W.E. Acree, Jr. LUES x2 x1 0.960 0.040 0.906 0.094 0.842 0.158 AUXILIARY INFORMATION US/PROCEDURE SOURCE AND PURITY OF MATERIA					

COMPONENTS: (1) Naphthalene; C ₁₀ H ₈ ; [91-20-3] (2) Methylcyclohexanol; C ₇ H ₁₄ O; [25639-42-3] VARIABLES:			ORIGINAL MEASUREMENTS: Weissenberger, G. Z. Angew Chem. <u>1927</u> , 40, 776.						
							PREPARED BY:		
							Temperature	Temperature	
			EXPERIMENTAL	VALUES					
T/K	x 2	×1	T/K	*2	<i>x</i> 1				
283	0.965	0.035	313	0.767	0.233				
293	0.921	0.079	318	0.616	0.384				
303	0.861	0.139							
		AUXILIA	RY INFORMATION						
ETHOD: APPAR	LATUS/PROCEDUR	RE	SOURCE AND PUR	ITY OF MATERIA	ALS:				
Experimental details were not given in paper.			(1) Purity and specified		urce was not				
			(2) Purity and specified		irce was not				
			ESTIMATED ERROR	RS:					
			T/K : precision x_1 : 0.002. (co		piler)				

COMPONENTS: (1) Naphthalene; C ₁₀ H ₈ ; [99-65-0] (2) 1,4-Benzenediol; C ₆ H ₆ O ₂ ; [123-31-9] VARIABLES: Temperature			ORIGINAL MEASUREMENTS:			
			Kremann, R.; Janetzky, E.			
			Monatsch. Chem. <u>1911</u> , 32, 1055-1062.			
			PREPARED BY:			
			W.E. Acree, Jr.			
EXPERIME	ENTAL VALUES			\$	<u> </u>	
	<i>т/</i> к	×2	x 1	T/K	*2	×1
	445.2	1.000	0.000	423.2	0.225	0.775
	432.2	0.913	0.087	412.1	0.115	0.885
	429.2	0.823	0.177	403.2	0.092	0.908
	428.2	0.636	0.364	383.2	0.038	0.962
	427.4	0.538	0.462	361.2	0.015	0.985
	426.2	0.375	0.625	353.2	0.000	1.000
	······		AUXILIARY	INFORMATION		
METHOD: APPARATUS/PROCEDURE Binary mixtures prepared by weight. While the experimental details were not given in the paper, compiler speculates (based upon quantity of material used) that the sample was sealed in a glass container,			SOURCE AND PURIT	Y OF MATERIA	LS:	
			(1) Purity and	chemical sou	irce not given.	
			(2) Purity and	chemical sou	rce not given	
tempera	ture slowly	varied, and	the phase	ESTIMATED ERRORS		
diagram determined by visually noting the temperature at which the last/first crystal of solid disappeared/appeared.			T/K: precision $x_1: \pm 0.002$ (Co	± 0.2 (Compi mpiler).	ller).	

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COMPONENTS:			ORIGINAL MEASUREMENTS:		
(1) Naphthalene; C ₁₀ H ₈ ; [91-20-3]			Kremann, R.; Janetzky, E.		
<pre>(2) 1,2-Benzenediol; C₆H₆O₂; [120-80-9] VARIABLES: Temperature</pre>		0 ₂ ; [120-80-9]	Monatsch. Chem. <u>1911</u> , 32, 1055-1062.		
			PREPARED BY:		
			W.E. Acree, Jr.		
EXPERIMENT	TAL VALUES				
	T/K	*2	x1		
	377.2	1.000	0.000		
	370.7	0.908	0.092		
	368.7	0.843	0.157		
	364.7	0.756	0.244		
	361.2	0.689	0.311		
	358.2	0.592	0.408		
	357.7	0.552	0.448		
	• 356.7	0.503	0.497		
	356.2	0.467	0.533		
	356.2	0.422	0.578		
	355.2	0.399	0.601		
	354.7	0.361	0.639		
	353.2	0.333	0.667		
	349.2	0.260	0.740		
	346.2	0.195	0.805		
	351.2	0.049	0.951		
	353.2	0.000	1.000		
	Compiler: A 1:1 second eutectic	molecular compoun point occurs at a	d is probably formed, in which case the bout $x_1 = 0.815$ and $T/K = 345.6$.		
		AUXILIARY	INFORMATION		
ETHOD: AP	PARATUS/PROCEDUR	E	SOURCE AND PURITY OF MATERIALS:		
the exper- in the pap upon quant sample was	imental details oper, compiler spot tity of material s sealed in a gla	eculates (based used) that the ass container,	(1) Purity and chemical source were not specified in paper.(2) Purity and chemical source were not		
diagram de temperatur	re slowly varied etermined by visu re at which the i	ually noting the last/first	specified in paper.		
crystal of	f solid disappea	red/appeared.	ESTIMATED ERRORS:		
			T/K: precision \pm 0.2 (Compiler). x ₁ : \pm 0.002 (Compiler).		

:onponents :		ORIGINAL MEASUREMENTS:		
<pre>(1) Naphthalene; C₁₀H₈; [91-20-3] (2) 1,3-Benzenediol; C₆H₆O₂; [108-46-3] VARIABLES: Temperature</pre>		Kremann, R.; Janetzky, E. Monatsch. Chem. <u>1911</u> , 32, 1055-1062.		
		W.E. Acree	, Jr.	
		PERIMENTAL VALUES		
T/K	*2	x ₁	Phases	
383.2	1.000	0.000	(2)	
378.7	0.938	0.062	(2) + liq 1	
375.2	0.896	0.104	(2) + liq 1	
373.2	0.882	0.118	(2) + liq 1	
373.7	0.839	0.161	(2) + liq 1	
370.7	0.830	0.170	lig 1 + lig 2	
374.7	0.823	0.177	lig 1 + lig 2	
371.2	0.778	0.222	lig 1 + lig 2	
370.2	0.767	0.233	lig 1 + lig 2	
370.2	0.717	0.283	liq 1 + liq 2	
370.2	0.668	0.332	liq 1 + liq 2	
370.2	0.604	0.396	liq 1 + liq 2	
370.4	0.585	0.415	liq 1 + liq 2	
370.2	0.540	0.460	liq 1 + liq 2	
370.2	0.538	0.462	liq 1 + liq 2 ⁻	
370.2	0.537	0.563	liq 1 + liq 2	
369.2	0.326	0.674	(2) + liq 2	
368.2	0.280	0.720	(2) + liq 2	
368.2	0.253	0.747	(2) + lig 2	
363.2	0.224	0.776	(2) + liq 2	
367.2	0.212	0.788	(2) + liq 2	
362.2	0.122	0.878	(2) + lig 2	
359.2	0.092	.0.908	(2) + liq 2	
355.2	0.073	0.927	(2) + liq 2	
347.7	0.036	0.964	(1) + 1iq 2	
353.2	0.000	1.000	(1)	
Compiler: A mis	cibility gap is o	served in sy	stem.	
<u></u>	AUXTLARY	INFORMATION		
THOD: APPARATUS/PROCEDURE			PURITY OF MATERIALS:	
inary mixtures prepared b he experimental details w n the paper, compiler spe pon quantity of material	y weight. While ere not given culates (based	(1) Purity	and chemical source were not ied in paper.	
ample was sealed in a gla emperature slowly varied, iagram determined by visu emperature at which the l	ss container, and the phase ally noting the ast/first		and chemical source were not ied in paper.	
rystal of solid disappear		ESTIMATED E	RRORS :	
			sion <u>+</u> 0.2 (Compiler). 2 (Compiler).	

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COMPONENTS :		ORIGINAL MEASUREMENTS:	
<pre>(1) Naphthalene; C₁₀H₈; [91-20-3] (2) Furfuryl Alcohol; C₅H₆O₂; [98-00-0] VARIABLES: Temperature</pre>		Sunier, A.A. J. Phys. Chem. <u>1931</u> , 35, 1756-1761.	
		W.E. Acree, Jr.	
		EXPERIMENTAL VALUES	
T/K	*2	<i>x</i> 1	
305.6	0.8906	0.1094	
319.5	0.814	0.186	
326.2	0.751	0.249	
331.9	0.668	0.332	
337.5	0.545	0.455	
340.4	0.439	0.561	
341.5	0.381	0.619	
344.6	0.262	0.738	
345.8	0.215	0.785	
ETHOD: APPARATUS/PROCE		INFORMATION SOURCE AND PURITY OF MATERIALS:	
Constant temperature bath and a precision thermometer. Mixtures of known concentrations sealed in glass tubes and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly			
thermometer. Mixtures of known conce in glass tubes and plac temperature to equilibr	entrations sealed ced in constant rate. Samples n temperature slowly	 Purity not specified, Eastman Kodak Company, Rochester, New York, USA, was recrystallized several times from meth- anol. Purity not given, Eastman Kodak Company was used as received. 	

Components:		ORIGINAL MEASUREMENTS:		
(1) Naphthalene; C ₁₀ H ₈ ;	[91-20-3]	Ward, H.L.		
(2) 2-Propanone; C ₃ H ₆ O; [67-64-1]		J. Phys. Chem. <u>1926</u> , 30, 1316-1333.		
VARIABLES:		PREPARED BY:		
Temperature		W.E. Acree, Jr.		
EXPERIMENTAL VALUES		<u></u>		
T/K	*2	×1		
279.5	0.873	0.127		
287.5	0.836	0.164		
297.4	0.773	0.227		
305.8	0.700	0.300		
312.5	0.634	0.366		
312.5	0.634	0.366		
320.4	0.535	0.465		
326.1	0.460	0.540		
331.7	0.377	0.623		
335.9	0.307	0.693		
340.4	0.230	0.770		
342.7	0.195	0.805		
		INFORMATION		
ETHOD: APPARATUS/PROCED	···· · · · · · · ·	SOURCE AND PURITY OF MATERIALS:		
Constant temperature bath and a precision thermometer. Solubilities were measured using a dynamic method. Mixtures of known concen- trations were sealed in thick-walled glass tubes and placed in a constant temperature to equilibrate with gentle rotation to thoroughly mix contents. Bath temperature was slowly increased and solu- bility visually determined by noting the temperature at which the last trace of solid solute disappeared. Measurements repeated several times to verify results.		 (1) Purity and source not specified, was recrystallized several times from methanol to give a melting temperature of 80.05-80.10 °C. (2) Purity and source not specified, was stored over calcium chloride and sodium amalgam, distilled collecting fraction at 56.1 °C. 		

ORIGINAL MEASUREMENTS: Chang, W. Ph.D Dissertation, North Dakota State Uni- versity, North Dakota, USA (1969).			
			PREPARED BY:
			W.E. Acree, Jr.
<i>x</i> 1			
0.283			
INFORMATION			
SOURCE AND PURITY OF MATERIALS:			
 Purity, source and purification proce- dures not specified. 			
(2) Reagent Grade or better, source not specified, was used as received.			
ESTIMATED ERRORS: T/K : precision \pm 0.1. x_1 : \pm 2 % (relative error; compiler).			

COMPONENTS :	ORIGINAL MEASUREMENTS:
COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Naphthalene; C ₁₀ H ₈ ; [91-20-3]	Mahieu, J.
(2) Carbon disulfide; CS ₂ ; [75-15-0]	Bull. Soc. Chim. Belgique <u>1936</u> , 45, 667-677.
VARIABLES:	PREPARED BY:
T/K = 298	W.E. Acree, Jr.
EXPERIMENTAL VALUES	
t/°C x ₂ ⁸	x ₁ ^a
25.0 0.714	0.286
^a computed by compiler from published so solubilities, which were expressed as we solute per 100 grams of solvent.	olvent compositions and solute eight percent and grams of
AUXILIARY	INFORMATION
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:
Constant temperature bath, thermometer, and a precision balance.	(1) Purity and source not given.
Excess solute and solvent placed in closed glass containers and allowed to equili- brate for several hours at constant temperature. Aliquots of saturatured solu-	(2) Purity and source not given.
tions transferred into tared containers and weighed. Solubiliites calculated from weight of solid residue which remained after solvent had evaporated.	ESTIMATED ERRORS: T/K : precision \pm 0.5 (compiler). x_1 : \pm 5 % (relative error; compiler).

COMPONENTS:			ORIGINAL I	MEASUREMENTS	:		
(1) Naphthal	ene; C ₁₀ H ₈ ; [9	91-20-3]	Ward, H.L. J. Phys. Chem. <u>1926</u> , 30, 1316-1333. PREPARED BY:				
(2) Nitroben:	zene; C ₆ H ₅ NO ₂ ;	[98-95-3]					
VARIABLES:							
Temperature	Temperature		W.E. Acre	e, Jr.			
EXPERIMENTAL	VALUES		ļ				
T/K	x 2	<i>*</i> 1	T/K	*2	×1		
276.1	0.839	0.161	333.4	0.322	0.678		
287.0	0.781	0.219	338.5	0.249	0.751		
297.2	0.710	0.290	345.0	0.148	0.852		
318.5	0.512	0.488					
		AUXILIARY	INFORMATION	ī			
METHOD: APPAR	TUS/PROCEDUR	LE	SOURCE ANI	PURITY OF M	ATERIALS:		
Constant temp thermometer.	Constant temperature bath and a precision thermometer.			 Purity and source not specified, was recrystallized several times from meth- anol to give a melting temperature of 			
Mixtures of known concentrations sealed in glass tubes and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly increased. Solubility determined by visual			 80.05-80.10 °C. (2) Purity and source not specified, was fractionally distilled once before use. 				
noting the te	emperature at	which the last appeared. Meas-	ESTIMATED	ERRORS :			
		times to verify		ision <u>+</u> 0.1. significant	figs. (compiler).		

COMPONENTS:	· · · · · · · · · · · · · · · · · · ·		ORIGINAL 1	MEASUREMENTS :			
(1) Naphthal	ene; C ₁₀ H ₈ ; [9	91-20-3}	Srivastava, R.D.; Gupta, P.D.				
(2) Nitroben	zene; C ₆ H ₅ NO ₂ ;	[98-95-3]	J. Indian Chem. Soc. <u>1967</u> , 44, 960-963.				
VARIABLES:			PREPARED BY:				
Temperature	Cemperature		W.E. Acree, Jr.				
EXPERIMENTAL	VALUES	<u></u>	[
T/K	×2	x 1	T/K	×2	* 1		
288.0	0.7767	0.2233	302.0	0.6723	0.3277		
293.0	0.7417	0.2583	302.6	0.6645	0.3355		
298.0	0.7044	0.2956	308.2	0.6224	0.3776		
300.2	0.7044	0.2956					
	<u>,</u>	AUXILIARY	INFORMATION	r			
METHOD: APPARI	ATUS/PROCEDUR	E	SOURCE AND	PURITY OF M	ATERIALS:		
thermometer.	Constant temperature bath and a precision thermometer. Mixtures of known concentrations sealed in glass ampoules and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly increased. Solubility determined by visual			 (1) Purity not given, British Drug Houses, United Kingdom, was recrystallized and sublimed. (2) Purity not given, British Drug Houses, was dried and distilled. 			
in glass ampo temperature t were rotated							
noting the te trace of soli	emperature at	which the last	ESTIMATED	ERRORS:			
				cision <u>+</u> 0.1. (relative e	rror, Compiler).		

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70 components			ORIGINAL MEA	SUREMENTS :	
		191-20-31	Kremann, R.		
	halene; C ₁₀ H ₈ ;		Nonatsch. Chem. <u>1904</u> , 25, 1271-1292. PREPARED BY:		
(2) NITTO	benzene; C ₆ H ₅ N	1021 [38-32-3]			
VARIABLES:	<u> </u>				
Temperatu	re		W.E. Acree,	Jr.	
EXPERIMENT	AL VALUES		· F		
	T/K	*2	×1	Solid Phase	
	276.2	1.000	0.000	(2)	
	274.2	0.957	0.043	(2)	
	271.2	0.911	0.089	(2)	
	269.7	0.850	0.150	(1)	
	285.2	0.786	0.214	(1)	
	292.5	0.736	0.264	(1)	
	303.2	0.653	0.347	(1)	
	307.2	0.628	0.372	(1)	
	313.2	0.571	0.429	(1)	
	318.2	0.521	0.479	(1)	
	322.2	0.478	0.522	(1)	
	323.2	0.458	0.542	(1)	
	327.2	0.417	0.583	(1)	
	329.2	0.386	0.614	(1)	
	337.2	0.275	0.725	(1)	
	343.2	0.192	0.808	(1)	
	354.2	0.000	1.000	(1)	
	Compiler: En	utectic point occurs	at about $x_1 = 0$	0.137 and T/K = 267.2.	
		AUXILIARY	INFORMATION		
METHOD: API	PARATUS/PROCEI	DURE	SOURCE AND P	URITY OF MATERIALS:	
the experi in the par upon quant sample was temperatur diagram de	imental detail per, compiler tity of materi s sealed in a ce slowly vari stermined by v	ed by weight. While ts were not given speculates (based tal used) that the glass container, ted, and the phase visually noting the	specific (2) Purity	and chemical source were not ed in paper. and chemical source were not ed in paper.	
Temperatur	e at which th		ESTIMATED ER	RORS:	
crystal of	: solid disapp	peared/appeared.	ESTIMATED EN		

COMPONENTS:			ORIGINAL N	MEASUREMENTS	:	
(1) Naphthale	ene; C ₁₀ H ₈ ; [91-20-3]	Ward, H.L.			
(2) Aniline;	(2) Aniline; C ₆ H ₇ N; [62-53-3]		J. Phys. Chem. <u>1926</u> , 30, 1316-1333.			
VARIABLES:			PREPARED BY:			
Temperature		W.E. Acre	ee, Jr.			
EXPERIMENTAL V	VALUES					
T/K	x 2	×1	T/K	*2	<i>x</i> 1	
273.8	0.930	0.070	310.6	0.723	0.277	
283.8	0.899	0.101	324.0	0.551	0.449	
286.1	0.891	0.109	334.0	0.374	0.626	
295.2	0.846	0.154	338.6	0.287	0.713	
303.1	0.792	0.208	347.6	0.119	0.881	
	<u> </u>	AUXILIARY	INFORMATION	1		
METHOD: APPAR	ATUS/PROCEDUI	UE	SOURCE AND	D PURITY OF 1	MATERIALS:	
Constant temperature bath and a precision thermometer. Mixtures of known concentrations sealed in glass tubes and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly increased. Solubility determined by visual			 Purity and source not specified, was recrystallized several times from meth- anol to give a melting temperature of 80.05-80.10 °C. Technical Grade, source not given, was distilled twice. Product showed slight color. 			
noting the te	emperature at	: which the last	ESTIMATED	ERRORS:		
trace of solid solute disappeared. Meas- urements repeated several times to verify results.				cision <u>+</u> 0.1. significant	figs. (compiler).	

Components:			ORIGINAL MEASUREMENTS:				
(1) Naphthal	ene; C ₁₀ H ₈ ; [9	1-20-3]	Choi, P.B.; McLaughlin, E. Ind. Eng. Chem. Fundam. <u>1983</u> , 22, 46-51.				
(2) Thiophen	e; C ₄ H ₄ S; [110	0-02-1]					
VARIABLES:	*	······	PREPARED BY:				
Temperature			W.E. Acree, Jr.				
EXPERIMENTAL	VALUES						
T/K	×2	x 1	T/K	×2	* ₁		
303.2	0.6412	0.3588	336.8	0.2628	0.7372		
318.2	0.4989	0.5011	341.1	0.1947	0.8053		
322.7	0.4490	0.5510	348.1	0.0833	0.9167		
	<u></u>	AUXILIARY	INFORMATION	4			
METHOD: APPAR	ATUS/PROCEDUR	E	SOURCE ANI	D PURITY OF M	ATERIALS:		
thermometer. Mixtures of l in glass amp temperature were rotated	Constant temperature bath and a precision			 (1) 99.2 %, Eastman Kodiak Chemical Company Rochester, New York, USA, was passed over activated alumina and then recrys- tallized from toluene. (2) Gold Label, 99.9+ %, Aldrich Chemical Company, was used as received. 			
noting the to		which the last	ESTIMATED	ERRORS:			
			$\frac{T/K: \text{ pred}}{x_1: \pm 0.0}$	cision <u>+</u> 0.1. 0003.			

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COMPONENTS :			ORIGINAL MEASUREMENTS:				
(1) Naphthal	ene; C ₁₀ H ₈ ; [9	1-20-3]	Choi, P.B.; McLaughlin, E. Ind. Eng. Chem. Fundam. <u>1983</u> , 22, 46-51.				
(2) Pyridine	; C ₅ H ₅ N; [110-	-86-1]					
VARIABLES:			PREPARED BY:				
Temperature		W.E. Acree, Jr.					
EXPERIMENTAL	VALUES						
T/K	×2	×1	T/K	*2	×1		
297.6	0.6968	0.3032	337.2	0.2578	0.7422		
325.3	0.4252	0.5748	344.4	0.1430	0.8570		
333.2	0.3192	0.6808					
		AUXILIARY	INFORMATION	4			
METHOD: APPARI	ATUS/PROCEDUR	E	SOURCE ANI	D PURITY OF M	ATERIALS:		
Constant temperature bath and a precision thermometer. Mixtures of known concentrations sealed in glass ampoules and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly increased. Solubility determined by visual							
noting the te		which the last	ESTIMATED	ERRORS:			
			$T/K: \text{ pred} \\ x_1: \pm 0.0$	cision <u>+</u> 0.1. 1003.			

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COMPONENTS:			ORIGINAL MEASUR	ORIGINAL MEASUREMENTS:				
(1) Naphthale	ene; C ₁₀ H ₈ ; [91-20-3]	Shinomiya, C. Nihon Kagakkai Shi. <u>1939</u> , 60, 170-182. PREPARED BY:					
(2) 2-Nitrobe [552-89-6	enzaldehyde; 5]	C ₇ H ₅ NO ₃ ;						
VARIABLES:								
Temperature		W.E. Acree, Jr	•					
EXPERIMENTAL \	ALUES			<u>.</u>	<u> </u>			
T/K	×2	×1	T/K	x2	×1			
311.2	1.000	0.000	326.2	0.446	0.554			
308.2	0.801	0.199	331.7	0.379	0.621			
303.2	0.701	0.299	344.2	0.181	0.819			
315.2	0.582	0.418	353.2	0.000	1.000			
		AUXILIAR	INFORMATION					
ETHOD: APPARA	TUS/PROCEDUR	E	SOURCE AND PURIT	TY OF MATERIA	LS:			
No experimental details given in paper. Compiler speculates that the transition temperatures were probably determined by visually observing the temperature			(1) Purity and specified i	chemical sou in paper.	arce were not			
corresponding tion (or comp	to the firs	t crystal forma-	(2) Purity and specified i		irce were not			
			ESTIMATED ERRORS	5:				
			T/K: precision $x_1: \pm 0.002$ (Co		iler).			

Components :		ORIGINAL ME	ASUREMENTS :	
(1) Naphthalene; C ₁₀ H _g	; [91-20-3]	Shinomiya,	с.	
(2) 3-Nitrobenzaldehy [99-61-6]		Nihon Kagakkai Shi. <u>1939</u> , 60, 170-182. PREPARED BY: W.E. Acree, Jr.		
ARIABLES:				
Temperature				
XPERIMENTAL VALUES				
T/K	x 2	* 1	Solid Phase	
330.2	1.000	0.000	(2)	
325.7	0.903	0.097	(2)	
319.7	0.784	0.216	(2)	
315.7	0.656	0.344	(2)	
312.7	0.624	0.376	(2)	
310.7	0.603	0.397	(2)	
310.2	0.599	0.401	Eutectic	
316.7	0.525	0.475	(1)	
321.7	0.469	0.531	(1)	
322.7	0.451	0.549	(1)	
330.7	0.358	0.642	(1)	
332.2	0.356	0.644	(1)	
345.2	0.173	0.837	(1)	
353.2	0.000	1.000	(1)	
		INFORMATION		
ETHOD: APPARATUS/PROCI			PURITY OF MATERIALS:	
No experimental detail Compiler speculates th temperatures were prob visually observing the	hat the transition bably determined by		and chemical source were not ed in paper.	
corresponding to the s tion (or complete liqu	first crystal forma-	(2) Purity specif:	and chemical source were not led in paper.	
		ESTIMATED EN	RRORS:	
		$T/K: \text{ precises} x_1: \pm 0.002$	ion ± 0.3 (Compiler). (Compiler).	

COMPONENTS:		ORIGINAL ME	ASUREMENTS :	
(1) Naphthalene; C ₁₀ H ₈ ;	(91-20-31	Shinomiya, C. Nihon Kagakkai Shi. <u>1939</u> , 60, 170-182. PREPARED BY: W.E. Acree, Jr.		
<pre>(2) 4-Nitrobenzaldehyd [555-16-8]</pre>				
VARIABLES:				
Temperature				
EXPERIMENTAL VALUES		<u> </u>		
T/K	*2	×1	Solid Phase	
378.2	1.000	0.000	(2)	
372.7	0.851	0.149	(2)	
367.2	0.727	0.273	(2)	
358.7	0.587	0.413	(2)	
356.2	0.542	0.458	(2)	
350.7	0.446	0.554	(2)	
339.2	0.395	0.605	(2)	
331.2	0.355	0.645	(1)	
336.2	0.333	0.667	(1)	
333.7	0.330	0.670	(1)	
336.7	0.278	0.722	(1)	
339.2	0.257	0.743	(1)	
342.2	0.208	0.792	(1)	
342.2	0.185	0.815	(1)	
348.7	0.090	0.910	(1)	
352.2	0.030	0.970	(1)	
353.7	0.010	0.990	(1)	
353.2	0.000	1.000	(1)	
Compiler: E	utectic point occurs	at about x ₁ =	0.64 and T/K = 331.6.	
		INFORMATION		
	AUXILIARY			
ETHOD: APPARATUS/PROCE		SOURCE AND	PURITY OF MATERIALS:	
METHOD: APPARATUS/PROCE No experimental detail Compiler speculates th temperatures were prob visually observing the	DURE s given in paper. at the transition ably determined by	(1) Purity		
Compiler speculates th temperatures were prob	DURE s given in paper. at the transition ably determined by temperature irst crystal forma-	(1) Purityspecif(2) Purity	and chemical source were not	

				1
Components :		ORIGINAL ME	ASUREMENTS :	
(1) Naphthalene; C ₁₀ H ₈ ;	[91-20-3]	Shinomiya,	с.	
(2) 1-Chloro-3-nitrobe [121-73-3]	nzene; C ₇ H ₅ NO ₃ ;	Nihon Kaga	kkai Shi. <u>1939</u> , 60, 170-182.	
/ARIABLES:		PREPARED BY	2	
Temperature		W.E. Acree	, Jr.	
SPERIMENTAL VALUES	<u></u>	-		
T/K	*2	×1	Solid Phase	
318.2	1.000	0.000	(2)	
315.2	0.926	0.074	(2)	
312.2	0.824	0.176	(2)	
308.2	0.754	0.246	(2)	
305.2	0.715	0.285	(2)	
312.2	0.536	0.464	(1)	
318.7	0.464	0.536	(1)	
339.7	0.217	0.783	(1)	
347.2	0.110	0.890	(1)	
353.2	0.000	1.000	(1)	
		INFORMATION		
-	DURE	SOURCE AND P	URITY OF MATERIALS:	
No experimental details Compiler speculates that temperatures were proba visually observing the	DURE s given in paper. It the transition ubly determined by temperature	(1) Purity specifi	and chemical source were not ed in paper.	
ETHOD: APPARATUS/PROCEI No experimental details Compiler speculates tha temperatures were proba visually observing the corresponding to the fi tion (or complete lique	DURE s given in paper. It the transition bby determined by temperature rst crystal forma-	SOURCE AND F (1) Purity specifi (2) Purity	and chemical source were not	
No experimental details Compiler speculates tha temperatures were proba visually observing the corresponding to the fi	DURE s given in paper. It the transition bby determined by temperature rst crystal forma-	SOURCE AND F (1) Purity specifi (2) Purity	and chemical source were not ed in paper. and chemical source were not ed in paper.	

OMPONENTS:		ORIGINAL ME	ASUREMENTS:	
(1) Naphthalene; C ₁₀ H ₈ ;	[91-20-3]	Shinomiya,	с.	
(2) 1-Chloro-4-nitrobe [100-00-5]		Nihon Kagakkai Shi. <u>1939</u> , 60, 170-182. PREPARED BY: W.E. Acree, Jr.		
ARIABLES:				
Semperature				
XPERIMENTAL VALUES		.		
T/K	*2	x 1	Solid Phase	
356.7	1.000	0.000	(2)	
347.2	0.827	0.173	(2)	
332.2	0.669	0.331	(2)	
334.2	0.659	0.341	(2)	
329.2	0.637	0.363	(2)	
326.2	0.601	0.399	(2)	
322.2	0.573	0.427	(2)	
317.2	0.532	0.468	(2)	
319.2	0.431	0.569	(1)	
322.7	0.424	0.576	(1)	
326.2	0.375	0.625	(1)	
329.2	0.352	0.648	(1)	
330.2	0.346	0.654	(1)	
331.2	0.328	0.672	(1)	
342.2	0.230	0.770	(1)	
4444		0.821		
316 3	n 170			
346.2	0.179		(1)	
353.2	0.179 0.000 n depicted in paper s	1.000	(1)	
353.2	0.000	1.000	(1)	
353.2	0.000 n depicted in paper m	1.000	(1)	
353.2	0.000 m depicted in paper s AUXILIARY	1.000 hows a simple INFORMATION	(1)	
353.2 Phase diagram ETHOD: APPARATUS/PROCE No experimental details Compiler speculates the temperatures were probe	0.000 n depicted in paper a AUXILIARY DURE s given in paper. at the transition abby determined by	1.000 hows a simple INFORMATION SOURCE AND 1 (1) Purity	(1) eutectic system.	
353.2 Phase diagram ETHOD: APPARATUS/PROCEM No experimental details Compiler speculates the	0.000 m depicted in paper s AUXILIARY DURE s given in paper. at the transition ably determined by temperature irst crystal forma-	1.000 hows a simple INFORMATION SOURCE AND 1 (1) Purity specif. (2) Purity	<pre>(1) eutectic system. PURITY OF MATERIALS: and chemical source were not ied in paper.</pre>	
353.2 Phase diagram ETHOD: APPARATUS/PROCE No experimental details Compiler speculates that temperatures were proba- visually observing the corresponding to the fi	0.000 m depicted in paper s AUXILIARY DURE s given in paper. at the transition ably determined by temperature irst crystal forma-	1.000 hows a simple INFORMATION SOURCE AND 1 (1) Purity specif. (2) Purity	(1) eutectic system. PURITY OF MATERIALS: and chemical source were not ied in paper. and chemical source were not ied in paper.	

HPONENTS: 1) Naphthalene; C ₁₀ H ₈ ; [91-20-3]	ORIGINAL MEASUREMENTS:		
	ORIGINAL MEASUREMENTS:		
	Shinomiya, C. Nihon Kagakkai Shi. <u>1938</u> , 59, 922-926. PREPARED BY: W.E. Acree, Jr.		
<pre>2) 2,4-Dinitroaniline; C₆H₅N₃O₄; [97-02-9]</pre>			
RIABLES:			
emperature			
PERIMENTAL VALUES			
<i>T/K *</i> 2	×1		
452.7 1.000	0.000		
446.7 0.942	0.058		
444.2 0.867	0.133		
440.7 0.774	0.226		
438.2 0.737	0,263		
431.2 0.637	0.363		
427.2 0.587	0.413		
427.2 0.554	0.446		
427.2 0.512	0.488		
427.2 0.491	0.509		
426.7 0.446	0.534		
425.2 0.392	0.608		
423.7 0.386	0.614		
413.2 0.230	0.770		
404.2 0.149	0.851		
354.2 0.036	0.964		
353.2 0.015	0.985		
353.2 0.000	1.000		
Compiler: A miscibility gap is o	observed in system for 0.410 < x ₁ < 0.510.		
	Y INFORMATION		
THOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:		
o experimental details given in paper. ompiler speculates that the transition emperatures were probably determined by isually observing the temperature	(1) Purity and chemical source were not specified in paper.		
orresponding to the first crystal forma- ion (or complete liquefication).	(2) Purity and chemical source were not specified in paper.		
	ESTIMATED ERRORS:		
	T/K: precision \pm 0.3 (Compiler). x ₁ : \pm 0.002 (Compiler).		

OMPONENTS :		ORIGINAL MEASUREMENTS:		
<pre>(1) Naphthalene; C₁₀H₈; [91-20-3] (2) 3,5-Dinitrobenzoic acid; C₇H₄N₂O₆; [99-34-3] VARIABLES: Temperature</pre>		Shinomiya, C.		
		a anon naga		
		PREPARED BY	3	
		W.E. Acree	, Jr.	
XPERIMENTAL VALUES		-	<u> </u>	
T/K	*2	×1	Solid Phase	
478.2	1.000	0.000	(2)	
474.7	0.908	0.092	(2)	
463.7	0.720	0.280	(2)	
460.7	0.691	0.309	(2)	
455.2	0.604	0.396	1:1 Compound	
455.2	0.520	0.480	1:1 Compound	
455.2	0.507	0.493	1:1 Compound	
453.2	0.377	0.623	1:1 Compound	
452.7	0.301	0.699	1:1 Compound	
452.2	0.287	0.713	1:1 Compound	
448.2	0.240	0.760	1:1 Compound	
436.7	0.121	0.879	1:1 Compound	
430.7	0.121	0.079		
400.0	0.006	0.014	1.1 Compound	
423.2	0.086	0.914	1:1 Compound	
397.2	0.038	0.962	1:1 Compound	
397.2 353.2 Phase diagram	0.038 0.000 depicted in paper s	0.962 1.000 hows formatio	1:1 Compound (1) n of a 1:1 naphthalene -	
397.2 353.2 Phase diagram	0.038 0.000 depicted in paper s	0.962 1.000 hows formatio	1:1 Compound (1)	
397.2 353.2 Phase diagram 3,5-dinitrobe T/K = 455.2.	0.038 0.000 depicted in paper a nzoic acid molecular AUXILIARY	0.962 1.000 thows formatio compound hav	1:1 Compound (1) n of a 1:1 naphthalene - ing a melting point of	
397.2 353.2 Phase diagram 3,5-dinitrobe T/K = 455.2. ETHOD: APPARATUS/PROCED	0.038 0.000 depicted in paper s nzoic acid molecular AUXILIARY URE	0.962 1.000 hows formatio compound hav i compound hav i INFORMATION SOURCE AND 1	<pre>1:1 Compound (1) n of a 1:1 naphthalene - ing a melting point of PURITY OF MATERIALS:</pre>	
397.2 353.2 Phase diagram 3,5-dinitrobe T/K = 455.2. T/K = 455.2 ETHOD: APPARATUS/PROCED No experimental details Compiler speculates that	0.038 0.000 depicted in paper s nzoic acid molecular AUXILIARY URE given in paper. t the transition bly determined by	0.962 1.000 shows formatic compound hav information Source and i (1) Purity	1:1 Compound (1) n of a 1:1 naphthalene - ing a melting point of	
397.2 353.2 Phase diagram 3,5-dinitrobe T/K = 455.2. ETHOD: APPARATUS/PROCED No experimental details Compiler speculates that	0.038 0.000 depicted in paper a nzoic acid molecular AUXILIARY URE given in paper. t the transition bly determined by temperature rst crvstal forma-	0.962 1.000 shows formatic compound hav information SOURCE AND (1) Purity specif. (2) Purity	1:1 Compound (1) n of a 1:1 naphthalene - ing a melting point of PURITY OF MATERIALS: and chemical source were not	
397.2 353.2 Phase diagram 3,5-dinitrobe: T/K = 455.2. ETHOD: APPARATUS/PROCED No experimental details Compiler speculates that temperatures were probal visually observing the fi	0.038 0.000 depicted in paper a nzoic acid molecular AUXILIARY URE given in paper. t the transition bly determined by temperature rst crvstal forma-	0.962 1.000 shows formatic compound hav information SOURCE AND (1) Purity specif. (2) Purity	<pre>1:1 Compound (1) n of a 1:1 naphthalene - ing a melting point of PURITY OF MATERIALS: and chemical source were not ied in paper. and chemical source were not ied in paper.</pre>	

Components :		ORIGINAL MEASUREMENTS:		
 Naphthalene; C₁₀H₈; [91-20-3] 1,3,5-Trimethyl-2,4,6-trinitrobenzene; C₉H₉N₃O₆; [602-96-0] 		Hammick, D.L.; Hellicar, A. J. Chem. Soc. <u>1938</u> , 761-763.		
Temperature		W.E. Acree, Jr.		
EXPERIMENTAL VALUES	<u>,</u>	<u></u>		
T/K	x 2	x 1	Solid Phase	
505.2	1.00	0.00	(2)	
502.2	0.90	0.10	(2)	
493.9	0.80	0.20	(2)	
489.7	0.73	0.27	(2)	
478.4	0.63	0.37	(2)	
465.7	0.51	0.49	(2)	
450.2	0.40	0.60	(2)	
433.2	0.29	0.71	(2)	
408.7	0.20	0.80	(2)	
395.2	0.16	0.84	(2)	
368.5	0.10	0.90	(2)	
351.7	0.02	0.98	(1)	
353.2	0.00	1.00	(1)	
AUXILIARY TETHOD: APPARATUS/PROCEDURE Temperatures of solid-liquid equilibrium were determined by the synthetic method. Weighed amounts of the two components were sealed in tubes, temperature slowly varied until a mean temperature was found at which a small crystal of the solid phase remained unchanged.				
Temperatures of solid-liquic were determined by the synth Weighed amounts of the two of were sealed in tubes, temper varied until a mean temperat at which a small crystal of	d equilibrium netic method. components cature slowly cure was found	(1) Purit speci (2) Purit	PURITY OF MATERIALS: y and chemical source were not fied in paper. y and chemical source were not fied in paper.	

8U Components:	ORIGINAL MEASUREMENTS:		
(1) Naphthalene; C ₁₀ H ₈ ; [91-20-3]	Kofler, A.		
<pre>(2) 4-Nitro-1-methylbenzene; C₇H₇NO₂; [99-99-0]</pre>	Z. Physik. Chem., Pt. A. <u>1940</u> , 187, 201- 210.		
VARIABLES:	PREPARED BY:		
Temperature	W.E. Acree, Jr.		
EXPERIMENTAL VALUES			
<i>T/K *</i> 2	x ₁ Solid Phase		
325.2 1.00	0.00 (2)		
320.2 0.89	0.11 (2)		
314.2 0.79	0.21 (2)		
307.2 0.69	0.31 (2)		
303.7 0.63	0.37 (1)		
306.7 0.58	0.42 (1)		
318.7 0.48	0.52 (1)		
328.2 0.38	0.62 (1)		
335.2 0.29	0.71 (1)		
343.2 0.19	0.81 (1)		
349.2 0.09	0.91 (1)		
353.7 0.00	1.00 (1)		
	LIARY INFORMATION		
ETHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:		
Analytical balance and a hot-stage mic scope. Binary mixtures prepared by weight. Melting point temperatures determined thermal analysis method developed by t author, using a hot-stage microscope.	specified in paper. (2) Purity and chemical source were not specified in paper.		
	ESTIMATED ERRORS:		
	T/K : precision \pm 0.2 (Compiler).		

COMPONENTS:		ORIGINAL MEASUREMENTS:							
<pre>(1) Naphthalene; C₁₀H₈; [91-20-3] (2) 4-Nitro-1-methylbenzene; C₇H₇NO₂; [99-99-0]</pre>		Kremann, R. Monatsch. Chem. <u>1904</u> , 25, 1271-1292.							
					/ARIABLES:		PREPARED BY:		
					Temperature		W.E. Acree,	W.E. Acree, Jr.	
XPERIMENTAL VALUES		ļ							
т/ К	*2	<i>*</i> 1	Solid Phase						
325.2	1.000	0.000	(2)						
319.2	0.886	0.114	(2)						
312.2	0.772	0.228	(2)						
305.2	0.674	0.326	(2)						
302.2	0.606	0.394	(1)						
305.7	0.586	0.414	(1)						
309.2	0.559	0.441	(1)						
315.2	0.503	0.497	(1)						
320.2	0.435	0.565	(1)						
328.2	0.371	0.629	(1)						
334.2	0.295	0.705	(1)						
341.7	0.207	0.793	(1)						
348.2	0.110	0.890	(1)						
353.7	0.000	1.000	(1)						
METHOD: APPARATUS/PROCEDURE Binary mixtures prepared by weight. While the experimental details were not given in the paper, compiler speculates (based upon quantity of material used) that the sample was sealed in a glass container, temperature slowly varied, and the phase diagram determined by visually noting the temperature at which the last/first		 (1) Purity specifi (2) Purity 	URITY OF MATERIALS: and chemical source were not ed in paper. and chemical source were not ed in paper.						
		ROMILLAMON WIDANG.							
diagram determined by v temperature at which th crystal of solid disapp	ne last/first	ESTIMATED ER	RORS:						

:OMPONENTS :		ORIGINAL MEASUREMENTS:			
<pre>(1) Naphthalene; C₁₀H₈; [91-20-3] (2) 1,3-Dinitrobenzene; C₆H₄N₂O₄; [99-65-0] VARIABLES:</pre>		Sekiguchi, K.; Suzuki, E.; Tsuda, Y.; Shirotani, KI.; Okamoto, K.			
		PREPARED BY	m. Bull. <u>1984</u> , 32, 658-664.		
Temperature	Temperature		W.E. Acree, Jr.		
EXPERIMENTAL VALUES					
T/K	*2	×1	Solid Phase		
363.8	1.000	0,000	(2)		
356.4	0.877	0.123	(2)		
348.3	0.757	0.243	(2)		
341.8	0.690	0.310	(2)		
337.7	0.646	0.354	(2)		
332.2	0.585	0.415	(2)		
326.1	0.531	0.469	(2)		
324.6	0.518	0.482	1:1 Compound		
325.0	0.497	0.503	1:1 Compound		
324.6	0.457	0.543	1:1 Compound		
324.3	0.435	0.565	1:1 Compound		
323.6	0.411	0.589	1:1 Compound		
325.0	0.381	0.619	(1)		
328.9	0.351	0.649	(1)		
330.7	0.328	0.662	(1)		
332.7	0.301	0.699	(1)		
338.7	0.245	0.755	(1)		
345.2	0.161	0.839	(1)		
349.6	0.077	0.923	(1)		
353.7	0.000	1.000	(1)		
benzene mol	Phase diagram shows fo ecular compound. Two 24.2 and at x ₁ = 0.600	eutectic poin	1:1 naphthalene - 1,3-dinitro- ts occur at about $x_1 = 0.476$ 3.2.		
· · · · · · · · · · · · · · · · · · ·	AUXILIARY	INFORMATION			
ETHOD: APPARATUS/PROCI	EDURE	SOURCE AND	PURITY OF NATERIALS:		
Analytical balance, differential thermal analyzer and differential scanning calor- imeter.		 Purity and chemical source were not specified in paper, was recrystallized from aqueous ethanol before use. 			
Binary mixtures prepa Phase diagram determin differential thermal a ential scanning calori	ned by combined analysis and differ-	(2) Purity and chemical source were not specified in paper, recrystallized fro both ethanol and methanol before use.			
supplemented by visual		ESTIMATED E	RRORS:		
			sion <u>+</u> 0.5 (Compiler). 2 (Compiler).		

COMPONENTS :			ORIGINAL MEASUREMENTS:		
<pre>(1) Naphthalene; C₁₀H₈; [91-20-3] (2) 1,3-Dinitrobenzene; C₆H₄N₂O₄; [99-65-0] VARIABLES:</pre>		3]	Kremann, R. Monatsch. Chem. <u>1904</u> , 25, 1271-1292. PREPARED BY:		
		43			
Temperature			W.E. Acree, Jr.		
EXPERIMENTAL VALUES					
T/K	*2	x 1	<i>T/K</i> x ₂ x ₁		
360.7	1.000	0.000	348.2 0.089 0.911		
356.2	0.939	0.061	351.7 0.032 0.968		
352.2	0.875	0.125	353.8 0.000 1.000		
348.2	0.789	0.211	Phase discreme success formation		
339.7	0.720	0.280	Phase diagram suggests formation of a 1:1 naphthalene - 1,3-dinitro-		
333.2	0.661	0.339	benzene molecular compound having a melting temperature of circa		
326.2	0.599	0.401	T/K = 324.0. Two eutectic points occur at about $x_1 = 0.42$ and $T/K = 232$		
323.7	0.577	0.423	323.6 and at $x_1 = 0.60$ and $T/K = 323.7$.		
323.8	0.555	0.445			
323.6	0.544	0.456			
323.6	0.517	0.483			
324.0	0.500	0.500			
324.0	0.491	0.509			
323.8	0.463	0.537			
323.6	0.454	0.546			
323.7	0.433	0.567			
324.0	0.433	0.567			
325.0	0.392	0.608			
325.2	0.383	0.617			
324.9	0.381	0.619			
328.7	0.353	0.647			
329.5	0.340	0.660			
334.5	0.276	0.724			
337.4	0.243	0.757			
340.7	0.205	0.795			
345.7	0.121	0.879			
<u></u>		AUXILIARY	INFORMATION		
ETHOD: APPARATUS/PR	DCEDURE		SOURCE AND PURITY OF MATERIALS:		
Binary mixtures prepared by weight. While the experimental details were not given in the paper, compiler speculates (based upon quantity of material used) that the sample was sealed in a glass container, temperature slowly varied, and the phase diagram determined by visually noting the		not given tes (based	(1) Purity and chemical source were not specified in paper.		
		ontainer, the phase noting the	(2) Purity and chemical source were not specified in paper.		
temperature at which crystal of solid dis			ESTIMATED ERRORS:		
			T/K: precision \pm 0.2 (Compiler). x ₁ : \pm 0.002 (Compiler).		

COMPONENTS :		ORIGINAL MEASUREMENTS:			
 (1) Naphthalene; C₁₀H₈; [91-20-3] (2) 1,3,5-Trinitrobenzene; C₆H₃N₃O₆; [99-35-4] 		Kremann, R. Monatsch. Chem. <u>1904</u> , 25, 1271-1292.			
					ARIABLES:
Temperature		W.E. Acree, Jr.			
TPERIMENT	AL VALUES		Į		
	T/K	x 2	x ₁	Solid Phase	
	395.2	1.000	0.000	(2)	
	393.2	0.971	0.029	(2)	
	389.2	0.915	0.085	(2)	
	401.2	0.825	0.175	1:1 Compound	
	413.7	0.731	0.269	1:1 Compound	
	419.7	0.649	0.351	1:1 Compound	
	424.2	0.540	0.460	1:1 Compound	
	424.2	0.459	0.541	1:1 Compound	
	424.0	0.436	0.564	1:1 Compound	
	423.7	0.417	0.583	1:1 Compound	
	422.2	0.390	0.610	1:1 Compound	
	421.7	0.375	0.625	1:1 Compound	
	420.7	0.356	0.644	1:1 Compound	
	418.2	0.318	0.682	1:1 Compound	
	414.2	0.287	0.713	1:1 Compound	
	409.7	0.246	0.754	1:1 Compound	
	402.2	0.197	0.803	1:1 Compound	
	391.2	0.148	0.852	1:1 Compound	
	381.2	0.127	0.873	1:1 Compound	
	363.2	0.077	0.923	1:1 Compound	
	351.2	0.051	0.949	Eutectic	
	352.7	0.029	0.971	(1)	
	354.2	0.000	1.000	(1)	
	molecular	compound having a melting	ng point of c	thalene - 1,3,5-trinitrobenzene firca $T/K = 425.7$. Two eutectic 3 and at $x_1 = 0.95$ and $T/K =$	
		AUYTTABV	INFORMATION		
ETHOD. 10	PARATUS/PROG			PURITY OF MATERIALS:	
Binary min the exper- in the pap upon quant	xtures prepa imental deta per, compile tity of mate	ared by weight. While tils were not given or speculates (based brial used) that the	(1) Purity specif	and chemical source were not ied in paper.	
temperatu: diagram de temperatu:	re slowly va stermined by re at which	a glass container, ried, and the phase visually noting the the last/first	specif	and chemical source were not ied in paper.	
crystal of	f solid disa	ppeared/appeared.	ESTIMATED E	RRORS :	

T/K: precision \pm 0.2 (Compiler). x₁: \pm 0.002 (Compiler).

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COMPONENTS:		ORIGINAL MEASUREMENTS:		
<pre>(1) Naphthalene; C₁₀H₈; [91-20-3] (2) 2-Nitrophenol; C₆H₅NO₃; [88-75-5] VARIABLES: Temperature</pre>		Kremann, R.		
		Monatsch. Chem. <u>1904</u> , 25, 1271-1292. PREPARED BY:		
		KPERIMENTAL VALUES		.
T/K	*2	* 1	Solid Phase	
318.2	1.000	0.000	(2)	
315.2	0.943	0.057	(2)	
312.2	0.880	0.120	(2)	
307.2	0.765	0.235	(2)	
304.2	0.712	0.288	(2)	
304.2	0.689	0.311	(1)	
305.2	0.686	0.314	(1)	
307.2	0.659	0.341	(1)	
308.0	0.654	0.346	(1)	
312.7	0.610	0.390	(1)	
317.2	0.560	0.440	(1)	
322.2	0.493	0.507	(1)	
325.7	0.451	0.549	(1)	
329.2	0.402	0.598	(1)	
343.7	0.340	0.660	(1)	
337.2	0.280	0.720	(1)	
343.2	0.175	0.825	(1)	
350.2	0.075	0.925	(1)	
353.7	0.000	1.000	(1)	
ETHOD: APPARATUS/PROCEDURE		INFORMATION	ITY OF MATERIALS:	
Binary mixtures prepared by weight. While the experimental details were not given in the paper, compiler speculates (based upon quantity of material used) that the sample was sealed in a glass container, temperature slowly varied, and the phase		specified (2) Purity and	d chemical source were not in paper. d chemical source were not in paper.	
diagram determined by visuatemperature at which the la	ast/first			
emperature at which the last/first crystal of solid disappeared/appeared.		ESTIMATED ERROL T/K: precision x_1 : \pm 0.002 (C	n <u>+</u> 0.2 (Compiler).	

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CONPONENTS :		ORIGINAL MEASUREMENTS:		
<pre>(1) Naphthalene; C₁₀H₈; [91-20-3] (2) 4-Nitrophenol; C₆H₅NO₃; [100-02-7] VARIABLES:</pre>		Kremann, R. <i>Monatsch. Chem.</i> <u>1904</u> , <i>25</i> , 1271-1292.		
		Temperature		W.E. Acree
EXPERIMENTAL VALUES				
T/K *2		×1	Solid Phase	
386.2 1.	000	0.000	(2)	
380.2 0.	900	0.100	(2)	
375.2 0.	799	0.201	(2)	
368.2 0.	686	0.314	(2)	
365.2 0.	607	0.393	(2)	
362.2 0.	554	0.446	(2)	
360.2 0.	496	0.504	(2)	
358.2 0.	461	0.539	(2)	
357.5 0.	446	0.554	(2)	
355.5 0.	408	0.592	(2)	
354.2 0.	381	0.619	(2)	
348.2 0.	269	0.731	(2)	
348.2 0.	181	0.819	(1)	
351.2 0.	063	0.937	(1)	
353.7 0.	000	1.000	(1)	
	AUXILIARY	INFORMATION		
METHOD: APPARATUS/PROCEDURE		SOURCE AND B	PURITY OF MATERIALS:	
Binary mixtures prepared by we the experimental details were in the paper. compiler specula	not given		and chemical source were not ied in paper.	
in the paper, compiler speculates (based upon quantity of material used) that the sample was sealed in a glass container, temperature slowly varied, and the phase diagram determined by visually noting the			and chemical source were not led in paper.	
temperature at which the last/ crystal of solid disappeared/a	first	ESTIMATED ERRORS:		
crystar of sorra arsappeared/appeared.				

T/K: precision \pm 0.2 (Compiler). x₁: \pm 0.002 (Compiler).

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COMPONENTS:		ORTGINAT. M	EASUREMENTS:		
	(91-20-31				
 Naphthalene; C₁₀H₈; [91-20-3] 2,4-Dinitro-1-methylbenzene; 		Kofler, A.			
(2) 2,4-Dinitro-1-metry C ₇ H ₆ N ₂ O ₄ ; [121-14-2]		2. Physik 210.	Z. Physik. Chem., Pt. A. <u>1940</u> , 187, 201- 210.		
VARIABLES:		PREPARED BY:			
Temperature		W.E. Acre	ə, Jr.		
EXPERIMENTAL VALUES		_			
T/K	<i>x</i> 2	* 1	Solid Phase		
343.7	1.00	0.00	(2)		
338.2	0.86	0.14	(2)		
329.7	0.74	0.26	(1)		
329.7	0.68	0.32	1:1 Compound		
331.7	0.62	0.38	1:1 Compound		
333.2	0.51	0.49	1:1 Compound		
333.2	0.41	0.59	1:1 Compound		
332.2	0.32	0.68	(1)		
340.2	0.23	0.77	(1)		
345.2	0.15	0.85	(1)		
350.7	0.07	0.93	(1)		
353.7 Author reports form	0.00	1.00	(1) (1) -dinitro-1-methylbenzene f = 0.29 and $T/K = 326.2$,		
353.7 Author reports form	0.00	1.00	(1)		
353.7 Author reports forms molecular compound. at $x_1 = 0.66$ and T/k	0.00 ation of a 1:1 naph Two eutectic poin (= 330.2. AUXILIAR:	1.00 thalene - 2,4- ts occur at x, Y INFORMATION	(1) -dinitro-1-methylbenzene -= 0.29 and T/K = 326.2,		
353.7 Author reports forms molecular compound. at $x_1 = 0.66$ and T/k	0.00 ation of a 1:1 naph Two eutectic poin (= 330.2. AUXILIAR:	1.00 thalene - 2,4- ts occur at x, Y INFORMATION	(1)		
353.7 Author reports forma molecular compound. at x ₁ = 0.66 and T/M	0.00 ation of a 1:1 naph Two eutectic poin (= 330.2. AUXILIAR	1.00 thalene - 2,4- ts occur at x, Y INFORMATION SOURCE AND (1) Purity	(1) -dinitro-1-methylbenzene -= 0.29 and T/K = 326.2,		
353.7 Author reports form	0.00 ation of a 1:1 naph Two eutectic poin (= 330.2. AUXILIAR TRE a hot-stage micro- d by weight. ees determined by developed by the	1.00 thalene - 2,4 ts occur at x, Y INFORMATION SOURCE AND (1) Purity specif (2) Purity	<pre>(1) -dinitro-1-methylbenzene 1 = 0.29 and T/K = 326.2, 2</pre>		
353.7 Author reports formation molecular compound. at x ₁ = 0.66 and T/M ETHOD: APPARATUS/PROCEDU Analytical balance and a scope. Binary mixtures prepared Melting point temperatur thermal analysis method	0.00 ation of a 1:1 naph Two eutectic poin (= 330.2. AUXILIAR TRE a hot-stage micro- d by weight. ees determined by developed by the	1.00 thalene - 2,4 ts occur at x, Y INFORMATION SOURCE AND (1) Purity specif (2) Purity	<pre>(1) -dinitro-1-methylbenzene = 0.29 and T/K = 326.2, PURITY OF MATERIALS: pand chemical source were not ied in paper. pand chemical source were not ied in paper.</pre>		

ne; C ₁₀ H ₈ ; [91-	20.21		asurements :		
ne; C ₁₀ H ₈ ; [91-:					
(1) Naphthalene; C ₁₀ H ₈ ; [91-20-3]		Kremann, R.			
(2) 2,4-Dinitro-1-methylbenzene; C ₇ H ₆ N ₂ O ₄ ; [121-14-2]		Monatsch. Chem. <u>1904</u> , 25, 1271-1292.			
VARIABLES:			PREPARED BY:		
		W.E. Acree	a, Jr.		
ALUES					
	x 2	x 1	Solid Phase		
.7	1.000	0.000	(2)		
.2	0.942	0.058	(2)		
.7	0.835	0.165	(2)		
.2	0.776	0.224	(2)		
.2	0.669	0.331	1:1 Compound		
.2	0.620	0.380	1:1 Compound		
.2	0.553	0.447	1:1 Compound		
.2	0.477	0.523	1:1 Compound		
.2	0.462	0.538	1:1 Compound		
.2	0.412	0.588	1:1 Compound		
.2	0.405	0.595	1:1 Compound		
.2	0.360	0.640	1:1 Compound		
.7	0.300	0.700	(1)		
.2	0.205	0.795	(1)		
.2	0.145	0.855	(1)		
	0.058	0.942	(1)		
		1.000	(1)		
hylbenzene mol .2. Two eutec	ecular compound tic points occur	naving a melt	ing temperature of circa T/K =		
	AUXILIARY	INFORMATION			
TUS/PROCEDURE		SOURCE AND	PURITY OF MATERIALS:		
al details we compiler spec of material us aled in a glass lowly varied, a nined by visual	re not given ulates (based sed) that the s container, and the phase lly noting the	specif (2) Purity	y and chemical source were not fied in paper. y and chemical source were not fied in paper.		
		ESTIMATED E	IRRORS :		
			sion <u>+</u> 0.2 (Compiler). 2 (Compiler).		
	ALUES .7 .2 .7 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2	ALUES x_2 .7 1.000 .2 0.942 .7 0.835 .2 0.776 .2 0.669 .2 0.620 .2 0.620 .2 0.477 .2 0.462 .2 0.442 .2 0.405 .2 0.405 .2 0.360 .7 0.300 .2 0.205 .2 0.145 .2 0.145 .2 0.145 .2 0.058 .7 0.000 piler: Phase diagram shows form hylbenzene molecular compound M .2. Two eutectic points occur $x_1 = 0.681$ and $T/K = 329.6$.	X2 X1 .7 1.000 0.000 .2 0.942 0.058 .7 0.835 0.165 .2 0.776 0.224 .2 0.669 0.331 .2 0.620 0.380 .2 0.462 0.538 .2 0.462 0.538 .2 0.462 0.538 .2 0.412 0.588 .2 0.412 0.588 .2 0.412 0.588 .2 0.412 0.588 .2 0.412 0.588 .2 0.412 0.588 .2 0.405 0.595 .2 0.360 0.640 .7 0.300 0.700 .2 0.145 0.855 .2 0.058 0.942 .7 0.000 1.000 piler: Phase diagram shows formation of a 1 hylbenzene molecular compound having a meltor .2 Two eutectic poi		

COMPONENTS :		ORIGINAL ME	LASUREMENTS :	
(1) Naphthalene; C ₁₀ H _g ; [91-20-3]		Kremann, R.		
(2) 2,4-Dinitrophenol;		Monatsch. Chem. <u>1904</u> , 25, 1271-1292.		
(51-28-5)	-0-4-2-57	Nonatatini Chemi <u>1904</u> , 29, 11,1 1292.		
VARIABLES:		PREPARED BY	[3	
Temperature		W.E. Acree, Jr.		
EXPERIMENTAL VALUES		Į		
T/K	x 2	x 1	Solid Phase	
383.2	1.000	0.000	(2)	
377.2	0.888	0.112	(2)	
369.2	0.771	0.229	(2)	
363.2	0.676	0.324	(2)	
362.7	0.613	0.387	1:1 Compound	
364.8	0.558	0.442	1:1 Compound	
364.7	0.554	0.446	1:1 Compound	
365.2	0.531	0.469	1:1 Compound	
365.2	0.509	0.491	1:1 Compound	
365.2	0.497	0.503	1:1 Compound	
365.2	0.458	0.542	1:1 Compound	
365.2	0.447	0.553	1;1 Compound	
364.7	0.423	0.577	1;1 Compound	
363.7	0.371	0.629	1:1 Compound	
363.7	0.368	0.632	1:1 Compound	
362.2	0.328	0.672	1;1 Compound	
361.7	0.318	0.682	1:1 Compound	
360.2	0.288	0.712	1:1 Compound	
352.7	0.210	0.790	1:1 Compound	
347.2	0.166	0.834	1:1 Compound	
346.7	0,120	0.880	(1)	
349.7	0.069	0.931	(1)	
352.2	0.030	0.970	(1)	
353.7	0.000	1.000	(1)	
a melting temp		5.2. Two eut	1:1 molecular compound having sectic points occur at about and $T/K = 345.2$.	
	AUXILIARY	INFORMATION		
ETHOD: APPARATUS/PROCEDU	JRE	SOURCE AND	PURITY OF MATERIALS:	
Binary mixtures prepared the experimental details in the paper, compiler s upon quantity of materia	s were not given speculates (based		and chemical source were not ied in paper.	
sample was sealed in a c temperature slowly varie diagram determined by vi temperature at which the	lass container, ad, and the phase sually noting the		and chemical source were not ied in paper.	
crystal of solid disappe		ESTIMATED E	RRORS:	
			sion <u>+</u> 0.2 (Compiler). 2 (Compiler).	

COMPONENTS :		ORIGINAL MEASUR	LEMENTS :	
(1) Naphthalene; C ₁₀ H	1 ₈ ; [91-20-3]	Nigam, R.K.; Dhillon, M.S.		
(2) 2,4,6-Trinitroph [88-89-1]	enol; C ₆ H ₃ N ₃ O ₇ ;	Indian J. Chem. <u>1970</u> , 8, 821-825.		
VARIABLES:		PREPARED BY:		
Temperature		W.E. Acree, Jr		
EXPERIMENTAL VALUES			·····	
T/K	x 2	×1	Solid Phase	
395.2	1.0000	0.0000	(2)	
387.2	0.9135	0.0865	1:1 Compound	
404.0	0.8246	0.1754	1:1 Compound	
409.2	0.7855	0.2145	1:1 Compound	
416.8	0.7135	0.2865	1:1 Compound	
423.0	0.6060	0.3940	1:1 Compound	
424.2	0.5475	0.4525	1:1 Compound	
424.1	0.4467	0.5533	1:1 Compound	
421.2	0.3588	0.6412	1:1 Compound	
407.4	0.1981	0.8019	1:1 Compound	
381.2	0.0819	0.9181	1:1 Compound	
			(1)	
353.4 Compiler: 1 phenol mole and $T/K = 3$	Phase diagram shows for	1.0000 mation of a 1:1 n two eutectic point and T/K = 345.6.	(1) Maphthalene - 2,4,6-trinitro- Es occur at about x ₁ = 0.059	
Compiler: 1	Phase diagram shows for	rmation of a 1:1 n	aphthalene - 2.4.6-trinitro-	
Compiler: 1 phenol mole and T/K = 3	Phase diagram shows for ecular compound. The 382.6 and at $x_1 > 0.95$	rmation of a 1:1 n two eutectic point and T/K = 345.6.	Taphthalene - 2,4,6-trinitro- s occur at about $x_1 = 0.059$	
Compiler: 1 phenol mol and T/K = 3 ETHOD: APPARATUS/PROC	Phase diagram shows for ecular compound. The 382.6 and at $x_1 > 0.95$ 382.6 and at $x_1 > 0.95$ AUXILIARS	<pre>rmation of a 1:1 n two eutectic point and T/K = 345.6. f INFORMATION SOURCE AND PURI</pre>	TY OF MATERIALS:	
Compiler: 1 phenol mole and T/K = 3	Phase diagram shows for ecular compound. The 382.6 and at $x_1 > 0.95$ AUXILIAR: CEDURE cermined using a scribed in detail i Nigam, Proc. Natl.	<pre>rmation of a 1:1 n two eutectic point and T/K = 345.6. INFORMATION SOURCE AND PURI (1) Purity and</pre>	TY OF MATERIALS: chemical source were not in paper, was recrystallized	
Compiler: 1 phenol mol and T/K = 3 ETHOD: APPARATUS/PROC Phase diagram was det thaw-melt method (der detail in Rastogi and	Phase diagram shows for ecular compound. The 382.6 and at $x_1 > 0.95$ AUXILIAR: CEDURE cermined using a scribed in detail i Nigam, Proc. Natl.	<pre>rmation of a 1:1 n two eutectic point and T/K = 345.6. (INFORMATION SOURCE AND PURI (1) Purity and specified before use (2) Purity and</pre>	TY OF MATERIALS: chemical source were not in paper, was recrystallized chemical source were not in paper, was recrystallized	
Compiler: 1 phenol mol and T/K = 3 ETHOD: APPARATUS/PROC Phase diagram was det thaw-melt method (der detail in Rastogi and	Phase diagram shows for ecular compound. The 382.6 and at $x_1 > 0.95$ AUXILIAR: CEDURE cermined using a scribed in detail i Nigam, Proc. Natl.	<pre>rmation of a 1:1 n two eutectic point and T/K = 345.6. r INFORMATION SOURCE AND PURI (1) Purity and specified before use (2) Purity and specified</pre>	TY OF MATERIALS: Chemical source were not in paper, was recrystallized Chemical source were not in paper, was recrystallized	

Components:		ORIGINAL MEAS	SUREMENTS		
(1) Naphthalene; C ₁₀ H ₈ ;	[91-20-3]	Kravchenko,	Kravchenko, V.M.; Pastukhova, I.S.		
(2) Isoquinoline; C ₉ H ₇ N;	[119-65-3]	J. Appl. Chem. U.S.S.R. <u>1952</u> , 25, 343- 350. (English translation) PREPARED BY: W.E. Acree, Jr.			
VARIABLES:					
Temperature					
EXPERIMENTAL VALUES ^a					
τ _{in} /κ	T _{fin} /K	*2	×1		
297.2	297.2	1,000	0.000		
301.2	299.7	0.953	0.047		
306.2	304.2	0.891	0.109		
314.2	311.2	0.792	0.208		
319.7	316.2	0.703	0.297		
326.7	323.2	0.588	0.412		
331.2	327.2	0.500	0.500		
336.7	333.2	0.398	0,602		
341.2	338.2	0.300	0.700		
345.2	343.2	0.200	0.800		
349.2	348.2	0.096	0.904		
	353.2 ven in the original plutions. Melting pure components. T egins; T_{fin} is the t tion concludes.	0.000 paper, shows fo points of binary in refers to the emperature at wi	1.000 mmation of a complete mixtures lie between temperature at which hich crystallization		
353.2	in the entries?	names shave fo			
353.2 ^a Phase diagram, give series of solid solution crystallization be of the solid solution of the solid solution and the solid solid solid solution and the solid solid solution and the s	AUXILLIAR	paper, shows fo points of binary in refers to the emperature at with Y INFORMATION	rmation of a complete mixtures lie between temperature at which hich crystallization		
353.2 ^a Phase diagram, give series of solid solution crystallization be of the solid solution of the solid solution and the solid solid solid solution and the solid solid solution and the s	AUXILLIAR	paper, shows fo points of binary in refers to the emperature at with Y INFORMATION			
353.2	AUXILIAR AUXILIAR RE hined using a (described in co, J. Phys. Chem.	paper, shows for points of binary in refers to the emperature at with Y INFORMATION SOURCE AND PU (1) Purity a specific before u (2) Purity a specific before u ESTIMATED ERR	RITY OF MATERIALS: and chemical source were not define a source were		

COMPONENTS:		ORIGINAL MEASUREMENTS:		
(1) Naphthalene; C ₁₀ H ₈ ; [91-20-3]	Simons, J.H.; Linevsky, M.J.		
(2) Perfluoro-dibutyl et [308-48-5]	her; C ₈ F ₁₈ O	J. Am. Chem. Soc. <u>1952</u> , 74, 4750-4751.		
VARIABLES:		PREPARED BY:		
T/K = 298 and 308		W.E. Acree, Jr.		
EXPERIMENTAL VALUES	<u>, , , , , , , , , , , , , , , , , , , </u>			
t/°C	x 2	×1		
25.0	0.9974	0.00257		
35.0	0.9960	0.00402		
	AUXILIARY	INFORMATION		
METHOD: APPARATUS/PROCEDU	RE	SOURCE AND PURITY OF MATERIALS:		
Constant temperature bat thermometer.	h and a precision	 Purity and source not given, was recrys- tallized two times from ethanol. 		
Mixtures of known concen in special solubility fl brated in a constant tem 48 hours. The entire sa was withdrawn by suction	ask and equili- perature bath for turated solution	(2) Purity and specific isomer not speci- fied, was synthesized by authors and distilled shortly before use.		
based upon weight of und which remained in the so after solution was remov	issolved solid, lubility flask	ESTIMATED ERRORS: T/K : precision \pm 0.5 (compiler). x_1 : \pm 3 % (relative error; compiler).		

COMPONENTS :		ORIGINAL MEASUREMENTS:		
(1) Naphthalene; C ₁₀ H ₈ ;	[91-20-3]	Simons, J.H.; Linevsky, M.J.		
(2) Perfluoro-tripropy [338-83-0]	lamine; C ₉ F ₂₁ N	J. Am. Chem. Soc. <u>1952</u> , 74, 4750-4751.		
VARIABLES:		PREPARED BY:		
T/K = 298 and 308		W.E. Acree, Jr.		
EXPERIMENTAL VALUES	·			
t/°C	*2	<i>*</i> 1		
25.0	0.9970	0.00300		
35.0	0.9954	0.00461		
	AUXILIARY	INFORMATION		
METHOD: APPARATUS/PROCE	DURE	SOURCE AND PURITY OF MATERIALS:		
Constant temperature b thermometer.	ath and a precision	 Purity and source not given, was recrys- tallized two times from ethanol. 		
Mixtures of known conc in special solubility brated in a constant to 48 hours. The entire was withdrawn by suction	flask and equili- emperature bath for saturated solution	(2) Purity and specific isomer not speci- fied, was synthesized by authors and distilled shortly before use.		
based upon weight of up which remained in the		ESTIMATED ERRORS:		
after solution was remo		T/K: precision \pm 0.5 (compiler). x ₁ : \pm 5 % (relative error; compiler).		

COMPONENTS:			ORIGINAL MEASUREM	ENTS:	
(1) Naphthale	ene; C ₁₀ H ₈ ; [91-20-3]	Kravchenko, V.M.		
(2) Benzene;			Zhur. Fiz. Khim.	<u>1939</u> , 1	3, 133-145.
(3) Methylber	zene; C ₇ H ₈ ;	[108-88-3]			
VARIABLES:	5 -1		PREPARED BY:		
Temperature,	Solvent com	Desicion	W.E. Acree, Jr.		
EXPERIMENTAL V	ALUES	· · · · · · · · · · · · · · · · · · ·	·····		
T/K	x ₂	* 1	T/K	x,	x ₁
274.2	0.890	0.061	295.2	0.525	0.283
270.8	0.858	0.097	306.9	0.470	0.363
270.6	0.854	0.064	317.2	0.384	0.472
270.0	0.844	0.075	327.2	0.299	0.589
233.2	0.829	0.092	335.2	0.217	0.708
267.9	0.822	0.100	250.4	0.609	0.047
269.4	0.802	0.122	249.6	0.598	0.061
272.4	0.780	0.145	260.2	0.582	0.089
284.2	0.721	0.210	284.2	0.503	0.210
265.2	0.788	0.044	241.9	0.527	0.026
263.6	0.769	0.066	240.7	0.516	0.047
261.7	0.753	0.087	239.7	0.514	0.050
263.2	0.735	0.109	247.2	0.507	0.063
272.7	0.705	0.143	259.0	0.494	0.087
283.4	0.654	0.206	273.6	0.464	0.144
296.2	0.590	0.281	283.4	0.429	0.207
268.2	0.708	0.033	296.3	0.390	0.279
256.6	0.688	0.060	307.6	0.337	0.377
255.7	0.673	0.083	318.0	0.289	0.466
260.2	0.661	0.098	326.9	0.225	0.584
273.8	0.624	0.144	335.4	0.158	0.708
283.7	0.582	0.207	346.2	0.078	0.856
		(Co	ntinued on next page	;)	
		AUXILIARY	INFORMATION		
METHOD: APPARA	TUS/PROCEDUR	E	SOURCE AND PURITY	OF MATER	IALS:
Phase diagram thermal analy detail in V.M	sis method ((1) Purity and ch specified in before use.		ource were not as recrystallized
	<u>9</u> , 13, 133),	supplemented by	 (2) Purity and chemical source were not specified in paper, was distilled before use. 		
			(3) Purity and ch specified in before use.		
~			ESTIMATED ERRORS:		
			T/K: precision ± x ₂ : ± 0.002 (Comp x ₁ : ± 0.002 (Comp	iler).	piler).
					······

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COMPONENTS :			ORIGINAL MEASUREN	CENTS :	
(1) Naphthal	ene; C ₁₀ H ₈ ; [91-20-3]	Kravchenko, V.M.		
(2) Benzene;) Benzene; C ₆ H ₆ ; [71-43-2]		Zhur. Fiz. Khim. <u>1939</u> , 13, 133-145.		
(3) Methylbe	nzene; C ₇ H ₈ ;	[108-88-3]			
VARIABLES:			PREPARED BY:		
	Solvent com	position	W.E. Acree, Jr.		
-					
EXPERIMENTAL	VALUES (Cont.	inuation)			
T/K	*2	x 1	<i>т/</i> к	×2	* 1
230.1	0.425	0.034	283.4	0.092	0.208
230.0	0.421	0.043	172.7	0.149	0.015
235.2	0.417	0.052	170.2	0.128	0.014
248.2	0.411	0.066	187.6	0.126	0.023
283.4	0.349	0.207			
216.4	0.326	0.028			
215.9	0.323	0.038			
224.5	0.321	0.046			
234.2	0.316	0.058			
246.9	0.313	0.071			
258.2	0.305	0.092			
273.7	0.286	0.147			
284.2	0.267	0.206			
295.6	0.243	0.278			
194.6	0.224	0.016			
194.2	0.222	0.025			
205.7	0.220	0.033			
224.4	0.216	0.050			
247.8	0.210	0.076			
260.1	0.205	0.102			
274.0	0.194	0.148			
282.9	0.181	0.205			
295.2	0.166	0.272			
307.0	0.145	0.363			
318.2	0.120	0.470			
327.3	0.092	0.587			

0.065

0.110

0.114

0.110

0.104

0.098

0.713

0.013

0.026

0.051

0.103

0.150

335.2

172.2

192.0

225.4

259.7

273.2

			· · · · · · · · · · · · · · · · · · ·		
COMPONENTS :			ORIGINAL MEASUREME	ENTS :	
(1) Naphthal	ene; C ₁₀ H ₈ ; [91-20-3]	Kravchenko, V.M.		
(2) Benzene;	C ₆ H ₆ ; [71-43	-2]	Zhur. Fiz. Khim.	<u>1939</u> ,	13, 989-1000.
(3) 1,3-Dime [108-38-					
VARIABLES:	and an		PREPARED BY:		
Temperature,	Solvent com	position	W.E. Acree, Jr.		
EXPERIMENTAL	VALUES				
T/K	×2	×1	T/K	×2	* 1
327.9	0.335	0.603	317.9	0.242	0.492
318.2	0.437	0.482	308.3	0.294	0.383
307.8	0.529	0.374	293.0	0.350	0.265
293.2	0.620	0.266	269.2	0.410	0.137
268.3	0.729	0.136	253.0	0.433	0.089
265.4	0.740	0.124	239.2	0.447	0.060
262.8	0.752	0.110	237.2	0.451	0.051
263.6	0.761	0.099	238.9	0.458	0.037
266.2	0.800	0.053	327.2	0.102	0.630
338.7	0.162	0.759	317.5	0.140	0.495
328.1	0.259	0.614	308.7	0.170	0.387
318.6	0.344	0.487	293.0	0.203	0.265
308.1	0.418	0.377	269.2	0.239	0.136
293.4	0.491	0.268	254.0	0.253	0.088
267.7	0.584	0.131	238.2	0.262	0.055
254.2	0.607	0.095	219.2	0.268	0.032
251.2	0.409	0.087	213.0	0.273	0.016
251.9	0.627	0.077	292.7	0.087	0.266
253.2	0.633	0.057	276.4	0.099	0.168
255.0	0.642	0.042	269.2	0.102	0.142
339.2	0.110	0.768	253.2	0.108	0.089
328.4	0.181	0.620	237.5	0.113	0.051
220.4	0.116	0.023	220.4	0.115	0.033
212.3	0.273	0.023	220.3	0.275	0.032
ETHOD: APPARI			INFORMATION SOURCE AND PURITY		DIM C.
Phase diagram	·				
thermal analy detail in V.M	ysis method (1. Kravchenko	described in , J. Phys. Chem. supplemented by	(1) Purity and ch specified in before use.		was recrystallized
visual observ			(2) Purity and ch specified in before use.	emical a paper, w	Bource were not was distilled
			(3) Purity and ch specified in before use.		source were not was distilled
			ESTIMATED ERRORS:		
			T/K: precision +	0.2 (Cor	miler

T/K: precision \pm 0.2 (Compiler). x₂: \pm 0.002 (Compiler). x₁: \pm 0.002 (Compiler).

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COMPONENTS:			ORIGINAL MEASURE	MENTS:	
(1) Naphthal	ene; C ₁₀ H ₈ ; [91-20-3]	Kravchenko, V.M.; Pastukhova, I.S.		
(2) Benzene;	C ₆ H ₆ ; [71-43	3-2]	Zhur. Fiz. Khim. <u>1953</u> , 27, 822-834.		
(3) Isoquino	<pre>B) Isoquinoline; C₉H₇N; [119-65-3]</pre>				
VARIABLES:			PREPARED BY:		
Temperature,	Solvent com	position	W.E. Acree, Jr.		
EXPERIMENTAL	VALUES				
T/K	*2	× ₁	T/K	x2	* 1
288.0	0.329	0.085	340.3	0.182	0.749
299.7	0.296	0.178	268.2	0.846	0.063
309.2	0.262	0.273	267.2	0.832	0.079
323.9	0.197	0.454	264.7	0.817	0.096
337.9	0.118	0.672	274.7	0.776	0.142
275.9	0.516	0.082	286.0	0.707	0.217
288.2	0.473	0.157	309.5	0.544	0.398
301.4	0.420	0.252	269.8	0.880	0.062
324.3	0.285	0.492	268.2	0.860	0.083
335.2	0.197	0.649	265.7	0.834	0.110
257.8	0.674	0.071	268.2	0.810	0.136
269.5	0.654	0.100	284.7	0.736	0.215
293.9	0.553	0.239	309.5	0.573	0.389
315.8	0.418	0.424	328.9	0.375	0.600
332.8	0.265	0.635			
		AUXILIARY	INFORMATION		
ETHOD: APPARI	ATUS/PROCEDUI	۶E.	SOURCE AND PURIT	Y OF MATERIA	LS:
Phase diagram thermal analy	n was determi ysis method		(1) Purity and specified i before use.		arce were not s recrystallized
	<u>39</u> , <i>13</i> , 133),	supplemented by	(2) Purity and	chemical sou n paper, was	
			(3) Purity and	chemical sou n paper, was	
			ESTIMATED ERRORS	:	
			T/K: precision	-	1071

T/K: precision \pm 0.2 (Compiler). x₂: \pm 0.002 (Compiler). x₁: \pm 0.002 (Compiler).

Components:	ORIGINAL MEASUREMENTS:
(1) Naphthalene; C ₁₀ H ₈ ; [91-20-3]	Khossravi, D.; Connors, K.A.
(2) Acetonitrile; C ₂ H ₃ N; [75-05-8]	J. Pharm. Sci. <u>1992</u> , 81, 371-379.
(3) Water; H ₂ O; [7732-18-5]	
VARIABLES:	PREPARED BY:
T/K = 298, Solvent composition	W.E. Acree, Jr.
EXPERIMENTAL VALUES⁸ t = 25.0 °C	
$x_2^{(s)}$ $c_1/$	(mol dm ⁻³)
_	01 x 10 ⁻⁴
0.0096 2.	55×10^{-4}
0.0228 3.	49 x 10 ⁻⁴
0.0330 4.	66 x 10 ⁻⁴
0.0469 6.	45 x 10 ⁻⁴
	23 x 10 ⁻⁴
	17×10^{-4}
	44×10^{-4}
	23×10^{-4}
	64×10^{-4}
	45 x 10 ⁻³
	16×10^{-3}
^a x ₂ ^(s) : initial mole fraction of binary solubility (mol dm ⁻³) of the solute.	
AUXILIARY	INFORMATION
<u> </u>	
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:
Constant temperature bath, calorimetric thermometer, and an HPLC equipped with	······
Constant temperature bath, calorimetric	SOURCE AND PURITY OF MATERIALS: (1) Purified Grade, Mallinckrodt, Paris,

COMPONENTS:	ORIGINAL MEASUREMENTS:	
(1) Naphthalene; C ₁₀ H ₈ ; [91-20-3]	Khossravi, D.; Connors, K.A.	
(2) Methanol; CH ₂ O; [67-56-1]	J. Pharm. Sci. <u>1992</u> , 81, 371-379.	
(3) Water; H ₂ O; [7732-18-5]		
-		
VARIABLES:	PREPARED BY:	
T/K = 298, Solvent composition	W.E. Acree, Jr.	
EXPERIMENTAL VALUES^a t = 25.0 °C		
$x_2^{(s)}$ $c_1/$	(mol dm ⁻³)	
0.0000 2.	01 x 10 ⁻⁴	
0.0135 2.	14×10^{-4}	
0.0294 2.	68 x 10 ⁻⁴	
0.0294 2.	61 x 10 ⁻⁴	
0.0432 2.94×10^{-4}		
0.0432 3.	14 x 10 ⁻⁴	
0.0579 3.54 x 10 ⁻⁴		
0.0900 5.	02×10^{-4}	
0.1236 7.	45 x 10 ⁻⁴	
0.1936 18.	18.47 × 10 ⁻⁴	
0.2732 50.	31 x 10 ⁻⁴	
0.3591 13.	13.43×10^{-3}	
0.4588 33.	22×10^{-3}	
^a x ₂ ^(s) : initial mole fraction of binary solubility (mol dm ⁻³) of the solute. AUXILIARY	solvent mixture; c ₁ : molar	
METHOD: APPARATUS/PROCEDURE Constant temperature bath, calorimetric	(1) Purified Grade, Mallinckrodt, Paris,	
thermometer, and an HPLC equipped with ultraviolet detection.	Kentucky, USA, was used as received.	
ultraviolet detection. Binary solvent mixtures were prepared by volume. Excess solute and solvent placed in glass ampules and allowed to equili-	(2) HPLC grade, J.T. Baker Chemical Company Phillipsburg, New Jersey, USA, was used as received.	
brate in a constant temperature water bath for 48 hours. Aliquots of the saturated solutions were removed, filtered through a 0.22 micrometer polytetrafluoroethylene membrane filter, transfered to a volume- tric flask, and diluted quantitatively to the mark. Solute concentrations were determined using reversed-phase HPLC with uv detection at 274 nm. 4-Butylbenzoic acid served as the internal standard.	(3) Was purified with a Sybron/Barnstead PCS system consisting of prefilter, organic ion exchange, and microfilter (0.2 micrometer) cartridges.	
	ESTIMATED ERRORS:	

COMPONENTS:	ORIGINAL MEASUREMENTS:	
(1) Naphthalene; C ₁₀ H ₈ ; [91-20-3]	Sarker, M.; Wilson, D.	
(2) 1-Propanol; C ₃ H ₈ O; [71-23-8]	J. Tennessee Acad. Sci. <u>1986</u> , 61, 69-74.	
(3) Water; H ₂ O; [7732-18-5]		
VARIABLES:	PREPARED BY:	
T/K = Ambient Room Temperature	W.E. Acree, Jr.	
EXPERIMENTAL VALUES		
Actual experimental data not given in cited paper. Solubilities, $c_1/(mg L^{-1})$,		
expressed in terms of the equation: $c_1/(\text{mg L}^{-1}) = 36.5 (1 + 3.8 \times 10^5 x_2^{-3.86})$		
Mole fraction compositions of 1-propanol ranged between $x_2 = 0.001$ to $x_2 = 0.10$.		
AUXILIARY	INFORMATION	
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:	
Gas chromatographic equipped with flame ionization detection.	 Purity and chemical source not given in paper. 	
Binary mixtures were prepared by weight.	(2) Purity and chemical source not given.	
Excess solute and solvent placed in closed glass bottles and allowed to equilbrate at ambient room temperature for several days.	(2) Purity and chemical source not given.(3) Purity and chemical source not given.	
Excess solute and solvent placed in closed glass bottles and allowed to equilbrate at		

COMPONENTS:	ORIGINAL MEASUREMENTS:	
(1) Naphthalene; C ₁₀ H ₈ ; [91-20-3]	Sarker, M.; Wilson, D.	
(2) 1-Hexanol; C ₆ H ₁₄ O; [111-27-3]	J. Tennessee Acad. Sci. <u>1986</u> , 61, 69-74.	
(3) Water; H ₂ O; [7732-18-5]		
VARIABLES:	PREPARED BY:	
T/K = Ambient Room Temperature W.E. Acree, Jr.		
EXPERIMENTAL VALUES		
Actual experimental data not given	in cited paper. Solubilities, $c_1/(\text{mg L}^{-1})$,	

expressed in terms of the equation: $c_1/(\text{mg L}^{-1}) = 36.5 (1 + 2.0 \times 10^{10} x_2^{-3.16})$ Mole fraction compositions of 1-hexanol ranged between $x_2 = 0.0001$ to $x_2 = 0.0004$.

AUXILIARY INFORMATION		
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:	
Gas chromatographic equipped with flame ionization detection.	 Purity and chemical source not given in paper. 	
Binary mixtures were prepared by weight. Excess solute and solvent placed in closed glass bottles and allowed to equilbrate at ambient room temperature for several days. A 100 mL aliquot removed and naphthalene	(2) Purity and chemical source not given.(3) Purity and chemical source not given.	
concentrated by hexane extraction. Con- centrations determined by gas chromato- graphy.	ESTIMATED ERRORS: T/K: Unknown. x_2 : \pm 0.0001 (Compiler). x_1 : \pm 8 % (Relative error; Compiler).	

COMPONENTS: ORIGINAL MEASUREMENTS: Sarker, M.; Wilson, D. (1) Naphthalene; C10H8; [91-20-3] J. Tennessee Acad. Sci. 1986, 61, 69-74. (2) 2-Propanone; C₃H₆O; [67-64-1] (3) Water; H₂O; [7732-18-5] PREPARED BY: VARIABLES: T/K = Ambient Room Temperature W.E. Acree, Jr. EXPERIMENTAL VALUES Actual experimental data not given in cited paper. Solubilities, $c_1/(\text{mg L}^{-1})$, expressed in terms of the equation: $c_1/(\text{mg L}^{-1}) = 36.5 (1 + 6.7 \times 10^3 x_2^{2.53})$ Mole fraction compositions of 2-propanone ranged between $x_2 = 0.01$ to $x_2 = 0.10$. AUXILIARY INFORMATION METHOD: APPARATUS/PROCEDURE SOURCE AND PURITY OF MATERIALS: Gas chromatographic equipped with flame (1) Purity and chemical source not given ionization detection. in paper. Binary mixtures were prepared by weight. Excess solute and solvent placed in closed glass bottles and allowed to equilbrate at (2) Purity and chemical source not given. (3) Purity and chemical source not given. ambient room temperature for several days. A 100 mL aliquot removed and naphthalene concentrated by hexane extraction. Con-ESTIMATED ERRORS: centrations determined by gas chromato-

COMPONENTS ;	ORIGINAL MEASUREMENTS:
(1) Naphthalene; C ₁₀ H ₈ ; [91-20-3]	Sarker, M.; Wilson, D.
(2) 2-Butanone; C ₄ H ₈ O; [78-93-3]	J. Tennessee Acad. Sci. <u>1986</u> , 61, 69-74.
(3) Water; H ₂ O; [7732-18-5]	
VARIABLES:	PREPARED BY:
T/K = Ambient Room Temperature	W.E. Acree, Jr.

T/K: Unknown.

 x_2 : \pm 0.01 (Compiler). x_1 : \pm 8 % (Relative error; Compiler).

EXPERI	MENTAL VALUES
А	ctual experimental data not given in cited paper. Solubilities, $c_1/(mg L^{-1})$,
e	expressed in terms of the equation: $c_1/(\text{mg L}^{-1}) = 36.5 (1 + 3.4 \times 10^4 x_2^{2.45})$
M	tole fraction compositions of 2-butanone ranged between $x_2 = 0.01$ to $x_2 = 0.02$.

AUXILIARY INFORMATION		
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:	
Gas chromatographic equipped with flame ionization detection.	 Purity and chemical source not given in paper. 	
Binary mixtures were prepared by weight. Excess solute and solvent placed in closed	(2) Purity and chemical source not given.	
glass bottles and allowed to equilbrate at ambient room temperature for several days. A 100 mL aliquot removed and naphthalene	(3) Purity and chemical source not given.	
concentrated by hexane extraction. Con- centrations determined by gas chromato-	ESTIMATED ERRORS:	
graphy.	T/K: Unknown.	
	$x_2: \pm 0.01$ (Compiler). $x_1: \pm 8$ % (Relative error; Compiler).	

graphy.

ORIGINAL MEASUREMENTS: Khossravi, D.; Connors, K.A.	
Khossravi, D.; Connors, K.A.	
J. Pharm. Sci. <u>1992</u> , 81, 371-379.	
PREPARED BY:	
W.E. Acree, Jr.	
) $x_2^{(s)}$ $c_1/(mol dm^{-3})$	
0.4300 94.95 x 10 ⁻⁴	
0.5640 20.19 x 10^{-3}	
0.5867 23.98 x 10 ⁻³	
1.0000 85.04 \times 10 ⁻³	
;	
· ·	
ary solvent mixture; c ₁ : molar	
LARY INFORMATION	
SOURCE AND PURITY OF MATERIALS:	
Company, Phillipsburg, New Jersey,	
	d
PCS system consisting of prefilter,	
e (0.2 micrometer) cartridges.	er
ESTIMATED ERRORS:	
T/K + 0.05	
$x_2^{(s)}$: \pm 0.0001 (compiler).	
-1 (relative error, comprier).	
	w.E. Acree, Jr. a^{-3}) $x_2^{(5)}$ $c_1/(mol dm^{-3})$ b^{-4} 0.4300 94.95×10^{-4} b^{-4} 0.5640 20.19×10^{-3} b^{-4} 0.5867 23.98×10^{-3} b^{-4} 0.5867 23.98×10^{-3} b^{-4} 0.5867 23.98×10^{-3} b^{-4} 1.0000 85.04×10^{-3} b^{-4}

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COMPONENTS :	ORIGINAL MEASUREMENTS:
(1) Naphthalene; C ₁₀ H ₈ ; [91-20-3]	Sarker, M.; Wilson, D.
(2) Ethyl ethanoate; C ₄ H ₈ O ₂ ; [141-78-6]	J. Tennessee Acad. Sci. <u>1986</u> , 61, 69-74.
(3) Water; H ₂ O; [7732-18-5]	
VARIABLES: PREPARED BY:	
<pre>T/K = Ambient Room Temperature</pre>	W.E. Acree, Jr.
EXPERIMENTAL VALUES	
Actual experimental data not given in c expressed in terms of the equation: c_1/c_2 Mole fractions of ethyl ethanoate range	$(mg L^{-1}) = 36.5 (1 + 8.8 x_2^{0.37})$
AUXILIARY	INFORMATION
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:
Gas chromatographic equipped with flame ionization detection.	 Purity and chemical source not given in paper.
Binary mixtures were prepared by weight. Excess solute and solvent placed in closed	(2) Purity and chemical source not given.
glass bottles and allowed to equilbrate at ambient room temperature for several days. A 100 mL aliguot removed and naphthalene	(3) Purity and chemical source not given.
concentrated by hexane extraction. Con-	ESTIMATED ERRORS:
centrations determined by gas chromato- graphy.	T/K: Unknown. $x_2: \pm 0.001$ (Compiler). $x_1: \pm 8$ % (Relative error; Compiler).

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Naphthalene; C ₁₀ H ₈ ; [91-20-3]	Sarker, M.; Wilson, D.
(2) Pyridine; C ₅ H ₅ N; [110-86-1]	J. Tennessee Acad. Sci. <u>1986</u> , 61, 69-74.
(3) Water; H ₂ O; [7732-18-5]	
VARIABLES:	PREPARED BY:
T/K = Ambient Room Temperature	W.E. Acree, Jr.

EXPERIMENTAL VALUES

Actual experimental data not given in cited paper.	Solubilities, $c_1/(\text{mg L}^{-1})$,
expressed in terms of the equation: $c_1/(\text{mg L}^{-1}) = 36$.5 (1 + 3.5 x $10^4 x_2^{2.60}$)
Mole fraction compositions of pyridine ranged betwee	$n x_2 = 0.01 \text{ to } x_2 = 0.10.$

AUXILIARY INFORMATION		
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:	
Gas chromatographic equipped with flame ionization detection.	 Purity and chemical source not given in paper. 	
Binary mixtures were prepared by weight. Excess solute and solvent placed in closed glass bottles and allowed to equilbrate at ambient room temperature for several days. A 100 mL aliquot removed and naphthalene	(2) Purity and chemical source not given.(3) Purity and chemical source not given.	
concentrated by hexane extraction. Con- centrations determined by gas chromato- graphy.	ESTIMATED ERRORS: T/K: Unknown. x_2 : \pm 0.01 (Compiler). x_1 : \pm 8 % (Relative error; Compiler).	

PERYLENE SOLUBILITIES IN PURE AND BINARY SOLVENT MIXTURES

A. <u>Saturated Hydrocarbons (including cycloalkanes)</u>

n-heptane

- B. <u>Alkenes</u>
- C. Aromatic Hydrocarbons

benzene

- D. <u>Esters</u>
- E. Ethers
- F. Haloalkanes and Haloaromatic Hydrocarbons
- G. Alcohols

1-octanol

- H. <u>Ketones</u>
- I. <u>Miscellaneous Pure Solvents</u>
- J. Binary Solvent_Mixtures

COMPONENTS :	ORIGINAL MEASUREMENTS:					
(1) Perylene; C ₂₀ H ₁₂ ; [198-55-0]	Lissi, E.A.; Abuin, E.B.					
(2) n-Heptane; C ₇ H ₁₆ ; [142-82-5]	Bol. Soc. Chil. Quim. <u>1981</u> , 26, 19-34.					
VARIABLES:	PREPARED BY:					
<i>T/</i> K = 293	W.E. Acree, Jr.					
EXPERIMENTAL VALUES						
t/°c c ₁ /	(mol dm ⁻³)					
20.0 0.00037						
AUXILIARY	INFORMATION					
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:					
Constant temperature bath, centrifuge, thermometer, and a spectrofluorimeter.	 (1) Purity not given, commercial sample of unspecified source, was used as received. 					
Excess solute and solvent were placed in glass vials, pre-equilibrated for several hours at 60-80 °C, and then equilibrated at 20 °C for several additional hours. After equilibration and centrifugation, concentrations determined from the mea- sured fluorescence emission intensity.	(2) Purity and chemical source not given, purification procedure not specified.					
	ESTIMATED ERRORS:					
	$T/K: \pm 2.$ $c_1:$ unknown.					

COMPONENTS:	ORIGINAL MEASUREMENTS:					
(1) Perylene; C ₂₀ H ₁₂ ; [198-55-0]	Mishra, D.S.; Yalkowsky, S.H.					
(2) Benzene; C ₆ H ₆ ; [71-43-2]	Ind. Eng. Chem. Res., <u>1990</u> , 29, 2278-2283.					
VARIABLES:	PREPARED BY:					
T/K = 296	W.E. Acree, Jr.					
EXPERIMENTAL VALUES						
t/°c x ₂	<i>x</i> ₁					
23.0 0.9604	0.0396					
AUXILIARY	INFORMATION					
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:					
Constant temperature bath, rotator, thermometer, and an uv/visible spectro- photometer.	(1) Reagent grade, source not specified, was used as received.					
Excess solute and solvent placed in screw-capped test tube and allowed to equilibrate for 3 days with gentle agita- tion in a constant temperature bath. Samples centrifuged for 30 minutes and concentrations were determined spectro- photometrically. Attainment of equili- brium verified by repetitive measurements	(2) Reagent grade, source not specified, was used as received.					
4 days later.	ESTIMATED ERRORS:					
	T/K: \pm 0.1 (compiler). x ₁ : \pm 5 % (relative error; compiler).					

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COMPONENTS :	ORIGINAL MEASUREMENTS:			
(1) Perylene; C ₂₀ H ₁₂ ; [198-55-0]	Miller, M.M.; Wasik, S.P.; Huang, GL.;			
(2) 1-Octanol; C ₈ H ₁₈ O; [111-87-5]	Shiu, WY.; Mackay, D. Environ. Sci. Technol. <u>1985</u> , 19, 522-529.			
VARIABLES:	PREPARED BY:			
<i>T/K</i> = 298	W.E. Acree, Jr.			
EXPERIMENTAL VALUES				
t/°C	(mol dm ⁻³)			
25.0 0.003044				
AUXILIARY	INFORMATION			
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:			
Constant temperature bath, rotator, thermometer, and a gas-liquid chromato- graph with flame ionization detection.	(1) Highest available commercial purity, specific chemical supplier not given, was used as received.			
Excess solute and solvent placed in glass vials and allowed to equilibrate for 24 hours with gentle agitation, and left to settle for 48 hours before anal- ysis. Aliquots of saturated solutions were removed and concentrations were determined using a gas-liquid chromatograph equipped with flame ionization detector and on 10 %	(2) 99+ %, Aldrich Chemical Company, Milwaukee, Wisconsin, USA, was used as received.			
SE30 ultraphase column.	ESTIMATED ERRORS:			
	T/K: \pm 0.1 (compiler). c_1 : \pm 3 % (relative error; compiler).			

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PHENANTHRENE SOLUBILITIES IN PURE AND BINARY SOLVENT MIXTURES Saturated Hydrocarbons (including cycloalkanes) Α. n-hexane n-heptane n-octane n-octadecane cyclohexane decahydronaphthalene в. Alkenes Aromatic Hydrocarbons c. benzene methylbenzene 1,2,3,4-tetrahydronaphthalene biphenyl fluoranthene acenaphthene D. Esters Ε. Ethers Haloalkanes and Haloaromatic Hydrocarbons F. tetrachloromethane 1,4-dibromobenzene 1-hydroperfluoroheptane 1,8-dihydroperfluorooctane octafluoronaphthalene G. <u>Alcohols</u> ethanol 1-octanol н. <u>Ketones</u> I. Miscellaneous Pure Solvents pyridine thiophene perfluoro-tri-n-butylamine nitrobenzene carbon disulfide 1,2-dinitrobenzene 1,3-dinitrobenzene 1,4-dinitrobenzene 1,3,5-trinitrobenzene 1,2,3,5-tetranitrobenzene 2,4-dinitromethylbenzene 2,6-dinitromethylbenzene 3,4-dinitromethylbenzene 2,4,6-trinitromethylbenzene

2,4-dinitrophenol 1-chloro-4-nitrobenzene dibenzothiophene thianthrene benzoic acid trans-cinnamic acid 2-hydroxybenzoic acid 3-hydroxybenzoic acid 6-methy1-2,3,4-trinitrophenol

J. Binary Solvent Mixtures

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COMPONENTS:			ORIGINAL MEASUREMENTS:					
<pre>(1) Phenanthrene; C₁₄H₁₀; [85-01-8] (2) n-Hexane; C₆H₁₄; [110-54-3] VARIABLES:</pre>			Doane, E.	Doane, E.P.; Drickamer, H.G.				
			J. Phys. Chem. <u>1955</u> , 59, 454-457.					
			PREPARED BY:					
T/K = 298, Pr	ressure		W.E. Acree, Jr.					
EXPERIMENTAL V	ALUES							
P/atm	×2	×1	P/atm	×2	x 1			
1	0.9674	0.0326	4300	0.9896	0.0104			
500	0.9728	0.0272	7150	0.9950	0.0050			
1000	0.9774	0.0226	8750	0.9964	0.0036			
2000	0.9820	0.0180						
		AUXILIARY	INFORMATION	1				
ETHOD: APPARA	TUS/PROCEDUR	E	SOURCE AND PURITY OF MATERIALS:					
Constant temperature bath, analytical balance and high pressure equipment. Excess solute and solvent allowed to equilibrate in a specially designed high pressure cell at constant temperature temperature for 20-24 hours. Known amount of saturated solution removed, solvent evaporated to dryness, and con- tration determined from weight of solid residue.			 (1) Purest grade, Eastman Kodak Chemical Company, Rochester, New York, USA, was used as received. (2) Pure grade, Phillips Petroleum, was dried over phosphorous pentoxide and distilled. 					
							ESTIMATED ERRORS: T/K : precision \pm 0.1. x_1 : \pm 1-3 % at atmospheric pressure, and \pm 10 % at the higher pressures.	

Components :	ORIGINAL MEASUREMENTS:					
(1) Phenanthrene; C ₁₄ H ₁₀ ; [85-01-8]	Lissi, E.A.; Abuin, E.B.					
(2) n-Heptane; C ₇ H ₁₆ ; [142-82-5]	Bol. Soc. Chil. Quim. <u>1981</u> , 26, 19-34.					
VARIABLES:	PREPARED BY:					
<i>T</i> /K = 293	W.E. Acree, Jr.					
EXPERIMENTAL VALUES						
t/°C	(mol dm ⁻³)					
20.0 0.0270						
AUXILIARY	INFORMATION					
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:					
Constant temperature bath, centrifuge, thermometer, and a spectrofluorimeter.	 (1) Purity not given, commercial sample of unspecified source, was used as received. 					
Solubility determined indirectly from measured aqueous solubility and solute	(2) Purity and chemical source not given, purification procedure not specified.					
partition coefficient between n-heptane and water. Solute concentration in both phases, after equilibration and centrifu- gation, determined from the fluorescence intensity. This indirect method computes						
partition coefficient between n-heptane and water. Solute concentration in both phases, after equilibration and centrifu- gation, determined from the fluorescence	ESTIMATED ERRORS:					

COMPONENTS:			ORIGINAL MEASUREMENTS:				
 (1) Phenanthrene; C₁₄H₁₀; [85-01-8] (2) n-Heptane; C₇H₁₆; [142-82-5] VARIABLES: 			Doane, E.P.; Drickamer, H.G. J. Phys. Chem. <u>1955</u> , 59, 454-457.				
			T/K = 298, Pi	ressure		W.E. Acree, Jr.	
EXPERIMENTAL V	VALUES						
P/atm	×2	×1	P/atm	x 2	x		
1	0.9599	0.0401	2000	0.9816	0.0184		
500	0.9679	0.0321	3430	0.9889	0.0111		
900	0.9708	0.0292	5000	0.9916	0.0084		
1000	0.9728	0.0272	7000	0.9948	0.0052		
		AUXILIARY	INFORMATION	1			
ETHOD: APPARJ	TUS/PROCEDUR	E	SOURCE AND	PURITY OF M	ATERIALS:		
Constant temperature bath, analytical balance and high pressure equipment. Excess solute and solvent allowed to equilibrate in a specially designed high pressure cell at constant temperature temperature for 20-24 hours. Known amount of saturated solution removed,			 (1) Purest grade, Eastman Kodak Chemical Company, Rochester, New York, USA, was used as received. (2) Pure grade, Phillips Petroleum, was dried over phosphorous pentoxide and distilled. 				
							solvent evapo
tration determined from weight of solid residue.			T/K: precision \pm 0.1. x_1 : \pm 1-3 % at atmospheric pressure, and \pm 10 % at the higher pressures.				

COMPONENTS :	OMPONENTS :			ORIGINAL MEASUREMENTS:				
<pre>(1) Phenanthrene; C₁₄H₁₀; [85-01-8] (2) n-Octane; C₈H₁₈; [111-65-9]</pre>			Doane, E.P.; Drickamer, H.G. <i>J. Phys. Chem.</i> <u>1955</u> , <i>59</i> , 454-457.					
								VARIABLES:
T/K = 298, P	ressure		W.E. Acree, Jr.					
EXPERIMENTAL	VALUES				······································			
P/atm	<i>x</i> 2	* 1	P/atm	×2	*1			
1	0.9536	0.0464	3850	0.9880	0.0120			
490	0.9619	0.0381	5200	0.9912	0.0088			
1000	0.9716	0.0284						
1960	0.9803	0.0197						
		AUXILIARY	INFORMATION	ſ				
METHOD: APPAR	ATUS/PROCEDUR	E	SOURCE AND PURITY OF MATERIALS:					
Constant temperature bath, analytical balance and high pressure equipment. Excess solute and solvent allowed to equilibrate in a specially designed high pressure cell at constant temperature temperature for 20-24 hours. Known amount of saturated solution removed,			 Purest grade, Eastman Kodak Chemical Company, Rochester, New York, USA, was used as received. 					
			(2) Pure grade, Phillips Petroleum, was dried over phosphorous pentoxide and distilled.					
		ness, and con- eight of solid	ESTIMATED	ERRORS:				
tration determined from weight of solid residue.			T/K: precision \pm 0.1. x_1 : \pm 1-3 % at atmospheric pressure, and \pm 10 % at the higher pressures.					

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COMPONENTS:			ORIGINAL MEASUREMENTS: Djordjevic, N.M.					
(1) Phenanthr	cene; C ₁₄ H ₁₀ ;	[85-01-8]						
(2) n-Octadecane; C ₁₈ H ₃₈ ; [593-45-3] VARIABLES:			Thermochim. Acta <u>1991</u> , 177, 109-118.					
			PREPARED BY:					
Temperature			W.E. Acre	e, Jr.				
EXPERIMENTAL V	VALUES							
T/K	×2	×1	T/K	*2	<i>x</i> ₁			
358.8	0.3685	0.6315	364.2	0.1776	0.8224			
359.9	0.3333	0.6667	367.0	0.1151	0.8849			
363.5	0.1919	0.8081	367.5	0.1044	0.8956			
364.1	0.1814	0.8186						
		AUXILIARY	INFORMATION					
METHOD: APPARA	ATUS/PROCEDUR	E	SOURCE AND PURITY OF MATERIALS:					
Differential scanning calorimeter. Mixtures (1.5 - 2.0 mg) of known concen- tration were weighed into aluminum pans, which were then crimped to preclude sample loss during the heating process. Solubil- ities determined by measuring melting points of binary mixtures using a Perkin- Elmer DSC-2 differential scanning calori- meter and scan rate of 5 K/min.			 (1) Gold Label, 99+ %, Aldrich Chemical Company, Milwaukee, Wisconsin, USA, was used as received. (2) 99 %, Aldrich Chemical Company, was vacuum-distilled before use. 					
							ESTIMATED ERRORS: T/K : precision \pm 0.3 (compiler). x_1 : \pm 0.0003 (compiler).	

COMPONENTS :			ORIGINAL MEASUREMENTS:				
<pre>(1) Phenanthrene; C₁₄H₁₀; [85-01-8] (2) Cyclohexane; C₆H₁₂; [110-82-7] VARIABLES: Temperature</pre>			Choi, P.B.; Williams, C.P.; Buehring, K.G.; McLaughlin, E. J. Chem. Eng. Data <u>1985</u> , 30, 403-409.				
			PREPARED B	Y:			
			W.E. Acree, Jr.				
EXPERIMENTAL V	ALUES		ļ				
T/K	*2	×1	T/K	<i>x</i> 2	×1		
307.65	0.9394	0.0606	325.85	0.8470	0.1530		
313.85	0.9181	0.0819	333.25	0.7570	0.2430		
319.65	0.8907	0.1093	339.55	0.6432	0.3568		
321.85	0.8772	0.1228					
		AUXILIARY	INFORMATION				
METHOD: APPARA	TUS/PROCEDUR	E	SOURCE AND PURITY OF MATERIALS:				
Constant temperature bath and a precision thermometer. Mixtures of known concentrations sealed in glass ampoules and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly increased. Solubility determined by visual			 98.7 %, Eastern Chemical Company, Smittown, New York, USA, was passed over activated alumina and then recrystallized from toluene. Gold Label, 99.9+ %, Aldrich Chemical Company, was used as received. 				
noting the te	mperature at	which the last	ESTIMATED	ERRORS :			
trace of solid solute disappeared.			$T/K:$ precision \pm 0.1. $x_1: \pm$ 0.0003.				

COMPONENTS:

(1) Phenanthrene; C14H10; [85-01-8]

(2) Cyclohexane; C₆H₁₂; [110-82-7]

EVALUATOR:

W.E. Acree, Jr. Department of Chemistry University of North Texas Denton, Texas 76203-5068 (USA) August, 1994

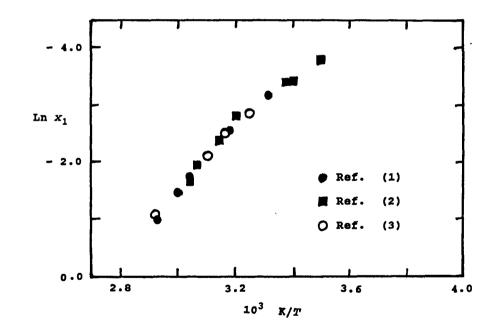
CRITICAL EVALUATION:

Phenanthrene solubilities in cyclohexane were retrieved from papers by McLaughlin and Zainal (1), Gordon and Scott (2) and Choi (3). All three studies report values at several temperatures. There is no a prior reason to exclude any of the three studies from the critical evaluation.

Regressional analysis of the experimental data as $Ln x_1$ versus 1/T yielded the following mathematical relationship:

$$Ln x_1 = -5215.6 (1/T) + 14.1709 \qquad (r = 0.9897)$$

for variation of naphthalene solubility with absolute temperature (see graph below). Phenanthrene does exhibit a solid-solid lambda point phase transition from around 331 to 361 K (4). A graphical plot of $\ln x_1$ versus 1/T is linear if the enthalpy of the transition is relatively small compared to the solute's enthalpy of fusion, as is the case here. The slight nonlinear behavior is undoubtedly attributed to the additional phase transition.



Graphical plot of Ln x_1 versus 1/T

REFERENCES

1.	McLaughlin,	Ε.;	Zainal,	H.A.	J. Chem.	Soc.	<u>1960</u> ,	3854-3857.
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2. Gordon, L.J.; Scott, R.L. J. Am. Chem. Soc. <u>1952</u>, 74, 4138-4140.

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    Choi, P.B.; Williams, C.P.; Buehring, K.G.; McLaughlin, E. J. Chem. Eng. Data
1985, 30, 403-409.
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4. Choi, P.B.; McLaughlin, E. AIChE J. <u>1983</u>, 29, 150-153.

85-01-8] .0-82-7]	-	n, E.; Zaina <i>Soc</i> . <u>1960</u> ,			
.0-82-7]	J. Chem.	soc. <u>1960</u> ,			
			3854-3857.		
ARIABLES:		PREPARED BY:			
	W.E. Acre	e, Jr.			
×1	T/K	*2	<i>*</i> 1		
0.0402	340.6	0.6253	0.3747		
0.0785					
0.1753					
0.2394					
AUXILIARY	INFORMATION	r			
	SOURCE AND	PURITY OF M	ATERIALS:		
Constant temperature bath and a precision thermometer. Mixtures of known concentrations sealed in glass ampoules and placed in constant temperature to equilibrate. Samples			British Drug Houses, as passed over an th benzene as eluant. d purification method		
were rotated while bath temperature slowly increased. Solubility determined by visual noting the temperature at which the last trace of solid solute disappeared.		ision ± 0.1 .			
	0.0402 0.0785 0.1753 0.2394 AUXILIARY and a precision rations sealed red in constant s. Samples semperature slowly permined by visual which the last	x1 T/K 0.0402 340.6 0.0785 340.6 0.1753 0.2394 AUXILIARY INFORMATION and a precision SOURCE AND and a precision (1) Purit with constant (2) Purit was n was n sequence ESTIMATED appeared. T/K: prec	0.0402 340.6 0.6253 0.0785 0.1753 0.2394 AUXILIARY INFORMATION and a precision and a precision (1) Purity not given, United Kingdom, w alumina column wi (2) Purity, source an- was not specified ermined by visual ESTIMATED ERRORS:		

COMPONENTS: (1) Phenanthrene; C ₁₄ H ₁₀ ; [85-01-8] (2) Cyclohexane; C ₆ H ₁₂ ; [110-82-7] VARIABLES: Temperature			ORIGINAL MEASUREMENTS: Gordon, L.J.; Scott, R.L. J. Am. Chem. Soc. <u>1952</u> , 74, 4138-4140. PREPARED BY:								
						W.E. Acre	ee, Jr.				
						EXPERIMENTAL	VALUES		- 		
						T/K	×2	×1	T/K	*2	×1
			286.0	0.9783	0.0217	317.6	0.9061	0.0939			
293.7	0.9672	0.0328	326.7	0.856	0.144						
296.1	0.9663	0.0337	328.2	0.827	0.173						
302.8	0.9582	0.0418	341.9	0.596	0.404						
311.7	0.9392	0.0608									
		AUXILIARY	INFORMATIO	N							
ETHOD: APPARI	ATUS/PROCEDUR	E	SOURCE AND	D PURITY OF M	ATERIALS:						
Constant temperature bath and a precision thermometer. Mixtures of known concentrations sealed in glass ampoules and placed in constant temperature to equilibrate. Temperature of bath slowly increased at a rate not exceeding 0.5 K per minute. Solubility			(1) White Label, Eastman Kodak Chemical Company, Rochester, New York, USA, wa used as received.								
			(2) White Label, Eastman Kodak Chemical Company was used as received.								
determined vi	lsually by no	ting the temper-	ESTIMATED	ERRORS:							
disappeared.				cision \pm 0.2. mificant fig	ures (compiler).						

COMPONENTS:			ORIGINAL N	EASUREMENTS:	
(1) Phenanth	rene; C ₁₄ H ₁₀ ;	[85-01-8]	Coon, J.I	E.; Auwaerter	;, J.E.; McLaughlin, E.
<pre>(2) Decahydronaphthalene; C₁₀H₁₈; [91-17-8]</pre>		Fluid Phase Equilibr. <u>1989</u> , 44, 305-345.			
VARIABLES:	/ARIABLES:		PREPARED BY:		
Temperature	Temperature		W.E. Acre	e, Jr.	
EXPERIMENTAL V	VALUES	·			
T/K	×2	<i>x</i> 1	T/K	x 2	<i>x</i> 1
314.4	0.8407	0.1593	337.4	0.5970	0.4030
320.1	0.7980	0.2020	341.2	0.5249	0.4751
326.2	0.7446	0.2554	345.6	0.4388	0.5612
331.9	0.6717	0.3283			
		AUXILIARY	INFORMATION	ī	
METHOD: APPARI	ATUS/PROCEDUR	E	SOURCE AND	PURITY OF M	ATERIALS:
Constant temperature bath and a precision thermometer. Mixtures of known concentrations sealed in glass ampoules and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly increased. Solubility determined by visual		wauke over then	e, Wisconsin an activated recrystalliz	hemical Company, Mil- , USA, was passed alumina column and ed from solution.	
		(2) 99+ %, Aldrich Chemical Company, havir isomer ratio of 60.6 % cis and 39.4 % trans, stored over molecular sieves.			
noting the te trace of soli		which the last appeared.	ESTIMATED T/K: prec x ₁ : ± 0.0	ision <u>+</u> 0.1.	

COMPONENTS :			ORIGINAL M	EASUREMENTS :	
 (1) Phenanthrene; C₁₄H₁₀; [85-01-8] (2) Benzene; C₆H₆; [71-43-2] 		Choi, P.B.; Williams, C.P.; Buehring, K.G.; McLaughlin, E. J. Chem. Eng. Data <u>1985</u> , 30, 403-409. PREPARED BY: W.E. Acree, Jr.			
VARIABLES:					
Temperature					
EXPERIMENTAL V	ALUES		ļ ,	<u></u>	······································
T/K	x 2	×1	T/K	*2	* ₁
312.75	0.7185	0.2815	341.85	0.4229	0.5771
316.75	0.6872	0.3128	342.15	0.4208	0.5792
325.25	0.6042	0.3958			
334.75	0.5051	0.4949			
		AUXILIARY	INFORMATION	1	
METHOD: APPARA	TUS/PROCEDUR	E	SOURCE AND	PURITY OF M	ATERIALS:
Constant temperature bath and a precision thermometer. Mixtures of known concentrations sealed in glass ampoules and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly increased. Solubility determined by visual		town, activ lized (2) Gold	New York, U ated alumina from toluen Label, 99.9+	hemical Company, Smith- SA, was passed over and then recrystal- e. %, Aldrich Chemical as received.	
	mperature at	which the last	ESTIMATED T/K: prec x ₁ : <u>+</u> 0.0	ision <u>+</u> 0.1.	

.

COMPONENTS: (1) Phenanthrene; C ₁₄ H ₁₀ ; [85-01-8] (2) Benzene; C ₆ H ₆ ; [71-43-2] VARIABLES: Temperature		ORIGINAL MEASUREMENTS:			
		McLaughlin, E.; Zainal, H.A.			
		J. Chem.	Soc. <u>1959</u> ,	863-867.	
		PREPARED BY:			
		W.E. Acr	ee, Jr.		
EXPERIMENTAL V	VALUES		Į		
T/K	x 2	×1	T/K	*2	* ₁
305.2	0.7761	0.2239	331.2	0.5428	0.4572
313.4	0.7164	0.2836			
315.0	0.7010	0.2990			
323.4	0.6250	0.3750			
		AUXILIARY	INFORMATION	1	
METHOD: APPARI	ATUS/PROCEDUR	E	SOURCE AND	D PURITY OF M	ATERIALS:
Constant temperature bath and a precision thermometer. Mixtures of known concentrations sealed in glass ampoules and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly increased. Solubility determined by visual noting the temperature at which the last trace of solid colute dispresed		USA,		ied, Bureau of Mines, ver an alumina column luant.	
		(2) "AnalaR", was dried over sodium wird and freshly distilled before use.			
		ESTIMATED	ERRORS:		
51400 Of 501	trace of solid solute disappeared.			cision <u>+</u> 0.1. 003 (compile	c).

COMPONENTS:			ORIGINAL I	EASUREMENTS:	8	
(1) Phenanthrene; C ₁₄ H ₁₀ ; [85-01-8]			Speyers, C.L. Am. J. Sci. <u>1902</u> , 14, 293-302. PREPARED BY:			
(2) Methylbenzene; C ₇ H ₈ ; [108-88-3]						
VARIABLES:						
Temperature		W.E. Acree, Jr.				
EXPERIMENTAL	VALUES	·····	-l	······		
T/K	x 2	×1	<i>T</i> /K	*2	×1	
273.2	0.8812	0.1188	328.1	0.4675	0.5325	
287.1	0.8260	0.1740	351.5	0.1802	0.8198	
304.0	0.7310	0.2690				
		AUXILIARY	(INFORMATION	4		
METHOD: APPAR	ATUS/PROCEDUR	E	SOURCE ANI	D PURITY OF 1	ATERIALS:	
Experimental procedure only marginally described by author. Excess solute and solvent were equilibrated in a constant temperature water bath for between 10-30 minutes. Saturated solution was with- drawn through a coarse filter and anal- yzed by specific gravity. Author noted that evaporation to dryness and weighing the residue was subject to too much		 (1) Purity not given, Kahlbaum, was recry tallized from toluene to a melting point temperature of 100.4 °C. (2) Purity not given, Kahlbaum, was dis- 				
			d before use).		
decomposition		o too much	ESTIMATED			
•		T/K: precision \pm 0.1. x_1 : \pm 8 % (relative error, compiler).				

		2		
COMPONENTS:		ORIGINAL MEASUREMENTS:		
(1) Phenanthrene; C ₁₄ H ₁₀	; [85-01-8]	Choi, P.B.; McLaughlin, E.		
(2) Methylbenzene; C ₇ H ₈ ;	[108-88-3]	AICHE J. <u>1983</u> , 29, 150-153.		
VARIABLES: Temperature		PREPARED BY:		
		W.E. Acree, Jr.		
EXPERIMENTAL VALUES		<u></u>		
T/K	*2	×1		
299.8	0.7541	0.2459		
307.7	0.6989	0.3011		
314.3	0.6487	0.3513		
316.6	0.6310	0.3690		
323.4	0.5717	0.4283		
342.8	0.3830	0.6170		
349.6	0.3039	0.6961		
355.6	0.2349	0.7651		
361.0	0.1651	0.8349		
366.5	0.0889	0.9111		
	AUXILIARY	INFORMATION		
ETHOD: APPARATUS/PROCED	URE	SOURCE AND PURITY OF MATERIALS:		
Analytical balance and o ture bath. Mixtures of known compo- in glass ampoules, and p stant temperature bath. slowly rotated at about the bath temperature was K every 1,200 seconds. which the last trace of when the last trace of	sition were sealed placed in a con- Ampoules were 0.25 rps, while s increased by 0.1 Temperature at solid disappeared	 98.67 % minimum, Eastern Chemical Company, USA, was purified by column chromatography and recrystallized from from toluene before use. Gold Label, Aldrich Chemical Company, Milwaukee, Wisconsin, USA, was used as received. 		
was visually determined	•	ESTIMATED ERRORS:		

T/K: precision ± 0.05. x_1 : ± 0.0001 (Compiler).

COMPONENTS :			ORIGINAL M	easurements:	}	
(1) Phenanth	rene; C ₁₄ H ₁₀ ;	[85-01-8]	Coon, J.E.; Auwaerter, J.E.; McLaughlin, E.			
<pre>(2) 1,2,3,4-Tetrahydronaphthalene; C₁₀H₁₂; [119-64-2]</pre>		Fluid Phase Equilibr. <u>1989</u> , 44, 305-345.				
VARIABLES:	ARIABLES:		PREPARED I	3¥:		
Temperature	Temperature		W.E. Acre	W.E. Acree, Jr.		
EXPERIMENTAL	VALUES			<u> </u>		
T/K	×2	*1	T/K	*2	x ₁	
309.7	0.7157	0.2843	340.6	0.4319	0.5681	
316.2	0.6657	0.3343				
325.8	0.5825	0.4175				
333.1	0.5113	0.4887				
	<u> </u>	AUXILIAR	Y INFORMATION	1		
ETHOD: APPAR	ATUS/PROCEDUR	E	SOURCE AND	PURITY OF M	IATERIALS:	
Constant temperature bath and a precision thermometer. Mixtures of known concentrations sealed in glass ampoules and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly increased. Solubility determined by visual		(2) 99.64 store then store	e, Wisconsin an activated recrystalliz %, Aldrich	Chemical Company, Mil- n, USA, was passed d alumina column and red from solution. Chemical Company, was rular sieves to remove		
noting the t		which the last	ESTIMATED	ERRORS:		
LINC OF BUT	14 50.466 415	abbaareat	$\begin{array}{c c} T/K: \text{ prec}\\ x_1: \pm 0.0 \end{array}$	ision <u>+</u> 0.1. 003.		

COMPONENTS:	ORIGINAL MEASUREMENTS:	
(1) Phenanthrene; C ₁₄ H ₁₀ ; [85-01-8]	Rai, U.S.; Shekhar, H.	
(2) Biphenyl; C ₁₂ H ₁₀ ; [92-52-4]	Thermochim. Acta <u>1991</u> , 175, 215-227.	
VARIABLES:	PREPARED BY:	
	W.E. Acree, Jr.	
EXPERIMENTAL VALUES		
Phase diagram, given in the orginal	paper, shows that the system is a simple	
eutectic system. The eutectic poin	t occurs at circa $x_1 = 0.23$ and $T/K = 333.7$.	

AUXILIARY INFORMATION				
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:			
Differential scanning calorimeter and an analytical balance.	(1) Purity not given, Thomas Backer & Co., Bombay, India, was purified by frac- tional recrystallization from ethanol.			
Binary mixtures were prepared by weight. Melting point temperatures and phase diagram determined using differential scanning calorimetric techniques.	(2) Purity not given, SOJUZ Chemicals, Moscow, USSR, was purified by recrys- tallization from ethanol.			
	ESTIMATED ERRORS:			
	T/K: precision \pm 0.3 (Compiler). x ₁ : \pm 0.01 (Compiler).			

		ORIGINAL ME		
(1) Phenanthrene; C ₁₄ H ₁₀ ; [85-0)1-8]	Kravchenko, V.M.; Pastukhova, I.S. J. Gen. Chem. U.S.S.R. <u>1959</u> , 29, 29-34. (English translation)		
(2) Fluoranthene; C ₁₆ H ₁₀ ; [206-	-44-0]			
VARIABLES: Temperature		PREPARED BY	8	
		W.E. Acree,	, Jr.	
EXPERIMENTAL VALUES		_		
T/K *2	2	x 1	Solid Phase	
383.2 1.	.000	0.000	(2)	
375.7 0.	.896	0.104	(2)	
365.0 0.	.738	0.262	(2)	
358.5 0.	.644	0.356	(2)	
353.4 0.	. 563	0.437	(2)	
347.5 0.	480	0.520	(2)	
346.2 0.	.460	0.540	Eutectic	
349.6 0.	. 391	0.609	(1)	
355.3 0.	.294	0.706	(1)	
363.8 0.	.156	0.844	(1)	
368.7 0.	.065	0.935	(1)	
372.5 0.	.000	1.000	(1)	
	•	at x ₂ - 0.	460 and at T/K = 346.2.	
METHOD: APPARATUS/PROCEDURE		(INFORMATION		
METHOD: APPARATUS/PROCEDURE	AUXILIARY	INFORMATION SOURCE AND P	URITY OF MATERIALS :	
METHOD: APPARATUS/PROCEDURE Phase diagram was determined u thermal analysis method (descr detail in V.M. Kravchenko, J. U.S.S.R. <u>1939</u> , 13, 133), supp visual observations.	AUXILIAR) sing a tibed in Phys. Chem.	(INFORMATION SOURCE AND P (1) Purity specifi before (2) Purity	URITY OF MATERIALS: and chemical Source were not ed in paper, was recrystallize use. and chemical source were not ed in paper, was recrystallize use.	

COMPONENTS:	ORIGINAL MEASUREMENTS:			
(1) Phenanthrene; C ₁₄ H ₁₀ ; [85-01-8]	Kravchenko, V.M.; Pastukhova, I.S.			
(2) Acenaphthene; C ₁₂ H ₁₀ ; [83-32-9]	Zhur. Fiz. Khim. <u>1957</u> , 31, 1802-1811.			
VARIABLES:	PREPARED BY:			
Temperature	W.E. Acree, Jr.			
EXPERIMENTAL VALUES				
<i>T/K x</i> ₂	x ₁ Solid Phase			
368.3 1.000	0.000 (2)			
362.0 0.901	0.099 (2)			
355.0 0.796	0.204 (2)			
346.7 0.686	0.314 (2)			
339.1 0.599	0.401 (2)			
334.5 0.541	0.459 (2)			
329.0 0.492	0.508 Eutectic			
338.7 0.386	0.614 (1)			
347.7 0.293	0.707 (1)			
357.4 0.199	0.801 (1)			
372.5 0.000	1.000 (1)			
AUXILIAR	Y INFORMATION			
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:			
Phase diagram was determined using a thermal analysis method (described in detail in V.M. Kravchenko, J. Phys. Chem. U.S.S.R. <u>1939</u> , 13, 133), supplemented by visual observations.	 (1) Purity and chemical source were not specified in paper, was recrystallized before use. (2) Purity and chemical source were not 			
	specified in paper, was recrystallized before use.			
	ESTIMATED ERRORS:			
	T/K: precision \pm 0.2 (Compiler). $x_1: \pm 0.002$ (Compiler).			
	-l			

COMPONENTS :			ORIGINAL MEASUREMENTS:									
<pre>(1) Phenanthrene; C₁₄H₁₀; [85-01-8] (2) Tetrachloromethane; CCl₄; [56-23-5] VARIABLES:</pre>			McLaughlin, E.; Zainal, H.A. J. Chem. Soc. <u>1960</u> , 2485-2488. PREPARED BY:									
							Temperature			W.E. Acree, Jr.		
							EIPERIMENTAL	VALUES	<u> </u>			
T/K	<i>x</i> 2	×1	T/K	<i>x</i> 2	* 1							
305.6	0.8232	0.1768	319.2	0.7080	0.2920							
310.0	0.7916	0.2084										
314.0	0.7579	0.2421										
317.0	0.7336	0.2664										
		AUXILIARY	INFORMATION	1								
METHOD: APPARATUS/PROCEDURE			SOURCE ANI	D PURITY OF M	ATERIALS:							
Constant temperature bath and a precision thermometer.			(1) Purity not given, British Drug Houses, United Kingdom, was passed over an alumina column with benzene as eluant.									
Mixtures of known concentrations sealed in glass ampoules and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly increased. Solubility determined by visual noting the temperature at which the last trace of solid solute disappeared.		 (2) AnalaR grade, source not givne, was stored over anhydrous calcium chloride and distilled before use. ESTIMATED ERRORS: 										
					T/K: precision \pm 0.1. x_1 : \pm 0.0003 (compiler).							

ORIGINAL MEASUREMENTS:
Rai, U.S.; Shekhar, H.
Thermochim. Acta <u>1991</u> , 175, 215-227.
PREPARED BY:
W.E. Acree, Jr.

EXPERIMENTAL VALUES

Phase diagram, given in the orginal paper, shows that the system is a simple eutectic system. The eutectic point occurs at circa $x_1 = 0.43$ and T/K = 328.2.

AUXILIARY INFORMATION						
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:					
Differential scanning calorimeter and an analytical balance. Binary mixtures were prepared by weight.	(1) Purity not given, Thomas Backer & Co., Bombay, India, was purified by frac- tional recrystallization from ethanol.					
Melting point temperatures and phase diagram determined using differential scanning calorimetric techniques.	(2) Purity not given, Fluka AG, Switzer- land, was purified by crystallization from boiling ethanol.					
	ESTIMATED ERRORS:					
	T/K: precision \pm 0.3 (Compiler). x ₁ : \pm 0.01 (Compiler).					

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COMPONENTS:	ORIGINAL MEASUREMENTS:			
 (1) Phenanthrene; C₁₄H₁₀; [85-01-8] (2) 1,1,1,2,2,3,3,4,4,5,5,6,6,7,7- pentadecafluoroheptane; C₇HF₁₅; [375-83-7] 	McLaughlin, E.; Scott, R.L. J. Phys. Chem. <u>1956</u> , 60, 674-676.			
VARIABLES:	PREPARED BY:			
<i>T/</i> K = 298	W.E. Acree, Jr.			
EXPERIMENTAL VALUES				
t/K x ₂	<i>x</i> ₁			
25.0 0.9984	0.00160			
AUXILIARY	INFORMATION			
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:			
Constant temperature bath, a precision thermometer and uv/visible spectrometer. Mixtures of known concentrations sealed in glass ampoules and allowed to equili- brate at a constant temperature for an unspecified length of time. Solubilities calculated from spectral absorbance data at 270 nm.	 White Label, Eastman Kodak Chemical Company, Rochester, New York, USA, was recrystallized ten times from ethanol. Purity not specified, synthesized by authors, was fractionally distilled shortly before use. ESTIMATED ERRORS: 			
	T/K: precision \pm 0.01. x_1 : \pm 3 % (relative error; compiler).			

COMPONENTS:	ORIGINAL MEASUREMENTS:			
<pre>(1) Phenanthrene; C₁₄H₁₀; [85-01-8] (2) 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8- hexadecafluorooctane; C₈H₂F₁₆; [307-99-3]</pre>	McLaughlin, E.; Scott, R.L. J. Phys. Chem. <u>1956</u> , 60, 674-676.			
VARIABLES:	PREPARED BY:			
<i>T/</i> K = 298	W.E. Acree, Jr.			
EXPERIMENTAL VALUES				
t/K x ₂	<i>*</i> 1			
25.0 0.9951	0.00488			
AUXILIARY	(INFORMATION			
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:			
Constant temperature bath, a precision thermometer and uv/visible spectrometer. Mixtures of known concentrations sealed in glass ampoules and allowed to equili- brate at a constant temperature for an unspecified length of time. Solubilities calculated from spectral absorbance data at 270 nm.	 (1) White Label, Eastman Kodak Chemical Company, Rochester, New York, USA, was recrystallized ten times from ethanol. (2) Purity not specified, synthesized by authors, was fractionally distilled shortly before use. ESTIMATED ERRORS: T/K: precision + 0.01. 			
	x_1 : ± 3 % (relative error; compiler).			

COMPONENTS:	ORIGINAL MEASUREMENTS:					
<pre>(1) Phenanthrene; C₁₄H₁₀; [85-01-8] (2) Octafluoronaphthalene; C₁₀F₈; [313-72-4] VARIABLES:</pre>	OKIGINAL REASOREMENTS: Miyagishi, S.; Isomi, A.; Iwata, T.; Asakawa, T.; Nishida, M. Bull. Chem. Soc. Japan 1985, 58, 3643- 3644. PREPARED BY: W.E. Acree, Jr.					
octafluoronaphthalene molecular compoun	oper, shows formation of a 1:1 phenanthrene - ad having a melting point of circa 453.2 K. 0.09 and T/K = 371.2, and at about x_2 = 0.91					
AUXILIARY INFORMATION						
METHOD: APPARATUS/PROCEDURE	SOURCE AND FURITY OF MATERIALS:					
Differential scanning calorimeter and an analytical balance. Binary mixtures were prepared by weight. Melting point temperatures and phase diagram determined using differential scanning calorimetric techniques.	 (1) Purity not given, Tokyo Chemical Company, Japan, was zone-refined before use. (2) Reagent grade, Tokyo Chemical Company, Japan, was recrystallized from meth- anol before use. ESTIMATED ERRORS: T/K: precision ± 0.3 (Compiler). x₁: ± 0.02 (Compiler). 					

COMPONENTS:			ORIGINAL MEASUREMENTS:						
<pre>(1) Phenanthrene; C₁₄H₁₀; [85-01-8] (2) Ethanol; C₂H₆O; [64-17-5] VARIABLES:</pre>			Speyers, C.L. Am. J. Sci. <u>1902</u> , 14, 293-302. PREPARED BY: W.E. Acree, Jr.						
							Temperature		
							EXPERIMENTAL	VALUES	
T/K	*2	* ₁					T/K	x 2	x 1
273.2	0.9918	0.0082	320.2	0.9781	0.0219				
284.1	0.9914	0.0086	343.4	0.9248	0.0752				
305.3	0.9844	0.0156							
		AUXILIARY	INFORMATION	И					
METHOD: APPAR	ATUS/PROCEDUR	E	SOURCE ANI	D PURITY OF M	ATERIALS:				
Experimental procedure only marginally described by author. Excess solute and solvent were equilibrated in a constant temperature water bath for between 10-30 minutes. Saturated solution was with- drawn through a coarse filter and anal- yzed by specific gravity. Author noted that evaporation to dryness and weighing the residue was subject to too much decomposition.		 Purity not given, Kahlbaum, was recrystallized from toluene to a melting point temperature of 100.4 °C. Marked absolute, from Eimer and Amend and Chas. Cooper and Co., dried over calcium oxide and distilled before use. 							
		ESTIMATED ERRORS: T/K : precision \pm 0.1. x_1 : \pm 8 % (relative error, compiler).							

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COMPONENTS: ORIGINAL MEASUREMENTS: Miller, M.M.; Wasik, S.P.; Huang, G.-L.; (1) Phenanthrene; C14H10; [85-01-8] Shiu, W.-Y.; Mackay, D. (2) 1-Octanol; C₈H₁₈O; [111-87-5] Environ. Sci. Technol. 1985, 19, 522-529. PREPARED BY: VARIABLES: T/K = 298W.E. Acree, Jr. EXPERIMENTAL VALUES $c_1/(\text{mol dm}^{-3})$ t/°C 0.4012 25.0 AUXILIARY INFORMATION METHOD: APPARATUS/PROCEDURE SOURCE AND PURITY OF MATERIALS: (1) Highest available commercial purity, specific chemical supplier not given, Constant temperature bath, rotator, thermometer, and a gas-liquid chromato-graph with flame ionization detection. was used as received. (2) 99+ %, Aldrich Chemical Company, Milwaukee, Wisconsin, USA, was used as Excess solute and solvent placed in glass vials and allowed to equilibrate for 24 hours with gentle agitation, and left to settle for 48 hours before analreceived. ysis. Aliquots of saturated solutions were removed and concentrations were determined using a gas-liquid chromatograph equipped with flame ionization detector and on 10 % SE30 ultraphase column. ESTIMATED ERRORS: T/K: \pm 0.1 (compiler). c₁: \pm 3 % (relative error; compiler).

COMPONENTS:			ORIGINAL MEASUREMENTS:			
(1) Phenanthrene; C ₁₄ H ₁₀ ; [85-01-8]			Choi, P.B.; McLaughlin, E.			
<pre>(2) Pyridine; C₅H₅N; [110-86-1] VARIABLES:</pre>			Ind. Eng. Chem. Fundam. <u>1983</u> , 22, 46-51. PREPARED BY:			
EXPERIMENTAL V	VALUES		Į			
T/K	*2	<i>*</i> 1	T/K	*2	*1	
299.8	0.7541	0.2459	342.8	0.3830	0.6170	
307.7	0.6989	0.3011	349.6	0.3039	0.6961	
314.3	0.6487	0.3513	355.6	0.2349	0.7651	
316.6	0.6310	0.3690	361.0	0.1651	0.8349	
323.4	0.5717	0.4283	366.5	0.0889	0.9111	
		AUXILIARY	INFORMATION	8		
METHOD: APPAR	ATUS/PROCEDUR	E	SOURCE ANI	PURITY OF M	ATERIALS:	
Constant temperature bath and a precision thermometer. Mixtures of known concentrations sealed in glass ampoules and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly increased. Solubility determined by visual		 98.7 %, Eastern Chemical Company, Smith- town, New York, USA, was passed over activated alumina and then recrystal- lized from toluene. Gold Label, 99.9+ %, Aldrich Chemical Company, was used as received. 				
noting the temperature at which the last trace of solid solute disappeared.			ESTIMATED ERRORS: T/K : precision \pm 0.1. x_1 : \pm 0.0003.			

Components:			ORIGINAL MEASUREMENTS:				
(1) Phenanth	rene; C ₁₄ H ₁₀ ;	[85-01-8]	Choi, P.B.; McLaughlin, E.				
(2) Thiophene; C ₄ H ₄ S; [110-02-1] VARIABLES:			Ind. Eng. Chem. Fundam. <u>1983</u> , 22, 46-51. PREPARED BY:				
							Temperature
EXPERIMENTAL	VALUES		ļ				
T/K	<i>x</i> 2	×1	T/K	<i>x</i> 2	<i>*</i> 1		
299.4	0.7621	0.2379	340.9	0.4093	0.5907		
304.9	0.7258	0.2742	348.3	0.3243	0.6757		
310.0	0.6854	0.3146	355.0	0.2459	0.7541		
321.2	0.6060	0.4016					
		AUXILIARY	INFORMATION	N			
METHOD: APPAR	ATUS/PROCEDUR	E	SOURCE ANI	D PURITY OF M	ATERIALS:		
Constant temperature bath and a precision thermometer. Mixtures of known concentrations sealed in glass ampoules and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly increased. Solubility determined by visual			town, activ lized (2) Gold	, New York, U vated alumina i from toluen Label, 99.9+	hemical Company, Smith SA, was passed over and then recrystal- e. %, Aldrich Chemical as received.		
	emperature at	which the last	ESTIMATED	ERRORS:			
		apporter	$\frac{T/K: \text{ pred}}{x_1: \pm 0.0}$	cision <u>+</u> 0.1. 003.			

COMPONENTS:	·····	ORIGINAL MEASUREMENTS:			
(1) Phenanthrene; C ₁₄ H	10; [85-01-8]	McLaughlin, E.; Scott, R.L.			
<pre>(2) Perfluoro-tri-n-butylamine; C₁₂F₂₇N; [311-89-7]</pre>		J. Am. Chem. Soc. <u>1954</u> , 76, 5276-5279.			
VARIABLES:		PREPARED BY:			
T/K = 298, 308 and 318	3	W.E. Acree, Jr.			
EXPERIMENTAL VALUES	·				
t/K	*2	×1			
25.0	0.9708	0.0292			
35.0	0.9511	0.0489			
45.0	0.9278	0.0722			
	AUXILIARY	INFORMATION			
METHOD: APPARATUS/PROCE	DURE	SOURCE AND PURITY OF MATERIALS:			
Constant temperature bath, a precision thermometer and uv/visible spectrometer. Mixtures of known concentrations sealed in glass ampoules and pre-equilibrated for four days at an elevated temperature. Saturated solutions were then transferred to a special solubility flask and equili-		 White Label, Eastman Kodak Chemical Company, Rochester, New York, USA, was recrystallized five times from ethanol to give a melting point of 101 °C. Purity not specified, Minnesota Mining & Manaufacturing Company, USA, was dis- tilled shortly before use. 			
brated for three days ture. Aliquots remove with solvent and conce spectrophotometrically	at desired tempera- ed, diluted ten-fold entrations determined	ESTIMATED ERRORS: T/K : precision \pm 0.02. x_1 : \pm 2 % (relative error; compiler).			

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COMPONENTS:	COMPONENTS :		ORIGINAL MEASUREMENTS:				
(1) Phenanth	(1) Phenanthrene; C ₁₄ H ₁₀ ; [85-01-8]			Srivastava, R.D.; Gupta, P.D.			
(2) Nitrobenzene; C ₆ H ₅ NO ₂ ; [98-95-3]			J. Indian Chem. Soc. <u>1967</u> , 44, 960–963.				
VARIABLES:	VARIABLES:			PREPARED BY:			
Temperature	Temperature		W.E. Acre	ee, Jr.			
EXPERIMENTAL	VALUES				· · · · · · · · · · · · · · · · · · ·		
T/K	*2	*1	T/K	*2	<i>*</i> 1		
290.2	0.7887	0.2113	301.6	0.7199	0.2801		
292.0	0.7783	0.2217	302.8	0.7108	0.2892		
296.0	0.7488	0.2512	308.3	0.6796	0.3204		
298.2	0.7430	0.2570					
	Anno 1997 - Anno 1	AUXILIARY	INFORMATION	N			
METHOD: APPAR	ATUS/PROCEDUR	E	SOURCE ANI	D PURITY OF M	ATERIALS:		
thermometer.				(1) Purity not given, British Drug Houses, United Kingdom, was recrystallized and sublimed.			
Mixtures of known concentrations sealed in glass ampoules and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly increased. Solubility determined by visual			(2) Purity not given, British Drug Houses, was dried and distilled.				
noting the te	emperature at	which the last	ESTIMATED	ERRORS:	· · · · · · · · · · · · · · · · · · ·		
	noting the temperature at which the last trace of solid solute disappeared.			cision <u>+</u> 0.1. (relative en	rror, Compiler).		

COMPONENTS:	COMPONENTS:			ORIGINAL MEASUREMENTS:			
(1) Phenanth	rene; C ₁₄ H ₁₀ ;	[85-01-8]	Doane, E.P.; Drickamer, H.G.				
(2) Carbon disulfide; CS ₂ ; [75-15-0] VARIABLES:			J. Phys. Chem. <u>1955</u> , 59, 454-457. PREPARED BY:				
							T/K = 298, P
EXPERIMENTAL	VALUES		Į				
P/atm	x 2	×1	P/atm	x 2	x _i		
1	0.765	0.235	4000	0.955	0.045		
500	0.838	0.162	6000	0.971	0.029		
1000	0.875	0.125	7000	0.978	0.022		
2000	0.927	0.073					
		AUXILIARY	INFORMATIO	N			
METHOD: APPAR	ATUS/PROCEDUT	RE	SOURCE AND PURITY OF MATERIALS:				
balance and I	Constant temperature bath, analytical balance and high pressure equipment. Excess solute and solvent allowed to			 Purest grade, Eastman Kodak Chemical Company, Rochester, New York, USA, wa used as received. 			
equilibrate in a specially designed high pressure cell at constant temperature temperature for 20-24 hours. Known amount amount of saturated solution removed,			(2) C.P. grade, J.T. Baker, was dried over phosphorous pentoxide and distilled.				
			ESTIMATED	ERRORS:			
residue.	solvent evaporated to dryness, and con- tration determined from weight of solid residue.			cision \pm 0.1. % at atmosp % at the high	heric pressure, and ther pressures.		

		ORIGINAL ME		
(1) Phenanthrene; C ₁₄ H.	in; [85-01-8]	Kremann, R. <i>Monatsch. Chem.</i> <u>1908</u> , <i>29</i> , 863-890.		
(2) 1,2-Dinitrobenzene [528-29-0]	; C ₆ H ₄ N ₂ O ₄ ;			
VARIABLES:		PREPARED BY	;	
Temperature		W.E. Acree	, Jr.	
EXPERIMENTAL VALUES		_ _		
T/K	*2	* 1	Solid Phase	
389.2	1.000	0.000	(2)	
380.3	0.829	0.171	(2)	
377.2	0.769	0.231	(2)	
371.2	0.669	0.331	(2)	
364.7	0.573	0.427	(2)	
356.7	0.488	0.512	(2)	
352.7	0.433	0.567	(2)	
352.2	0.431	0.569	(2)	
352.2	0.335	0.665	(1)	
363.4	0.293	0.807	(1)	
369.7	0.107	0.893	(1)	
376.2	0.000 utectic point occurs	1.000 at about <i>x</i> ₁ =	(1) 0.61 and T/K = 348.	
376.2				
376.2 Compiler: E	utectic point occurs	at about x ₁ =	0.61 and T/K = 348.	
376.2 Compiler: E ETHOD: APPARATUS/PROCE Binary mixtures preparation the experimental detail in the paper, compiler	AUXILIAR DURE ad by weight. While Is were not given speculates (based	at about $x_1 =$		
376.2	AUXILIAR AUXILIAR BURE ad by weight. While is were not given speculates (based tal used) that the glass container, led, and the phase visually noting the	at about x ₁ = Y INFORMATION SOURCE AND P (1) Purity specifi (2) Purity	0.61 and T/K = 348.	

226			ORIGINAL MEASURE			
COMPONENTS :			Kremann, R. Nonatsch. Chem. <u>1908</u> , 29, 863-890. PREPARED BY:			
(1) Phenanthr						
(2) 1,3-Dinit [99-65-0]		C ₆ H ₄ N ₂ O ₄ ;				
ARIABLES:						
Temperature			W.E. Acree, Jr.			
XPERIMENTAL \	ALUES					
T/K	x 2	x 1	T/K	x 2	* 1	
362.7	1.000	0.000	362.2	0.179	0.821	
360.2	0.955	0.045	369.2	0.103	0.897	
356.2	0.900	0.100	373.2	0.048	0.952	
353.2	0.847	0.153	376.7	0.000	1.000	
349.7	0.806	0.194	Compile-	Futantia	oint cours at	
345.2	0.753	0.247	about x ₁	= 0.482 and	point occurs at $T/K = 320.6$.	
342.2	0.706	0.294				
338.7	0.676	` 0.324				
335.7	0.638	0.362				
331.2	0.601	0.399				
326.2	0.560	0.440				
321.7	0.527	0.473				
321.7	0.525	0.475				
324.2	0.500	0.500				
326.2	0.482	0.518				
331.2	0.468	0.532				
328.7	0.467	0.533				
330.2	0.455	0.545				
333.2	0.445	0.555				
335.2	0.432	0.568				
337.9	0.421	0.579				
338.2	0.412	0.588				
343.2	0.368	0.632				
350.2	0.308	0.692				
357.7	0.237	0.763				
	- Marine menore	· · · · · · · · · · · · · · · · · · ·	-u			
	M10 / DDA		INFORMATION	W AB VI		
ETHOD: APPARA	·		SOURCE AND PURIT			
the experimen in the paper,	tal details compiler st	by weight. While were not given peculates (based used) that the	(1) Purity and specified i	chemical sou n paper.	irce were not	
sample was se temperature s diagram deter	aled in a gl lowly varied mined by vis	lass container, i, and the phase sually noting the	(2) Purity and specified i		nrce were not	
temperature a crystal of so		last/first ared/appeared.	ESTIMATED ERRORS	:		
			T/K: precision $x_1: \pm 0.002$ (Con		ler).	

OMPONENTS :		ORIGINAL MEASUREMENTS:		
(1) Phenanthrene; C ₁₄ H ₁₀ ;	[85-01-8]	Kremann, R.		
(2) 1,4-Dinitrobenzene; [100-25-4]		Monatsch. Chem. <u>1908</u> , 29, 863-890. PREPARED BY:		
ARIABLES:	<u> </u>			
Temperature		W.E. Acree, Jr.		
XPERIMENTAL VALUES				
T/K	x 2	* 1	Solid Phase	
445.2	1.000	0.000	(2)	
443.5	0.959	0.041	(2)	
441.2	0.920	0.080	(2)	
438.2	0.872	0.128	(2)	
433.2	0.808	0.192	(2)	
428.7	0.752	0.248	(2)	
428.2	0.694	0.306	(2)	
423.7	0.651	0.349	(2)	
419.5	0.616	0.384	(2)	
410.8	0.586	0.416	(2)	
402.7	0.519	0.481	(2)	
397.2	0.488	0.512	(2)	
392.2	0.461	0.539	(2)	
386.2	0.429	0.571	(2) .	
377.2	0.386	0.614	(2)	
357.2	0.312	0.688	(2)	
354.2	0.304	0.696	(2)	
352.2	0.296	0.706	(2)	
353.5	0.285	0.715	(1)	
354.2	0.245	0.755	(1)	
353.7	0.238	0.762	(1)	
354.2	0.225	0.775	(1)	
362.7	0.156	0.844	(1)	
367.2	0.109	0.891	(1)	
371.5	0.059	0.941	(1)	
376.2	0.000	1.000	(1)	
	AUYTLTAR	Y INFORMATION		
THOD: APPARATUS/PROCEDU			RITY OF MATERIALS:	
ETHOD: APPARATUS/PROCEDURE Binary mixtures prepared by weight. While the experimental details were not given in the paper, compiler speculates (based upon quantity of material used) that the sample was sealed in a glass container, temperature slowly varied, and the phase diagram determined by visually noting the temperature at which the last/first		(1) Purity ar	nd chemical source were not in paper.	
			nd chemical source were not 1 in paper.	
crystal of solid disappe		ESTIMATED ERRO	DRS:	
		T/K: precision $x_1: \pm 0.002$ (on <u>+</u> 0.5 (Compiler). Compiler).	

COMPONENTS:		ORIGINAL ME	CASUREMENTS :	
(1) Phenanthrene; C ₁₄	H ₁₀ ; [85-01-8]	Kremann, R. <i>Monatsch. Chem.</i> <u>1908</u> , 29, 863-890.		
(2) 1,3,5-Trinitrobe [99-35-4]				
VARIABLES:		PREPARED BY	<u>[</u>]	
Temperature	Temperature		ə, Jr.	
EXPERIMENTAL VALUES				
T/K	*2	× ₁	Solid Phase	
394.2	1.000	0.000	(2)	
384.2	0.883	0.117	(2)	
379.2	0.815	0.185	(2)	
388.2	0.729	0.271	1:1 Compound	
397.2	0.579	0.421	1:1 Compound	
398.2	0.471	0.529	1:1 Compound	
397.2	0.419	0.581	1:1 Compound	
393.2	0.355	0.645	1:1 Compound	
390.2	0.318	0.682	1:1 Compound	
384.2	0.272	0.728	1:1 Compound	
375.2	0.213	0.787	1:1 Compound	
364.2	0.174	0.826	1:1 Compound	
364.2	0.144	0.856	(1)	
367.2	0.122	0.878	(1)	
370.2	0.085	0.915	(1)	
373.2	0.058	0.942	(1)	
376.2	0.000	1.000	(1)	
molecular c	compound having a meltipoints occur at $x_1 = 0.22$	ng point of c	anthrene - 1,3,5-trinitrobenzene irca $T/K = 398.2$. The two 77.9 and at $x_1 = 0.845$ and	
	AUXILIARY	INFORMATION		
ETHOD: APPARATUS/PROC	EDURE	SOURCE AND	PURITY OF MATERIALS:	
ETHOD: APPARATUS/PROCEDURE Binary mixtures prepared by weight. While the experimental details were not given in the paper, compiler speculates (based upon quantity of material used) that the sample was sealed in a glass container, temperature slowly varied, and the phase diagram determined by visually noting the		specif: (2) Purity	and chemical source were not ied in paper. and chemical source were not ied in paper.	
	sperature at which the last/first stal of solid disappeared/appeared.		RRORS: sion <u>+</u> 0.5 (Compiler). ? (Compiler).	

Components :		ORIGINAL MEASUREMENTS:			
(1) Phenanthrene; C ₁₄ H ₁₀ ;	[85-01-8]	Shinomiya,	Shinomiya, C.		
(2) 1,2,3,5-Tetranitroben C ₆ H ₂ N ₄ O ₈ ; [3698-53-1]	zene;	J. Chem. Soc. Japan <u>1940</u> , 15, 259-270. PREPARED BY: W.E. Acree, Jr.			
VARIABLES:					
Temperature					
EXPERIMENTAL VALUES					
T/K	*2	x 1	Phases		
399.2	1.000	0.000	(2)		
394.2	0.921	0.079	(2) + lig 1		
394.2	0.815	0.185	liq 1 + liq 2		
394.2	0.810	0.190	lig 1 + lig 2		
396.5	0.720	0.280	lig 1 + lig 2		
396.7	0.696	0.304	lig 1 + lig 2		
398.2	0.623	0.377	lig 1 + lig 2		
397.7	0.575	0.425	lig 1 + lig 2		
396.7	0.549	0.451	liq 1 + liq 2		
396.2	0.537	0.463	lig 1 + lig 2		
395.7	0.485	0.515	liq 1 + liq 2		
393.7	0.483	0.517	liq 1 + liq 2		
391.2	0.413	0.587	(2) + liq		
391.2	0.402	0.598	(2) + liq		
384.7	0.320	0.680	1:1 Compound + liq		
372.2	0.238	0.762	1:1 Compound + liq		
364.2	0.207	0.793	1:1 Compound + liq		
360.2	0.136	0.864	(1) + lig		
363.2	0.114	0.886	(1) + liq		
373.7	0.000	1.000	(1)		
tetranitrobenzene comp molecular compound hav points occur at $x_1 = 0$ A pertectic point occu Compiler: From a then with formation of a 1: point at $x_1 = 0.615$ an	cound, and a 2:3 ring a melting po 0.120 and $T/K = 3$ ars at $x_1 = 0.615$ companie viewpo 1 molecular comp 1 molecular comp at close to $x_1 = 1$	phenanthrene - phenanthrene - s8.2, and at x_1 and $T/K = 388$. phint, phase diagound, with the d a miscibility	<pre>1:1 phenanthrene - 1,2,3,5- 1,2,3,5-tetranitrobenzene e of 398.2 K. Two eutectic = 0.822 and T/K = 352.2. 2. gram is more in agreement with existence of a peritectic gap at higher temperature, 392, and an eutectic point</pre>		
	AUXILIAF	Y INFORMATION			
ETHOD: APPARATUS/PROCEDURE	5	SOURCE AND F	PURITY OF MATERIALS:		
No experimental details gi	ven in paper.		and chemical source were not led in paper.		
			and chemical source were not ed in paper.		
		ESTIMATED ER	RORS:		
		ESTIMATED ERRORS: T/K : precision \pm 0.2 (Compiler). x_1 : \pm 0.002 (Compiler).			

230 Components:			ORIGINAL MEASUREMENTS:			
			Kremann, R.			
(1) Phenanthrene; (
(2) 2,4-Dinitro-1-n C ₇ H ₆ N ₂ O ₄ ; [121-3	nethylbenzen L4-2]	e;	Monatsch. Chem. <u>1908</u> , 29, 863-890. PREPARED BY:			
VARIABLES:						
Temperature			W.E. Acree, Jr.			
EXPERIMENTAL VALUES						
T/K	x 2	x 1	T/K x ₂ x ₁			
342.2	1.000	0.000	351.2 0.293 0.707			
341.2	0.968	0.032	354.7 0.262 0.738			
338.7	0.924	0.076	360.2 0.210 0.790			
337.2	0.889	0.111	365.7 0.151 0.849			
334.7	0.854	0.146	368.2 0.122 0.878			
333.2	0.819	0.181	371.2 0.076 0.924			
331.2	0.791	0.209	376.7 0.000 1.000			
329.2	0.756	0.244	Compiler: Eutectic point occurs at			
327.7	0.733	0.267	about $x_1 = 0.447$ and $T/K = 310.6$.			
326.2	0.716	0.284				
324.2	0.693	0.307				
322.2	0.658	0.342				
319.9	0.638	0.362				
317.2	0.610	0.390				
314.2	0.580	0.420				
310.7	0.557	0.443				
313.2	0.544	0.456				
315.2	0.532	0.468				
317.7	0.511	0.489				
319.2	0.508	0.492				
326.2	0.471	0.529				
332.7	0.427	0.573				
336.2	0.402	0.598				
341.2	0.372	0.628				
346.7	0.334	0.666				
		· · · · · · · · · · · · · · · · · · ·				
		AUXILIARY	INFORMATION			
METHOD: APPARATUS/PR	OCEDURE		SOURCE AND PURITY OF MATERIALS:			
Binary mixtures pre the experimental de in the paper, compi	tails were n ler speculat	not given tes (based	(1) Purity and chemical source were not specified in paper.			
upon quantity of ma sample was sealed i temperature slowly diagram determined	n a glass co varied, and by visually	ontainer, the phase noting the	(2) Purity and chemical source were not specified in paper.			
temperature at whic crystal of solid di			ESTIMATED ERRORS:			
			T/K: precision \pm 0.2 (Compiler). x_1 : \pm 0.002 (Compiler).			

Components :		ORIGINAL MEASUREMENTS:		
(1) Phenanthrene; C ₁₄ H	₁₀ ; [85-01-8]	Kremann, R	•	
(2) 2,6-Dinitro-1-met C ₇ H ₆ N ₂ O ₄ ; [606-20-3	hylbenzene;	Monatsch. Chem. <u>1908</u> , 29, 863-890. PREPARED BY:		
VARIABLES:				
Temperature		W.E. Acree	, Jr.	
EXPERIMENTAL VALUES				
T/K	*2	* ₁	Solid Phase	
338.2	1.000	0.000	(2)	
337.2	0.979	0.021	(2)	
333.7	0.917	0.083	(2)	
330.2	0.848	0.152	(2)	
327.2	0.797	0.203	(2)	
326.2	0.763	0.237	(2)	
321.2	0.720	0.280	(2)	
318.2	0.683	0.317	(2)	
313.2	0.635	0.365	(2)	
317.2	0.588	0.412	(1)	
321.2	0.574	0.426	(1)	
322.2	0.558	0.442	(1)	
326.2	0.540	0.460	(1)	
325.2	0.535	0.465	(1)	
330.7	0.506	0.494	(1)	
336.2	0.462	0.538	(1)	
341.2	0.422	0.578	(1)	
345.2	0.380	0.620	(1)	
348.7	0.338	0.662	(1)	
354.7	0.277	0.723	(1)	
360.7	0.213	0.787	(1)	
365.2	0.153	0.847	(1)	
370.4	0.088	0.912	(1)	
373.7	0.048	0.952	(1)	
376.7 Compiler: Eutect	0.000 c point occurs at abo	1.000	(1) and $T/K = 311.7$.	
	•	•	•	
		INFORMATION		
METHOD: APPARATUS/PROCI	DURE	SOURCE AND	PURITY OF MATERIALS:	
Binary mixtures prepared by weight. While the experimental details were not given in the paper, compiler speculates (based upon quantity of material used) that the sample was sealed in a glass container,		specif. (2) Purity	and chemical source were not ied in paper. and chemical source were not	
temperature slowly van diagram determined by temperature at which t	visually noting the the last/first	specif.	ied in paper.	
crystal of solid disap		ESTIMATED E		
		$T/K: \text{ precises} x_1: \pm 0.002$	sion <u>+</u> 0.2 (Compiler). 2 (Compiler).	

COMPONENTS:		ORIGINAL MEASUREMENTS:		
(1) Phenanthrene; C ₁₄ 1	H: [85-01-81	Kremann, R.		
 (1) Phenanchizene; C₁₄ (2) 3,4-Dinitro-1-met 		Monatsch. Chem. <u>1908</u> , 29, 863-890.		
C ₇ H ₆ N ₂ O ₄ ; [610-39-	C ₇ H ₆ N ₂ O ₄ ; [610-39-9]			
VARIABLES:			f :	
emperature		W.E. Acree	a, Jr.	
EXPERIMENTAL VALUES	·	. 	<u>, , , , , , , , , , , , , , , , , , , </u>	
T/K	x 2	x 1	Solid Phase	
332.2	1.000	0.000	(2)	
324.7	0.875	0.125	(2)	
322.2	0.853	0.147	(2)	
320.2	0.830	0.170	(2)	
317.2	0.785	0.215	(2)	
313.2	0.724	0.276	(2)	
309.2	0.679	0.321	(2)	
307.2	0.672	0.328	(2)	
316.0	0.581	0.419	(1)	
324.1	0.547	0.453	(1)	
328.2	0.504	0.496	(1)	
330.8	0.489	0.511	(1)	
334.2	0.457	0.543	(1)	
342.2	0.406	0.594	(1)	
350.2	0.334	0.666	(1)	
355.2	0.282	0.718	(1)	
360.7	0.214	0.786	(1)	
365.4	0.159	0.841	(1)	
369.7	0.109	0.891	(1)	
372.7	0.060	0.940	(1)	
376.7	0.000	1.000	(1)	
Compiler:	Eutectic point occurs	at about x ₁ =	0.341 and at T/K = 308.	
	AUXILIARY	INFORMATION		
ETHOD: APPARATUS/PROC	EDURE	SOURCE AND	PURITY OF MATERIALS:	
Binary mixtures prepa the experimental deta in the paper, compile upon quantity of mate	ils were not given r speculates (based		and chemical source were not ied in paper.	
upon quantity of material used) that the sample was sealed in a glass container, temperature slowly varied, and the phase diagram determined by visually noting the temperature at which the last/first		specif	and chemical source were not ied in paper.	
crystal of solid disa	ppeared/appeared.		RRORS: sion <u>+</u> 0.2 (Compiler). 2 (Compiler).	

Components:	·····	ORIGINAL M	EASUREMENTS :
(1) Phenanthrene; C ₁₄ H ₁₀ ;	[85-01-8]	Kremann, I	R.
(2) 2,4,6-Trinitro-1-meth C ₇ H ₅ N ₃ O ₆ ; [118-96-7]		Monatsch.	Chem. <u>1908</u> , 29, 863-890.
VARIABLES:		PREPARED BY	Y:
Temperature		W.E. Acree	e, Jr.
EXPERIMENTAL VALUES			
T/K	x 2	x 1	Solid Phase
351.2	1.000	0.000	(2)
347.2	0.896	0.104	(2)
343.2	0.828	0.172	(2)
345.2	0.787	0.213	1:1 Compound
351.7	0.709	0.291	1:1 Compound
355.2	0.669	0.331	1:1 Compound
358.2	0.610	0.390	1:1 Compound
360.2	0.551	0.449	1:1 Compound
360.7	0.505	0.495	1:1 Compound
360.7	0.483	0.517	1:1 Compound
360.2	0.459	0.541	1:1 Compound
359.7	0.444	0.556	1:1 Compound
358.0	0.406	0.594	1:1 Compound
355.2	0.371	0.629	1:1 Compound
352.2	0.342	0.658	1:1 Compound
350.7	0.322	0.678	1:1 Compound
350.2	0.297	0.707	(1)
360.2	0.204	0.796	ⁱ (1)
365.2	0.159	0.841	(1)
369.2	0.102	0.898	(1)
371.7	0.072	0.928	(1)
374.7	0.041	0.959	(1)
376.7	0.000	1.000	(1)
Compiler: Phase eutectic points and T/K = 348.5.	occur at about x;	rmation of a = 0.183 and 3	1:1 molecular compound. Two $T/K = 342.4$ and at $x_1 = 0.694$
	AUXILIARY	INFORMATION	
ETHOD: APPARATUS/PROCEDURE	l	SOURCE AND	PURITY OF MATERIALS:
Binary mixtures prepared h the experimental details w in the paper, compiler spe upon quantity of material sample was sealed in a gla	ere not given culates (based used) that the ss container,	specif	and chemical source were not ied in paper.
temperature slowly varied, diagram determined by visu	and the phase ally noting the		ied in paper.
temperature at which the l crystal of solid disappear		ESTIMATED E	RRORS :
		$\frac{T/K: \text{ preci}}{x_1: \pm 0.002}$	sion <u>+</u> 0.2 (Compiler). 2 (Compiler).

components:	ORIGINAL ME	ASUREMENTS :
(1) Phenanthrene; C ₁₄ H ₁₀ ; [85-01-8]	Kremann, R	.; Hofmeier, F.
<pre>(2) 2,4-Dinitrophenol; C₆H₄N₂O₅; [51-28-5]</pre>	Monatsch.	Chem. <u>1910</u> , 31, 201-202.
VARIABLES:	PREPARED BY	:
Temperature	W.E. Acree	, Jr.
EXPERIMENTAL VALUES		
т/к x ₂	* 1	Solid Phase
384.2 1.000	0.000	(2)
382.2 0.970	0.030	(2)
380.2 0.928	0.072	(2)
377.2 0.872	0.128	(2)
374.2 0.845	0.155	(2)
371.2 0.797	0.203	(2)
369.2 0.755	0.245	(2)
366.2 0.718	0.282	(2)
363.2 0.677	0.323	(2)
360.2 0.641	0.359	(2)
355.2 0.595	0.405	(2)
350.2 0.558	0.442	(2)
347.2 0.507	0.493	(2)
340.2 0.475	0.525	(2)
335.2 0.446	0.554	(2)
337.2 0.415	0.585	. (1)
341.2 0.376	0.624	(1)
346.2 '0.336	0.664	(1)
351.2 0.286	0.714	(1)
356.2 0.235	0.765	(1)
363.2 0.163	0.837	(1)
369.2 0.103	0.897	(1)
374.2 0.043	0.957	(1)
376.2 0.000	1.000	(1)
Compiler: Eutectic point occurs	at about $x_1 =$	0.562 and $T/K = 334.8$.
AUXILIAR	Y INFORMATION	
ETHOD: APPARATUS/PROCEDURE	SOURCE AND	PURITY OF MATERIALS:
Binary mixtures prepared by weight. While the experimental details were not given in the paper, compiler speculates (based upon quantity of material used) that the		and chemical source were not ied in paper.
sample was sealed in a glass container, temperature slowly varied, and the phase diagram determined by visually noting the temperature at which the last/first	(2) Purity specif	and chemical source were not ied in paper.
crystal of solid disappeared/appeared.	ESTIMATED E	RRORS:
	$T/K: \text{ precis}$ $x_1: \pm 0.002$	sion <u>+</u> 0.5 (Compiler). ? (Compiler).

CONPONENTS :	ORIGINAL MEASUREMENTS:
(1) Phenanthrene; C ₁₄ H ₁₀ ; [85-01-8]	Rai, U.S.; Shekhar, H.
<pre>(2) 1-Chloro-4-nitrobenzene; C₆H₄ClNO₂; [100-00-5]</pre>	Thermochim. Acta <u>1991</u> , 175, 215-227.
VARIABLES:	PREPARED BY:
	W.E. Acree, Jr.
EXPERIMENTAL VALUES	
Phase diagram, given in the original pa	per, shows that the system is a simple
eutectic system. The eutectic point oc	curs at circa $x_1 = 0.44$ and $T/K = 316.7$.
AUXILIARI	INFORMATION
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:
Differential scanning calorimeter and an analytical balance. Binary mixtures were prepared by weight.	(1) Purity not given, Thomas Backer & Co., Bombay, India, was purified by frac- tional recrystallization from ethanol.
Melting point temperatures and phase diagram determined using differential scanning calorimetric techniques.	(2) Purity not given, SD'S Lab-Chem. Indus- try, Bombay, India, purified by frac- tional recrystallization from ethanol.
	ESTIMATED ERRORS:
	T/K: precision \pm 0.3 (Compiler). x_1 : \pm 0.01 (Compiler).

Components:	ORIGINAL MEASUREMENTS:
(1) Phenanthene; C ₁₄ H ₁₀ ; [85-01-8]	Burger, A.; Bryant, H.W.
<pre>(2) Dibenzothiophene; C₁₂H₈S; [132-65-0]]</pre>	J. Am. Chem. Soc. <u>1941</u> , 63, 1054-1057.
VARIABLES:	PREPARED BY:
Temperature	W.E. Acree, Jr.
EXPERIMENTAL VALUES Experimentally determined phase diagram in the original paper, shows phenanthre simple eutectic system. The eutectic p T/K = 349.	ne + dibenzothiophene mixtures to form a
AUXILIARY	INFORMATION

METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:
No experimental details given in paper.	(1) Purity and chemical source were not specified in paper.
	(2) Purity and chemical source were not specified in paper.
	ESTIMATED ERRORS:
	T/K: precision \pm 0.2 (Compiler). x_1 : \pm 0.01 (Compiler).

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COMPONENTS:		ORIGINAL ME	ASUREMENTS:
(1) Phenanthrene; C ₁₄ H (2) Thianthrene; C ₁₂ H _a		Eckert, C.	I.; Howell, W.J.; Tomasko, D.L.; A. ing. Data <u>1990</u> , 35, 446-449.
VARIABLES:		PREPARED BY	:
Temperature		W.E. Acree	, Jr.
EXPERIMENTAL VALUES			······
T/K	<i>x</i> 2	* 1	Solid Phase
429	1.00	0.00	(2)
425	0.95	0.05	(2)
423	0.90	0.10	(2)
420	0.85	0.15	(2)
416	0.80	0.20	(2)
412	0.75	0.25	(2)
409	0.70	0.30	(2)
405	0.65	0.35	(2)
400	0.60	0.40	(2)
397	0.55	0.45	(2)
390	0.50	0.50	(2)
383	0.45	0.55	(2)
377	0.40	0.60	(2)
370	0.35	0.65	(2)
362	0.30	0.70	(2)
356	0.25	0.75	(2)
357	0.20	0.80	(1)
361	0.15	0.85	(1)
365	0.10	0.90	(1)
369	0.05	0.95	(1)
372	0.00	1.00	(1)
Authors stat	e that system exhib	bits simple eute	ctic behavior.
***************************************	AUXILIA	ARY INFORMATION	
ETHOD: APPARATUS/PROCE	EDURE	SOURCE AND	PURITY OF MATERIALS:
Samples were equilibra similar to the one use workers (see J. Phys. 1387). Temperature of	ed by Ott and co- Chem. <u>1962</u> , 66,	waukee	, Aldrich Chemical Company, Mil- , Wisconsin, USA, was recrystal- before use.
tored with an Omega RI stainless steel tube t through the center of Samples heated above t	D probe inside a that went down the pyrex tube.		, Aldrich Chemical Company, was tallized before use.
temperature, and time- curves were measured.		ESTIMATED E	RRORS:
curves were measured.			sion <u>+</u> 0.5. 5 (Compiler).

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Phenanthrene; $C_{12}H_{10}$; [85-01-8]	Rai, U.S.; Shekhar, H.
(2) Benzoic Acid; C ₇ H ₆ O ₂ ; [65-85-0]	Cryst. Res. Technol. <u>1990</u> , 25, 771-779.
VARIABLES:	PREPARED BY:
	W.E. Acree, Jr.
EXPERIMENTAL VALUES	
Phase equilibrium data not given in cite	ed paper. Authors report that the binary
system has a single eutectic point which	n occurs at $x_1 = 0.54$ and $T/K = 353.7$.
AUXILIARY	INFORMATION
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:
Binary mixtures were prepared by weight. Melting and thaw point temperatures determined using a Toshiniwal Melting Point Apparatus equipped with a precision	(1) Purity unknown, Thomas Backer & Co., Bombay, India, was recrystallized from ethanol.
thermometer.	(2) Purity unknown, E. Merck, India, was recrystallized from boiling water.
	ESTIMATED ERRORS:
	T/K: precision \pm 0.2 (Compiler). x_1 : \pm 0.01 (Compiler).

COMPONENTS :	
(1) Phenanthrene; C ₁₄ H ₁₀ ; [85-01-8]	Rai, U.S.; Shekhar, H.
(2) <i>trans-</i> Cinnamic Acid; C ₇ H ₆ O ₂ ; [140-10-3]	Cryst. Res. Technol. <u>1990</u> , 25, 771-779.
VARIABLES:	PREPARED BY:
	W.E. Acree, Jr.
EIPERIMENTAL VALUES	
Phase equilibrium data not given in cit	ed paper. Authors report that the binary
system has a single eutectic point whic	n occurs at $x_1 = 0.69$ and $T/K = 357.7$.
AUXILIARY	INFORMATION
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:
Binary mixtures were prepared by weight. Melting and thaw point temperatures determined using a Toshiniwal Melting Point Apparatus equipped with a precision	 Purity unknown, Thomas Backer & Co., Bombay, India, was recrystallized from ethanol.
Binary mixtures were prepared by weight. Melting and thaw point temperatures determined using a Toshiniwal Melting	(1) Purity unknown, Thomas Backer & Co., Bombay, India, was recrystallized from
Binary mixtures were prepared by weight. Melting and thaw point temperatures determined using a Toshiniwal Melting Point Apparatus equipped with a precision	 Purity unknown, Thomas Backer & Co., Bombay, India, was recrystallized from ethanol. Purity unknown, Sisco-Chem. Industry,
Binary mixtures were prepared by weight. Melting and thaw point temperatures determined using a Toshiniwal Melting Point Apparatus equipped with a precision	 Purity unknown, Thomas Backer & Co., Bombay, India, was recrystallized from ethanol. Purity unknown, Sisco-Chem. Industry, India, was used as received.

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COMPONENTS:		ORIGINAL ME	ASUREMENTS:
(1) Phenanthrene; C ₁₄	H ₁₀ ; [85-01-8]		.; Howell, W.J.; Tomasko, D.L.;
<pre>(2) 2-Hydroxybenzoic [69-72-7]</pre>	acid; C ₇ H ₆ O ₃ ;	Eckert, C. J. Chem. 1	A. Eng. Data <u>1990</u> , 35, 446-449.
VARIABLES:		PREPARED BY	7:
Temperature		W.E. Acree	a, Jr.
EXPERIMENTAL VALUES			
T/K	×2	x 1	Solid Phase
432	1.00	0.00	(2)
423	0.90	0.10	(2)
416	0.80	0.20	(2)
410	0.70	0.30	(2)
404	0.60	0.40	(2)
398	0.50	0.50	(2)
390	0.40	0.60	(2)
381	0.30	0.70	(2)
368	0.20	0.80	(2)
367	0.10	0.90	(1)
370	0.00	1.00	(1)
		ts simple eute	
	AUXILIAR	Y INFORMATION	
METHOD: APPARATUS/PROC		Y INFORMATION	PURITY OF MATERIALS:
METHOD: APPARATUS/PROC Samples were equilibr similar to the one us workers (see J. Phys. 1387). Temperature o tored with an Omega R stainless steel tube through the center of Samples heated above temperature, and time curves were measured.	EDURE ated in an apparatus ed by Ott and co- <i>Chem.</i> <u>1962</u> , 66, f the sample moni- TD probe inside a that went down the pyrex tube. their melting point	Y INFORMATION SOURCE AND (1) 99.5 % waukee lized (2) 99.5 % recrys ESTIMATED E T/K: preci	PURITY OF MATERIALS: , Aldrich Chemical Company, Mil- , Wisconsin, USA, was recrystal- before use. , Aldrich Chemical Company, was tallized before use.

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COMPONENTS :		ORIGINAL MEASUREMENTS:
(1) Phenanthrene; C ₁₄ H ₁₀ ; [8	35-01-8]	Mayer, M.M.; Howell, W.J.; Tomasko, D.L.;
<pre>(2) 3-Hydroxybenzoic acid; [99-06-9]</pre>		Eckert, C.A. J. Chem. Eng. Data <u>1990</u> , 35, 446-449.
ARIABLES:		PREPARED BY:
Temperature		W.E. Acree, Jr.
XPERIMENTAL VALUES		
T/K	*2	x 1
472	1.00	0.00
466	0.90	0.10
457	0.80	0.20
454	0.70	0.30
451	0.60	0.40
450	0.50	0.50
449	0.40	0.60
447	0.30	0.70
440	0.20	0.80
426	0.10	0.90
372	0.00	1.00
Authors state tha formation or a so	it system exhibi lid solution.	ts behavior indicative of either compound .
Authors state the formation or a so	t system exhibi blid solution.	ts behavior indicative of either compound
Authors state the formation or a so	lid solution.	ts behavior indicative of either compound
formation or a so	lid solution.	
ETHOD: APPARATUS/PROCEDURE Samples were equilibrated is similar to the one used by workers (see J. Phys. Chem. 1387). Temperature of the tored with an Omega RTD pro stainless steel tube that w through the center of the p	AUXILIAR AUXILIAR ot and co- <u>1962</u> , 66, sample moni- be inside a ent down yrex tube.	Y INFORMATION
TETHOD: APPARATUS/PROCEDURE Samples were equilibrated i similar to the one used by workers (see J. Phys. Chem. 1387). Temperature of the tored with an Omega RTD pro stainless steel tube that w	AUXILIAR AUXILIAR Ott and co- <u>1962, 66,</u> sample moni- be inside a ent down yrex tube. melting point	Y INFORMATION SOURCE AND PURITY OF MATERIALS: (1) 99.5 %, Aldrich Chemical Company, Mil- waukee, Wisconsin, USA, was recrystal- lized before use. (2) 99.5 %, Aldrich Chemical Company, was

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Phenanthrene; C ₁₄ H ₁₀ ; [85-01-8]	Efremov, N.N.; Fikhomirova, A.N.
<pre>(2) 6-Methyl-2,3,4-trinitrophenol; C₇H₅N₃O₇; [89793-90-8]</pre>	J. Russ. Phys. Chem. Soc. <u>1927</u> , 57, 373- 390.
VARIABLES:	PREPARED BY:
	W.E. Acree, Jr.
EXPERIMENTAL VALUES	
Phase equilibrium data not given in cite	ed paper. Authors report formation of a
1:1 phenanthrene - 6-methyl-2,3,4-trinit	crophenol molecular compound. The two
eutectic points occur at $x_1 = 0.176$ and	$T/K = 358.8$ and at $x_1 = 0.825$ and
T/K = 357.4.	
AUXILIARY	INFORMATION
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:
Experimental details not given in paper.	 Purity and chemical source were not specified in paper.
determined using a Toshiniwal Melting Point Apparatus equipped with a precision thermometer.	(2) Purity and chemical source were not specified in paper.
	ESTIMATED ERRORS:
	T/K: precision \pm 0.2 (Compiler). x ₁ : \pm 0.003 (Compiler).

1,10-PHENANTHROLINE SOLUBILITIES IN PURE AND BINARY SOLVENT MIXTURES

- A. <u>Saturated Hydrocarbons (including cycloalkanes)</u>
- B. <u>Alkenes</u>
- C. Aromatic Hydrocarbons
- D. Esters
- E. <u>Ethers</u>
- F. Haloalkanes and Haloaromatic Hydrocarbons
- G. <u>Alcohols</u>
- H. <u>Ketones</u>
- I. <u>Miscellaneous Pure Solvents</u>
- J. Binary Solvent Mixtures

methanol + water
ethanol + water

COMPONENTS :	ORIGINAL MEASUREMENTS:
(1) 1,10-Phenanthroline; C ₁₂ H ₈ N ₂ ;	Burgess, J.; Haines, R.I.
[5144-89-8] (2) Methanol; CH ₄ O; [67-56-1]	J. Chem. Eng. Data <u>1978</u> , 23, 196-197.
(3) Water; H ₂ O; [7732-18-5]	
VARIABLES:	PREPARED BY:
T/K = 298, Solvent composition	W.E. Acree, Jr.
EXPERIMENTAL VALUES ⁸ $t = 25.0 \ ^{\circ}C$	
$\phi_2^{(s)}$	$c_1/(mol dm^{-3})$
0.00	0.0149
0.05	0.0173
0.10	0.0207
0.15	0.0247
0.20	0.0280
0.25	0.0339
of the solute expressed in terms of	binary solvent mixture; c1: solubility molarity. Equilibrium solid phase is enanthroline, particularly in the water-
of the solute expressed in terms of probably a hydrated form of 1,10-ph	molarity. Equilibrium solid phase is
of the solute expressed in terms of probably a hydrated form of 1,10-ph rich binary solvent mixtures.	molarity. Equilibrium solid phase is
of the solute expressed in terms of probably a hydrated form of 1,10-ph rich binary solvent mixtures.	molarity. Equilibrium solid phase is enanthroline, particularly in the water-
AUXIL: AUXIL: TETHOD: APPARATUS/PROCEDURE Constant temperature bath, and an ultra- violet/visible spectrophotometer.	molarity. Equilibrium solid phase is enanthroline, particularly in the water- IARY INFORMATION SOURCE AND PURITY OF MATERIALS: (1) Purity and chemical source not specified, was recrystallized from aqueous ethanol.
AUXIL: AUXIL: METHOD: APPARATUS/PROCEDURE Constant temperature bath, and an ultra- violet/visible spectrophotometer. Excess solute and binary solvent equili- brated in a constant temperature vessel. Aliquots of saturated solution withdraw	molarity. Equilibrium solid phase is enanthroline, particularly in the water- IARY INFORMATION SOURCE AND PURITY OF MATERIALS: (1) Purity and chemical source not speci- fied, was recrystallized from aqueous- ethanol. (2) Purity and chemical source not speci-
AUXIL: AUXIL: TETHOD: APPARATUS/PROCEDURE Constant temperature bath, and an ultra- violet/visible spectrophotometer. Excess solute and binary solvent equili- brated in a constant temperature vessel. Aliquots of saturated solution withdrawn and concentrations determined spectro- metrically at 298.2 nm. Attainment of equilibrium verified by several repeti-	<pre>molarity. Equilibrium solid phase is enanthroline, particularly in the water- IARY INFORMATION SOURCE AND PURITY OF MATERIALS: (1) Purity and chemical source not speci- fied, was recrystallized from aqueous- ethanol. (2) Purity and chemical source not speci- fied in paper. (3) Purity and chemical source not speci- (3) Purity and chemical source not speci- </pre>
AUXIL: AUXIL: TETHOD: APPARATUS/PROCEDURE Constant temperature bath, and an ultra- violet/visible spectrophotometer. Excess solute and binary solvent equili- brated in a constant temperature vessel. Aliquots of saturated solution withdrawn and concentrations determined spectro- metrically at 298.2 nm. Attainment of equilibrium verified by several repeti-	<pre>molarity. Equilibrium solid phase is enanthroline, particularly in the water- IARY INFORMATION SOURCE AND PURITY OF MATERIALS: (1) Purity and chemical source not speci- fied, was recrystallized from aqueous- ethanol. (2) Purity and chemical source not speci- fied in paper. (3) Purity and chemical source not speci- (3) Purity and chemical source not speci- </pre>
AUXIL: AUXIL: METHOD: APPARATUS/PROCEDURE Constant temperature bath, and an ultra- violet/visible spectrophotometer. Excess solute and binary solvent equili- brated in a constant temperature vessel.	<pre>molarity. Equilibrium solid phase is enanthroline, particularly in the water- IARY INFORMATION SOURCE AND PURITY OF MATERIALS: (1) Purity and chemical source not speci- fied, was recrystallized from aqueous- ethanol. (2) Purity and chemical source not speci- fied in paper. (3) Purity and chemical source not speci- (3) Purity and chemical source not speci- </pre>

	24			
COMPONENTS: (1) 1,10-Phenanthroline; C ₁₂ H ₈ N ₂ ;	ORIGINAL MEASUREMENTS: Sengupta, D.; Amalendu, P.; Lahiri, S.C.			
[5144-89-8] (2) Methanol; CH_4O ; [67-56-1] (3) Water; H_2O ; [7732-18-5]	J. Chem. Soc., Dalton Trans. <u>1983</u> , 2685- 2688.			
VARIABLES: T/K = 295, Solvent composition	PREPARED BY: W.E. Acree, Jr.			
EXPERIMENTAL VALUES ^a				
$t = 22.0 \ ^{\circ}C$ $x_2^{(s)}$	$c_1/(\text{mol dm}^{-3})$			
0.000	0.0169			
0.047	0.0269			
0.099	0.0591			
0.159	0.1496			
0.228	0.4491			
	1.1412			
0.307	•••••			
0.400	2.5072			
0.508 0.639	5.1028			
AUXILIARY	INFORMATION			
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:			
Constant temperature bath, and an ultra- violet/visible spectrophotometer. Binary solvent mixtures prepared volume- trically and solvent weight percentages calculated from known densities of the pure solvents at 295 K. Excess solute and solvent allowed to equilibrate for 24 hours in a Campbell solubility appar- atus. Saturated solutions were filtered and withdrawn by inversion of the appar- atus. Concentrations determined spectro- photometrically at 264 nm.	 Reagent grade, E. Merck, was used as received from chemical supplier. Purity and chemical source not speci- fied in paper. Purity and chemical source not speci- fied in paper. 			
	ESTIMATED ERRORS: $T/K: \pm 0.1$ (Compiler). $x_2^{(s)}: \pm 0.001$ (Compiler). $c_1: \pm 3$ % (relative error, Compiler).			

244	
244 COMPONENTS: (1) 1,10-Phenanthroline; $C_{12}H_{8}N_{2}$; [5144-89-8] (2) Ethanol; $C_{2}H_{6}O$; [64-17-5] (3) Water; $H_{2}O$; [7732-18-5] VARIABLES: T/K = 295, Solvent composition EXPERIMENTAL VALUES ⁶ $t = 22.0 \ ^{\circ}C$ $x_{2}^{(s)}$ 0.000 0.033 0.071 0.117 0.170 0.235 0.325 0.325 0.418 0.553 ^a $x_{2}^{(s)}$; initial mole fraction of binary of the solute expressed in terms of mol probably a hydrated form of 1,10-phenan rich binary solvent mixtures.	arity. Equilibrium solid phase is
0.553 ^a $x_2^{(s)}$: initial mole fraction of binary of the solute expressed in terms of mol probably a hydrated form of 1,10-phenan	12.6205 solvent mixture; c_1 : solubility arity. Equilibrium solid phase is
AUXILIARY METHOD: APPARATUS/PROCEDURE Constant temperature bath, and an ultra- violet/visible spectrophotometer.	INFORMATION SOURCE AND PURITY OF MATERIALS: (1) Reagent grade, E. Merck, was used as received from chemical supplier.
Binary solvent mixtures prepared volume- trically and solvent weight percentages calculated from known densities of the pure solvents at 295 K. Excess solute and solvent allowed to equilibrate for 24 hours in a Campbell solubility appar- atus. Saturated solutions were filtered and withdrawn by inversion of the appar- atus. Concentrations determined spectro- photometrically at 280 nm.	 (2) Absolute, chemical supplier not specified in paper, was dried over calcium oxide and distilled before use. (3) Purity and chemical source not specified in paper.
	ESTIMATED ERRORS: $T/K: \pm 0.1$ (Compiler). $x_2^{(5)}: \pm 0.001$ (Compiler). $c_1: \pm 3$ % (relative error, Compiler).

PHENOTHIAZINE SOLUBILITIES IN PURE AND BINARY SOLVENT MIXTURES

- A. <u>Saturated Hydrocarbons (including cycloalkanes)</u>
- B. <u>Alkenes</u>
- C. Aromatic Hydrocarbons
- D. Esters
- E. <u>Ethers</u>
- F. <u>Haloalkanes and Haloaromatic Hydrocarbons</u>
- G. <u>Alcohols</u>
- H. Ketones
- I. <u>Miscellaneous Pure Solvents</u>

phenoxazine thianthrene phenoxanthiin dibenzo[b,e][1,4]dioxine

J. Binary Solvent Mixtures

OMPONENTS:		ORIGINAL MEA	SUREMENTS:	
(1) Phenothiazine; C ₁₂ H ₉ NS	; [92-84-2]	Cullinane, N.M.; Rees, W.T. Trans. Faraday Soc. <u>1940</u> , 36, 506-514.		
(2) Phenoxazine; C ₁₂ H ₉ NO;	[135-67-1]			
ARIABLES:		PREPARED BY:		
emperature		W.E. Acree,	Jr.	
XPERIMENTAL VALUES ^a		-Į		
$r_{ m in}/\kappa$	T _{fin} /K	*2	* 1	
429.9	429.1	1.000	0.000	
427.3	415.3	0.941	0.059	
424.3	413.0	0.871	0.129	
416.7	413.2	0.744	0.256	
415.2	412.9	0.735	0.265	
415.8	413.1	0.689	0.311	
430.1	413.6	0.483	0.517	
438.1	413.0	0.360	0.640	
449.5	416.9	0.176	0.824	
452.0	421.5	0.118	0.882	
457.6 ^a Phase diagram, given series of solid sol x ₂ = 0.22 and from 2 which crystallization of the solid solution	456.8 in in the original jutions having comp $x_2 = 0.93$ to $x_2 = 1$ on begins; T_{fin} is on concludes.	0.000 paper, shows fo ositions from (.00. T _{in} refer the temperature	1.000 brmation of a partial circa $x_2 = 0.00$ to cs to the temperature at e at which crystallization	
⁸ Phage diagram, give	n in the original	naper, shows fo	ormation of a partial	
Phase diagram, given series of solid sol x ₂ = 0.22 and from 3 which crystallizati of the solid solution of the solid solution	n in the original utions having comp x ₂ = 0.93 to x ₂ = 1 on begins; T _{fin} is on concludes.	paper, shows for ositions from (.00. T _{in} refer the temperature INFORMATION	ormation of a partial circa x ₂ = 0.00 to rs to the temperature at e at which crystallization	
^a Phase diagram, given series of solid sol x ₂ = 0.22 and from 3 which crystallizati of the solid solution of the solid solution ETHOD: APPARATUS/PROCEDURING Contemporation of the solid solution of the solid solid solution of the solid so	AUXILIARY	paper, shows for ositions from (.00. T _{in} refer the temperature INFORMATION SOURCE AND PL	Drmation of a partial circa x ₂ = 0.00 to so the temperature at e at which crystallization	
 Phase diagram, given series of solid sol x₂ = 0.22 and from 3 which crystallizati of the solid solution of the solid solution ETHOD: APPARATUS/PROCEDURI Mixtures were placed in sm tubes. Temperature was sl with ample time given for Transition temperatures de 	AUXILIARY AUXILIARY s c c c c c c c c c c c c c	paper, shows for ositions from (.00. T _{in} refer the temperature INFORMATION SOURCE AND PL (1) Purity a specifie	ormation of a partial circa x ₂ = 0.00 to rs to the temperature at e at which crystallization	
 Phase diagram, given series of solid sol x₂ = 0.22 and from 3 which crystallizati of the solid soluti ETHOD: APPARATUS/PROCEDURI Mixtures were placed in set tubes. Temperature was sl with ample time given for Transition temperatures de visual observations. Reco 	AUXILIARY AUXILIARY S AUXILIARY A	paper, shows for ositions from (.00. T _{in} refer the temperature INFORMATION SOURCE AND PL (1) Purity a specific recrysta (2) Synthesi	JRITY OF MATERIALS: and chemical source were not ad in paper, was sublimed and allized from alcohol.	
 Phase diagram, given series of solid sol x₂ = 0.22 and from 3 which crystallizati of the solid solution of the solid solution ETHOD: APPARATUS/PROCEDURI Mixtures were placed in sm tubes. Temperature was sl with ample time given for Transition temperatures de 	AUXILIARY AUXILIARY S AUXILIARY A	paper, shows for ositions from (.00. T _{in} refer the temperature INFORMATION SOURCE AND PL (1) Purity a specific recrysta (2) Synthesi fied by	URITY OF MATERIALS: and chemical source were not allized from alcohol. Lized by the authors, was puri- sublimation and recrystallized cohol.	

Components:		ORIGINAL MEA	SUREMENTS:	
(1) Phenothiazine; C ₁₂ H	H ₉ NS; [92-84-2]	Cullinane,	N.M.; Rees, W.T.	
(2) Thianthrene; C ₁₂ H ₈ S	5 ₂ ; [92-85-3]	Trans. Faraday Soc. <u>1940</u> , 36, 506-514.		
ARIABLES: Temperature		PREPARED BY:		
		W.E. Acree,	Jr.	
CIPERIMENTAL VALUES ^a		- 	······································	
T _{in} /K	T _{fin} /K	*2	x 1	
429.9	429.1	1.000	0.000	
426.4	414.7	0.906	0.094	
422.7	406.0	0.838	0.162	
418.0	402.6	0.740	0.260	
409.0	403.2	0.618	0.382	
407.6	403.2	0.559	0.441	
424.5	403.3	0.439	0.561	
437.8	402.7	0.291	0.709	
451.7	404.4	0.106	0.894	
455.4	421.2	0.041	0.959	
457.6 ^a Phase diagram, gi series of solid a x ₁ = 0.20 and fro which crystalliza of the solid solu	456.8 iven in the original solutions having comp om $x_1 = 0.89$ to $x_1 = 1$ ation begins; T_{fin} is ution concludes.	0.000 paper, shows fo ositions from (.00. T _{in} refer the temperature	1.000 prmation of a partial circa $x_1 = 0.00$ to s to the temperature at e at which crystallization	
^a Phase diagram ci	turn in the original	nanon chouc fo	remation of a nartial	
^a Phase diagram, gi series of solid s x ₁ = 0.20 and fro which crystallizs of the solid solution of the solid solid solution of the solid solid solid solid so	iven in the original solutions having comp om $x_1 = 0.89$ to $x_1 = 1$ ation begins; T_{fin} is ution concludes.	paper, shows for ositions from o 1.00. T _{in} refer the temperature INFORMATION	prmation of a partial pirca $x_1 = 0.00$ to is to the temperature at e at which crystallization	
^a Phase diagram, gi series of solid s x ₁ = 0.20 and fro which crystallizs of the solid solution of the solid solid solution of the solid solid solid solid so	iven in the original solutions having comp om $x_1 = 0.89$ to $x_1 = 1$ ation begins; T_{fin} is ution concludes.	paper, shows for ositions from o 1.00. T _{in} refer the temperature INFORMATION	Dermation of a partial pirca x ₁ = 0.00 to is to the temperature at e at which crystallization RITY OF MATERIALS:	
^a Phase diagram, gi series of solid is x ₁ = 0.20 and fro which crystallize of the solid solution of the solid solution solution the solid solution of the solid solution solution the solid solution fixtures were placed in subes. Temperature was with ample time given for reasition temperatures isual observations. R	AUXILIARY Solutions having comp om x ₁ = 0.89 to x ₁ = 1 ation begins; T _{fin} is ution concludes. AUXILIARY DURE a small capillary s slowly varied or equilibration. d determined by teported tempera-	paper, shows for ositions from o 1.00. T _{in} refer the temperature INFORMATION SOURCE AND PU (1) Purity a specifie recrysta (2) Purity a specifie sublimat acetone.	TRITY OF MATERIALS: and chemical source were not chemical source wer	
^a Phase diagram, gi series of solid i x ₁ = 0.20 and fro which crystallize of the solid solution of the solid solution solution of the solid solution of the solid solution of the solid solution solution of the solid solution solid solid solid solid solid solid solid so	AUXILIARY Solutions having comp om x ₁ = 0.89 to x ₁ = 1 ation begins; T _{fin} is ution concludes. AUXILIARY DURE a small capillary s slowly varied or equilibration. d determined by teported tempera-	paper, shows for ositions from o 1.00. T _{in} refer the temperature INFORMATION SOURCE AND PU (1) Purity a specific recrysta (2) Purity a specific sublimat acetone.	TRITY OF MATERIALS: and chemical source were not chemical source wer	

omponents:		ORIGINAL MEA	SUREMENTS I	
1) Phenothiazine; C ₁₂ H ₉ N	IS; [92-84-2]	Cullinane, N.M.; Rees, W.T.		
2) Phenoxanthiin; C ₁₂ H ₈ O	os; [262-20-4]	Trans. Faraday Soc. <u>1940</u> , 36, 506-514.		
ARIABLES:	······································	PREPARED BY:		
Cemperature		W.E. Acree,	Jr.	
(PERIMENTAL VALUES ⁸		÷		
Τ _{in} /κ	T _{fin} /K	×2	×1	
328.9	328.5	1.000	0.000	
360.5	330.8	0.887	0.113	
396.8	335.5	0.708	0.292	
425.0	344.1	0.463	0.537	
437.0	352.6	0.339	0.661	
449.1	373.5	0.168	0.832	
456.5	413.4	0.028	0.972	
457.6	456.8	0.000	1.000	
series of solid so those of the two p crystallization be of the solid solut				
of the solid solut				
of the solid solut		INFORMATION		
of the solid solut	AUXILIARY	INFORMATION	URITY OF MATERIALS:	

COMPO	ONENTS :		<u> </u>	ORIGINAL MEASUREMENTS:				
(1)	 Phenothiazine; C₁₂H_gNS; [92-84-2] Dibenzo[b,e][1,4]dioxin; C₁₂H₈O₂; [262-12-4] 			Cullinane, N.M.; Rees, W.T.				
(2)				Trans. Faraday Soc. <u>1940</u> , 36, 506-514.				
VARI	ABLES:			PREPARED BY: W.E. Acree, Jr.				
Temp	perature							
EXPER	RIMENTAL V	ALUES						
	T/K	*2	×1	T/K	<i>x</i> 2	*1		
	393.1	1.000	0.000	425.0	0.485	0.515		
	392.8	0.981	0.019	447.4	0.211	0.789		
	387.5	0.892	0.108	456.0	0.050	0.950		
	383.2	0.832	0.168	457.6	0.000	1.000		
	389.8	0.780	0.220					
			AUXILIARY	INFORMATION				
Mixt tube with Tran visu	MATTHON: APPARATUS/PROCEDURE Mixtures were placed in small capillary tubes. Temperature was slowly varied with ample time given for equilibration. Transition temperatures determined by visual observations. Reported tempera- tures verified by repetitive measurements.			sublimation alcohol. (2) Purity and purified by alcohol and	chemical sou In paper, was a and recryst chemical sou recrystalli sublimed.			
				ESTIMATED ERRORS T/K: precision x_1 : \pm 0.002 (Co	± 0.2 (Compi	ller).		

PHENOXANTHIIN SOLUBILITIES IN PURE AND BINARY SOLVENT MIXTURES

- A. <u>Saturated Hydrocarbons (including cycloalkanes)</u>
- B. <u>Alkenes</u>
- C. Aromatic Hydrocarbons
- D. <u>Esters</u>
- E. <u>Ethers</u>
- F. Haloalkanes and Haloaromatic Hydrocarbons
- G. <u>Alcohols</u>
- H. <u>Ketones</u>
- I. <u>Miscellaneous Pure Solvents</u>

phenoxazine thianthrene phenothiazine dibenzo[b,e][1,4]dioxin

J. Binary Solvent Mixtures

Components :			ORIGINAL MEASUREMENTS: Cullinane, N.M.; Rees, W.T.			
 Phenoxanthiin; C₁₂H₉OS; [262-20-4] Phenoxazine; C₁₂H₈NO; [135-67-1] 						
		Trans. Faraday	Soc. <u>1940</u> ,	<i>36</i> , 506-514.		
VARIABLES:	·		PREPARED BY:			
Temperature			W.E. Acree, Jr	•		
EXPERIMENTAL	VALUES	· · · · · · · · · · · · · · · · · · ·	<u></u>			
T/K	<i>x</i> 2	×1	T/K	<i>x</i> 2	×1	
429.9	1.000	0.000	338.3	0.166	0.834	
427.0	0.943	0.057	324.4	0.102	0.898	
415.9	0.789	0.211	327.2	0.067	0.933	
388.4	0.492	0.508	328.5	0.026	0.974	
349.8	0.229	0.711	328.9	0.000	1.000	
		AUXILIARY	INFORMATION			
ETHOD: APPARI	ATUS/PROCEDUR	LE	SOURCE AND PURITY OF MATERIALS:			
Mixtures were placed in small capillary tubes. Temperature was slowly varied with ample time given for equilibration. Transition temperatures determined by visual observations. Reported tempera- tures verified by repetitive measurements.		fied by rec and sublima (2) Synthesized	crystallizat: ation. 1 by authors, plimation and	, and was puri- ion from alcohol , and was puri- d recrystallized		
			ESTIMATED ERRORS	3:		
			T/K: precision x_1 : \pm 0.002 (Co		ller).	

Components:			ORIGINAL MEASUREMENTS:				
(1) Phenoxan	thiin; C ₁₂ H ₈ O	5; [262-20-4]	Cullinane, N.M.; Rees, W.T.				
(2) Thianthrene; C ₁₂ H ₈ S ₂ ; [92-85-3]			Trans. Faraday	soc. <u>1940</u> ,	36, 506-514.		
VARIABLES:	<u> </u>	PREPARED BY:		PREPARED BY:			
Temperature			W.E. Acree, Jr.				
EXPERIMENTAL V	VALUES		<u> </u>		<u></u>		
T/K	*2	*1	T/K	*2	<i>x</i> 1		
429.9	1.000	0.000	357.4	0.189	0.811		
426.8	0.900	0.100	337.2	0.100	0.900		
415.3	0.699	0.301	326.1	0.070	0.930		
399.5	0.513	0.487	328.3	0.046	0.954		
378.7	0.308	0.692	328.9	0.000 1.000	1.000		
		AUXILIARY	INFORMATION				
METHOD: APPARA	TUS/PROCEDUR	E	SOURCE AND PURITY OF MATERIALS:				
Mixtures were placed in small capillary tubes. Temperature was slowly varied with ample time given for equilibration. Transition temperatures determined by visual observations. Reported tempera- tures verified by repetitive measurements.			 (1) Synthesized by the authors, was purified by sublimation and recrystallized from alcohol. (2) Purity and chemical source not given, was purified by sublimation and recrystallization from acetone. 				
			ESTIMATED ERRORS	-			
			T/K: precision x_1 : \pm 0.002 (Co		iler).		

COMPONENTS:		ORIGINAL ME	asurements :	
(1) Phenoxanthiin; C ₁₂ H ₈ O	s; [262-20-4]	Cullinane,	N.M.; Rees, W.T.	
(2) Phenothiazine; C ₁₂ H ₉ N	S; [92-84-2]	Trans. Fai	raday Soc. <u>1940</u> , 36, 506-514.	
VARIABLES:		PREPARED BY	۲ <u>۶</u>	
Temperature		W.E. Acree, Jr.		
EXPERIMENTAL VALUES ⁶		4		
r _{in} /K	T _{fin} /K	×2	×1	
457.6	456.8	1.000	0.000	
456.5	413.4	0.972	0.028	
449.1	373.5	0.832	0.168	
437.0	352.6	0.661	0.339	
425.0	344.1	0.537	0.463	
398.8	335.5	0.292	0.708	
360.5	330.8	0.113	0.887	
328.9	328.5	0.000	1.000	
	·	INFORMATION		_
METHOD: APPARATUS/PROCEDUR Mixtures were placed in a tubes. Temperature was a with ample time given for Transition temperatures o visual observations. Rep tures verified by repetit	small capillary slowly varied c equilibration. determined by ported tempera-	 (1) Synthe fied b from a (2) Purity in pap lized ESTIMATED E T/K: preci 	PURITY OF MATERIALS: sized by the authors, was puri- y sublimation and recrystallized lcohol. and chemical source not given er, was sublimed and recrystal- from alcohol. RRORS: sion ± 0.2 (Compiler). 2 (Compiler).	
		lized ESTIMATED E T/K: preci	from alcohol. RRORS: sion <u>+</u> 0.2 (Compiler).	

Components :			ORIGINAL MEASUREMENTS: Cullinane, N.M.; Rees, W.T.			
<pre>(1) Phenoxanthiin; C₁₂H₉OS; [262-20-4]</pre>						
(2) Dibenzo[[262-12-	b,e][1,4]dio: 4]	xin; C ₁₂ H ₈ O ₂ ;	Trans. Faraday Soc. <u>1940</u> , 36, 506-514.			
VARIABLES:			PREPARED BY: W.E. Acree, Jr.			
Temperature						
EXPERIMENTAL	VALUES			······································	······································	
T/K	x 2	* 1	T/K	×2	<i>*</i> 1	
393.1	1.000	0.000	335.8	0.218	0.782	
390.9	0.943	0.057	320.4	0.096	0.904	
380.1	0.739	0.261	325.5	0.052	0.948	
367.6	0.561	0.439	327.1	0.000	1.000	
348.2	0.337	0.663				
		AUXILIARY	INFORMATION			
ETHOD: APPAR	ATUS/PROCEDUR	2E	SOURCE AND PURIT	TY OF MATERIA	ALS:	
Mixtures were placed in small capillary tubes. Temperature was slowly varied with ample time given for equilibration. Transition temperatures determined by visual observations. Reported tempera- tures verified by repetitive measurements.		fied by red and sublima (2) Purity and fied in pag	crystallization. chemical sou	, and was puri- ion from alcohol arce not speci- l by sublimation a acetone.		
			ESTIMATED ERRORS	; ;		
			T/K: precision $x_1: \pm 0.002$ (Co	± 0.2 (Compi mpiler).	ller).	

PHENOXAZINE SOLUBILITIES IN PURE AND BINARY SOLVENT MIXTURES

- A. <u>Saturated Hydrocarbons (including cycloalkanes)</u>
- B. <u>Alkenes</u>
- C. Aromatic Hydrocarbons
- D. Esters
- E. <u>Ethers</u>
- F. Haloalkanes and Haloaromatic Hydrocarbons
- G. Alcohols
- H. Ketones
- I. <u>Miscellaneous</u> Pure Solvents

phenothiazine phenoxanthiin thianthrene dibenzo[b,e][1,4]dioxin

J. <u>Binary Solvent Mixtures</u>

COMPONENTS:		ORIGINAL MEASUREMENTS:			
(1) Phenoxazine; C ₁₂ H ₀ N	0: (135-67-1)		N.M.; Rees, W.T.		
(2) Phenothiazine; C ₁₂ H			aday Soc. <u>1940</u> , 36, 506-514.		
12	y - , ,		-		
VARIABLES:		PREPARED BY	8		
Temperature		W.E. Acree, Jr.			
EXPERIMENTAL VALUES ^a					
$r_{ m in}/\kappa$	T _{fin} /K	×2	* ₁		
457.6	456.8	1.000	0.000		
452.0	421.5	0.882	0.118		
449.5	416.9	0.824	0.176		
438.1	413.0	0.640	0.360		
430.1	413.6	0.517	0.483		
415.8	413.1	0.311	0.689		
415.2	412.9	0.265	0.735		
416.7	413.2	0.256	0.744		
424.3	413.0	0.129	0.871		
427.3	415.3	0.059 ´	0.941		
429.9	429.2	0.000	1.000		
			circa $x_1 = 0.00$ to rs to the temperature at re at which crystallization.		
	AUXILIARY	INFORMATION			
METHOD: APPARATUS/PROCED	JRE	SOURCE AND P	URITY OF MATERIALS:		
Mixtures were placed in small capillary tubes. Temperature was slowly varied with ample time given for equilibration. Transition temperatures determined by visual observations. Reported tempera- tures verified by repetitive measurements.		fied by from al (2) Purity specifi	and chemical source were not ed in paper, was sublimed and allized from alcohol.		
			ion <u>+</u> 0.2 (Compiler). (Compiler).		

COMPONENTS :			ORIGINAL MEASUREMENTS:				
 (1) Phenoxazine; C₁₂H₉NO; [135-67-1] (2) Phenoxanthiin; C₁₂H₈OS; [262-20-4] 			Cullinane, N.M.; Rees, W.T.				
			Trans. Faraday	Soc. <u>1940</u> ,	36, 506-514.		
VARIABLES:			PREPARED BY:				
Temperature			W.E. Acree, Jr.	•			
EXPERIMENTAL \	VALUES	······································					
T/K	*2	×1	T/K	×2	×1		
328.9	1.000	0.000	349.8	0.771	0.229		
328.5	0.974	0.026	388.4	0.508	0.492		
327.2	0.933	0.067	415.9	0.211	0.789		
324.4	0.898	0.102	427.0	0.057	0.943		
338.8	0.834	0.166	429.9	0.000	1.000		
		AUXILIARY	INFORMATION				
METHOD: APPARA	TUS/PROCEDU	RE	SOURCE AND PURITY OF MATERIALS:				
Mixtures were placed in small capillary tubes. Temperature was slowly varied with ample time given for equilibration. Transition temperatures determined by visual observations. Reported tempera- tures verified by repetitive measurements.		fied by rec and sublima (2) Synthesized	crystallization. ation. d by authors, plimation and	, and was puri- ion from alcohol , and was puri- d recrystallized			
			ESTIMATED ERRORS	3:			
			T/K: precision $x_1: \pm 0.002$ (Co		iler).		

CONPONENTS :			ORIGINAL MEASUREMENTS:								
(1) Phenoxazine; C ₁₂ H ₉ NO; [135-67-1]			Cullinane, N.M.; Rees, W.T.								
<pre>(2) Thianthrene; C₁₂H₈S₂; [92-85-3] VARIABLES: Temperature</pre>			Trans. Faraday Soc. <u>1940</u> , 36, 506-514. PREPARED BY: W.E. Acree, Jr.								
						EXPERIMENTAL	VALUES				
						T/K	×2	*1	т/ К	*2	* ₁
429.9	1.000	0.000	393.4	0.439	0.561						
427.5	0.946	0.054	412.2	0.241	0.759						
416.4	0.749	0.251	428.1	0.033	0.967						
399.4	0.531	0.469	429.9	0.000	1.000						
392.0	0.458	0.542									
		AUXILIARY	INFORMATION								
METHOD: APPARATUS/PROCEDURE			SOURCE AND PURITY OF MATERIALS:								
Mixtures were placed in small capillary tubes. Temperature was slowly varied with ample time given for equilibration. Transition temperatures determined by visual observations. Reported tempera- tures verified by repetitive measurements.			 (1) Synthesized by authors, and was purified by recrystallization from alcohol and sublimation. (2) Purity and chemical source not given in paper, was purified by sublimation and repeated recrystallizations from acetone. 								
		ESTIMATED ERRORS:									
			T/K: precision \pm 0.2 (Compiler). x ₁ : \pm 0.002 (Compiler).								

COMPONENTS:		ORIGINAL MEASUREMENTS:		
(1) Phenoxazine; C ₁₂ H ₉ NG		Cullinane, N.M.; Rees, W.T.		
<pre>(2) Dibenzo[b,e][1,4]dioxin; C₁₂H₈O₂; [262-12-4]</pre>		Trans. Faraday Soc. <u>1940</u> , 36, 506-514.		
VARIABLES:		PREPARED BY:		
Temperature		W.E. Acree, Jr.		
EXPERIMENTAL VALUES ^a				
τ _{in} /κ	T _{fin} /K	*2	× ₁	
393.1	392.6	1.000	0.000	
390.4	378.4	0.903	0.097	
387.5	373.6	0.835	0.165	
385.0	369.2	0.774	0.226	
381.1	363.3	0.703	0.297	
367.1	363.5	0.648	0.352	
374.4	363.4	0.608	0.392	
396.4	363.0	0.486	0.514	
413.3	364.7	0.291	0.709	
418.5	371.4	0.208	0.792	
423.8	387.3	0.121	0.879	
429.9	429.2	0.000	1.000	
which crystalliza of the solid solu	tion begins; T _{fin} is tion concludes.	the temperatur	circa $x_1 = 0.00$ to x_1 rs to the temperature at re at which crystallization	
	AUXILIARY	INFORMATION		
METHOD: APPARATUS/PROCEDU		•	URITY OF MATERIALS:	
Mixtures were placed in small capillary tubes. Temperature was slowly varied with ample time given for equilibration. Transition temperatures determined by visual observations. Reported tempera- tures verified by repetitive measurements.		 Synthesized by the authors, was purified by sublimation and recrystallized from alcohol. Purity and chemical source were not specified in paper, was sublimed and recrystallized from acetone. ESTIMATED ERRORS: T/K: precision ± 0.2 (Compiler). 		
		$x_1: \pm 0.002$	(Compiler).	

PYRENE SOLUBILITIES IN PURE AND BINARY SOLVENT MIXTURES

A. <u>Saturated Hydrocarbons (including cycloalkanes)</u>

```
n-hexane
n-heptane
n-octane
n-octadecane
cyclohexane
methylcyclohexane
cyclooctane
2,2,4-trimethylpentane
t-butylcyclohexane
```

B. <u>Alkenes</u>

C. Aromatic Hydrocarbons

```
benzene
methylbenzene
1,2-dimethylbenzene
1,3-dimethylbenzene
1,4-dimethylbenzene
chrysene
naphthalene
```

D. Esters

ethyl ethanoate butyl ethanoate ethyl butyrate

E. <u>Ethers</u>

1,1-oxybisbutane 1,4-dioxane

F. <u>Haloalkanes and Haloaromatic Hydrocarbons</u>

tetrachloromethane 1,2-dichloroethane 1-chlorobutane 1,4-dichlorobutane octafluoronaphthalene

G. Alcohols

methanol
ethanol
l-propanol
2-propanol
l-butanol
2-butanol
l-pentanol
2-methyl-1-propanol
3-methyl-1-butanol
l-octanol

cyclopentanol 1-hydroxy-2-methylbenzene

H. Ketones

2-propanone

I. <u>Miscellaneous Pure Solvents</u>

pyridine dimethyl sulfoxide acetonitrile 1,3-dinitrobenzene 1,4-dinitrobenzene 1,3,5-trinitrobenzene 1,2,3,5-tetranitrobenzene 2,4-dinitromethylbenzene 2,4-dinitromethylbenzene 2,4,6-trinitromethoxybenzene 2,4,6-trinitroaniline 2,4,6-trinitroaniline 2-chloro-1,3,5-trinitrobenzene 3-methyl-2,4,6-trinitrophenol

J. Binary Solvent Mixtures

n-hexane + 1-propanol n-heptane + 1-propanol n-octane + 1-propanol cyclohexane + 1-propanol methylcyclohexane + 1-propanol 2,2,4-trimethylpentane + 1-propanol n-heptane + 2-propanol n-octane + 2-propanol cyclohexane + 2-propanol methylcyclohexane + 2-propanol 2,2,4-trimethylpentane + 2-propanol

COMPONENTS:	ORIGINAL MEASUREMENTS:	
(1) Pyrene; C ₁₆ H ₁₀ ; [129-00-0]	Judy, C.L.; Pontikos, N.M.; Acree, W.E., Jr. <i>J. Chem. Eng. Data</i> <u>1987</u> , 32, 60-62.	
(2) n-Hexane; C ₆ H ₁₄ ; [110-54-3]		
VARIABLES:	PREPARED BY:	
<i>T</i> /K = 299	W.E. Acree, Jr.	
EXPERIMENTAL VALUES		
t/°C x ₂	×1	
26.0 0.9915	0.00852	
AUXILIARY	INFORMATION	
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:	
Constant temperature bath, calorimetric thermometer, and an ultraviolet/visible spectrophotometer.	(1) 99 %, Aldrich Chemical Company, Milwaukee, Wisconsin, USA, recrystal- lized 3 times from absolute ethanol.	
Excess solute and solvent placed in amber glass bottles and allowed to equilibrate for several days at constant temperature. Attainment of equilibrium verified by repetitive measurements. Aliquots of sat- urated solutions transferred through a coarse filter into tared volumetric flasks, weighed and diluted with methanol.	(2) 99 %, Aldrich Chemical Company, was stored over molecular sieves and dis- tilled shortly before use.	
Concentrations determined spectrophoto- metrically at 372 nm.	ESTIMATED ERRORS:	
	$T/K: \pm 0.05.$ $x_1: \pm 1$ % (relative error).	

COMPONENTS:	ORIGINAL MEASUREMENTS:	
(1) Pyrene; C ₁₆ H ₁₀ ; [129-00-0] (2) n-Heptane; C ₇ H ₁₆ ; [142-82-5]	Judy, C.L.; Pontikos, N.M.; Acree, W.E., Jr.	
	J. Chem. Eng. Data <u>1987</u> , 32, 60-62.	
VARIABLES:	PREPARED BY:	
T/K = 299	W.E. Acree, Jr.	
EXPERIMENTAL VALUES		
t/°C x ₂	<i>x</i> 1	
26.0 0.9890	0.01101	
AUXILIARY	INFORMATION	
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:	
Constant temperature bath, calorimetric thermometer, and an ultraviolet/visible spectrophotometer.	(1) 99 %, Aldrich Chemical Company, Milwaukee, Wisconsin, USA, recrystal- lized 3 times from absolute ethanol.	
Excess solute and solvent placed in amber glass bottles and allowed to equilibrate for several days at constant temperature. Attainment of equilibrium verified by repetitive measurements. Aliquots of sat- urated solutions transferred through a coarse filter into tared volumetric flakks, weighed and diluted with methanol.	(2) HPLC Grade, 99.7+ %, Aldrich Chemical Company, was stored over molecular sieves and distilled shortly before use.	
Concentrations determined spectrophoto- metrically at 372 nm.	ESTIMATED ERRORS:	
	$T/K: \pm 0.05.$ $x_1: \pm 1 $ (relative error).	

Components :	ORIGINAL MEASUREMENTS:		
(1) Pyrene; C ₁₆ H ₁₀ ; [129-00-0]	Lissi, E.A.; Abuin, E.B.		
(2) n-Heptane; C ₇ H ₁₆ ; [142-82-5]	Bol. Soc. Chil. Quim. <u>1981</u> , 26, 19-34.		
VARIABLES:	PREPARED BY:		
<i>T/</i> K = 293	W.E. Acree, Jr.		
EXPERIMENTAL VALUES	•		
$t/^{\circ}C$ $c_{1}/(mol dm^{-3})$			
20.0 0.0	0.0120		
AUXILIARY	INFORMATION		
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:		
Constant temperature bath, centrifuge, thermometer, and a spectrofluorimeter.	 (1) Purity not given, commercial sample of unspecified source, was used as received. 		
Solubility determined indirectly from measured aqueous solubility and solute partition coefficient between n-heptane and water. Solute concentration in both phases, after equilibration and centrifu- gation, determined from the fluorescence intensity. This indirect method computes the solubility that is expected assuming	(2) Purity and chemical source not given, purification procedure not specified.		
that the dilute solution behavior extra- polates up to saturation point.	ESTIMATED ERRORS:		
	$T/K: \pm 2.$ $c_1: unknown.$		

COMPONENTS :	ORIGINAL MEASUREMENTS:			
<pre>(1) Pyrene; C₁₆H₁₀; [129-00-0] (2) n-Octane; C₈H₁₈; [111-65-9]</pre>	Judy, C.L.; Pontikos, N.M.; Acree, W.E., Jr. J. Chem. Eng. Data <u>1987</u> , 32, 60-62.			
VARIABLES:	PREPARED BY:			
<i>T/K</i> = 299	W.E. Acree, Jr.			
EIPERIMENTAL VALUES				
t/°C x ₂	<i>x</i> 1			
26.0 0.9862	0.01379			
AUXILIARY INFORMATION				
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:			
Constant temperature bath, calorimetric thermometer, and an ultraviolet/visible spectrophotometer. Excess solute and solvent placed in amber glass bottles and allowed to equilibrate for several days at constant temperature. Attainment of equilibrium verified by repetitive measurements. Aliguots of sat- urated solutions transferred through a coarse filter into tared volumetric flasks, weighed and diluted with methanol.	 99 %, Aldrich Chemical Company, Milwaukee, Wisconsin, USA, recrystal- lized 3 times from absolute ethanol. Gold Label, 99+ %, Aldrich Chemical Company, was stored over molecular sieves and distilled shortly before use. 			
Concentrations determined spectrophoto- metrically at 372 nm.	ESTIMATED ERRORS: $T/K: \pm 0.05.$ $x_1: \pm 1$ % (relative error).			

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COMPONENTS: (1) Pyrene; C ₁₆ H ₁₀ ; [129-00-0] (2) n-Octadecane; C ₁₈ H ₃₈ ; [593-45-3] VARIABLES:		ORIGINAL N	MEASUREMENTS:					
		Djordjevic, N.M. Thermochim. Acta <u>1991</u> , 177, 109-118. PREPARED BY:						
					Temperature		W.E. Acree, Jr.	
					EXPERIMENTAL V	VALUES		
T/K	*2	×1	T/K	×2	* ₁			
407.0	0.3939	0.6061	411.2	0.2388	0.7612			
409.1	0.3095	0.6905	412.5	0.1765	0.8235			
409.7	0.2972	0.7028	417.2	0.1014	0.8986			
410.5	0.2671	0.7329	419.0	0.0498	0.9502			
		AUXILIARY	INFORMATION	1				
METHOD: APPARATUS/PROCEDURE		SOURCE ANI	PURITY OF M	ATERIALS:				
Differential scanning calorimeter. Mixtures (1.5 - 2.0 mg) of known concen- tration were weighed into aluminum pans, which were then crimped to preclude sample loss during the heating process. Solubil- ities determined by measuring melting points of binary mixtures using a Perkin- Elmer DSC-2 differential scanning calori- meter and scan rate of 5 K/min.		 (1) 99+ %, Aldrich Chemical Company, Mil- waukee, Wisconsin, USA, was used as received. 						
		(2) 99 %, vacut	Aldrich Che m-distilled	mical Company, was before use.				
			ERRORS: ision <u>+</u> 0.3 003 (compiler					

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Pyrene; C ₁₆ H ₁₀ ; [129-00-0] (2) Cyclohexane; C ₆ H ₁₂ ; [110-82-	Judy, C.L.; Pontikos, N.M.; Acree, W.E., Jr. J. Chem. Eng. Data <u>1987</u> , 32, 60-62.
VARIABLES:	PREPARED BY:
<i>T</i> /K = 299	W.E. Acree, Jr.
EXPERIMENTAL VALUES	
t/°C x ₂	×1
26.0 0.9	891 0.01089
	AUXILIARY INFORMATION
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:
Constant temperature bath, calo thermometer, and an ultraviolet spectrophotometer.	
Excess solute and solvent place glass bottles and allowed to eq for several days at constant te Attainment of equilibrium verif repetitive measurements. Aliquo urated solutions transferred th coarse filter into tared volume flasks, weighed and diluted wit	uilibrate Company, was stored over molecular mperature. sieves and distilled shortly before use ied by ts of sat- rough a tric
Concentrations determined spect metrically at 372 nm.	rophoto- ESTIMATED ERRORS:
	$T/K: \pm 0.05.$ x ₁ : ± 1 % (relative error).

COMPONENTS: (1) Pyrene; C ₁₆ H ₁₀ ; [129-00-0] (2) Cyclohexane; C ₆ H ₁₂ ; [110-82-7]		ORIGINAL MEASUREMENTS:	
		McLaughlin, E.; Zainal, H.A.	
		J. Chem. Soc. <u>1960</u> , 3854-3857.	
VARIABLES:		PREPARED BY:	
Temperature		W.E. Acree, Jr.	
EXPERIMENTAL VALUES			
<i>T/</i> K	×2	× ₁	
295.0	0.9916	0.0084	
303.7	0.9871	0.0129	
316.2	0.9799	0.0201	
322.3 0.9749		0.0251	
	AUXILIARY	INFORMATION	
METHOD: APPARATUS/PROCEDURE		SOURCE AND PURITY OF MATERIALS:	
Constant temperature bath and a precision thermometer. Mixtures of known concentrations sealed in glass ampoules and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly increased. Solubility determined by visual noting the temperature at which the last trace of solid solute disappeared.		 Purity not given, Gesellschaft fur Teerverwertung, was passed over an alumina column with benzene as eluant. Purity, source and purification method was not specified. 	
		ESTIMATED ERRORS: T/K: precision ± 0.1. x ₁ : ± 0.0003 (compiler).	

Components :	ORIGINAL MEASUREMENTS:	
 (1) Pyrene; C₁₆H₁₀; [129-00-0] (2) Cyclohexane; C₆H₁₂; [110-82-7] 	Carre, O.R.; Phillips, D.J.; Brennecke, J.F. Ind. Eng. Chem. Res. <u>1994</u> , 33, 1355-1362.	
VARIABLES:	PREPARED BY:	
T/K = Circa 294 (Ambient Room)	W.E. Acree, Jr.	
EXPERIMENTAL VALUES		
t/°C x ₂	×1	
21.0 0.9886	0.0114	
AUXILIARY	INFORMATION	
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:	
Ultraviolet/visible spectrophotometer and centrifugal automatic particle anal- yzer.	 (1) 99 %, Aldrich Chemical Company, Milwaukee, Wisconsin, USA, was used as received from manufacturer. 	
Excess solute and solvent were allowed to equilibrate under vigorous agitation at ambient temperature (presumed). Sample was centrifuged at 3000 rpms to remove solid particles in suspension. Samples of 2 mLs of saturated liquid were then removed and diluted quantitatively for subsequent spectrophotometric analysis.	(2) HPLC Grade, 99+ %, Fisher Scientific, Pittsburgh, Pennsylvania, USA, was used as received.	
Attainment of equilibrium was verified by repetitive measurements taken at 24 hour intervals.	ESTIMATED ERRORS: $T/K: \pm 2$ (Compiler). $x_1: \pm 2.4$ % (relative error).	

Components :	ORIGINAL MEASUREMENTS:	
(1) Pyrene; C ₁₆ H ₁₀ ; [129-00-0] (2) Methylcyclohexane; C ₇ H ₁₄ ;	Wallach, J.R.; Tucker, S.A.; Oswalt, B.M.; Murral, D.J.; Acree, W.E., Jr. J. Chem. Eng. Data <u>1989</u> , 34, 70-73.	
[108-87-2]		
VARIABLES:	PREPARED BY:	
T/K = 299	W.E. Acree, Jr.	
EXPERIMENTAL VALUES		
t/°C x ₂	×1	
26.0 0.9870	0.0130	
AUXILIARY	INFORMATION	
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:	
Constant temperature bath, calorimetric thermometer, and an ultraviolet/visible spectrophotometer.	(1) 99 %, Aldrich Chemical Company, Milwaukee, Wisconsin, USA, recrystal- lized 3 times from absolute ethanol.	
Excess solute and solvent placed in amber glass bottles and allowed to equilibrate for several days at constant temperature. Attainment of equilibrium verified by repetitive measurements. Aliquots of sat- urated solutions transferred through a coarse filter into tared volumetric flasks, weighed and diluted with methanol.	(2) Gold Label, 99+ %, anhydrous, Aldrich Chemical Company, was stored over molecular sieves and distilled shortly before use.	
Concentrations determined spectrophoto- metrically at 372 nm.	ESTIMATED ERRORS:	
	$T/K: \pm 0.05.$ $x_1: \pm 1$ % (relative error).	

COMPONENTS:	ORIGINAL MEASUREMENTS:	
(1) Pyrene; C ₁₆ H ₁₀ ; [129-00-0] (2) Cyclooctane; C ₈ H ₁₆ ; [292-64-8]	Judy, C.L.; Pontikos, N.M.; Acree, W.E., Jr. <i>J. Chem. Eng. Data</i> <u>1987</u> , 32, 60-62.	
VARIABLES:	PREPARED BY:	
T/K = 299	W.E. Acree, Jr.	
EXPERIMENTAL VALUES		
t/°C x ₂	<i>x</i> 1	
26.0 0.9804	0.01956	
AUXILIARY INFORMATION		
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:	
Constant temperature bath, calorimetric thermometer, and an ultraviolet/visible spectrophotometer.	(1) 99 %, Aldrich Chemical Company, Milwaukee, Wisconsin, USA, recrystal- lized 3 times from absolute ethanol.	
Excess solute and solvent placed in amber glass bottles and allowed to equilibrate for several days at constant temperature. Attainment of equilibrium verified by repetitive measurements. Aliguots of sat- urated solutions transferred through a coarse filter into tared volumetric flasks, weighed and diluted with methanol.	(2) Gold Label, 99+ %, Aldrich Chemical Company, was stored over molecular sieves and distilled shortly before use.	
Concentrations determined spectrophoto- metrically at 372 nm.	ESTIMATED ERRORS:	
	$T/K: \pm 0.05.$ $x_1: \pm 1$ % (relative error).	

Components:		ORIGINAL MEASUREMENTS:		
<pre>(1) Pyrene; C₁₆H₁₀; [129-00-0] (2) 2,2,4-Trimethylpentane; C₈H₁₈; [540-84-1]</pre>		Judy, C.L.; Pontikos, N.M.; Acree, W.E.,		
		Jr. J. Chem. Eng. Data <u>1987</u> , 32, 60-62.		
VARIABLES:	· · · · · · · · · · · · · · · · · · ·	PREPARED BY:		
<i>T</i> /K = 299		W.E. Acree, Jr.		
EXPERIMENTAL VALUES	·	+		
t/° C	×2	x 1		
26.0	0.9928	0.00721		
METHOD: APPARATUS/PROCE	DURE	SOURCE AND PURITY OF MATERIALS:		
		INFORMATION		
Constant temperature bath, calorimetric thermometer, and an ultraviolet/visible		(1) 99 %, Aldrich Chemical Company, Milwaukee, Wisconsin, USA, recrystal-		
spectrophotometer.		lized 3 times from absolute ethanol.		
Excess solute and solvent placed in amber glass bottles and allowed to equilibrate for several days at constant temperature. Attainment of equilibrium verified by repetitive measurements. Aliquots of sat- urated solutions transferred through a coarse filter into tared volumetric flasks, weighed and diluted with methanol. Concentrations determined spectrophoto- metrically at 372 nm.		(2) HPLC Grade, 99.7+ %, Aldrich Chemical Company, was stored over molecular sieves and distilled shortly before use.		
		ESTIMATED ERRORS:		
		$T/K: \pm 0.05.$ $x_1: \pm 1 $ (relative error).		

COMPONENTS:	ORIGINAL MEASUREMENTS:		
<pre>(1) Pyrene; C₁₆H₁₀; [129-00-0] (2) t-Butylcyclohexane; C₁₀H₂₀; [3178-22-1]</pre>	Wallach, J.R.; Tucker, S.A.; Oswalt, B.M.; Murral, D.J.; Acree, W.E., Jr. J. Chem. Eng. Data <u>1989</u> , 34, 70-73.		
VARIABLES:	PREPARED BY:		
<i>T</i> /K = 299	W.E. Acree, Jr.		
EXPERIMENTAL VALUES			
t/° C x ₂	<i>x</i> 1		
26.0 0.9841	0.0159		
AUXILIARY INFORMATION			
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:		
Constant temperature bath, calorimetric thermometer, and an ultraviolet/visible spectrophotometer.	(1) 99 %, Aldrich Chemical Company, Milwaukee, Wisconsin, USA, recrystal- lized 3 times from absolute ethanol.		
Excess solute and solvent placed in amber glass bottles and allowed to equilibrate for several days at constant temperature. Attainment of equilibrium verified by repetitive measurements. Aliquots of sat- urated solutions transferred through a coarse filter into tared volumetric flasks, weighed and diluted with methanol.	(2) 99 %, Aldrich Chemical Company, was stored over molecular sieves and dis- tilled shortly before use.		
Concentrations determined spectrophoto- metrically at 372 nm.	ESTIMATED ERRORS:		
	$T/K: \pm 0.05.$ $x_1: \pm 1$ % (relative error).		

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Pyrene; C ₁₆ H ₁₀ ; [129-00-0]	Judy, C.L.; Pontikos, N.M.; Acree, W.E., Jr.
(2) Benzene; C ₆ H ₆ ; [71-43-2]	Phys. Chem. Liq. <u>1987</u> , 16, 179-187.
VARIABLES:	PREPARED BY:
T/K = 299	W.E. Acree, Jr.
EXPERIMENTAL VALUES	
t/°C x ₂	x 1
26.0 0.9368	0.06316
AUXII	JARY INFORMATION
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:
Constant temperature bath, calorimetric thermometer, and an ultraviolet/visible spectrophotometer.	
Excess solute and solvent placed in and glass bottles and allowed to equilibrat for several days at constant temperatur Attainment of equilibrium verified by repetitive measurements. Aliquots of sa urated solutions transferred through a coarse filter into tared volumetric flasks, weighed and diluted with methar	Company, was stored over molecular sieves and distilled shortly before use.
Concentrations determined spectrophoto- metrically at 372 nm.	ESTIMATED ERRORS:
	$T/K: \pm 0.05.$ $x_1: \pm 1.5$ % (relative error).

COMPONENTS: (1) Pyrene; C ₁₆ H ₁₀ ; [129-00-0] (2) Benzene; C ₆ H ₆ ; [71-43-2]		ORIGINAL MEASUREMENTS: McLaughlin, E.; Zainal, H.A. J. Chem. Soc. <u>1959</u> , 863-867.								
					VARIABLES:			PREPARED BY: W.E. Acree, Jr.		
					Temperature					
EXPERIMENTAL	VALUES			<u> </u>						
T/K	*2	×1	T/K	×2	×ı					
305.6	0.9266	0.0734	357.8	0,6986	0.3014					
331.8	0.8494	0.1506								
340.0	0.8104	0.1896								
349.4	0.7559	0.2441								
		AUXILIARY	INFORMATION	1						
METHOD: APPAR	ATUS/PROCEDUR	E	SOURCE AND	PURITY OF M	ATERIALS:					
Constant temperature bath and a precision thermometer. Mixtures of known concentrations sealed in glass ampoules and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly increased. Solubility determined by visual		A.G., mina (2) "Anal	Germany, wa column with .aR", was dri	ied, Rutgerswerke s passed over an alu- benzene as eluant. ed over sodium wire lled before use.						
	emperature at	which the last		ERRORS: ision <u>+</u> 0.1. 003 (compile:						

COMPONENTS: (1) Pyrene; C ₁₆ H ₁₀ ; [129-00-0] (2) Methylbenzene; C ₇ H ₈ ; [108-88-3]		ORIGINAL MEASUREMENTS: Krezewki, R.; Smutek, M.		
		VARIABLES:		PREPARED BY:
<i>T</i> /K = 293		W.E. Acree, Jr.		
EXPERIMENTAL VALUES	<u></u>			
t/° C	<i>x</i> 2	×1		
20.0	0.9433	0.0567		
	AUXILIARY	INFORMATION		
METHOD: APPARATUS/PROCES	JURE	SOURCE AND PURITY OF MATERIALS:		
Constant temperature bath, thermometer, and a precision balance. Excess solute and solvent placed in closed glass container and allowed to equilibrate for several hours at constant temperature. Aliguots of saturated solutions were transferred into tared constainers and weighed. Solubilities calculated from		 (1) 95 % initial purity, source not given, was recrystallized several times from toluene and ethanol to give a melting temperature of 150.5-150.9 °C. (2) 99 %, Urxovy Zavody, Czech., was used as received. 		
	e that remained prated.	ESTIMATED ERRORS:		

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Pyrene; C ₁₆ H ₁₀ ; [129-00-0] (2) Methylbenzene; C ₇ H ₈ ; [108-88-3]	Carre, O.R.; Phillips, D.J.; Brennecke, J.F. Ind. Eng. Chem. Res. <u>1994</u> , 33, 1355-1362.
VARIABLES:	PREPARED BY:
T/K = Circa 294 (Ambient Room)	W.E. Acree, Jr.
EXPERIMENTAL VALUES	· · · · · · · · · · · · · · · · · · ·
t/°C x ₂	<i>x</i> 1
21.0 0.9335	0.0665
AUXILIARY	INFORMATION
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:
Ultraviolet/visible spectrophotometer and centrifugal automatic particle anal- yzer.	 (1) 99 %, Aldrich Chemical Company, Milwaukee, Wisconsin, USA, was used as received from manufacturer.
Excess solute and solvent were allowed to equilibrate under vigorous agitation at ambient temperature (presumed). Sample was centrifuged at 3000 rpms to remove solid particles in suspension. Samples of 2 mLs of saturated liquid were then removed and diluted quantitatively for subsequent spectrophotometric analysis.	(2) ACS Grade, 99+ %, Fisher Scientific, Pittsburgh, Pennsylvania, USA, was used as received.
Attainment of equilibrium was verified by repetitive measurements taken at 24 hour intervals.	ESTIMATED ERRORS: $T/K: \pm 2$ (Compiler). $x_1: \pm 1.5$ % (relative error).

COMPONENTS: ORIGINAL MEASUREMENTS: Powell, J.R.; Voisinet, D.; Salazar, A.; Acree, W.E., Jr. (1) Pyrene; C₁₆H₁₀; [129-00-0] (2) Methylbenzene; C₇H₈; [108-88-3] Phys. Chem. Liq., in press. VARIABLES: PREPARED BY: W.E. Acree, Jr. and J.R. Powell T/K = 299EXPERIMENTAL VALUES t/° C ×2 **x**1 0.06785 26.0 0.9322 AUXILIARY INFORMATION SOURCE AND PURITY OF MATERIALS: METHOD: APPARATUS/PROCEDURE 99 %, Aldrich Chemical Company, Milwaukee, Wisconsin, USA, recrystal-lized 3 times from methanol. Constant temperature bath, calorimetric thermometer, and an ultraviolet/visible spectrophotometer. Excess solute and solvent placed in amber glass bottles and allowed to equilibrate for several days at constant temperature. Attainment of equilibrium verified by (2) 99.8+ %, Aldrich Chemical Company, was stored over molecular sieves and dis-tilled shortly before use. repetitive measurements. Aliquots of saturated solutions transferred through a coarse filter into tared volumetric flasks, weighed and diluted with methanol. Concentrations determined spectrophoto-metrically at 372 nm. ESTIMATED ERRORS: $T/K: \pm 0.05.$ $x_1: \pm 2.5$ % (relative error).

COMPONENTS:	· · · · · · · · · · · · · · · · · · ·	ORIGINAL MEASUREMENTS:	
<pre>(1) Pyrene; C₁₆H₁₀; [129-00-0] (2) 1,2-Dimethylbenzene; C₈H₁₀; [95-47-6]</pre>		Powell, J.R.; Voisinet, D.; Salazar, A.; Acree, W.E., Jr. Phys. Chem. Lig., in press.	
VARIABLES:		PREPARED BY: W.E. Acree, Jr. and J.R. Powell	
T/K = 299			
EXPERIMENTAL VALUES			
t/° C	*2	<i>x</i> 1	
26.0	0.9239	0.07611	
	AUXILIARY	INFORMATION	
METHOD: APPARATUS/PROCE	DURE	SOURCE AND PURITY OF MATERIALS:	
Constant temperature b thermometer, and an ul spectrophotometer.		(1) 99 %, Aldrich Chemical Company, Milwaukee, Wisconsin, USA, recrystal- lized 3 times from methanol.	
Excess solute and solvent placed in amber glass bottles and allowed to equilibrate for several days at constant temperature. Attainment of equilibrium verified by repetitive measurements. Aliquots of sat- urated solutions transferred through a coarse filter into tared volumetric flasks, weighed and diluted with methanol.		(2) 98+ %, Aldrich Chemical Company, was stored over molecular sieves and dis- tilled shortly before use.	
Concentrations determi metrically at 372 nm.	ned spectrophoto-	ESTIMATED ERRORS:	
		$T/K: \pm 0.05.$ $x_1: \pm 2.5$ % (relative error).	

COMPONENTS: (1) Pyrene; C ₁₆ H ₁₀ ; [129-00-0] (2) 1,3-Dimethylbenzene; C ₈ H ₁₀ ; [108-38-3]		ORIGINAL MEASUREMENTS: Powell, J.R.; Voisinet, D.; Salazar, A.; Acree, W.E., Jr. Phys. Chem. Lig., in press.	
<i>T</i> /K = 299			
EXPERIMENTAL VALUES	······································		
t/°C	x 2	<i>x</i> t	
26.0	0.9295	0.07055	
	AUXILIARY	INFORMATION	
METHOD: APPARATUS/PROCE	DURE	SOURCE AND PURITY OF MATERIALS:	
Constant temperature b thermometer, and an ul spectrophotometer.		(1) 99 %, Aldrich Chemical Company, Milwaukee, Wisconsin, USA, recrystal- lized 3 times from methanol.	
Excess solute and solvent placed in amber glass bottles and allowed to equilibrate for several days at constant temperature. Attainment of equilibrium verified by repetitive measurements. Aliquots of sat- urated solutions transferred through a coarse filter into tared volumetric flasks, weighed and diluted with methanol.		(2) 99+ %, Aldrich Chemical Company, was stored over molecular sieves and dis- tilled shortly before use.	
Concentrations determi metrically at 372 nm.	ned spectrophoto-	ESTIMATED ERRORS:	
		$T/K: \pm 0.05.$ $x_1: \pm 2.5 $ % (relative error).	

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Pyrene; C ₁₆ H ₁₀ ; [129-00-0] (2) 1,4-Dimethylbenzene; C _R H ₁₀ ;	Powell, J.R.; Voisinet, D.; Salazar, A.; Acree, W.E., Jr.
[106-42-3]	Phys. Chem. Liq., in press.
VARIABLES:	PREPARED BY:
T/K = 299	W.E. Acree, Jr. and J.R. Powell
EIPERIMENTAL VALUES	
t/°C x ₂	<i>x</i> 1
26.0 0.9317	0.06831
AUXILIARY	INFORMATION
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:
Constant temperature bath, calorimetric thermometer, and an ultraviolet/visible spectrophotometer.	 (1) 99 %, Aldrich Chemical Company, Milwaukee, Wisconsin, USA, recrystal- lized 3 times from methanol.
Excess solute and solvent placed in amber glass bottles and allowed to equilibrate for several days at constant temperature. Attainment of equilibrium verified by repetitive measurements. Aliquots of sat- urated solutions transferred through a coarse filter into tared volumetric flasks, weighed and diluted with methanol.	(2) 99+ %, Aldrich Chemical Company, was stored over molecular sieves and dis- tilled shortly before use.
Concentrations determined spectrophoto- metrically at 372 nm.	ESTIMATED ERRORS:
	$T/K: \pm 0.05.$ $x_1: \pm 2.5$ % (relative error).

COMPONENTS: (1) Pyrene; C ₁₆ H ₁₀ ; [129-00-0] (2) Chrysene; C ₁₈ H ₁₂ ; [218-01-9] VARIABLES: Temperature EXPERIMENTAL VALUES		ORIGINAL MEASUREMENTS: Kravchenko, V.M.; Pastukhova, I.S. Proc. Acad. Sci. U.S.S.R., Sect. Chem. <u>1956</u> , 111, 667-669. (English translation) PREPARED BY: W.E. Acree, Jr.						
					T/K	*2	x ₁	Solid Phase
					528.2	1.000	0.000	(2)
					517.7	0.897	0.103	(2)
		506.7	0.782	0.218	(2)			
496.2	0.686	0.314	(2)					
487.2	0.604	0.396	(2)					
473.2	0.495	0.505	(2)					
458.7	0.398	0.602	(2)					
441.2	0.303	0.697	(2)					
420.6	0.210	0.790	(2)					
415.4	0.187	0.813	(2)					
408.2	0.165	0.835	Eutectic					
410.2	0.136	0.864	(1)					
413.7	0.099	0.901	(1)					
423.2	0.000	1.000	(1)					
METHOD: APPARATUS/PROCE Phase diagram was deter thermal analysis method	DURE mined using a d (described in	(1) Purity specifi	PURITY OF MATERIALS: and chemical source were not led in paper, was recrystallized					
detail in V.M. Kravcher U.S.S.R. <u>1939</u> , 13, 13: visual observations.			and chemical source were not ied in paper, was recrystallized					
		ESTIMATED EF T/K: precis x_1 : \pm 0.002	RORS: Bion <u>+</u> 0.2 (Compiler). (Compiler).					

COMPONENTS :	ORIGINAL MEASUREMENTS:
(1) Pyrene; C ₁₆ H ₁₀ ; [129-00-0] (2) Naphthalene; C ₁₀ H ₈ ; [91-20-3]	Miyagishi, S.; Isomi, A.; Iwata, T.; Asakawa, T.; Nishida, M. <i>Bull. Chem. Soc. Japan <u>1985</u>, 58,</i> 3643- 3644.
VARIABLES:	PREPARED BY:
	W.E. Acree, Jr.
EIPERIMENTAL VALUES	
Phase diagram, given in the original pa	per, shows that the system is a simple
eutectic system. The eutectic point oc	curs at circa $x_1 = 0.22$ and $T/K = 335.7$.
AUXILIARY	INFORMATION
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:
Differential scanning calorimeter and an analytical balance.	(1) Analytical grade, Katayama Chemicals, Japan, was used as received.
Binary mixtures were prepared by weight. Melting point temperatures and phase diagram determined using differential scanning calorimetric techniques.	(2) Reagent grade, Katayama Chemicals, Japan, was used as received.
	ESTIMATED ERRORS:
	T/K: precision \pm 0.3 (Compiler). $x_1: \pm 0.02$ (Compiler).

COMPONENTS :		ORIGINAL MEASUREMENTS:
(1) Pyrene; C ₁₆ H ₁₀ ; [129-00 (2) Ethyl ethanoate; C ₄ H ₈ O ₂		Powell, J.R.; Voisinet, D.; Salazar, A.; Acree, W.E., Jr. Phys. Chem. Liq., in press.
VARIABLES:		PREPARED BY:
T/K = 299		W.E. Acree, Jr. and J.R. Powell
EXPERIMENTAL VALUES		
t/°C	*2	×1
26.0	0.9575	0.04251
	AUXILIARY	INFORMATION
METHOD: APPARATUS/PROCEDURE		SOURCE AND PURITY OF MATERIALS:
Constant temperature bath, thermometer, and an ultrav spectrophotometer.		(1) 99 %, Aldrich Chemical Company, Milwaukee, Wisconsin, USA, recrystal- lized 3 times from methanol.
Excess solute and solvent p glass bottles and allowed for several days at constant Attainment of equilibrium repetitive measurements. A urated solutions transferra coarse filter into tared va flasks, weighed and diluted	to equilibrate nt temperature. verified by liquots of sat- ed through a olumetric d with methanol.	(2) 99.9 %, Aldrich Chemical Company, was stored over molecular sieves and dis- tilled shortly before use.
Concentrations determined a metrically at 372 nm.	spectrophoto-	ESTIMATED ERRORS:
		$T/K: \pm 0.05.$ $x_1: \pm 1.3$ % (relative error).

COMPONENTS:		ORIGINAL MEASUREMENTS:	
 (1) Pyrene; C₁₆H₁₀; [129-00-0] (2) Butyl ethanoate; C₆H₁₂O₂; [123-86-4] 		Powell, J.R.; Voisinet, D.; Salazar, A.; Acree, W.E., Jr. Phys. Chem. Liq., in press.	
VARIABLES:		PREPARED BY:	
T/K = 299		W.E. Acree, Jr. and J.R. Powell	
EXPERIMENTAL VALUES			
t/° C	×2	<i>x</i> ₁	
26.0	0.9407	0.05932	
	AUXILIARY	INFORMATION	
METHOD: APPARATUS/PROCE	DURE	SOURCE AND PURITY OF MATERIALS:	
Constant temperature by thermometer, and an ult spectrophotometer.		(1) 99 %, Aldrich Chemical Company, Milwaukee, Wisconsin, USA, recrystal- lized 3 times from methanol.	
Excess solute and solve glass bottles and allow for several days at cor Attainment of equilibri repetitive measurements urated solutions transs coarse filter into tare flasks, weighed and dil	ved to equilibrate Istant temperature. Lum verified by 3. Aliquots of sat- Gerred through a d volumetric	(2) 99.8+ %, Aldrich Chemical Company, was stored over molecular sieves and dis- tilled shortly before use.	
Concentrations determin metrically at 372 nm.		ESTIMATED ERRORS:	
		$T/K: \pm 0.05.$ $x_1: \pm 2.5$ % (relative error).	

COMPONENTS:	ORIGINAL MEASUREMENTS:	
(1) Pyrene; C ₁₆ H ₁₀ ; [129-00-0] (2) Ethyl butyrate; C ₆ H ₁₂ O ₂ ; [105-54-4]	Carre, O.R.; Phillips, D.J.; Brennecke, J.F. Ind. Eng. Chem. Res. <u>1994</u> , 33, 1355-1362.	
VARIABLES:	PREPARED BY:	
T/K = Circa 294 (Ambient Room)	W.E. Acree, Jr.	
EXPERIMENTAL VALUES		
t/°C x ₂	<i>x</i> 1	
21.0 0.9460	0.0540	
AUXILIAF	RY INFORMATION	
ETHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:	
Ultraviolet/visible spectrophotometer and centrifugal automatic particle anal- yzer.	 (1) 99 %, Aldrich Chemical Company, Milwaukee, Wisconsin, USA, was used as received from manufacturer. 	
Excess solute and solvent were allowed to equilibrate under vigorous agitation at ambient temperature (presumed). Sample was centrifuged at 3000 rpms to remove solid particles in suspension. Samples of 2 mLs of saturated liquid were then removed and diluted quantitatively for subsequent spectrophotometric analysis.	(2) 99 %, Aldrich Chemical Company, was used as received.	
Attainment of equilibrium was verified by repetitive measurements taken at 24 hour intervals.	ESTIMATED ERRORS: $T/X: \pm 2$ (Compiler). $x_1: \pm 6.0$ % (relative error).	

COMPONENTS :		ORIGINAL MEASUREMENTS:
<pre>(1) Pyrene; C₁₆H₁₀; [129-00-0] (2) 1,1-Oxybisbutane; C₈H₁₈O; [142-96-1]</pre>		Wallach, J.R.; Tucker, S.A.; Oswalt, B.M.; Murral, D.J.; Acree, W.E., Jr. J. Chem. Eng. Data <u>1989</u> , 34, 70-73.
VARIABLES:		PREPARED BY:
T/K = 299		W.E. Acree, Jr.
EXPERIMENTAL VALUES		
t/°C	×2	x 1
26.0	0.9702	0.0298
	AUXILIARY	INFORMATION
METHOD: APPARATUS/PROCEDURE		SOURCE AND PURITY OF MATERIALS:
Constant temperature bath, calorimetric thermometer, and an ultraviolet/visible spectrophotometer.		(1) 99 %, Aldrich Chemical Company, Milwaukee, Wisconsin, USA, recrystal- lized 3 times from absolute ethanol.
Excess solute and solvent placed in amber glass bottles and allowed to equilibrate for several days at constant temperature. Attainment of equilibrium verified by repetitive measurements. Aliquots of sat- urated solutions transferred through a coarse filter into tared volumetric flasks, weighed and diluted with methanol.		(2) Gold Label, 99+ %, Aldrich Chemical Company, was stored over molecular sieves and distilled shortly before use.
Concentrations determined spe metrically at 372 nm.	ectrophoto-	ESTIMATED ERRORS:
		T/K: \pm 0.05. x_1 : \pm 1 % (relative error).

COMPONENTS:	ORIGINAL MEASUREMENTS:	
(1) Pyrene; C ₁₆ H ₁₀ ; [129-00-0] (2) 1,4-Dioxane; C ₄ H ₈ O ₂ ; [123-91-1]	Pinal, R.; Rao, P.S.C.; Lee, L.S; Cline, P.V.; Yalkowsky, S.H. <i>Environ. Sci. Technol.</i> <u>1990</u> , 24, 639-646.	
VARIABLES:	PREPARED BY:	
T/K = 296	W.E. Acree, Jr.	
EXPERIMENTAL VALUES		
t/°C	(mol dm ⁻³)	
23.0 0.7	91	
AUXILIARY	INFORMATION	
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:	
Constant temperature bath, centrifuge, thermometer, and an HPLC equipped with uv absorption and fluorescence detection.	 Purity not given, commercial sample of unspecified source, was used as received. 	
Excess solute and solvent were placed in glass vials and allowed to equilibrate with rotation for 12-24 hours in a con- stant temperature bath. Prior to analysis samples were centrifuged at a minimum of 300 RCF for 15 minutes. The clear super- natant solution was analyzed by reversed- phase liquid chromatography with either	(2) Purity and chemical source not given, purification procedure not specified.	
fluorescence or uv detection.	ESTIMATED ERRORS:	
	$T/K: \pm 1.$ $c_1: \pm 5$ % (relative error; compiler).	

COMPONENTS:		ORIGINAL MEASUREMENTS:
<pre>(1) Pyrene; C₁₆H₁₀; [129-00-0] (2) 1,4-Dioxane; C₄H₈O₂; [123-91-1]</pre>		Powell, J.R.; Voisinet, D.; Salazar, A.; Acree, W.E., Jr. Phys. Chem. Liq., in press.
VARIABLES:		PREPARED BY:
T/K = 299		W.E. Acree, Jr. and J.R. Powell
EXPERIMENTAL VALUES		••••••••••••••••••••••••••••••••••••••
t/°C	×2	x 1
26.0	0.9648	0.03520
	AUXILIARY	INFORMATION
METHOD: APPARATUS/PROCE	EDURE	SOURCE AND PURITY OF MATERIALS:
Constant temperature bath, calorimetric thermometer, and an ultraviolet/visible spectrophotometer.		 (1) 99 %, Aldrich Chemical Company, Milwaukee, Wisconsin, USA, recrystal- lized 3 times from methanol.
Excess solute and solvent placed in amber glass bottles and allowed to equilibrate for several days at constant temperature. Attainment of equilibrium verified by repetitive measurements. Aliquots of sat- urated solutions transferred through a coarse filter into tared volumetric flasks, weighed and diluted with methanol.		(2) 99.8+ %, Aldrich Chemical Company, was stored over molecular sieves and dis- tilled shortly before use.
Concentrations determi metrically at 372 nm.	ned spectrophoto-	ESTIMATED ERRORS:
· · · · · · · · · · · · · · · · · · ·		$T/K: \pm 0.05.$ $x_1: \pm 1.3$ % (relative error).

COMPONENTS:		ORIGINAL MEASUREMENTS:
(1) Pyrene; C ₁₆ H ₁₀ ; [12	9-00-0]	McLaughlin, E.; Zainal, H.A.
<pre>(2) Tetrachloromethane; CCl₄; [56-23-5]</pre>		J. Chem. Soc. <u>1960</u> , 2485-2488.
VARIABLES:		PREPARED BY:
Temperature		W.E. Acree, Jr.
EXPERIMENTAL VALUES		Į
T/K	*2	×1
314.2	0.9298	0.0702
331.6	0.8811	0.1189
342.2	0.8361	0.1639
352.4	0.7810	0.2190
	AUXILIARY	INFORMATION
METHOD: APPARATUS/PROCE	DURE	SOURCE AND PURITY OF MATERIALS:
Constant temperature bath and a precision thermometer. Mixtures of known concentrations sealed in glass ampoules and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly increased. Solubility determined by visual		(1) Purity not given, Gesellschaft fur Teerverwertung, was passed over an alumina column with benzene as eluant.
		(2) AnalaR grade, source not given, was dried over anhydrous calcium chloride and distilled before use.
noting the temperature	at which the last	ESTIMATED ERRORS:
trace of solid solute disappeared.		$T/K:$ precision \pm 0.1. $x_1: \pm$ 0.0003 (compiler).

COMPONENTS:		ORIGINAL MEASUREMENTS:	
<pre>(1) Pyrene; C₁₆H₁₀; [129-00-0] (2) Tetrachloromethane; CCl₄; [56-23-5]</pre>		Powell, J.R.; Voisinet, D.; Salazar, A.; Acree, W.E., Jr. Phys. Chem. Lig., in press.	
		PREPARED BY:	
VARIABLES:			
T/K = 299		W.E. Acree, Jr. and J.R. Powell	
EXPERIMENTAL VALUES			
t/° C	x 2	<i>x</i> 1	
26.0	0.9577	0.04229	
	AUXILIARY	INFORMATION	
METHOD: APPARATUS/PROCE	DURE	SOURCE AND PURITY OF MATERIALS:	
Constant temperature bath, calorimetric thermometer, and an ultraviolet/visible spectrophotometer.		(1) 99 %, Aldrich Chemical Company, Milwaukee, Wisconsin, USA, recrystal- lized 3 times from methanol.	
Excess solute and solvent placed in amber glass bottles and allowed to equilibrate for several days at constant temperature. Attainment of equilibrium verified by repetitive measurements. Aliquots of sat- urated solutions transferred through a coarse filter into tared volumetric flasks, weighed and diluted with methanol.		(2) 99.9+ %, Aldrich Chemical Company, was stored over molecular sieves and dis- tilled shortly before use.	
Concentrations determinetrically at 372 nm.		ESTIMATED ERRORS:	
		$T/K: \pm 0.05.$ $x_1: \pm 1.3$ % (relative error).	

COMPONENTS:		ORIGINAL MEASUREMENTS:
<pre>(1) Pyrene; C₁₆H₁₀; [129-00-0] (2) 1,2-Dichloroethane; C₂H₄Cl₂; [107-06-2]</pre>		Powell, J.R.; Voisinet, D.; Salazar, A.; Acree, W.E., Jr. Phys. Chem. Liq., in press.
VARIABLES:	·····	PREPARED BY:
T/K = 299		W.E. Acree, Jr. and J.R. Powell
EXPERIMENTAL VALUES		•
t/° C	*2	<i>x</i> 1
26.0	0.9125	0.08746
	AUXILIARY	INFORMATION
METHOD: APPARATUS/PROCEDU	RE	SOURCE AND PURITY OF MATERIALS:
Constant temperature bath thermometer, and an ultra spectrophotometer.		(1) 99 %, Aldrich Chemical Company, Milwaukee, Wisconsin, USA, recrystal- lized 3 times from methanol.
Excess solute and solvent placed in amber glass bottles and allowed to equilibrate for several days at constant temperature. Attainment of equilibrium verified by repetitive measurements. Aliquots of sat- urated solutions transferred through a coarse filter into tared volumetric flasks, weighed and diluted with methanol.		(2) 99+ %, Aldrich Chemical Company, anhy- drous, was stored over molecular sieves and distilled shortly before use.
Concentrations determined metrically at 372 nm.	1 spectrophoto-	ESTIMATED ERRORS:
		$T/K: \pm 0.05.$ $x_1: \pm 2.5$ % (relative error).

COMPONENTS:		ORIGINAL MEASUREMENTS:
(1) Pyrene; C ₁₆ H ₁₀ ; [3 (2) 1-Chlorobutane; (Powell, J.R.; Voisinet, D.; Salazar, A.; Acree, W.E., Jr. Phys. Chem. Liq., in press.
VARIABLES:		PREPARED BY:
T/K = 299		W.E. Acree, Jr. and J.R. Powell
EXPERIMENTAL VALUES		•
t/° C	<i>x</i> 2	<i>*</i> 1
26.0	0.9391	0.06094
	AUXILIARY	INFORMATION
METHOD: APPARATUS/PRO	CEDURE	SOURCE AND PURITY OF MATERIALS:
Constant temperature bath, calorimetric thermometer, and an ultraviolet/visible spectrophotometer.		(1) 99 %, Aldrich Chemical Company, Milwaukee, Wisconsin, USA, recrystal- lized 3 times from methanol.
Excess solute and solvent placed in amber glass bottles and allowed to equilibrate for several days at constant temperature. Attainment of equilibrium verified by repetitive measurements. Aliquots of sat- urated solutions transferred through a coarse filter into tared volumetric flasks, weighed and diluted with methanol.		(2) 99.9+ %, Aldrich Chemical Company, was stored over molecular sieves and dis- tilled shortly before use.
Concentrations deter metrically at 372 nm	mined spectrophoto-	ESTIMATED ERRORS: $T/K: \pm 0.05.$ $x_1: \pm 2.5$ % (relative error).

COMPONENTS: (1) Pyrene; C ₁₆ H ₁₀ ; [129-00-0] (2) 1,4-Dichlorobutane; C ₄ H ₈ Cl ₂ ; [110-56-5] VARIABLES:		ORIGINAL MEASUREMENTS: Acree, W.E., Jr.; Tucker, S.A.; Zvaigzne, A.I. J. Chem. Soc., Faraday Trans. <u>1990</u> , 86, 2197-2201. PREPARED BY:				
				T/K = 299		W.E. Acree, Jr.
				EXPERIMENTAL VALUES		
t/° C	×2	x 1				
26.0	0.8903	0.1097				
	AUXILIARY	INFORMATION				
METHOD: APPARATUS/PROCE	DURE	SOURCE AND PURITY OF MATERIALS:				
Constant temperature bath, calorimetric thermometer, and an ultraviolet/visible spectrophotometer.		(1) 99 %, Aldrich Chemical Company, Milwaukee, Wisconsin, USA, recrystal-				
		lized 3 times from absolute ethanol.				
	Yent placed in amber wed to equilibrate onstant temperature. ium verified by s. Aliquots of sat- ferred through a	lized 3 times from absolute ethanol.				
spectrophotometer. Excess solute and solv glass bottles and allo for several days at co Attainment of equilibr repetitive measurement urated solutions trans	Yent placed in amber wed to equilibrate instant temperature. fium verified by s. Aliquots of sat- ferred through a ed volumetric luted with methanol.	 lized 3 times from absolute ethanol. (2) puriss, 99+ %, Fluka Chemical Corporation, Ronkonkoma, New York, USA, was stored over molecular sieves and dis- 				

9	7	6
2	1	D.

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COMPONENTS :	ORIGINAL MEASUREMENTS:
(1) Pyrene; C ₁₆ H ₁₀ ; [129-00-0]	Miyagishi, S.; Isomi, A.; Iwata, T.;
<pre>(2) Octafluoronaphthalene; C₁₀F₈; [313-72-4]</pre>	Asakawa, T.; Nishida, M. <i>Bull. Chem. Soc. Japan <u>1985</u>, 58,</i> 3643- 3644.
VARIABLES:	PREPARED BY:
	W.E. Acree, Jr.
EXPERIMENTAL VALUES	
Phase diagram, given in the original pa	per, shows formation of a 1:1 pyrene -
octafluoronaphthalene molecular compoun	d having a melting point of circa 528.2 K.
Two eutectic points occur at about $x_2 =$	0.07 and $T/K = 422.2$, and at about $x_2 = 0.95$
and $T/K = 321.2$.	
AUXILIARY	INFORMATION
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:
Differential scanning calorimeter and an analytical balance.	(1) Analytical grade, Katayama Chemicals, Japan, was used as received.
Binary mixtures were prepared by weight. Melting point temperatures and phase diagram determined using differential scanning calorimetric techniques. (2) Reagent grade, Tokyo Chemical Co Japan, was recrystallized from m anol before use.	
	ESTIMATED ERRORS:
	T/K: precision \pm 0.3 (Compiler). $x_1: \pm$ 0.02 (Compiler).

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Pyrene; C ₁₆ H ₁₀ ; [129-00-0] (2) Methanol; CH ₄ O; [67-56-1]	Pinal, R.; Rao, P.S.C.; Lee, L.S; Cline, P.V.; Yalkowsky, S.H. Environ. Sci. Technol. <u>1990</u> , 24, 639-646.
VARIABLES:	PREPARED BY:
T/K = 296	W.E. Acree, Jr.
EXPERIMENTAL VALUES	
t/°C	(mol dm ⁻³)
23.0 0.0	673
	INFORMATION
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:
Constant temperature bath, centrifuge, thermometer, and an HPLC equipped with uv absorption and fluorescence detection.	 Purity not given, commercial sample of unspecified source, was used as received.
Excess solute and solvent were placed in glass vials and allowed to equilibrate with rotation for 12-24 hours in a con- stant temperature bath. Prior to analysis samples were centrifuged at a minimum of 300 RCF for 15 minutes. The clear super- natant solution was analyzed by reversed- phase liquid chromatography with either fluorescence or uv detection.	(2) Purity and chemical source not given, purification procedure not specified.
ridorescence of uv detection.	PETIMATED PODODE.

ESTIMATED ERRORS:

T/K: \pm 1. c₁: \pm 5% (relative error; compiler).

COMPONENTS:	<u> </u>	ORIGINAL MEASUREMENTS:	
(1) Pyrene; C ₁₆ H ₁₀ ; [129-00-0] (2) Methanol; CH ₄ O; [67-56-1]		Powell, J.R.; Voisinet, D.; Salazar, A.; Acree, W.E., Jr. Phys. Chem. Liq., in press.	
VARIABLES:		PREPARED BY:	
T/K = 299		W.E. Acree, Jr. and J.R. Powell	
EXPERIMENTAL VALUES			
t/°C	*2	x 1	
26.0	0.9985	0.00149	
	AUXILIARY	INFORMATION	
METHOD: APPARATUS/PROCE	DURE	SOURCE AND PURITY OF MATERIALS:	
Constant temperature bath, calorimetric thermometer, and an ultraviolet/visible spectrophotometer.		(1) 99 %, Aldrich Chemical Company, Milwaukee, Wisconsin, USA, recrystal- lized 3 times from methanol.	
Excess solute and solvent placed in amber glass bottles and allowed to equilibrate for several days at constant temperature. Attainment of equilibrium verified by repetitive measurements. Aliquots of sat- urated solutions transferred through a coarse filter into tared volumetric flasks, weighed and diluted with methanol.		(2) 99.9+ %, Aldrich Chemical Company, was stored over molecular sieves and dis- tilled shortly before use.	
Concentrations determi metrically at 372 nm.		ESTIMATED ERRORS:	
		$T/K: \pm 0.05.$ $x_1: \pm 1.3 $ % (relative error).	

Components :	ORIGINAL MEASUREMENTS:
(1) Pyrene; C ₁₆ H ₁₀ ; [129-00-0]	Krezewki, R.; Smutek, M.
(2) Ethanol; C ₂ H ₆ O; [64-17-5]	Collection Czech. Chem. Commun. <u>1967</u> , 32, 1258-1259.
VARIABLES:	PREPARED BY:
T/K = 293	W.E. Acree, Jr.
EXPERIMENTAL VALUES	
t/°C x ₂	×1
20.0 0.	0.00288
	AUXILIARY INFORMATION
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:
Constant temperature bath, the and a precision balance. Excess solute and solvent plac glass container and allowed to for several hours at constant Aliguots of saturated solution transferred into tared constai weighed. Solubilities calcula	 was recrystallized several times from toluene and ethanol to give a melting temperature of 150.5-150.9 °C. (2) Commercial sample, purity and source not specified, was dehydrated and dis- tilled before use.
weight of solid residue that r after solvent had evaporated.	ESTIMATED ERRORS: T/K : precision \pm 0.05.

COMPONENTS:	- <u></u>	ORIGINAL MEASUREMENTS:	
 (1) Pyrene; C₁₆H₁₀; [129-00] (2) Ethanol; C₂H₆0; [64-17] 		Powell, J.R.; Voisinet, D.; Salazar, A.; Acree, W.E., Jr. Phys. Chem. Liq., in press.	
VARIABLES:		PREPARED BY:	
T/K = 299		W.E. Acree, Jr. and J.R. Powell	
EXPERIMENTAL VALUES			
t/° C	<i>x</i> 2	×1	
26.0	0.9968	0.00317	
	AUXILIARY	INFORMATION	
METHOD: APPARATUS/PROCEDURE		SOURCE AND PURITY OF MATERIALS:	
Constant temperature bath, thermometer, and an ultrav spectrophotometer.		(1) 99 %, Aldrich Chemical Company, Milwaukee, Wisconsin, USA, recrystal- lized 3 times from methanol.	
Excess solute and solvent placed in amber glass bottles and allowed to equilibrate for several days at constant temperature. Attainment of equilibrium verified by repetitive measurements. Aliquots of sat- urated solutions transferred through a coarse filter into tared volumetric flasks, weighed and diluted with methanol.		(2) Absolute, Aaper Alcohol and Chemical Company, Shelbyville, Kentucky, USA, was stored over molecular sieves and distilled shortly before use.	
Concentrations determined metrically at 372 nm.		ESTIMATED ERRORS: $T/K: \pm 0.05.$ $x_1: \pm 1.3 $ (relative error).	

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Pyrene; C ₁₆ H ₁₀ ; [129-00-0]	Zvaigzne, A.I.; Acree, W.E., Jr.
(2) 1-Propanol; C ₃ H ₈ O; [71-23-8]	J. Chem. Eng. Data <u>1993</u> , 38, 393-395.
VARIABLES:	PREPARED BY:
T/K = 299	W.E. Acree, Jr.
EXPERIMENTAL VALUES	
t/°C x ₂	x 1
26.0 0.9957	0.00426
A	UXILIARY INFORMATION
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:
Constant temperature bath, calorime thermometer, and an ultraviolet/vis spectrophotometer.	
Excess solute and solvent placed in glass bottles and allowed to equili for several days at constant temper Attainment of equilibrium verified repetitive measurements. Aliquots o urated solutions transferred throug coarse filter into tared volumetric flasks, weighed and diluted with me	brate Company, was stored over molecular sture. sieves and distilled shortly before use. by of sat- h a
Concentrations determined spectroph metrically at 372 nm.	estimated errors:
	$T/K: \pm 0.05.$ $x_1: \pm 1.5$ % (relative error).

COMPONENTS :		ORIGINAL MEASUREMENTS:	
(1) Pyrene; C ₁₆ H ₁₀ ; [129-00-0]		Zvaigzne, A.I.; Acree, W.E., Jr.	
(2) 2-Propanol; C ₃ H ₈ O; [6	57-63-0]	J. Chem. Eng. Data <u>1993</u> , 38, 393-395.	
VARIABLES:		PREPARED BY:	
T/K = 299		W.E. Acree, Jr.	
EXPERIMENTAL VALUES			
t/°C	x 2	x 1	
26.0	0.9971	0.00290	
	AUXILIARY	INFORMATION	
METHOD: APPARATUS/PROCEDU	RE	SOURCE AND PURITY OF MATERIALS:	
Constant temperature bat thermometer, and an ultr spectrophotometer.		 (1) 99 %, Aldrich Chemical Company, Milwaukee, Wisconsin, USA, recrystal- lized 3 times from absolute ethanol. 	
Excess solute and solvent placed in amber glass bottles and allowed to equilibrate for several days at constant temperature. Attainment of equilibrium verified by repetitive measurements. Aliquots of sat- urated solutions transferred through a coarse filter into tared volumetric flasks, weighed and diluted with methanol.		(2) 99+ %, anhydrous, Aldrich Chemical Company, was stored over molecular sieves and distilled shortly before use.	
Concentrations determine metrically at 372 nm.		ESTIMATED ERRORS:	
		$T/K: \pm 0.05.$ $x_1: \pm 1.5 $ (relative error).	

COMPONENTS :	······	ORIGINAL MEASUREMENTS:
(1) Pyrene; C ₁₆ H ₁₀ ; [12 [.] (2) 1-Butanol; C ₄ H ₁₀ O;		Powell, J.R.; Voisinet, D.; Salazar, A.; Acree, W.E., Jr. Phys. Chem. Liq., in press.
VARIABLES:		PREPARED BY:
T/K = 299		W.E. Acree, Jr. and J.R. Powell
EXPERIMENTAL VALUES		
t/° C	<i>x</i> 2	x 1
26.0	0.9938	0.00622
	AUXILIARY	INFORMATION
METHOD: APPARATUS/PROCE	DURE	SOURCE AND PURITY OF MATERIALS:
Constant temperature bath, calorimetric thermometer, and an ultraviolet/visible spectrophotometer.		(1) 99 %, Aldrich Chemical Company, Milwaukee, Wisconsin, USA, recrystal- lized 3 times from methanol.
Excess solute and solvent placed in amber glass bottles and allowed to equilibrate for several days at constant temperature. Attainment of equilibrium verified by repetitive measurements. Aliquots of sat- urated solutions transferred through a coarse filter into tared volumetric flasks, weighed and diluted with methanol. Concentrations determined spectrophoto- metrically at 372 nm.		(2) 99.8 %, Aldrich Chemical Company, was stored over molecular sieves and dis- tilled shortly before use.
		ESTIMATED ERRORS:
		$T/K: \pm 0.05.$ $x_1: \pm 1.3 $ (relative error).

Components :		ORIGINAL MEASUREMENTS:	
(1) Pyrene; C ₁₆ H ₁₀ ; [129-00-0]		Powell, J.R.; Voisinet, D.; Salazar, A.; Acree, W.E., Jr.	
(2) 2-Butanol; C ₄ H ₁₀ O;	[15892-23-6]	Phys. Chem. Liq., in press.	
VARIABLES:	······································	PREPARED BY:	
T/K = 299		W.E. Acree, Jr. and J.R. Powell	
EXPERIMENTAL VALUES			
t/° C	×2	x 1	
26.0	0.9957	0.00433	
·····	AUXILIARY	INFORMATION	
ETHOD: APPARATUS/PROCE	DURE	SOURCE AND PURITY OF MATERIALS:	
Constant temperature b thermometer, and an ul spectrophotometer.		(1) 99 %, Aldrich Chemical Company, Milwaukee, Wisconsin, USA, recrystal- lized 3 times from methanol.	
Excess solute and solvent placed in amber glass bottles and allowed to equilibrate for several days at constant temperature. Attainment of equilibrium verified by repetitive measurements. Aliquots of sat- urated solutions transferred through a coarse filter into tared volumetric flasks, weighed and diluted with methanol. Concentrations determined spectrophoto- metrically at 372 nm.		(2) 99+ %, Aldrich Chemical Company, anhy- drous, was stored over molecular sieves and distilled shortly before use.	
		ESTIMATED ERRORS:	
		$T/K: \pm 0.05.$ x ₁ : ± 1.3 % (relative error).	

COMPONENTS:	ORIGINAL MEASUREMENTS:
<pre>(1) Pyrene; C₁₆H₁₀; [129-00-0] (2) 1-Pentanol; C₅H₁₂O; [71-41-0]</pre>	Powell, J.R.; Voisinet, D.; Salazar, A.; Acree, W.E., Jr. Phys. Chem. Lig., in press.
VARIABLES:	PREPARED BY: W.E. Acree, Jr. and J.R. Powell
T/K = 299	
EXPERIMENTAL VALUES	
t/°C x ₂	×1
26.0 0.9907	0.00926
METHOD: APPARATUS/PROCEDURE Constant temperature bath, calorimetric	SOURCE AND PURITY OF MATERIALS: (1) 99 %, Aldrich Chemical Company,
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:
thermometer, and an ultraviolet/visible spectrophotometer.	Milwaukee, Wisconsin, USA, recrystal- lized 3 times from methanol.
Excess solute and solvent placed in amber glass bottles and allowed to equilibrate for several days at constant temperature. Attainment of equilibrium verified by repetitive measurements. Aliquots of sat- urated solutions transferred through a coarse filter into tared volumetric flasks, weighed and diluted with methanol.	(2) 99+ %, Aldrich Chemical Company, was stored over molecular sieves and dis- tilled shortly before use.
Concentrations determined spectrophoto- metrically at 372 nm.	ESTIMATED ERRORS:
	$T/K: \pm 0.05.$ x _i : ± 1.3 % (relative error).

COMPONENTS :		ORIGINAL MEASUREMENTS:	
(1) Pyrene; C ₁₆ H ₁₀ ; [129-00-0]		Powell, J.R.; Voisinet, D.; Salazar, A.; Acree, W.E., Jr.	
(2) 2-Methyl-1-propand [78-83-1]	ol; C ₄ H ₁₀ O;	Phys. Chem. Liq., in press.	
VARIABLES:		PREPARED BY:	
T/K = 299		W.E. Acree, Jr. and J.R. Powell	
EXPERIMENTAL VALUES			
t/° C	x 2	<i>x</i> 1	
26.0	0.9968	0.00319	
	AUXILIARY	INFORMATION	
METHOD: APPARATUS/PROCI	EDURE	SOURCE AND PURITY OF MATERIALS:	
Constant temperature i thermometer, and an u spectrophotometer.		 (1) 99 %, Aldrich Chemical Company, Milwaukee, Wisconsin, USA, recrystal- lized 3 times from methanol. 	
Excess solute and solvent placed in amber glass bottles and allowed to equilibrate for several days at constant temperature. Attainment of equilibrium verified by repetitive measurements. Aliquots of sat- urated solutions transferred through a coarse filter into tared volumetric flasks, weighed and diluted with methanol.		(2) 99+ %, Aldrich Chemical Company, anhy- drous, was stored over molecular sieves and distilled shortly before use.	
Concentrations determinetrically at 372 nm.		ESTIMATED ERRORS:	
		$T/K: \pm 0.05.$ $x_1: \pm 1.3$ % (relative error).	

COMPONENTS: (1) Pyrene; C ₁₆ H ₁₀ ; [12] (2) 3-Methyl-1-butanol [123-51-3] VARIABLES: T/K = 299		ORIGINAL MEASUREMENTS: Powell, J.R.; Voisinet, D.; Salazar, A.; Acree, W.E., Jr. Phys. Chem. Liq., in press. PREPARED BY: W.E. Acree, Jr. and J.R. Powell
EXPERIMENTAL VALUES		
t/° C	x 2	x 1
26.0	0.9945	0.00546
	AUXILIARY	INFORMATION
METHOD: APPARATUS/PROCES	URE	SOURCE AND PURITY OF MATERIALS:
Constant temperature by thermometer, and an ult spectrophotometer. Excess solute and solve glass bottles and allow for several days at cor Attainment of equilibri repetitive measurements urated solutions transf coarse filter into tare flasks, weighed and dil	raviolet/visible ent placed in amber red to equilibrate stant temperature. .um verified by . Aliquots of sat- erred through a d volumetric uted with methanol.	 99 %, Aldrich Chemical Company, Milwaukee, Wisconsin, USA, recrystal- lized 3 times from methanol. 99+ %, Aldrich Chemical Company, anhy- drous, was stored over molecular sieves and distilled shortly before use.
Concentrations determin metrically at 372 nm.	ed spectrophoto-	ESTIMATED ERRORS: $T/K: \pm 0.05.$ $x_1: \pm 1.3 $ (relative error).

Components:		ORIGINAL MEASUREMENTS:	
(1) Pyrene; C ₁₆ H ₁₀ ; [129-00-0] (2) 1-Octanol; C ₈ H ₁₈ O; [111-87-5]		Powell, J.R.; Voisinet, D.; Salazar, A.; Acree, W.E., Jr.	
		Phys. Chem. Liq., in press.	
VARIABLES:		PREPARED BY:	
T/K = 299		W.E. Acree, Jr. and J.R. Powell	
EXPERIMENTAL VALUES			
t/° C	x2	<i>x</i> 1	
26.0	0.9790	0.02097	
	AUXILIARY	INFORMATION	
ETHOD: APPARATUS/PROCE	DURE	SOURCE AND PURITY OF MATERIALS:	
Constant temperature b thermometer, and an ul spectrophotometer.		 (1) 99 %, Aldrich Chemical Company, Milwaukee, Wisconsin, USA, recrystal- lized 3 times from methanol. 	
Excess solute and solvent placed in amber glass bottles and allowed to equilibrate for several days at constant temperature. Attainment of equilibrium verified by repetitive measurements. Aliquots of sat- urated solutions transferred through a coarse filter into tared volumetric flasks, weighed and diluted with methanol. Concentrations determined spectrophoto- metrically at 372 nm.		(2) 99+ %, Aldrich Chemical Company, anhy- drous, was stored over molecular sieves and distilled shortly before use.	
		ESTIMATED ERRORS:	

COMPONENTS :	ORIGINAL MEASUREMENTS:
<pre>(1) Pyrene; C₁₆H₁₀; [129-00-0] (2) 1-Octanol; C₈H₁₈O; [111-87-5]</pre>	Miller, M.M.; Wasik, S.P.; Huang, GL.; Shiu, WY.; Mackay, D. Environ. Sci. Technol. <u>1985</u> , 19, 522-529.
VARIABLES:	PREPARED BY:
<i>T/</i> K = 298	W.E. Acree, Jr.
EXPERIMENTAL VALUES	
t/°C	(mol dm ⁻³)
25.0 0.1	399
AUXILIARY	INFORMATION
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:
Constant temperature bath, rotator, thermometer, and a gas-liquid chromato- graph with flame ionization detection. Excess solute and solvent placed in glass vials and allowed to equilibrate for 24 hours with gentle agitation, and left to settle for 48 hours before anal- ysis. Aliquots of saturated solutions were removed and concentrations were determined using a gas-liquid chromatograph equipped with flame ionization detector and on 10 %	 Highest available commercial purity, specific chemical supplier not given, was used as received. 99+ %, Aldrich Chemical Company, Milwaukee, Wisconsin, USA, was used as received.
SE30 ultraphase column.	ESTIMATED ERRORS:
	T/K: \pm 0.1 (compiler). c_1 : \pm 3 % (relative error; compiler).

ORIGINAL MEASUREMENTS: COMPONENTS: Powell, J.R.; Voisinet, D.; Salazar, A.; Acree, W.E., Jr. (1) Pyrene; C₁₆H₁₀; [129-00-0] (2) Cyclopentanol; C₅H₁₀O; [96-41-3] Phys. Chem. Liq., in press. VARIABLES: PREPARED BY: T/K = 299W.E. Acree, Jr. and J.R. Powell EXPERIMENTAL VALUES t/° C x₁ *x*2 0.9901 0.00994 26.0 AUXILIARY INFORMATION METHOD: APPARATUS/PROCEDURE SOURCE AND PURITY OF MATERIALS: Constant temperature bath, calorimetric thermometer, and an ultraviolet/visible (1) 99 %, Aldrich Chemical Company, Milwaukee, Wisconsin, USA, recrystal-lized 3 times from methanol. spectrophotometer. Excess solute and solvent placed in amber glass bottles and allowed to equilibrate for several days at constant temperature. Attainment of equilibrium verified by repetitive measurements. Aliquots of sat-(2) 99 %, Aldrich Chemical Company, was stored over molecular sieves and dis-tilled shortly before use. urated solutions transferred through a coarse filter into tared volumetric flasks, weighed and diluted with methanol. Concentrations determined spectrophotometrically at 372 nm. ESTIMATED ERRORS: $T/K: \pm 0.05.$ $x_1: \pm 1.3$ % (relative error).

COMPONENTS :	ORIGINAL MEASUREMENTS:
 (1) Pyrene; C₁₆H₁₀; [129-00-0] (2) 1-Hydroxy-2-methylbenzene; C₇H₈O; [95-48-7] 	Pinal, R.; Rao, P.S.C.; Lee, L.S; Cline, P.V.; Yalkowsky, S.H. <i>Environ. Sci. Technol.</i> <u>1990</u> , 24, 639-646.
VARIABLES:	PREPARED BY:
T/K = 296	W.E. Acree, Jr.
EXPERIMENTAL VALUES	•
t/°C	(mol dm ⁻³)
23.0 0.2	18
AUXILIARY	INFORMATION
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:
Constant temperature bath, centrifuge, thermometer, and an HPLC equipped with uv absorption and fluorescence detection.	 (1) Purity not given, commercial sample of unspecified source, was used as received.
Excess solute and solvent were placed in glass vials and allowed to equilibrate with rotation for 12-24 hours in a con- stant temperature bath. Prior to analysis samples were centrifuged at a minimum of 300 RCF for 15 minutes. The clear super- natant solution was analyzed by reversed- phase liquid chromatography with either	(2) Purity and chemical source not given, purification procedure not specified.
fluorescence or uv detection.	ESTIMATED ERRORS:
	$T/K: \pm 1.$ $c_1: \pm 5$ % (relative error; compiler).

COMPONENTS :	ORIGINAL MEASUREMENTS:		
(1) Pyrene; C ₁₆ H ₁₀ ; [129-00-0]	Krezewki, R.; Smutek, M.		
(2) 2-Propanone; C ₃ H ₆ O; {67-64-1]	Collection Czech. Chem. Commun. <u>1967</u> , 32, 1258-1259.		
VARIABLES:	PREPARED BY:		
T/K = 293	W.E. Acree, Jr.		
EXPERIMENTAL VALUES			
t/°C x ₂	<i>x</i> 1		
20.0 0.9716	0.0284		
AUXILIAR	Y INFORMATION		
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:		
Constant temperature bath, thermometer, and a precision balance. Excess solute and solvent placed in closed glass container and allowed to equilibrate for several hours at constant temperature. Aliguots of saturated solutions were transferred into tared constainers and weighed. Solubilities calculated from	•		
weight of solid residue that remained after solvent had evaporated.	ESTIMATED ERRORS:		
	T/K: precision \pm 0.05. x ₁ : \pm 3 % (relative error; compiler).		

COMPONENTS:		ORIGINAL MEASUREMENTS:
(1) Pyrene; C ₁₆ H ₁₀ ; [12 (2) 2-Propanone; C ₃ H ₆ O;		Powell, J.R.; Voisinet, D.; Salazar, A.; Acree, W.E., Jr. Phys. Chem. Lig., in press.
VARIABLES:		PREPARED BY:
T/K = 299		W.E. Acree, Jr. and J.R. Powell
EXPERIMENTAL VALUES		
t/°C	<i>x</i> 2	x 1
26.0	0.9639	0.03612
	AUXILIARY	INFORMATION
METHOD: APPARATUS/PROCE	DURE	SOURCE AND PURITY OF MATERIALS:
Constant temperature b thermometer, and an ul spectrophotometer.		(1) 99 %, Aldrich Chemical Company, Milwaukee, Wisconsin, USA, recrystal- lized 3 times from methanol.
Excess solute and solv glass bottles and allo for several days at co Attainment of equilibr repetitive measurement urated solutions trans coarse filter into tar flasks, weighed and di	wed to equilibrate nstant temperature. ium verified by s. Aliquots of sat- ferred through a ed volumetric	(2) 99.9+ %, Aldrich Chemical Company, was stored over molecular sieves and dis- tilled shortly before use.
Concentrations determinetrically at 372 nm.	ned spectrophoto-	ESTIMATED ERRORS:
		$T/K: \pm 0.05.$ $x_1: \pm 1.3$ % (relative error).

COMPONENTS :	ORIGINAL MEASUREMENTS:
(1) Pyrene; C ₁₆ H ₁₀ ; [129-00-0]	Krezewki, R.; Smutek, M.
(2) Pyridine; C ₅ H ₅ N; [110-86-1]	Collection Czech. Chem. Commun. <u>1967</u> , 32, 1258-1259.
VARIABLES:	PREPARED BY:
T/K = 293	W.E. Acree, Jr.
EXPERIMENTAL VALUES	<u></u>
t/°C x ₂	×1
20.0 0.9127	0.0873
AUXILIARY	INFORMATION
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:
Constant temperature bath, thermometer, and a precision balance. Excess solute and solvent placed in closed glass container and allowed to equilibrate for several hours at constant temperature. Aliguots of saturated solutions were transferred into tared constainers and weighed. Solubilities calculated from	 95 % initial purity, source not given, was recrystallized several times from toluene and ethanol to give a melting temperature of 150.5-150.9 °C. Purity not given, Urxovy Zavody, Czech., treated with potassium permanganate, dried over potassium hydroxide and then distilled before use.
weight of solid residue that remained after solvent had evaporated.	ESTIMATED ERRORS:
	T/K: precision \pm 0.05. $x_1: \pm 3$ % (relative error; compiler).

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Pyrene; C ₁₆ H ₁₀ ; [129-00-0]	Pinal, R.; Rao, P.S.C.; Lee, L.S; Cline, P.V.; Yalkowsky, S.H.
<pre>(2) Dimethyl sulfoxide; C₂H₆OS; [67-68-5]</pre>	Environ. Sci. Technol. <u>1990</u> , 24, 639-646.
VARIABLES:	PREPARED BY:
T/K = 296	W.E. Acree, Jr.
EXPERIMENTAL VALUES	
t/°C c ₁ /	(mol dm ⁻³)
23.0 0.3	96
AUXILIARY	INFORMATION
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:
Constant temperature bath, centrifuge, thermometer, and an HPLC equipped with uv absorption and fluorescence detection.	 Purity not given, commercial sample of unspecified source, was used as received.
Excess solute and solvent were placed in glass vials and allowed to equilibrate with rotation for 12-24 hours in a con- stant temperature bath. Prior to analysis samples were centrifuged at a minimum of 300 RCF for 15 minutes. The clear super- natant solution was analyzed by reversed- phase liquid chromatography with either	(2) Purity and chemical source not given, purification procedure not specified.
fluorescence or uv detection.	ESTIMATED ERRORS:
	T/K: + 1.

Components :	ORIGINAL MEASUREMENTS:
(1) Pyrene; C ₁₆ H ₁₀ ; [129-00-0]	Carre, O.R.; Phillips, D.J.; Brennecke, J.F.
(2) Acetonitrile; C ₂ H ₃ N; [75-05-8]	Ind. Eng. Chem. Res. <u>1994</u> , 33, 1355-1362.
VARIABLES:	PREPARED BY:
T/K = Circa 294 (Ambient Room)	W.E. Acree, Jr.
EXPERIMENTAL VALUES	
t/°C x ₂	x ₁
21.0 0.9943	0.00574
3	AUXILIARY INFORMATION
ETHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:
Ultraviolet/visible spectrophotomet and centrifugal automatic particle yzer.	
Excess solute and solvent were all equilibrate under vigorous agitatic ambient temperature (presumed). Sa was centrifuged at 3000 rpms to rem solid particles in suspension. Sam of 2 mLs of saturated liquid were t removed and diluted quantitatively subsequent spectrophotometric analy	on at Company, was used as received. ample nove nples then for
Attainment of equilibrium was verif by repetitive measurements taken at hour intervals.	ied

Components:			ORIGINAL MEASURI	ements:	
<pre>(1) Pyrene; C₁₆H₁₀; [129-00-0] (2) 1,3-Dinitrobenzene; C₆H₄N₂O₄; [99-65-0]</pre>		Shinomiya, C. J. Chem. Soc. Japan <u>1940</u> , 15, 259-270.			
Temperature			W.E. Acree, Jr.		
XPERIMENTAL V	ALUES				
T/K	*2	× 1	<i>т/</i> к	*2	x 1
363.2	1.000	0.000	365.0	0.554	0.446
358.2	0.913	0.087	365.7	0.499	0.501
354.2	0.854	0.146	366.0	0.496	0.504
357.2	0.831	0.169	365.2	0.476	0.524
359.7	0.790	0.210	364.2	0.449	0.551
360.2	0.762	0.238	376.2	0.430	0.570
362.2	0.702	0.298	367.2	0.429	0.571
362.5	0.665	0.335	376.2	0.391	0.609
362.2	0.621	0.379	384.2	0.341	0.659
363.7	0.586	0.414	395.7	0.277	0.723
364.7	0.563	0.437	423.2	0.000	1.000

AUXILIAR	Y INFORMATION
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:
No experimental details given in paper.	(1) Purity and chemical source were not specified in paper.
	(2) Purity and chemical source were not specified in paper.
	ESTIMATED ERRORS:
	T/K : precision \pm 0.2 (Compiler). x_1 : \pm 0.002 (Compiler).

			ORIGINAL MEASUR		
(1) Pyrene; C ₁₆ H ₁₀ ; [129-00-0]		Shinomiya, C.			
(2) 1,4-Dinitrobenzene; C ₆ H ₄ N ₂ O ₄ ; [100-25-4] VARIABLES:		J. Chem. Soc. Japan <u>1940</u> , 15, 259-270. PREPARED BY:			
					Temperature
EXPERIMENTAL N	VALUES		<u>+</u>		<u>,</u>
T/K	×2	×1	T/K	*2	×1
446.7	1.000	0.000	386.2	0.413	0.587
432.2	0.818	0.182	386.2	0.402	0.598
422.7	0.715	0.285	385.2	0.395	0.605
415.2	0.666	0.334	382.7	0.360	0.640
414.2	0.622	0.378	384.5	0.349	0.651
403.2	0.554	0.446	384.2	0.340	0.660
400.7	0.536	0.464	388.2	0.332	0.668
389.2	0.484	0.516	402.2	0.284	0.716
388.2	0.460	0.540	395.5	0.260	0.740
387.2	0.435	0.565	417.2	0.066	0.934
386.7	0.419	0.581	423.2	0.000	1.000
Author re molecular point occ	ports format	aving an incongrue 0.637 and $T/K =$	ene - 1,4-dinitrobe ent melting point to 380.7, and a pertect	emperature.	A eutectic
Author re molecular point occ	ports format compound ha	aving an incongrue 0.637 and $T/K =$	ent melting point to	emperature.	A eutectic
Author re molecular point occ x ₁ = 0.52	eports format compound ha urs at x ₁ = 0 and T/K =	Aving an incongru 0.637 and T/K = 387.7.	Nent melting point to 380.7, and a pertect	emperature.	A euţectic curs at
Author re molecular point occ $x_1 = 0.52$	ports format compound haurs at x ₁ = 0 and T/K =	Aving an incongru 0.637 and T/K = 387.7. AUXILIA	RY INFORMATION	emperature. ic point occ	A euţectic curs at
Author re molecular point occ $x_1 = 0.52$	ports format compound haurs at x ₁ = 0 and T/K =	Aving an incongru 0.637 and T/K = 387.7.	Nent melting point to 380.7, and a pertect	emperature. Lic point occ	A euţectic curs at
Author re molecular point occ $x_1 = 0.52$	ports format compound haurs at x ₁ = 0 and T/K =	Aving an incongru 0.637 and T/K = 387.7. AUXILIA	RY INFORMATION SOURCE AND PURIT (1) Purity and	emperature. ic point occ ry OF MATERIA chemical sound n paper. chemical sound chemical s	A euţectic curs at ALS: urce were not
Author re molecular point occ $x_1 = 0.52$	ports format compound haurs at x ₁ = 0 and T/K =	Aving an incongru 0.637 and T/K = 387.7. AUXILIA	RY INFORMATION SOURCE AND PURIT (1) Purity and specified i (2) Purity and	emperature. L'É point occ ry OF MATERIA chemical sou n paper. chemical sou n paper.	A euţectic curs at ALS: urce were not

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ONPONENTS:	·	ORIGINAL ME	Asurements:	
(1) Pyrene; C ₁₆ H ₁₀ ; [129-00)-0]	Shinomiya, C.		
<pre>(2) 1,3,5-Trinitrobenzene; C₆H₃N₃O₆; [99-35-4]</pre>		J. Chem. Soc. Japan <u>1940</u> , 15, 259-270.		
VARIABLES:		PREPARED BY:		
Temperature		W.E. Acree	, Jr.	
XPERIMENTAL VALUES				
T/K	*2	x _i	Solid Phase	
396.2	1.000	0.000	(2)	
420.2	0.950	0.050	1:1 Compound	
478.2	0.828	0.172	1:1 Compound	
478.2	0.826	0.174	1:1 Compound	
500.2	0.740	0.260	1:1 Commpound	
514.7	0.627	0.373	1:1 Compound	
518.7	0.514	0.486	1:1 Compound	
517.2	0.447	0.553	1:1 Compound	
508.7	0.321	0.679	1:1 Compound	
482.5	0.222	0.778	1:1 Compound	
466.7	0.160	0.840	1:1 Compound	
		0 075	1.1 Connound	
439.2	0.125	0.875	1:1 Compound	
423.2	0.000	1.000	(1) nitrobenzene reddish-orange e of 518.7 K. Two eutectic = 0.900 and T/K = 414.7.	
423.2	0.000	1.000	(1)	
423.2 Author reports formation molecular compound hav points occur at $x_1 = 0$	0.000 ion of a 1:1 pyr ying a melting p .020 and T/K = 3	1.000 ene - 1,3,5-tri pint temperatur 389.2, and at x 389.2, and at x	(1) nitrobenzene reddish-orange e of 518.7 K. Two eutectic T = 0.900 and $T/K = 414.7$.	
423.2 Author reports formation molecular compound hav points occur at x ₁ = 0	0.000 lon of a 1:1 pyr ing a melting p .020 and T/K = 3 AUXILIAN	1.000 ene - 1,3,5-tri pint temperatur 389.2, and at x 389.2, and at x source and source source and source	<pre>(1) nitrobenzene reddish-orange e of 518.7 K. Two eutectic = 0.900 and T/K = 414.7. PURITY OF MATERIALS:</pre>	
423.2 Author reports formation molecular compound hav points occur at $x_1 = 0$	0.000 lon of a 1:1 pyr ing a melting p .020 and T/K = 3 AUXILIAN	1.000 ene - 1,3,5-tri pint temperatur 389.2, and at x 389.2, and at x and at x seven temperatur and at x and at x at x at x at x at x at x at x at x	(1) nitrobenzene reddish-orange e of 518.7 K. Two eutectic T = 0.900 and $T/K = 414.7$.	
423.2 Author reports formation molecular compound hav points occur at x ₁ = 0	0.000 lon of a 1:1 pyr ing a melting p .020 and T/K = 3 AUXILIAN	1.000 ene - 1,3,5-tri oint temperatur 389.2, and at x 89.2, and at x second temperatur and the second second temperature (1) Purity specif (2) Purity	<pre>(1) nitrobenzene reddish-orange e of 518.7 K. Two eutectic 1 = 0.900 and T/K = 414.7. PURITY OF MATERIALS: and chemical source were not</pre>	
423.2 Author reports formation molecular compound hav points occur at x ₁ = 0	0.000 lon of a 1:1 pyr ing a melting p .020 and T/K = 3 AUXILIAN	1.000 ene - 1,3,5-tri oint temperatur 389.2, and at x 89.2, and at x second temperatur and the second second temperature (1) Purity specif (2) Purity	<pre>(1) nitrobenzene reddish-orange e of 518.7 K. Two eutectic 1 = 0.900 and T/K = 414.7. PURITY OF MATERIALS: and chemical source were not ied in paper. and chemical source were not ied in paper.</pre>	

COMPONENTS:		ORIGINAL ME	ASUREMENTS:	
(1) Pyrene; C ₁₆ H ₁₀ ; [12	9-00-01	Shinomiya,	с.	
(2) 1,2,3,5-Tetranitrobenzene; C ₆ H ₂ N ₄ O ₈ ; [3698-53-1]		J. Chem. Soc. Japan <u>1940</u> , 15, 259-270.		
/ARIABLES:		PREPARED BY:		
Temperature		W.E. Acree, Jr.		
EXPERIMENTAL VALUES		ļ		
T/K	*2	* 1	Solid Phase	
399.2	1.000	0.000	(2)	
398.2	0.904	0.096	1:1 Compound	
435.2	0.661	0.339	1:1 Compound	
439.7	0.594	0.406	1:1 Compound	
441.2	0.510	0.490	1:1 Compound	
441.2	0.503	0.497	1:1 Compound	
435.2	0.406	0.594	1:1 Compound	
431.2	0.380	0.620	1:1 Compound	
414.2	0.251	0.749	1:1 Compound	
400.2	0.205	0.795	1:1 Compound	
			(1)	
403.2	0.162	0.838	(+)	
420.2 423.2 Author reports for molecular compound	0.042 0.000 mation of a 1:1 pyr having a melting p	0.958 1.000 cene - 1,2,3,5-to point temperature	<pre>(1) (1) (1) etranitrobenzene dark red e of 441.7 K. Two eutectic = 0.810 and T/K = 398.2.</pre>	
420.2 423.2 Author reports for molecular compound	0.042 0.000 mation of a 1:1 pyr having a melting p	0.958 1.000 cene - 1,2,3,5-to point temperature	(1) (1) etranitrobenzene dark red e of 441.7 K. Two eutectic	
420.2 423.2 Author reports for molecular compound points occur at x ₁	0.042 0.000 mation of a 1:1 pyr having a melting p = 0.085 and T/K = AUXILIA	0.958 1.000 Tene - 1,2,3,5-tr point temperature 395.2, and at x ₁ 395.2, and at x ₁ RY INFORMATION	<pre>(1) (1) atranitrobenzene dark red of 441.7 K. Two eutectic = 0.810 and T/K = 398.2.</pre>	
420.2 423.2 Author reports for molecular compound points occur at x ₁	0.042 0.000 mation of a 1:1 pyr having a melting p = 0.085 and T/K = AUXILIA	0.958 1.000 Tene - 1,2,3,5-tr point temperature 395.2, and at x ₁ 395.2, and at x ₁ RY INFORMATION	(1) (1) etranitrobenzene dark red e of 441.7 K. Two eutectic	
420.2 423.2 Author reports for molecular compound points occur at x ₁	0.042 0.000 mation of a 1:1 pyr having a melting p = 0.085 and T/K = AUXILIA	0.958 1.000 Tene - 1,2,3,5-to point temperature 395.2, and at x ₁ 395.2, and at x ₁ RY INFORMATION SOURCE AND H (1) Purity	<pre>(1) (1) atranitrobenzene dark red of 441.7 K. Two eutectic = 0.810 and T/K = 398.2.</pre>	
420.2 423.2 Author reports for molecular compound points occur at x ₁	0.042 0.000 mation of a 1:1 pyr having a melting p = 0.085 and T/K = AUXILIA	0.958 1.000 Tene - 1,2,3,5-to point temperature 395.2, and at x ₁ 395.2, and at x ₁ RY INFORMATION SOURCE AND E (1) Purity specifi (2) Purity	<pre>(1) (1) (1) etranitrobenzene dark red e of 441.7 K. Two eutectic = 0.810 and T/K = 398.2. PURITY OF MATERIALS: and chemical source were not</pre>	
420.2 423.2 Author reports for molecular compound points occur at x ₁	0.042 0.000 mation of a 1:1 pyr having a melting p = 0.085 and T/K = AUXILIA	0.958 1.000 Tene - 1,2,3,5-to point temperature 395.2, and at x ₁ 395.2, and at x ₁ RY INFORMATION SOURCE AND E (1) Purity specifi (2) Purity	<pre>(1) (1) (1) atranitrobenzene dark red a of 441.7 K. Two eutectic = 0.810 and T/K = 398.2. PURITY OF MATERIALS: and chemical source were not led in paper. and chemical source were not led in paper.</pre>	

		ORIGINAL ME	ASUREMENTS:	
(1) Pyrene; C ₁₆ H ₁₀ ; [129	-00-01	Shinomiya,	с.	
<pre>(1) 7; 121, 12, 12, 12, 12, 12, 12, 12, 12, 12</pre>		J. Chem. Soc. Japan <u>1940</u> , 15, 259-270.		
VARIABLES:		PREPARED BY:		
Temperature		W.E. Acree,	, Jr.	
EXPERIMENTAL VALUES				
T/K	*2	*1	Solid Phase	
344.2	1.000	0.000	(2)	
333.7	0.823	0.178	(2)	
337.2	0.788	0.212	1:1 Compound	
342.2	0.758	0.242	1:1 Compound	
355.2	0.689	0.311	1:1 Compound	
358.7	0.641	0.359	1:1 Compound	
363.5	0.583	0.417	1:1 Compound	
365.2	0.519	0.481	1:1 Compound	
365.7	0.506	0.494	1:1 Compound	
364.0	0.449	0.551	(1)	
379.7	0.382	0.618	(1)	
394.2	0.270	0.730	(1)	
397.7	0.242	0.758	(1)	
415.7	0.098	0.902	(1)	
413+/	01030	0.902	(1)	
423.7 Author reports form	0.000 ation of a 1:1 pyre	1.000 ene - 2,4-dinitr	(1)	
423.7 Author reports form	0.000 ation of a 1:1 pyre	1.000 ene - 2,4-dinitr	(1)	
423.7 Author reports form molecular compound points occur at x_1 =	0.000 ation of a 1:1 pyre having a melting po = 0.197 and T/K = 3 AUXILIAR	1.000 ene - 2,4-dinitr Dint temperature 30.7, and at x ₁	<pre>(1) romethylbenzene yellow > of 365.7 K. Two eutectic = 0.544 and T/K = 362.2.</pre>	
423.7 Author reports form molecular compound points occur at x ₁ =	0.000 ation of a 1:1 pyre having a melting po = 0.197 and T/K = 3 AUXILIAR	1.000 ene - 2,4-dinitr Joint temperature 30.7, and at x ₁ 30.7 VINFORMATION SOURCE AND F (1) Purity	(1)	
423.7 Author reports form molecular compound points occur at x ₁ =	0.000 ation of a 1:1 pyre having a melting po = 0.197 and T/K = 3 AUXILIAR	1.000 ene - 2,4-dinitr Joint temperature 30.7, and at x ₁ 30.7 Viet of the second source and P (1) Purity specifi (2) Purity	<pre>(1) comethylbenzene yellow a of 365.7 K. Two eutectic = 0.544 and T/K = 362.2. PURITY OF MATERIALS: and chemical source were not</pre>	
423.7 Author reports form	0.000 ation of a 1:1 pyre having a melting po = 0.197 and T/K = 3 AUXILIAR	1.000 ene - 2,4-dinitr Joint temperature 30.7, and at x ₁ 30.7 Viet of the second source and P (1) Purity specifi (2) Purity	<pre>(1) romethylbenzene yellow a of 365.7 K. Two eutectic = 0.544 and T/K = 362.2. PURITY OF MATERIALS: and chemical source were not .ed in paper. and chemical source were not .ed in paper.</pre>	

Components :		ORIGINAL ME	ASUREMENTS:		
(1) Pyrene; C ₁₆ H ₁₀ ; [129-00-0	נס	Shinomiya,	Shinomiya, C.		
(2) 2,4-Dinitrophenol; C ₆ H ₄ N ₂ O ₅ ; [51-28-5] VARIABLES:		J. Chem. Soc. Japan <u>1940</u> , 15, 259-270.			
		PREPARED BY:			
Temperature		W.E. Acree, Jr.			
EXPERIMENTAL VALUES					
T/K	<i>x</i> ₂	x 1	Solid Phase		
386.7	1.000	0.000	(2)		
382.2	0.924	0.076	(2)		
386.2	0.805	0.195	1:1 Compound		
416.2	0.610	0.390	1:1 Compound		
419.2	0.530	0.470	1:1 Compound		
419.7	0.506	0.494	1:1 Compound		
419.2	0.456	0.544	1:1 Compound		
418.2	0.448	0.552	1:1 Compound		
407.7	0.335	0.665	1:1 Compound		
405.7	0.180	0.820	(1)		
416.2	0.077	0.923	(1)		
			(-)		
423.2 Author reports formation molecular compound havin points occur at $x_1 = 0.1$	ng a melting p	oint temperature	<pre>(1) cophenol reddish-orange of 419.5 K. Two eutectic = 0.736 and T/K = 393.2.</pre>		
Author reports formation molecular compound having	n of a l:l pyr ng a melting p	ene - 2,4-dinitr oint temperature	cophenol reddish-orange of 419.5 K. Two eutectic		
Author reports formation molecular compound havin points occur at $x_1 = 0.1$	n of a 1:1 pyr ng a melting p 56 and T/K = 5	ene - 2,4-dinitr oint temperature 374.2, and at x ₁	cophenol reddish-orange of 419.5 K. Two eutectic		
Author reports formation molecular compound havir points occur at $x_1 = 0.1$	A of a 1:1 pyr ng a melting p 56 and T/K = 56 and T/K = AUXILIA	ene - 2,4-dinitr oint temperature 374.2, and at x ₁ RY INFORMATION SOURCE AND P	URITY OF MATERIALS:		
Author reports formation molecular compound havir points occur at $x_1 = 0.1$ ETHOD: APPARATUS/PROCEDURE	A of a 1:1 pyr ng a melting p 56 and T/K = 56 and T/K = AUXILIA	ene - 2,4-dinitr oint temperature 374.2, and at x ₁ RY INFORMATION SOURCE AND P (1) Purity specifi (2) Purity	rophenol reddish-orange a of 419.5 K. Two eutectic = 0.736 and T/K = 393.2.		
Author reports formation molecular compound havin	A of a 1:1 pyr ng a melting p 56 and T/K = 56 and T/K = AUXILIA	ene - 2,4-dinitr oint temperature 374.2, and at x ₁ RY INFORMATION SOURCE AND P (1) Purity specifi (2) Purity specifi	URITY OF MATERIALS: and chemical source were not ed in paper.		
Author reports formation molecular compound havir points occur at $x_1 = 0.1$ ETHOD: APPARATUS/PROCEDURE	A of a 1:1 pyr ng a melting p 56 and T/K = 56 and T/K = AUXILIA	ene - 2,4-dinitr oint temperature 374.2, and at x ₁ RY INFORMATION SOURCE AND P (1) Purity specifi (2) Purity specifi ESTIMATED ER	URITY OF MATERIALS: and chemical source were not ed in paper.		

	·····	ORTGINAL ME	ASIIREMENTS:				
COMPONENTS: (1) Pyrene; C ₁₆ H ₁₀ ; [129-00-0]		ORIGINAL MEASUREMENTS: Shinomiya, C.					
<pre>(1) Fyrene; C₁₆n₁₀; [129-00-0] (2) 2,4,6-Trinitromethylbenzene;</pre>		Shinomiya, C. J. Chem. Soc. Japan <u>1940</u> , 15, 259-270.					
(2) 2,4,6-frintfomethylbenzene; C ₇ H ₅ N ₃ O ₆ ; [118-96-7] VARIABLES: Temperature		D. Chem. Soc. Japan 1940 13, 259-270. PREPARED BY:					
				EXPERIMENTAL VALUES			
				T/K	×2	<i>x</i> 1	Solid Phase
354.7	1.000	0.000	(2)				
354.2	0.944	0.056	1:1 Compound				
375.2	0.890	0.110	1:1 Compound				
400.2	0.835	0.165	1:1 Compound				
408.7	0.790	0.210	1:1 Compound				
417.2	0.741	0.259	1:1 Compound				
417.2			-				
	0.670	0.330	1:1 Compound				
436.2	0.550	0.450	1:1 Compound				
437.7	0.482	0.518	1:1 Compound				
436.7	0.431	0.569	1:1 Compound				
427.2	0.315	0.685	1:1 Compound				
415.7	0.239	0.761	1:1 Compound				
405.2	0.156	0.844	(2)				
421.2	0.029	0.971	(2)				
molecular compound	having a melting po	int temperature	nitromethylbenzene orange e of 437.7 K. Two eutectic = 0.812 and T/K = 399.2.				
	AUXILIAR	Y INFORMATION					
ETHOD: APPARATUS/PROCED			PURITY OF MATERIALS:				
ETHOD: APPARATUS/PROCED No experimental details	URE	SOURCE AND F	PURITY OF MATERIALS: and chemical source were not ed in paper.				
TETHOD: APPARATUS/PROCED	URE	SOURCE AND F (1) Purity specifi (2) Purity	and chemical source were not				
•	URE	SOURCE AND F (1) Purity specifi (2) Purity	and chemical source were not ed in paper. and chemical source were not ed in paper.				

Components:		ORIGINAL MEASUREMENTS:		
(1) Pyrene; C ₁₆ H ₁₀ ; [129-00-0]		Shinomiya, C.		
(2) 2,4,6-Trinitromethoxybenzene; C ₇ H ₅ N ₃ O ₇ ; [606-35-9]		J. Chem. Soc. Japan <u>1940</u> , 15, 259-270.		
VARIABLES:		PREPARED BY:		
Temperature EIPERIMENTAL VALUES		W.E. Acree, Jr.		
T/K	*2	x 1	Solid Phase	
341.2	1.000	0.000	(2)	
356.2	0.867	0.133	1:1 Compound	
365.2	0.796	0.204	1:1 Compound	
365.7	0.782	0.218	1:1 Compound	
373.2	0.660	0.340	1:1 Compound	
376.2	0.569	0.431	1:1 Compound	
377.2	0.532	0.468	1:1 Compound	
377.7	0.471	0.529	1:1 Compound	
377.7	0.376	0.624	(1)	
385.2	0.346	0.654	(1)	
401.2	0.222	0.778	(1)	
413.7	0.125	0.875	(1)	
423.2 Author reports forma orange compound havi	0.000 tion of a 1:1 pyr ng a melting poin	1.000 ene - 2,4,6-trin t temperature of	<pre>(1) (1) itromethoxybenzene yellowish- 377.7 K. Two eutectic = 0.605 and T/K = 371.7.</pre>	
423.2 Author reports forma orange compound havi	0.000 tion of a 1:1 pyr ng a melting poin	1.000 ene - 2,4,6-trin t temperature of	(1) hitromethoxybenzene yellowish- 5 377.7 K. Two eutectic	
423.2 Author reports forma orange compound havin points occur at x ₁ =	0.000 tion of a 1:1 pyr ng a melting poin 0.030 and T/K = 3	1.000 ene - 2,4,6-trin t temperature of 333.7, and at x ₁	<pre>(1) hitromethoxybenzene yellowish- 5 377.7 K. Two eutectic = 0.605 and T/K = 371.7.</pre>	
423.2 Author reports formatorange compound having points occur at x ₁ =	0.000 tion of a 1:1 pyr ng a melting poin 0.030 and T/K = 3 AUXILIAN	1.000 ene - 2,4,6-trin t temperature of 333.7, and at x ₁ RY INFORMATION SOURCE AND F (1) Purity	(1) hitromethoxybenzene yellowish- 5 377.7 K. Two eutectic	
423.2 Author reports formatorange compound having points occur at x ₁ =	0.000 tion of a 1:1 pyr ng a melting poin 0.030 and T/K = 3 AUXILIAN	1.000 ene - 2,4,6-trin t temperature of 333.7, and at x ₁ RY INFORMATION SOURCE AND F (1) Purity specifi (2) Purity	<pre>(1) hitromethoxybenzene yellowish- 2 377.7 K. Two eutectic = 0.605 and T/K = 371.7. URITY OF MATERIALS: and chemical source were not</pre>	
423.2 Author reports forma orange compound havi	0.000 tion of a 1:1 pyr ng a melting poin 0.030 and T/K = 3 AUXILIAN	1.000 ene - 2,4,6-trin t temperature of 333.7, and at x ₁ RY INFORMATION SOURCE AND F (1) Purity specifi (2) Purity	<pre>(1) hitromethoxybenzene yellowish- 5 377.7 K. Two eutectic = 0.605 and T/K = 371.7. URITY OF MATERIALS: and chemical source were not ed in paper. and chemical source were not ed in paper.</pre>	

		ORIGINAL ME	ASUREMENTS:	
COMPONENTS: (1) Pyrene; C ₁₆ H ₁₀ ; [129-00-0]		ORIGINAL MEASUREMENTS: Shinomiya, C.		
 Pyrene; C₁₆H₁₀; [129-00-0] (2) 2,4,6-Trinitroaniline; C₆H₂N₃O₆; 		J. Chem. Soc. Japan <u>1940</u> , 15, 259-270.		
<pre>(2) 2,4,6-Trinitroaniline; C₆H₄N₃O₆; [489-98-5]</pre>		J. Chem. Soc. Japan <u>1340</u> , 13, 239-270.		
VARIABLES:		PREPARED BY:		
Temperature		W.E. Acree, Jr.		
PERIMENTAL VALUES				
<i>t/</i> K	*2	x 1	Solid Phase	
461.7	1.000	0.000	(2)	
468.7	0.834	0.166	1:1 Compound	
486.7	0.731	0.269	1:1 Compound	
504.2	0.614	0.386	1:1 Compound	
509.2	0.497	0.503	1:1 Compound	
508.7	0.480	0.520	1:1 Compound	
505.5	0.377	0.623	1:1 Compound	
501.7	0.346	0.654	1:1 Compound	
486.2	0.262	0.738	1:1 Compound	
472.2	0.186	0.814	1:1 Compound	
447.2	0.118	0.882	1:1 Compound	
442.2	0.085	0.915	1:1 Compound	
418.2	0.053	0.947	(1)	
423.2 Author reports forma molecular compound h	aving a melting po	oint temperature	(1) nitroaniline brown e of 509.2 K. Two eutectic	
423.2 Author reports forma molecular compound h	tion of a 1:1 pyre aving a melting po	ene - 2,4,6-trip Dint temperature	(1) nitroaniline brown	
423.2 Author reports forma molecular compound h	tion of a 1:1 pyre aving a melting po 0.122 and $T/K = 4$	ene - 2,4,6-trip Dint temperature	(1) nitroaniline brown e of 509.2 K. Two eutectic	
423.2 Author reports forma molecular compound h points occur at x ₁ =	AUXILIAR	ene - 2,4,6-trin bint temperature 53.7, and at x ₁ S3.7 View of the second sec	(1) nitroaniline brown e of 509.2 K. Two eutectic	
423.2 Author reports forma molecular compound h points occur at x ₁ =	AUXILIAF	AND PARTY OF THE STATE OF THE S	<pre>(1) nitroaniline brown s of 509.2 K. Two eutectic = 0.920 and T/K = 412.7.</pre>	
423.2 Author reports forma molecular compound h points occur at x ₁ =	AUXILIAF	AND PARTICLE AND PARTICLE AND PARTICLE AND PARTICLE AND PARTICLE AND PARTICLE (1) Purity Specifi (2) Purity	<pre>(1) nitroaniline brown s of 509.2 K. Two eutectic = 0.920 and T/K = 412.7. PURITY OF MATERIALS: and chemical source were not</pre>	
423.2 Author reports forma molecular compound h	AUXILIAF	AND PARTICLE AND PARTICLE AND PARTICLE AND PARTICLE AND PARTICLE AND PARTICLE (1) Purity Specifi (2) Purity	<pre>(1) nitroaniline brown e of 509.2 K. Two eutectic = 0.920 and T/K = 412.7. PURITY OF MATERIALS: and chemical source were not led in paper. and chemical source were not led in paper.</pre>	

COMPONENTS :		ORIGINAL MEASUREMENTS:	
(1) Pyrene; C ₁₆ H ₁₀ ; [129-00-0]		Shinomiya, C.	
(2) 2-Chloro-1,3,5-trinitrobenzene; C ₆ H ₂ ClN ₃ O ₆ ; [88-88-0]		J. Chem. Soc. Japan <u>1940</u> , 15, 259-270.	
VARIABLES:		PREPARED BY:	
Temperature		W.E. Acree, Jr.	
EXPERIMENTAL VALUES			
T/K	*2	* 1	
356.2	1.000	0.000	
352.2	0.913	0.087	
401.7	0.776	0.224	
418.2	0.700	0.300	
425.2	0.570	0.430	
426.7	0.509	0.491	
423.2	0.426	0.574	
409.2	0.301	0.699	
407.7	0.188	0.712	
417.0	0.090	0.910	
423.2 Author reports format red compound having a	melting point of	1.000 ene - 2-chloro-1,3,5-trinitrobenzene brownish- f 427.2 K. Two eutectic points occur at = 0.770 and T/K = 398.2.	
423.2 Author reports format red compound having a	ion of a 1:1 pyre melting point o	ene - 2-chloro-1,3,5-trinitrobenzene brownish- f 427.2 K. Two eutectic points occur at	
423.2 Author reports format red compound having a $x_1 = 0.080$ and $T/K = 1$	ion of a 1:1 pyre melting point of 346.7, and at x ₁	ene - 2-chloro-1,3,5-trinitrobenzene brownish- f 427.2 K. Two eutectic points occur at = 0.770 and T/K = 398.2.	
423.2 Author reports format red compound having a x ₁ = 0.080 and T/K = 1	ion of a 1:1 pyra melting point or 346.7, and at x ₁ 346.7, and at x ₁ 346.7, and at x ₁	ene - 2-chloro-1,3,5-trinitrobenzene brownish- f 427.2 K. Two eutectic points occur at = 0.770 and T/K = 398.2.	
423.2 Author reports format red compound having a x ₁ = 0.080 and T/K = 1	ion of a 1:1 pyra melting point or 346.7, and at x ₁ 346.7, and at x ₁ 346.7, and at x ₁	ene - 2-chloro-1,3,5-trinitrobenzene brownish- f 427.2 K. Two eutectic points occur at = 0.770 and T/K = 398.2.	
423.2 Author reports format red compound having a x ₁ = 0.080 and T/K = 1	ion of a 1:1 pyra melting point or 346.7, and at x ₁ 346.7, and at x ₁ 346.7, and at x ₁	AND PURITY OF MATERIALS: (1) Purity and chemical source were not	
423.2 Author reports format red compound having a	ion of a 1:1 pyra melting point on 346.7, and at x ₁ 346.7, and at x ₁ 346.7, and at x ₁ 346.7, and at x ₁	AND PURITY OF MATERIALS: (1) Purity and chemical source were not specified in paper. (2) Purity and chemical source were not	

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Pyrene; C ₁₆ H ₁₀ ; [129-00-0]	Krajewska, A.; Wasilewska, K.
<pre>(2) 2-Chloro-1,3,5-trinitrobenzene; C₆H₂ClN₃O₆; [88-88-0]</pre>	Thermochim. Acta <u>1981</u> , 44, 117-120.
VARIABLES:	PREPARED BY:
	W.E. Acree, Jr.
EXPERIMENTAL VALUES	
Authors report that the binary system	exhibits a fairly simple phase diagram.
A 1:1 pyrene - 2-chloro-1,3,5-trinitro	benzene molecular compound with melting point
of $T/K = 429$, and an incongruently mel	ting 3:2 pyrene - 2-chloro-1,3,5-trinitro-
benzene molecular compound were observ	red.
AUXILIAF	Y INFORMATION
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:
Differential scanning calorimeter and thermostated light microscope.	 Purity and chemical source were not specified in paper.
Binary mixtures were prepared by weight. Melting point temperatures and phase	(2) Purity and chemical source were not specified in paper.
diagram determined using differential scanning calorimetric and microscopic techniques.	
scanning calorimetric and microscopic	ESTIMATED ERRORS:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Pyrene; C ₁₆ H ₁₀ ; [129-00-0]	Bando, M.; Matsunaga, Y.
(2) 2-Chloro-1,3,5-trinitrobenzene; C ₆ H ₂ ClN ₃ O ₆ ; [88-88-0]	Bull. Chem. Soc. Japan <u>1976</u> , 49, 3345- 3346.
VARIABLES:	PREPARED BY:
	W.E. Acree, Jr.

EXPERIMENTAL VALUES

Authors report formation of a 1:1 pyrene - 2-chloro-1,3,5-trinitrobenzene molecular compound having a melting point of 427.2 K. An eutectic point occurs at $x_1 = 0.120$ and T/K = 348.2. Four incongruently melting pyrene - 2-chloro-1,3,5-trinitrobenzene compounds with 4:3, 2:1, 3:1 and 4:1 stoichoimetries were also reported to exist.

AUXILIARY INFORMATION		
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:	
Differential scanning calorimeter.	 Purity and chemical source were not specified in paper. 	
Binary mixtures were prepared by weight. Melting points and transition tempera- tures determined using a differential scanning calorimeter	(2) Purity and chemical source were not specified in paper.	
An experimental phase diagram is given in the original paper.	ESTIMATED ERRORS: T/K : precision \pm 0.1 (Compiler). x_{1} : \pm 0.002 (Compiler).	

COMPONENTS :		ORIGINAL ME	ASUREMENTS:	
(1) Pyrene; C ₁₆ H ₁₀ ; [129-00-0]		Shinomiya, C.		
(2) 3-Methyl-2,4,6-trinitrophenol;		J. Chem. Soc. Japan <u>1940</u> , 15, 259-270.		
C ₇ H ₅ N ₃ O ₇ ; [602-99-3]				
/ARIABLES:		PREPARED BY:		
Temperature		W.E. Acree, Jr.		
EXPERIMENTAL VALUES				
T/K	*2	* 1	Solid Phase	
381.7	1.000	0.000	(2)	
405.7	0.847	0.153	1:1 Compound	
420.2	0.754	0.246	1:1 Compound	
426.7	0.699	0.301	1:1 Compound	
434.2	0.578	0.422	1:1 Compound	
436.2	0.529	0.471	1:1 Compound	
434.2	0.449	0.551	1:1 Compound	
425.2	0.290	0.710	1:1 Compound	
421.2	0.235	0.765	1:1 Compound	
413.2	0.109	0.891	(1)	
423.2 Author reports form brown compound hav: $x_1 = 0.075$ and T/K	ing a melting point	of 436.2 K. Tu	<pre>(1) 2,4,6-trinitrophenol reddish- wo eutectic points occur at 1 = 408.2.</pre>	
Author reports for brown compound hav:	mation of a 1:1 pyre ing a melting point	ene - 3-methyl-: of 436.2 K. Tu	2,4,6-trinitrophenol reddish- wo eutectic points occur at	
Author reports for brown compound hav $x_1 = 0.075$ and T/K	<pre>mation of a 1:1 pyr4 ing a melting point = 374.2, and at x1 AUXILLIAR</pre>	ene - 3-methyl-: of 436.2 K. Tr = 0.848 and T/K	2,4,6-trinitrophenol reddish- wo eutectic points occur at = 408.2.	
Author reports for brown compound hav $x_1 = 0.075$ and T/K	<pre>mation of a 1:1 pyr4 ing a melting point = 374.2, and at x1 AUXILIAR WURE</pre>	ene - 3-methyl-: of 436.2 K. Tr = 0.848 and T/K NY INFORMATION SOURCE AND F	2,4,6-trinitrophenol reddish- wo eutectic points occur at = 408.2.	
Author reports for brown compound hav x ₁ = 0.075 and T/K	<pre>mation of a 1:1 pyr4 ing a melting point = 374.2, and at x1 AUXILIAR WURE</pre>	ene - 3-methyl-: of 436.2 K. Ty = 0.848 and T/K N INFORMATION SOURCE AND F (1) Purity	2,4,6-trinitrophenol reddish- wo eutectic points occur at = 408.2.	
Author reports for brown compound hav:	<pre>mation of a 1:1 pyr4 ing a melting point = 374.2, and at x1 AUXILIAR WURE</pre>	ene - 3-methyl-: of 436.2 K. Tr = 0.848 and T/K X INFORMATION SOURCE AND F (1) Purity specifi (2) Purity	2,4,6-trinitrophenol reddish- wo eutectic points occur at = 408.2. PURITY OF MATERIALS: and chemical source were not	
Author reports for brown compound hav x ₁ = 0.075 and T/K	<pre>mation of a 1:1 pyr4 ing a melting point = 374.2, and at x1 AUXILIAR WURE</pre>	ene - 3-methyl-: of 436.2 K. Tr = 0.848 and T/K X INFORMATION SOURCE AND F (1) Purity specifi (2) Purity	2,4,6-trinitrophenol reddish- wo eutectic points occur at = 408.2. PURITY OF MATERIALS: and chemical source were not ed in paper. and chemical source were not ed in paper.	

300		
Components:	ORIGINAL MEASUREMENTS:	
(1) Pyrene; C ₁₆ H ₁₀ ; [129-00-0]	Zvaigzne, A.I.; Acree, W.E., Jr.	
(2) n-Hexane; C ₆ H ₁₄ ; [110-54-3]	J. Chem. Eng. Data <u>1993</u> , 38, 393-395.	
(3) 1-Propanol; C ₃ H ₈ O; [71-23-8]		
VARIABLES:	PREPARED BY:	
T/K = 299, Solvent composition	W.E. Acree, Jr. and A.I. Zvaigzne	
EXPERIMENTAL VALUES ^a t = 26.0 °C		
x3 ^(s) x3	x ₁	
0.0000 0.0000	0.00857	
0.1727 0.1711	0.00944	
0.3063 0.3036	0.00895	
0.5431 0.5388	0.00787	
0.6400 0.6353	0.00728	
0.7258 0.7209	0.00669	
0.8734 0.8686	0.00545	
0.9338 0.9292	0.00490	
1.0000 0.9957	0.00426	
AUXILIARY	INFORMATION	
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:	
Constant temperature bath, calorimetric thermometer, and an ultraviolet/visible spectrophotometer. Binary solvent mixtures were prepared by weight. Excess solute and solvent placed in amber glass bottles and allowed to equilibrate for several days at constant temperature. Attainment of equilibrium was verified by several repetitive measurements and by approaching equili- brium from supersaturation. Aliquots of saturated solutions transferred through a coarse filter into tared volumetric flasks, weighed and diluted with methanol. Concentrations determined spectrophoto- metrically at 372 nm.	 (1) 99 %, Aldrich Chemical Company, Milwaukee, Wisconsin, USA, recrystallized 3 times from absolute ethanol. (2) 99+ %, Aldrich Chemical Company. (3) 99+ %, anhydrous, Aldrich Chemical Company. Components 2 and 3 were stored over molecular sieves and distilled shortly before use. 	
	ESTIMATED ERRORS: $T/K: \pm 0.05.$ $x_3^{(s)}: \pm 0.0001.$ $x_1: \pm 1.5$ % (relative error).	

Components :		ORIGINAL MEASUREMENTS:	
(1) Pyrene; C ₁₆ H ₁₀ ; [129-00-0]		Zvaigzne, A.I.; Acree, W.E., Jr.	
(2) n-Heptane; C ₇ H ₁₆ ; [142-82-5]		J. Chem. Eng. Data <u>1993</u> , 38, 393-395.	
(3) 1-Propanol; C ₃ H ₈ O; [71-23-8]			
VARIABLES:		PREPARED BY:	
T/K = 299, Solvent composition		W.E. Acree, Jr. and A.I. Zvaigzne	
EXPERIMENTAL VALU t = 26.0 °C	ies ^a	4	
x3 ⁽⁵⁾	x 3	×1	
0.0000	0.0000	0.01102	
0.1927	0.1905	0.01154	
0.3280	0.3244	0.01089	
0.5599	0.5548	0.00916	
0.6656	0.6602	0.00814	
0.7383	0.7329	0.00734	
0.8810	0.8760	0.00568	
0.9416	0.9369	0.00495	
1.0000 ^a x ₃ ^(s) : init: fraction sol the ternary	0.9957 ial mole fraction of binary ubility of the solute; x ₃ : r solution.	0.00426 solvent mixture; x ₁ : mole mole fraction of component 3 in	
^a x ₃ ^(s) : init: fraction sol	ial mole fraction of binary ubility of the solute; x_3 :	solvent mixture; x.: mole	
^a x ₃ ^(s) : init: fraction sol	ial mole fraction of binary ubility of the solute; x ₃ : r solution.	solvent mixture; x.: mole	
a x3 ^(s) : init: fraction sol the ternary	ial mole fraction of binary ubility of the solute; x ₃ : r solution. AUXILIARY	Bolvent mixture; x ₁ : mole mole fraction of component 3 in	
a x3 ^(s) : init: fraction sol the ternary the ternary ETHOD: APPARATUS Constant tempera	ial mole fraction of binary ubility of the solute; x ₃ : r solution. AUXILIARY /PROCEDURE ture bath, calorimetric an ultraviolet/visible	Solvent mixture; x ₁ : mole mole fraction of component 3 in INFORMATION SOURCE AND PURITY OF MATERIALS:	
a _{X3} (s); init: fraction sol the ternary the ternary ETHOD: APPARATUS Constant tempera thermometer, and spectrophotomete: Binary solvent m weight. Excess so in amber glass bo equilibrate for	ial mole fraction of binary ubility of the solute; x ₃ : r solution. AUXILIARY /PROCEDURE ture bath, calorimetric an ultraviolet/visible r. ixtures were prepared by olute and solvent placed ottles and allowed to several days at constant	Solvent mixture; x ₁ : mole mole fraction of component 3 in INFORMATION SOURCE AND PURITY OF MATERIALS: (1) 99 %, Aldrich Chemical Company, Milwau- kee, Wisconsin, USA, recrystallized 3 times from absolute ethanol. (2) HPLC Grade, 99.7+ %, Aldrich Chemical Company.	
<pre>a x₃^(s): init: fraction sol the ternary the ternary ETHOD: APPARATUS Constant temperat thermometer, and spectrophotomete: Binary solvent m weight. Excess so in amber glass bo equilibrate for temperature. At was verified by measurements and brium from super: saturated solution a coarse filter flasks, weighed a Concentrations do</pre>	AUXILIARY AUXILIARY /PROCEDURE ture bath, calorimetric an ultraviolet/visible r. ixtures were prepared by olute and solvent placed ottles and allowed to several days at constant tainment of equilibrium several repetitive by approaching equili- saturation. Aliquots of ons transferred through into tared volumetric and diluted with methanol. etermined spectrophoto-	<pre>Bolvent mixture; x₁: mole mole fraction of component 3 in INFORMATION SOURCE AND PURITY OF MATERIALS: (1) 99 %, Aldrich Chemical Company, Milwau- kee, Wisconsin, USA, recrystallized 3 times from absolute ethanol. (2) HPLC Grade, 99.7+ %, Aldrich Chemical</pre>	
a x3 ^(s) : init: fraction sol the ternary (ETHOD: APPARATUS Constant tempera thermometer, and spectrophotometer Binary solvent m weight. Excess so in amber glass b equilibrate for temperature. At was verified by measurements and brium from super saturated solution a coarse filter flasks, weighed of	AUXILIARY AUXILIARY /PROCEDURE ture bath, calorimetric an ultraviolet/visible r. ixtures were prepared by olute and solvent placed ottles and allowed to several days at constant tainment of equilibrium several repetitive by approaching equili- saturation. Aliquots of ons transferred through into tared volumetric and diluted with methanol. etermined spectrophoto-	<pre>Bolvent mixture; x₁: mole mole fraction of component 3 in INFORMATION SOURCE AND PURITY OF MATERIALS: (1) 99 %, Aldrich Chemical Company, Milwau- kee, Wisconsin, USA, recrystallized 3 times from absolute ethanol. (2) HPLC Grade, 99.7+ %, Aldrich Chemical Company. (3) 99+ %, anhydrous, Aldrich Chemical Company. (3) 99+ %, anhydrous, Aldrich Chemical Company. Components 2 and 3 were stored over molecular sieves and distilled shortly</pre>	

		ORIGINAL MEASUREMENTS:	
COMPONENTS: (1) Pyrene; C ₁₆ H ₁₀ ; [129-00-0]			
10		Zvaigzne, A.I.; Acree, W.E., Jr.	
(2) n-Octane; C ₈		J. Chem. Eng. Data <u>1993</u> , 38, 393-395.	
(3) 1-Propanol;	C ₃ H ₈ O; [71-23-8]		
VARIABLES:		PREPARED BY:	
T/K = 299, Solvent composition		W.E. Acree, Jr. and A.I. Zvaigzne	
EXPERIMENTAL VALUE $t = 26.0$ °C	JES ⁸		
x ₃ ^(s)	x3	×1	
0,0000	0.0000	0.01372	
0.1959	0.1932	0.01389	
0.3597	0.3552	0.01261	
0.5930	0.5869	0.01022	
0.6798	0.6736	0.00910	
0.7584	0.7523	0.00800	
0.8873	0.8819	0.00612	
0.9504	0.9456	0.00507	
1.0000	0.9957	0.00426	
$x_3^{(5)}$; init fraction sol the ternary	ial mole fraction of binary ubility of the solute; x_3 : r solution.	solvent mixture; x ₁ : mole mole fraction of component 3 in	
fraction sol	lubility of the solute; x _i : n	solvent mixture; x ₁ : mole mole fraction of component 3 in	
fraction sol	ubility of the solute; x ₃ : r solution.	solvent mixture; x ₁ : mole mole fraction of component 3 in INFORMATION	
fraction sol the ternary	Lubility of the solute; x ₃ : r solution. AUXILIARY	nole fraction of component 3 in	
fraction sol the ternary METHOD: APPARATUS Constant tempera thermometer, and spectrophotomete	AUXILIARY S/PROCEDURE ature bath, calorimetric an ultraviolet/visible br.	NOLE fraction of component 3 in INFORMATION SOURCE AND PURITY OF MATERIALS:	
fraction sol the ternary METHOD: APPARATUS Constant tempera thermometer, and spectrophotomete Binary solvent m weight. Excess a in amber glass b	AUXILIARY S/PROCEDURE AUXILIARY S/PROCEDURE Auxiliary S/PROCEDURE S/S/S/S/S/S/S/S/S/S/S/S/S/S/S/S/S/S/S/	INFORMATION SOURCE AND PURITY OF MATERIALS: (1) 99 %, Aldrich Chemical Company, Milwau kee, Wisconsin, USA, recrystallized 3	
fraction sol the ternary METHOD: APPARATUS Constant tempera thermometer, and spectrophotomete Binary solvent m weight. Excess s in amber glass b equilibrate for temperature. At was verified by	AUXILIARY AUXILIARY S/PROCEDURE ature bath, calorimetric an ultraviolet/visible er. bixtures were prepared by iolute and solvent placed bottles and allowed to several days at constant ttainment of equilibrium several repetitive	INFORMATION SOURCE AND PURITY OF MATERIALS: (1) 99 %, Aldrich Chemical Company, Milwau kee, Wisconsin, USA, recrystallized 3 times from absolute ethanol. (2) 99+ %, anhydrous, Aldrich Chemical	
fraction sol the ternary METHOD: APPARATUS Constant tempera thermometer, and spectrophotomete Binary solvent m weight. Excess a in amber glass b equilibrate for temperature. At was verified by measurements and brium from super saturated soluti a coarse filter flasks, weighed	AUXILIARY AUXILIARY S/PROCEDURE Auxiliary S/PROCEDURE Auxiliary Auxiliary S/PROCEDURE Auxiliary Auxiliary S/PROCEDURE Auxiliary Auxiliary S/PROCEDURE Auxiliary Auxiliary S/PROCEDURE Auxiliary Auxiliary S/PROCEDURE Auxiliary Auxiliary S/PROCEDURE Auxiliary Auxiliary S/PROCEDURE Auxiliary Auxiliary Auxiliary Auxiliary Auxiliary Auxiliary Auxiliary Auxiliary Auxiliary Auxiliary	<pre>INFORMATION INFORMATION SOURCE AND PURITY OF MATERIALS: (1) 99 %, Aldrich Chemical Company, Milwau kee, Wisconsin, USA, recrystallized 3 times from absolute ethanol. (2) 99+ %, anhydrous, Aldrich Chemical Company. (3) 99+ %, anhydrous, Aldrich Chemical</pre>	
fraction sol the ternary METHOD: APPARATUS Constant tempera thermometer, and spectrophotomete Binary solvent m weight. Excess s in amber glass t equilibrate for temperature. At was verified by measurements and brium from super saturated soluti a coarse filter flasks, weighed Concentrations d	AUXILIARY AUXILIARY S/PROCEDURE Auxiliary S/PROCEDURE Auxiliary Auxiliary S/PROCEDURE Auxiliary Auxiliary S/PROCEDURE Auxiliary Auxiliary S/PROCEDURE Auxiliary Auxiliary S/PROCEDURE Auxiliary Auxiliary S/PROCEDURE Auxiliary Auxiliary S/PROCEDURE Auxiliary Auxiliary S/PROCEDURE Auxiliary Auxiliary Auxiliary Auxiliary Auxiliary Auxiliary Auxiliary Auxiliary Auxiliary Auxiliary	<pre>INFORMATION INFORMATION SOURCE AND PURITY OF MATERIALS: (1) 99 %, Aldrich Chemical Company, Milwau kee, Wisconsin, USA, recrystallized 3 times from absolute ethanol. (2) 99+ %, anhydrous, Aldrich Chemical Company. (3) 99+ %, anhydrous, Aldrich Chemical Company. (3) 99+ %, anhydrous, Aldrich Chemical Company. Components 2 and 3 were stored over molecular sieves and distilled shortly</pre>	

COMPONENTS :		ORIGINAL MEASUREMENTS:	
(1) Pyrene; C ₁₆ H ₁₀ ; [129-00-0]		Zvaigzne, A.I.; Acree, W.E., Jr.	
(2) Cyclohexane;	C ₆ H ₁₂ ; [110-82-7]	J. Chem. Eng. Data <u>1993</u> , 38, 393-395.	
(3) 1-Propanol; $C_3H_8O;$ [71-23-8]			
VARIABLES:		PREPARED BY:	
T/K = 299, Solve	ent composition	W.E. Acree, Jr. and A.I. Zvaigzne	
EXPERIMENTAL VALU t = 26.0 °C	ES ^a	-I	
x3 ^(s)	×3	x1	
0.0000	0.0000	0.01100	
0.1513	0.1495	0.01192	
0.2741	0.2710	0.01141	
0.4938	0.4890	0.00969	
0.5957	0.5905	0.00876	
0.6894	0.6841	0.00765	
0.8750	0.8700	0.00573	
0.9251	0.9205	0.00501	
1.0000 ^a x3 ^(S) : initi fraction solution the ternary	0.9957 Lal mole fraction of binary ubility of the solute; x_3 : solution.	0.00426 solvent mixture; x ₁ : mole mole fraction of component 3 in	
^a x ₃ ^(s) : initi fraction solu	ial mole fraction of binary ubility of the solute; x_3 :	solvent mixture; x,: mole	
^a x ₃ ^(s) : initi fraction solu	tal mole fraction of binary ubility of the solute; x_3 ; solution.	solvent mixture; x,: mole	
^a x ₃ ^(s) : initi fraction solu	ial mole fraction of binary ubility of the solute; x ₃ : solution. AUXILIARY	solvent mixture; x ₁ : mole mole fraction of component 3 in	
^a _{x3} ^(s) : initi fraction sol the ternary the ternary the ternary the ternary the ternary the ternary the ternary the ternary the ternary	<pre>ial mole fraction of binary ubility of the solute; x₃: solution. AUXILIARY /PROCEDURE ture bath, calorimetric an ultraviolet/visible</pre>	solvent mixture; x ₁ : mole mole fraction of component 3 in INFORMATION SOURCE AND PURITY OF MATERIALS:	
 * x3^(\$); initi fraction sol the ternary ************************************	<pre>ial mole fraction of binary ubility of the solute; x₃: solution. AUXILIARY /PROCEDURE ture bath, calorimetric an ultraviolet/visible</pre>	Bolvent mixture; x ₁ : mole mole fraction of component 3 in INFORMATION SOURCE AND PURITY OF MATERIALS: (1) 99 %, Aldrich Chemical Company, Milwau- kee, Wisconsin, USA, recrystallized 3	
 * x3^(s); initi fraction solution the ternary * The ternary *	AUXILIARS AUXILIARS /PROCEDURE ture bath, calorimetric an ultraviolet/visible r. ixtures were prepared by olute and solvent placed ottles and allowed to several days at constant tainment of equilibrium several repetitive by approaching equili- saturation. Aliquots of ons transferred through into tared volumetric and diluted with methanol. etermined spectrophoto-	Solvent mixture; x ₁ : mole mole fraction of component 3 in INFORMATION SOURCE AND PURITY OF MATERIALS: (1) 99 %, Aldrich Chemical Company, Milwau- kee, Wisconsin, USA, recrystallized 3 times from absolute ethanol. (2) HPLC Grade, 99.9+ %, Aldrich Chemical Company.	

ORIGINAL MEASUREMENTS: Zvaigzne, A.I.; Acree, W.E., Jr. J. Chem. Eng. Data <u>1993</u> , 38, 393-395. PREPARED BY: W.E. Acree, Jr. and A.I. Zvaigzne
J. Chem. Eng. Data <u>1993</u> , 38, 393-395. PREPARED BY:
PREPARED BY:
W.E. Acree, Jr. and A.I. Zvaigzne
×1
0.01292
0.01336
0.01271
0.01045
0.00921
0.00798
0.00599
0.00499
0.00426
INFORMATION
SOURCE AND PURITY OF MATERIALS:
(1) 99 %, Aldrich Chemical Company, Milwau- kee, Wisconsin, USA, recrystallized 3 times from absolute ethanol.
 (2) 99+ %, anhydrous, Aldrich Chemical Company. (3) 99+ %, anhydrous, Aldrich Chemical Company. Components 2 and 3 were stored over molecular sieves and distilled shortly before use.
ESTIMATED ERRORS: $T/K: \pm 0.05.$

COMPONENTS:		ORIGINAL MEASUREMENTS:
(1) Pyrene; C ₁₆ H ₁₀ ; [129-00-0]		Zvaigzne, A.I.; Acree, W.E., Jr.
(2) 2,2,4-Trimet	thylpentane; C ₈ H ₁₈ ;	J. Chem. Eng. Data <u>1993</u> , 38, 393-395.
[540-84-1] (3) 1-Propanol; C ₃ H ₈ O; [71-23-8]		
VARIABLES: T/K = 299, Solvent composition		PREPARED BY:
		W.E. Acree, Jr. and A.I. Zvaigzne
EXPERIMENTAL VALU t = 26.0 °C	JES ^a	4
x3 ^(s)	×3	x,
0.0000	0.0000	0.00720
0.2131	0.2115	0.00738
0.3581	0.3555	0.00721
0.5925	0.5886	0.00659
0.6783	0.6741	0.00624
0.7710	0.7665	0.00584
0.8887	0.8842	0.00511
0.9421	0.9377	0.00472
1.0000 ^a x ₃ ^(s) : init: fraction sol the ternary		0.00426 solvent mixture; x ₁ : mole . mole fraction of component 3 in
^a x ₃ ⁽⁵⁾ : init: fraction sol	ial mole fraction of binary ubility of the solute; x_3 :	solvent mixture; x.: mole
^a x ₃ ⁽⁵⁾ : init: fraction sol	ial mole fraction of binary ubility of the solute; x_3 : r solution.	solvent mixture; x.: mole
a x3 ^(s) : init: fraction sol the ternary	ial mole fraction of binary ubility of the solute; x ₃ : r solution. AUXILIARY	solvent mixture; x ₁ : mole . mole fraction of component 3 in
a x3 ^(s) : init: fraction sol the ternary (ETHOD: APPARATUS Constant tempera	ial mole fraction of binary ubility of the solute; x3: r solution. AUXILIARY /PROCEDURE ture bath, calorimetric an ultraviolet/visible	solvent mixture; x ₁ : mole . mole fraction of component 3 in INFORMATION
 ^a x₃^(s); init: fraction sol the ternary APPARATUS APPARATUS Constant tempera thermometer, and spectrophotomete Binary solvent Binary solvent Binary solvent 	AUXILIARY /PROCEDURE ture bath, calorimetric an ultraviolet/visible r. ixtures were prepared by olute and solvent placed ottles and allowed to	Solvent mixture; x ₁ : mole mole fraction of component 3 in INFORMATION SOURCE AND PURITY OF MATERIALS: (1) 99 %, Aldrich Chemical Company, Milwau kee, Wisconsin, USA, recrystallized 3
<pre>a x₃^(s): init: fraction sol the ternary (ETHOD: APPARATUS Constant tempera thermometer, and spectrophotometer Binary solvent m weight. Excess so in amber glass b equilibrate for temperature. At was verified by measurements and</pre>	AUXILIARY AUXILIARY /PROCEDURE ture bath, calorimetric an ultraviolet/visible r. ixtures were prepared by olute and solvent placed ottles and allowed to several days at constant tainment of equilibrium several repetitive by approaching equili-	<pre>solvent mixture; x₁: mole mole fraction of component 3 in INFORMATION SOURCE AND FURITY OF MATERIALS: (1) 99 %, Aldrich Chemical Company, Milwau kee, Wisconsin, USA, recrystallized 3 times from absolute ethanol. (2) HPLC Grade, 99.7+ %, Aldrich Chemical Company. (3) 99+ %, anhydrous, Aldrich Chemical Company.</pre>
<pre>a x3^(s): init: fraction sol the ternary (ETHOD: APPARATUS Constant tempera thermometer, and spectrophotometer Binary solvent m weight. Excess so in amber glass b equilibrate for temperature. At was verified by measurements and brium from super saturated solutio a coarse filter i flasks, weighed a</pre>	AUXILIARY AUXILIARY /PROCEDURE ture bath, calorimetric an ultraviolet/visible r. ixtures were prepared by olute and solvent placed ottles and allowed to several days at constant tainment of equilibrium several repetitive by approaching equili- saturation. Aliquots of ons transferred through into tared volumetric and diluted with methanol. etermined spectrophoto-	<pre>solvent mixture; x₁: mole mole fraction of component 3 in INFORMATION SOURCE AND PURITY OF MATERIALS: (1) 99 %, Aldrich Chemical Company, Milwau kee, Wisconsin, USA, recrystallized 3 times from absolute ethanol. (2) HPLC Grade, 99.7+ %, Aldrich Chemical Company. (3) 99+ %, anhydrous, Aldrich Chemical</pre>
<pre>a x3⁽⁵⁾: init: fraction sol the ternary the ternary</pre>	AUXILIARY AUXILIARY /PROCEDURE ture bath, calorimetric an ultraviolet/visible r. ixtures were prepared by olute and solvent placed ottles and allowed to several days at constant tainment of equilibrium several repetitive by approaching equili- saturation. Aliquots of ons transferred through into tared volumetric and diluted with methanol. etermined spectrophoto-	<pre>solvent mixture; x₁: mole mole fraction of component 3 in INFORMATION SOURCE AND PURITY OF MATERIALS: (1) 99 %, Aldrich Chemical Company, Milwau kee, Wisconsin, USA, recrystallized 3 times from absolute ethanol. (2) HPLC Grade, 99.7+ %, Aldrich Chemical Company. (3) 99+ %, anhydrous, Aldrich Chemical Company. (3) 99+ %, anhydrous, Aldrich Chemical Company. Components 2 and 3 were stored over molecular sieves and distilled shortly</pre>

COMPONENTS :		ORIGINAL MEASUREMENTS:
(1) Pyrene; C ₁₆ H ₁₀ ; [129-00-0]		Zvaigzne, A.I.; Acree, W.E., Jr.
(2) n-Hexane; $C_{6}H_{16}$; [110-54-3]		J. Chem. Eng. Data <u>1993</u> , 38, 393-395.
(3) 2-Propanol;	C ₃ H ₈ O; [67-63-0]	
VARIABLES: T/K = 299, Solvent composition		PREPARED BY: W.E. Acree, Jr. and A.I. Zvaigzne
×3 ⁽⁵⁾	<i>x</i> 3	x ₁
0.0000	0.0000	0.00857
0.1676	0.1661	0.00867
0.2966	0.2942	0.00825
0.5251	0.5214	0.00700
0.6303	0.6264	0.00619
0.7199	0.7160	0.00547
0.8651	0.8615	0.00412
0.9301	0.9268	0.00352
1.0000	0.9971	0.00290
^a x ₃ ^(s) : init fraction so the ternary	ial mole fraction of binary lubility of the solute; x_3 ; r solution.	solvent mixture; x_i : mole mole fraction of component 3 in
a x3 ^(s) : init fraction so the ternary	ial mole fraction of binary lubility of the solute; x_3 : r solution.	solvent mixture; x _i : mole mole fraction of component 3 in
a x3 ^(s) : init fraction so the ternary	solution.	solvent mixture; x ₁ : mole mole fraction of component 3 in INFORMATION
the ternary	solution.	
the ternary (ETHOD: APPARATU: Constant tempera	S/PROCEDURE ature bath, calorimetric i an ultraviolet/visible	INFORMATION SOURCE AND PURITY OF MATERIALS:
the ternary (ETHOD: APPARATU: Constant temperathermometer, and spectrophotometer Binary solvent r weight. Excess r in amber glass h equilibrate for	AUXILIARY AUXILIARY S/PROCEDURE ature bath, calorimetric d an ultraviolet/visible er. mixtures were prepared by solute and solvent placed bottles and allowed to several days at constant	INFORMATION SOURCE AND PURITY OF MATERIALS: (1) 99 %, Aldrich Chemical Company, Milwau kee, Wisconsin, USA, recrystallized 3
the ternary AETHOD: APPARATU Constant temper: thermometer, and spectrophotomete Binary solvent r weight. Excess s in amber glass t equilibrate for temperature. At was verified by measurements and	AUXILIARY AUXILIARY S/PROCEDURE ature bath, calorimetric d an ultraviolet/visible ar. mixtures were prepared by solute and solvent placed bottles and allowed to several days at constant trainment of equilibrium several repetitive d by approaching equili-	<pre>INFORMATION SOURCE AND PURITY OF MATERIALS: (1) 99 %, Aldrich Chemical Company, Milwau kee, Wisconsin, USA, recrystallized 3 times from absolute ethanol. (2) 99+ %, Aldrich Chemical Company. (3) 99+ %, anhydrous, Aldrich Chemical Company.</pre>
The ternary THE THOD: APPARATU: Constant temperathermometer, and spectrophotometer in amber glass the equilibrate for temperature. At was verified by measurements and brium from super saturated soluti a coarse filter flasks, weighed Concentrations of	AUXILIARY AUXILIARY S/PROCEDURE ature bath, calorimetric d an ultraviolet/visible ar. mixtures were prepared by solute and solvent placed bottles and allowed to several days at constant ttainment of equilibrium several repetitive d by approaching equili- isaturation. Aliquots of ons transferred through into tared volumetric and diluted with methanol. letermined spectrophoto-	INFORMATION SOURCE AND PURITY OF MATERIALS: (1) 99 %, Aldrich Chemical Company, Milwau kee, Wisconsin, USA, recrystallized 3 times from absolute ethanol. (2) 99+ %, Aldrich Chemical Company. (3) 99+ %, anhydrous, Aldrich Chemical
METHOD: APPARATUS Constant tempers thermometer, and spectrophotometer Binary solvent r weight. Excess s in amber glass t equilibrate for temperature. At was verified by measurements and brium from super saturated soluti a coarse filter flasks, weighed	AUXILIARY AUXILIARY S/PROCEDURE ature bath, calorimetric d an ultraviolet/visible ar. mixtures were prepared by solute and solvent placed bottles and allowed to several days at constant ttainment of equilibrium several repetitive d by approaching equili- isaturation. Aliquots of ons transferred through into tared volumetric and diluted with methanol. letermined spectrophoto-	<pre>INFORMATION SOURCE AND PURITY OF MATERIALS: (1) 99 %, Aldrich Chemical Company, Milwau kee, Wisconsin, USA, recrystallized 3 times from absolute ethanol. (2) 99+ %, Aldrich Chemical Company. (3) 99+ %, anhydrous, Aldrich Chemical Company. Components 2 and 3 were stored over molecular sieves and distilled shortly</pre>

ORIGINAL MEASUREMENTS: Zvaigzne, A.I.; Acree, W.E., Jr. J. Chem. Eng. Data <u>1993</u> , 38, 393-395.	
J. Chem. Eng. Data 1993, 38, 393-395.	
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PREPARED BY:	
W.E. Acree, Jr. and A.I. Zvaigzne	
×1	
0.01102	
0.01117	
0.01029	
0.00830	
0.00724	
0.00618	
0.00430	
0.00367	
0.00290	
INFORMATION	
SOURCE AND PURITY OF MATERIALS:	
(1) 99 %, Aldrich Chemical Company, Milwau- kee, Wisconsin, USA, recrystallized 3 times from absolute ethanol.	
(2) HPLC Grade, 99.7+ %, Aldrich Chemical Company.	
 (3) 99+ %, anhydrous, Aldrich Chemical Company. Components 2 and 3 were stored over 	
molecular sieves and distilled shortly before use.	
ESTIMATED ERRORS:	
$T/K: \pm 0.05.$ $x_3^{(5)}: \pm 0.0001.$	

COMPONENTS :		ORIGINAL MEASUREMENTS:
(1) Pyrene; C ₁₆ H ₁₀ ; [129-00-0]		Zvaigzne, A.I.; Acree, W.E., Jr.
(2) n-Octane; C ₈ H ₁₈ ; [111-65-9]		J. Chem. Eng. Data <u>1993</u> , 38, 393-395.
(3) 2-Propanol; (C ₃ H ₈ O; [67-63-0]	
VARIABLES: T/K = 299, Solvent composition		PREPARED BY: W.E. Acree, Jr. and A.I. Zvaigzne
*3 ^(\$)	x 3	<i>x</i> 1
0.0000	0.0000	0.01372
0.1971	0.1944	0.01350
0.3555	0.3512	0.01210
0.5829	0.5774	0.00940
0.6836	0.6782	0.00796
0.7639	0.7588	0.00673
0.9006	0.8965	0.00451
0.9459	0.9423	0.00377
1.0000	0.9971	0.00290
^a x ₃ ^(s) : initi fraction soluthe ternary s	al mole fraction of binary ubility of the solute; x_3 : solution.	solvent mixture; x ₁ : mole mole fraction of component 3 in
^a x ₃ ^(S) : initi fraction solu the ternary s	al mole fraction of binary bility of the solute; x_3 : solution.	solvent mixture; x ₁ : mole mole fraction of component 3 in
<pre>a x₃^(s): initi fraction solu the ternary s</pre>	solution.	solvent mixture; x ₁ : mole mole fraction of component 3 in INFORMATION
the ternary a	AUXILIARY	
ETHOD: APPARATUS/ Constant temperat thermometer, and spectrophotometer	AUXILIARY /PROCEDURE uure bath, calorimetric an ultraviolet/visible	INFORMATION SOURCE AND PURITY OF MATERIALS:
ETHOD: APPARATUS/ Constant temperat thermometer, and spectrophotometer Binary solvent mi weight. Excess so in amber glass bo equilibrate for s	AUXILIARY PROCEDURE Sure bath, calorimetric an ultraviolet/visible Sures were prepared by plute and solvent placed by buttles and allowed to several days at constant	<pre>INFORMATION SOURCE AND PURITY OF MATERIALS: (1) 99 %, Aldrich Chemical Company, Milwau kee, Wisconsin, USA, recrystallized 3 times from absolute ethanol. (2) 99+ %, anhydrous, Aldrich Chemical Company.</pre>
ETHOD: APPARATUS/ Constant temperat thermometer, and spectrophotometer Binary solvent mi weight. Excess so in amber glass bo equilibrate for a temperature. Att was verified by s	AUXILIARY AUXILIARY PROCEDURE Sure bath, calorimetric an ultraviolet/visible c. xtures were prepared by slute and solvent placed bottles and allowed to several days at constant ainment of equilibrium several repetitive	INFORMATION SOURCE AND PURITY OF MATERIALS: (1) 99 %, Aldrich Chemical Company, Milwau kee, Wisconsin, USA, recrystallized 3 times from absolute ethanol. (2) 99+ %, anhydrous, Aldrich Chemical
ETHOD: APPARATUS/ Constant temperat thermometer, and spectrophotometer Binary solvent mi weight. Excess so in amber glass bo equilibrate for s temperature. Att was verified by s measurements and brium from supers saturated solutio a coarse filter i flasks, weighed a Concentrations de	AUXILIARY PROCEDURE Sure bath, calorimetric an ultraviolet/visible Auxiliance an ultraviolet/visible Auxiliance and allowed to several days at constant ainment of equilibrium several repetitive by approaching equili- iaturation. Aliquots of ans transferred through nto tared volumetric and diluted with methanol. termined spectrophoto-	<pre>INFORMATION SOURCE AND PURITY OF MATERIALS: (1) 99 %, Aldrich Chemical Company, Milwaukee, Wisconsin, USA, recrystallized 3 times from absolute ethanol. (2) 99+ %, anhydrous, Aldrich Chemical Company. (3) 99+ %, anhydrous, Aldrich Chemical</pre>
ETHOD: APPARATUS/ Constant temperat thermometer, and spectrophotometer Binary solvent mi weight. Excess so in amber glass bo equilibrate for s temperature. Att was verified by s measurements and brium from supers saturated solutio a coarse filter i flasks, weighed a	AUXILIARY PROCEDURE Sure bath, calorimetric an ultraviolet/visible Auxiliance an ultraviolet/visible Auxiliance and allowed to several days at constant ainment of equilibrium several repetitive by approaching equili- iaturation. Aliquots of ans transferred through nto tared volumetric and diluted with methanol. termined spectrophoto-	<pre>INFORMATION SOURCE AND PURITY OF MATERIALS: (1) 99 %, Aldrich Chemical Company, Milwaukee, Wisconsin, USA, recrystallized 3 times from absolute ethanol. (2) 99+ %, anhydrous, Aldrich Chemical Company. (3) 99+ %, anhydrous, Aldrich Chemical Company. Components 2 and 3 were stored over molecular sieves and distilled shortly</pre>

Components :		ORIGINAL MEASUREMENTS:	
(1) Pyrene; C ₁₆ H ₁₀ ; [129-00-0]		Zvaigzne, A.I.; Acree, W.E., Jr.	
(2) Cyclohexane; C ₆ H ₁₂ ; [110-82-7]		J. Chem. Eng. Data <u>1993</u> , 38, 393-395.	
(3) 2-Propanol;	C ₃ H ₈ O; [67-63-0]		
VARIABLES:		PREPARED BY:	
T/K = 299, Solvent composition		W.E. Acree, Jr. and A.I. Zvaigzne	
EXPERIMENTAL VALU t = 26.0 °C	ES ^a	L	
×3 ^(a)	<i>x</i> 3	x ₁	
0.0000	0.0000	0.01100	
0.1496	0.1479	0.01133	
0.2625	0.2597	0.01082	
0.4936	0.4893	0.00875	
0.5936	0.5891	0.00764	
0.6755	0.6710	0.00670	
0.8559	0.8520	0.00451	
0.9212	0.9177	0.00376	
1.0000 ^a x ₃ ^(s) : initi fraction soluthe ternary p	0.9971 al mole fraction of binary ubility of the solute; x ₃ : n solution.	0.00290 solvent mixture; x ₁ : mole mole fraction of component 3 in	
^a x ₃ ^(s) : initi fraction solu	al mole fraction of binary ubility of the solute; x_3 :	solvent mixture; x.: mole	
^a x ₃ ^(s) : initi fraction solu	al mole fraction of binary ubility of the solute; x ₃ : r solution.	solvent mixture; x.: mole	
^a x ₃ ^(s) : initi fraction solu	al mole fraction of binary ubility of the solute; x ₃ : n solution. AUXILIARY	solvent mixture; x ₁ : mole mole fraction of component 3 in	
<pre>a x₃(s): initi fraction sol the ternary of the ternary of the ternary of the ternary of the ternary of the ternary of the ternary of the ternary of the ternary of the ternary of the ternary of the ternary of the ternary of ternary</pre>	Al mole fraction of binary ubility of the solute; x ₃ : 1 solution. AUXILIARY /PROCEDURE ture bath, calorimetric an ultraviolet/visible	solvent mixture; x ₁ : mole mole fraction of component 3 in INFORMATION	
<pre>a x₃^(s): initi fraction sol the ternary of the ternary of the ternary of the ternary of the ternary of the ternary of the ternary of the ternary of the ternary of ternary of ternary of ternary of the ternary of t</pre>	Al mole fraction of binary ubility of the solute; x ₃ : r solution. AUXILIARY /PROCEDURE ture bath, calorimetric an ultraviolet/visible tures were prepared by plute and solvent placed ottles and allowed to several days at constant ainment of equilibrium	<pre>solvent mixture; x,: mole mole fraction of component 3 in INFORMATION SOURCE AND PURITY OF MATERIALS: (1) 99 %, Aldrich Chemical Company, Milwau- kee, Wisconsin, USA, recrystallized 3 times from absolute ethanol. (2) HPLC Grade, 99.9+ %, Aldrich Chemical Company. (3) 99+ %, anhydrous, Aldrich Chemical</pre>	
<pre>* ***********************************</pre>	AUXILIARY AUXILIARY /PROCEDURE ture bath, calorimetric an ultraviolet/visible ixtures were prepared by plute and solvent placed bytles and allowed to several days at constant cainment of equilibrium several repetitive by approaching equili- saturation. Aliquots of ons transferred through .nto tared volumetric und diluted with methanol. termined spectrophoto-	<pre>solvent mixture; x,: mole mole fraction of component 3 in INFORMATION SOURCE AND PURITY OF MATERIALS: (1) 99 %, Aldrich Chemical Company, Milwau- kee, Wisconsin, USA, recrystallized 3 times from absolute ethanol. (2) HPLC Grade, 99.9+ %, Aldrich Chemical Company.</pre>	

ORIGINAL MEASUREMENTS: Zvaigzne, A.I.; Acree, W.E., Jr. J. Chem. Eng. Data <u>1993</u> , 38, 393-395.
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J. Chem. Eng. Data <u>1993</u> , 38, 393-395.
PREPARED BY:
W.E. Acree, Jr. and A.I. Zvaigzne
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<i>*</i> 1
0.01292
0.01325
0.01221
0.00960
0.00819
0.00673
0.00469
0.00374
0.00290
INFORMATION
SOURCE AND PURITY OF MATERIALS:
(1) 99 %, Aldrich Chemical Company, Milwau- kee, Wisconsin, USA, recrystallized 3 times from absolute ethanol.
 (2) 99+ %, anhydrous, Aldrich Chemical Company. (3) 99+ %, anhydrous, Aldrich Chemical Company.
Company. Components 2 and 3 were stored over molecular sieves and distilled shortly before use.
ESTIMATED ERRORS: $T/K: \pm 0.05.$ $x_3^{(6)}: \pm 0.0001.$ $x_1: \pm 1.5 % (relative error).$

COMPONENTS: (1) Pyrene; C ₁₆ H ₁₀ ; [129-00-0] (2) 2,2,4-Trimethylpentane; C ₈ H ₁₈ ; [540-84-1] (3) 2-Propanol; C ₃ H ₈ O; [67-63-0] VARIABLES: T/K = 299, Solvent composition		ORIGINAL MEASUREMENTS: Zvaigzne, A.I.; Acree, W.E., Jr. J. Chem. Eng. Data <u>1993</u> , 38, 393-395.		
				PREPARED BY: W.E. Acree, Jr. and A.I. Zvaigzne
		x3 ^(s)	x 3	×1
		0.0000	0.0000	0.00720
0.1987	0.1972	0.00746		
0.3622	0.3597	0.00690		
0.5803	0.5769	0.00592		
0.6848	0.6812	0.00532		
0.7661	0.7624	0.00478		
0.8908	0.8874	0.00380		
0.9434	0.9402	0.00336		
1.0000 ^a x ₃ ^(s) : init fraction sol the ternary	0.9971 ial mole fraction of binary ubility of the solute; x ₃ : r solution.	0.00290 solvent mixture; x ₁ : mole mole fraction of component 3 in .		
^a x ₃ ^(s) : init fraction sol	ial mole fraction of binary ubility of the solute; x_3 ; r	solvent mixture; x1: mole		
^a x ₃ ^(s) : init fraction sol	ial mole fraction of binary ubility of the solute; x3: r solution.	solvent mixture; x1: mole		
a _{X3} (s): init fraction sol the ternary	ial mole fraction of binary ubility of the solute; x ₃ : r solution. AUXILIARY	solvent mixture; x ₁ : mole mole fraction of component 3 in .		
a _{X3} (s); init. fraction sol the ternary ETHOD: APPARATUS Constant tempera thermometer, and	ial mole fraction of binary ubility of the solute; x ₃ : r solution. AUXILIARY /PROCEDURE ture bath, calorimetric an ultraviolet/visible	solvent mixture; x ₁ : mole mole fraction of component 3 in INFORMATION SOURCE AND PURITY OF MATERIALS:		
a _{X3} (s); init. fraction sol the ternary ETHOD: APPARATUS Constant tempera thermometer, and spectrophotomete Binary solvent m weight. Excess s in amber glass b equilibrate for	ial mole fraction of binary ubility of the solute; x ₃ : r solution. AUXILIARY /PROCEDURE ture bath, calorimetric an ultraviolet/visible r. ixtures were prepared by olute and solvent placed ottles and allowed to several days at constant	<pre>solvent mixture; x₁: mole mole fraction of component 3 in INFORMATION SOURCE AND PURITY OF MATERIALS: (1) 99 %, Aldrich Chemical Company, Milwau kee, Wisconsin, USA, recrystallized 3 times from absolute ethanol. (2) HPLC Grade, 99.7+ %, Aldrich Chemical Company.</pre>		
a _{X3} (s); init. fraction sol the ternary ETHOD: APPARATUS Constant tempera thermometer, and spectrophotomete Binary solvent m weight. Excess s in amber glass b equilibrate for temperature. At was verified by measurements and brium from super: saturated soluti a coarse filter	AUXILIARY AUXILIARY /PROCEDURE ture bath, calorimetric an ultraviolet/visible r. ixtures were prepared by olute and solvent placed ottles and allowed to several days at constant tainment of equilibrium several repetitive by approaching equili- saturation. Aliquots of ons transferred through into tared volumetric	Solvent mixture; x ₁ : mole mole fraction of component 3 in INFORMATION SOURCE AND PURITY OF MATERIALS: (1) 99 %, Aldrich Chemical Company, Milwau kee, Wisconsin, USA, recrystallized 3 times from absolute ethanol. (2) HPLC Grade, 99.7+ %, Aldrich Chemical		
a x3 ^(s) : init. fraction sol the ternary the ternary ETHOD: APPARATUS Constant tempera thermometer, and spectrophotomete Binary solvent m weight. Excess s in amber glass b equilibrate for temperature. At was verified by measurements and brium from super saturated soluti a coarse filter flasks, weighed	AUXILIARY AUXILIARY /PROCEDURE ture bath, calorimetric an ultraviolet/visible r. ixtures were prepared by olute and solvent placed ottles and allowed to several days at constant tainment of equilibrium several repetitive by approaching equili- saturation. Aliquots of ons transferred through into tared volumetric and diluted with methanol. etermined spectrophoto-	<pre>solvent mixture; x₁: mole mole fraction of component 3 in INFORMATION SOURCE AND PURITY OF MATERIALS: (1) 99 %, Aldrich Chemical Company, Milwau kee, Wisconsin, USA, recrystallized 3 times from absolute ethanol. (2) HPLC Grade, 99.7+ %, Aldrich Chemical Company. (3) 99+ %, anhydrous, Aldrich Chemical Company. (3) 99+ %, anhydrous, Aldrich Chemical Company. Components 2 and 3 were stored over molecular sieves and distilled shortly</pre>		
a x3 ^(s) : init. fraction sol the ternary the ternary ETHOD: APPARATUS Constant tempera thermometer, and spectrophotomete Binary solvent m weight. Excess s in amber glass b equilibrate for temperature. At was verified by measurements and brium from super saturated solution a coarse filter flasks, weighed Concentrations do	AUXILIARY AUXILIARY /PROCEDURE ture bath, calorimetric an ultraviolet/visible r. ixtures were prepared by olute and solvent placed ottles and allowed to several days at constant tainment of equilibrium several repetitive by approaching equili- saturation. Aliquots of ons transferred through into tared volumetric and diluted with methanol. etermined spectrophoto-	<pre>solvent mixture; x₁: mole mole fraction of component 3 in INFORMATION SOURCE AND PURITY OF MATERIALS: (1) 99 %, Aldrich Chemical Company, Milwau kee, Wisconsin, USA, recrystallized 3 times from absolute ethanol. (2) HPLC Grade, 99.7+ %, Aldrich Chemical Company. (3) 99+ %, anhydrous, Aldrich Chemical Company. (3) 99+ %, anhydrous, Aldrich Chemical Company. Components 2 and 3 were stored over molecular sieves and distilled shortly</pre>		

THIANTHENE SOLUBILITIES IN PURE AND BINARY SOLVENT MIXTURES

A. <u>Saturated Hydrocarbons (including cycloalkanes)</u>

```
n-hexane
n-heptane
n-octane
cyclohexane
methylcyclohexane
cyclooctane
2,2,4-trimethylpentane
```

B. <u>Alkenes</u>

C. Aromatic Hydrocarbons

phenanthrene

- D. <u>Esters</u>
- E. <u>Ethers</u>
- F. Haloalkanes and Haloaromatic Hydrocarbons
- G. <u>Alcohols</u>
- H. Ketones
- I. <u>Miscellaneous Pure Solvents</u>

phenothiazine phenoxanthiin phenoxazine

J. Binary Solvent Mixtures

COMPONENTS:		ORIGINAL MEASUREMENTS:
(1) Thianthrene; C ₁₂ H ₈ S ₂ ; [92-85-3] (2) n-Hexane; C ₆ H ₁₄ ; [110-54-3]		Acree, W.E., Jr.; Tucker, S.A.; Zvaigzne, A.I.
		Phys. Chem. Liq. <u>1990</u> , 21, 45-49.
VARIABLES:		PREPARED BY:
<i>T</i> /K = 298		W.E. Acree, Jr.
EXPERIMENTAL VALUES		
t/° C	*2	<i>x</i> 1
25.0	0.9968	0.00320
	AUXILIÄRY	INFORMATION
ETHOD: APPARATUS/PROCE	DURE	SOURCE AND PURITY OF MATERIALS:
Constant temperature k thermometer, and an ul spectrophotometer.		(1) 99 %, Aldrich Chemical Company, Milwaukee, Wisconsin, USA, recrystal- lized 3 times from absolute ethanol.
Excess solute and solvent placed in amber glass bottles and allowed to equilibrate for several days at constant temperature. Attainment of equilibrium verified by repetitive measurements. Aliquots of sat- urated solutions transferred through a coarse filter into tared volumetric flasks, weighed and diluted with methanol.		(2) 99 %, Aldrich Chemical Company, was stored over molecular sleves and dis- tilled shortly before use.
Concentrations determi metrically at 255 nm.	ned spectrophoto-	ESTIMATED ERRORS:
		$T/K: \pm 0.05.$ x,: ± 1 % (relative error).

COMPONENTS :	ORIGINAL MEASUREMENTS:
<pre>(1) Thianthrene; C₁₂H₈S₂; [92-85-3] (2) n-Heptane; C₇H₁₆; [142-82-5]</pre>	Acree, W.E., Jr.; Tucker, S.A.; Zvaigzne, A.I.
	Phys. Chem. Liq. <u>1990</u> , 21, 45-49.
VARIABLES:	PREPARED BY:
T/K = 298	W.E. Acree, Jr.
EIPERIMENTAL VALUES	
t/°C x ₂	x 1
25.0 0.9965	0.00346
AUXILIARY	INFORMATION \
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:
Constant temperature bath, calorimetric thermometer, and an ultraviolet/visible spectrophotometer.	(1) 99 %, Aldrich Chemical Company, Milwaukee, Wisconsin, USA, recrystal- lized 3 times from absolute ethanol.
Excess solute and solvent placed in amber glass bottles and allowed to equilibrate for several days at constant temperature. Attainment of equilibrium verified by repetitive measurements. Aliquots of sat- urated solutions transferred through a coarse filter into tared volumetric flasks, weighed and diluted with methanol.	(2) HPLC Grade, 99+ %, Aldrich Chemical Company, was stored over molecular sieves and distilled shortly before use.
Concentrations determined spectrophoto- metrically at 255 nm.	ESTIMATED ERRORS:
	$T/K: \pm 0.05.$ $x_1: \pm 1$ % (relative error).

.

COMPONENTS:	ORIGINAL MEASUREMENTS:	
(1) Thianthrene; C ₁₂ H ₈ S ₂ ; [92-85-3] (2) n-Octane; C ₈ H ₁₈ ; [111-65-9]	Acree, W.E., Jr.; Tucker, S.A.; Zvaigzne, A.I. Phys. Chem. Liq. <u>1990</u> , 21, 45-49.	
VARIABLES:	PREPARED BY:	
<i>T</i> /K = 298	W.E. Acree, Jr.	
EXPERIMENTAL VALUES		
t/°C x ₂	x 1	
25.0 0.9961	0.00392	
AUXILIARY	INFORMATION	
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:	
Constant temperature bath, calorimetric thermometer, and an ultraviolet/visible spectrophotometer.	(1) 99 %, Aldrich Chemical Company, Milwaukee, Wisconsin, USA, recrystal- lized 3 times from absolute ethanol.	
Excess solute and solvent placed in amber glass bottles and allowed to equilibrate for several days at constant temperature. Attainment of equilibrium verified by repetitive measurements. Aliquots of sat- urated solutions transferred through a coarse filter into tared volumetric flasks, weighed and diluted with methanol.	(2) 99+ %, anhydrous, Aldrich Chemical Company, was stored over molecular sieves and distilled shortly before use	
Concentrations determined spectrophoto- metrically at 255 nm.	ESTIMATED ERRORS:	
	$T/K: \pm 0.05.$ x ₁ : ± 1 % (relative error).	

COMPONENTS:		ORIGINAL MEASUREMENTS:
<pre>(1) Thianthrene; C₁₂H₈S₂; [92-85-3] (2) Cyclohexane; C₆H₁₂; [110-82-7] VARIABLES:</pre>		Acree, W.E., Jr.; Tucker, S.A.; Zvaigzne, A.I. Phys. Chem. Liq. <u>1990</u> , 21, 45-49. PREPARED BY:
EXPERIMENTAL VALUES		
t/° C	<i>x</i> 2	x 1
25.0	0.9941	0.00587
	, AUXILIAR Y	INFORMATION
METHOD: APPARATUS/PROC	edure	SOURCE AND PURITY OF MATERIALS:
Constant temperature i thermometer, and an u spectrophotometer. Excess solute and sol	ltraviolet/visible	 (1) 99 %, Aldrich Chemical Company, Milwaukee, Wisconsin, USA, recrystal- lized 3 times from absolute ethanol. (2) HPLC Grade, 99.9+ %, Aldrich Chemical
Excess solute and solvent placed in amber glass bottles and allowed to equilibrate for several days at constant temperature. Attainment of equilibrium verified by repetitive measurements. Aliquots of sat- urated solutions transferred through a coarse filter into tared volumetric flasks, weighed and diluted with methanol.		Company, was stored over molecular sieves and distilled shortly before use.
Concentrations determ: metrically at 255 nm.	ined spectrophoto-	ESTIMATED ERRORS:
		$T/K: \pm 0.05.$ x ₁ : \pm 1 % (relative error).

	01
COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Thianthrene; C ₁₂ H ₈ S ₂ ; [92-85-3]	Acree, W.E., Jr.; Tucker, S.A.; Zvaigzne, A.I.
(2) Methylcyclohexane; C ₇ H ₁₄ ; [108-87-2]	Phys. Chem. Liq. <u>1990</u> , 21, 45-49.
VARIABLES:	PREPARED BY:
<i>T/</i> K = 298	W.E. Acree, Jr.
EXPERIMENTAL VALUES ⁸	
t/°C x ₂	<i>x</i> 1
25.0 0.9937	0.00631
AUXILIA	RY INFORMATION
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:
Constant temperature bath, calorimetric thermometer, and an ultraviolet/visible spectrophotometer.	(1) 99 %, Aldrich Chemical Company, Milwaukee, Wisconsin, USA, recrystal- lized 3 times from absolute ethanol.
Excess solute and solvent placed in amber glass bottles and allowed to equilibrate for several days at constant temperature. Attainment of equilibrium verified by repetitive measurements. Aliquots of sat- urated solutions transferred through a coarse filter into tared volumetric flasks, weighed and diluted with methanol.	Company, was stored over molecular sieves and distilled shortly before use.
Concentrations determined spectrophoto- metrically at 255 nm.	ESTIMATED ERRORS:
	$T/K: \pm 0.05.$ $x_1: \pm 1$ % (relative error).

COMPONENTS:	ORIGINAL MEASUREMENTS:			
 (1) Thianthrene; C₁₂H₈S₂; [92-85-3] (2) Cyclooctane; C₈H₁₆; [292-64-8] 	Acree, W.E., Jr.; Tucker, S.A.; Zvaigzne, A.I. Phys. Chem. Liq. <u>1990</u> , 21, 45-49.			
VARIABLES:	PREPARED BY:			
<i>T/</i> K = 298	W.E. Acree, Jr.			
EXPERIMENTAL VALUES ^a				
t/° C x ₂	x 1			
25.0 0.9877	0.01232			
AUXILIARY	INFORMATION			
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:			
Constant temperature bath, calorimetric thermometer, and an ultraviolet/visible spectrophotometer. Excess solute and solvent placed in amber glass bottles and allowed to equilibrate for several days at constant temperature. Attainment of equilibrium verified by repetitive measurements. Aliquots of sat- urated solutions transferred through a coarse filter into tared volumetric flasks, weighed and diluted with methanol.	 (1) 99 %, Aldrich Chemical Company, Milwaukee, Wisconsin, USA, recrystal- lized 3 times from absolute ethanol. (2) 99+ %, Aldrich Chemical Company, was stored over molecular sieves and dis- tilled shortly before use. 			
Concentrations determined spectrophoto- metrically at 255 nm.	ESTIMATED ERRORS: $T/K: \pm 0.05.$ $x_1: \pm 1$ % (relative error).			

.

COMPONENTS:		ORIGINAL MEASUREMENTS:			
(1) Thianthrene; C ₁₂ H ₈ S ₂ ; [92-85-3]		Acree, W.E., Jr.; Tucker, S.A.; Zvaigzne, A.I.			
(2) 2,2,4-Trimethylpen [540-84-1]	tane; C ₈ H ₁₈ ;	Phys. Chem. Liq. <u>1990</u> , 21, 45-49.			
VARIABLES:		PREPARED BY:			
T/K = 298		W.E. Acree, Jr.			
EXPERIMENTAL VALUES ^a					
t/° C	x 2	<i>x</i> 1			
25.0 0.9973		0.00273			
	AUXILIARY	INFORMATION			
METHOD: APPARATUS/PROCE	DURE	SOURCE AND PURITY OF MATERIALS:			
Constant temperature b thermometer, and an ul spectrophotometer.		 (1) 99 %, Aldrich Chemical Company, Milwaukee, Wisconsin, USA, recrystal- lized 3 times from absolute ethanol. 			
Excess solute and solv glass bottles and allo for several days at co Attainment of equilibr repetitive measurement urated solutions trans coarse filter into tar flasks, weighed and di	wed to equilibrate nstant temperature. ium verified by s. Aliquots of sat- ferred through a ed volumetric	(2) HPLC Grade, 99.7 %, Aldrich Chemical Company, was stored over molecular sieves and distilled shortly before use.			
Concentrations determi metrically at 255 nm.	ned spectrophoto-	ESTIMATED ERRORS:			
		$T/K: \pm 0.05.$ $x_1: \pm 1$ % (relative error).			

omponents :	ORIGINAL M	EASUREMENTS:			
 (1) Thianthrene; C₁₂H₈S₂; [92-85-3] (2) Phenanthrene; C₁₄H₁₀; [85-01-8] 	Eckert, C	Mayer, M.M.; Howell, W.J.; Tomasko, D.L.; Eckert, C.A. <i>J. Chem. Eng. Data</i> <u>1990</u> , 35, 446-449.			
VARIABLES :	PREPARED BY:				
Temperature	W.E. Acre	e, Jr.			
XPERIMENTAL VALUES					
т/к * ₂	x 1	Solid Phase			
372 1.00	0.00	(2)			
369 0.95	0.05	(2)			
365 0.90	0.10	(2)			
361 0.85	0.15	(2)			
357 0.80	0.20	(2)			
356 0.75	0.25	(1)			
362 0.70	0.30	(1)			
370 0.65	0.35	(1)			
377 0.60	0.40	(1)			
383 0.55	0.45	(1)			
390 0.50	0.50	(1)			
397 0.45	0.55	(1)			
400 0.40	0.60	(1)			
405 0.35	0.65	(1)			
409 0.30	0.70	(1)			
412 0.25	0.75	(1)			
416 0.20	0.80	(1)			
420 0.15	0.85	(1)			
423 0.10	0.90	(1)			
425 0.05	0.95	(1)			
429 0.00	1,00	(1)			
Authors report that system exhib	its simple eut	cectic behavior.			
Compiler: Eutectic point occurs	at about $x_1 =$	0.24 and $T/K = 353.2$.			
·					
	Y INFORMATION				
THOD: APPARATUS/PROCEDURE		PURITY OF MATERIALS:			
Samples were equilibrated in an apparatus similar to the one used by Ott and co- workers (see J. Phys. Chem. <u>1962</u> , 66, 1387). Temperature of the sample moni-	waukee	a, Aldrich Chemical Company, Mil- , Wisconsin, USA, was recrystal- before use.			
cored with an Omega RTD probe inside a stainless steel tube that went down chrough the center of the pyrex tube. Samples heated above their melting point		, Aldrich Chemical Company, was tallized before use.			
temperature, and time-temperature cooling curves were measured.	ESTIMATED E	RRORS:			
anten were mednared.	T/K: precision \pm 0.5. x_1 : \pm 0.005 (Compiler).				

COMPONENTS:		ORIGINAL MEA	SUREMENTS :		
(1) Thianthrene; C ₁₂ H ₈ S	2; [92-85-3]	Cullinane, N.M.; Rees, W.T.			
(2) Phenothiazine; C ₁₂ F	-	Trans. Fara	day Soc. <u>1940</u> , 36, 506-514.		
VARIABLES:		PREPARED BY:			
Temperature		W.E. Acree,	Jr.		
EXPERIMENTAL VALUES ^a					
T _{in} /K	T _{fin} /K	x 2	×1		
457.6	456.8	1.000	0.000		
455.4	421.2	0.959	0.041		
451.7	404.4	0.894	0.106		
437.8	402.7	0.709	0.291		
424.5	403.3	0.561	0.439		
407.6	403.2	0.441	0.559		
409.0	403.2	0.382	0.618		
418.0	402.6	0.260	0.740		
422.7	406.0	0.162	0.838		
426.4	414.7	0.094	0.906		
429.9	429.1	0.000	1.000		
	AUXILIARY	(INFORMATION			
ETHOD: APPARATUS/PROCE	DURE	SOURCE AND PI	URITY OF MATERIALS:		
Mixtures were placed in tubes. Temperature was with ample time given : Transition temperature visual observations. I tures verified by repet	s slowly varied for equilibration. s determined by Reported tempera-	 (1) Purity and chemical source were not specified in paper, was purified by sublimation and recrystallization from acetone. (2) Purity and chemical source were not specified in paper, was sublimed and recrystallized from alcohol. ESTIMATED ERRORS: T/K: precision ± 0.2 (Compiler). 			
			ion <u>+</u> 0.2 (Compiler). (Compiler).		

COMPONENTS:			ORIGINAL MEASUREMENTS: Cullinane, N.M.; Rees, W.T. Trans. Faraday Soc. <u>1940</u> , 36, 506-514. PREPARED BY: W.E. Acree, Jr.			
 (1) Thianthrene; C₁₂H₈S₂; [92-85-3] (2) Phenoxanthiin; C₁₂H₈OS; [262-20-4] VARIABLES: Temperature 						
		EXPERIMENTAL				
T/K	<i>*</i> 2	<i>x</i> ₁	T/K	*2	×1	
328.9	1.000	0.000	378.7	0.692	0.308	
328.3	0.954	0.046	399.5	0.487	0.513	
326.1	0.930	0.070	415.3	0.301	0.699	
337.2	0.900	0.100	426.8	0.100	0.900	
357.4	0.811	0.189	429.9	0.000	1.000	
		AUXILIARY	INFORMATION		······································	
METHOD: APPARI	ATUS/PROCEDU	LE	SOURCE AND PURITY OF MATERIALS:			
Mixtures were placed in small capillary tubes. Temperature was slowly varied with ample time given for equilibration. Transition temperatures determined by visual observations. Reported tempera- tures verified by repetitive measurements.			 Purity and chemical source not specified, was purified by sublimation and recrystallized from acetone. Synthesized by authors, was purified by sublimation and recrystallized from alcohol. 			
			ESTIMATED ERRORS	5:		
			T/K: precision \pm 0.2 (Compiler). $x_1: \pm$ 0.002 (Compiler).			

COMPONENTS:			ORIGINAL MEASUREMENTS:				
(1) Thianthro	(1) Thianthrene; C ₁₂ H ₈ S ₂ ; [92-85-3]			Cullinane, N.M.; Rees, W.T.			
(2) Phenoxazine; C ₁₂ H ₉ NO; [135-67-1]		Trans. Faraday	Soc. <u>1940</u> ,	36, 506-514.			
VARIABLES:			PREPARED BY:		· · · · · · · · · · · · · · · · · · ·		
Temperature			W.E. Acree, Jr	•			
EXPERIMENTAL	VALUES	<u></u>		· · · -	· · · · · · · · · · · · · · · · · · ·		
T/K	*2	<i>x</i> 1	T/K	<i>*</i> 2	*1		
429.9	1.000	0.000	399.4	0.469	0.531		
428.1	0.967	0.033	416.4	0.251	0.749		
412.2	0.659	0.341	427.5	0.054	0.946		
393.4	0.561	0.439	429.9	0.000	1.000		
392.0	0.542	0.458					
		AUXILIARY	INFORMATION				
METHOD: APPARA	TUS/PROCEDUR	E	SOURCE AND PURIT	TY OF MATERIA	ALS:		
Mixtures were placed in small capillary tubes. Temperature was slowly varied with ample time given for equilibration. Transition temperatures determined by visual observations. Reported tempera- tures verified by repetitive measurements.			 Purity and chemical source were not specified in paper, was purified by sublimation and recrystallization from acetone. Synthesized by authors, and was puri- fied by recrystallization from alcohol and sublimation. 				
			ESTIMATED ERRORS T/K: precision x_1 : \pm 0.002 (Co	± 0.2 (Comp	iler).		

THIOXANTHENE SOLUBILITIES IN PURE AND BINARY SOLVENT MIXTURES

A. <u>Saturated Hydrocarbons (including cycloalkanes)</u>

cyclohexane decahydronaphthalene

- B. <u>Alkenes</u>
- C. Aromatic Hydrocarbons

benzene 1,2,3,4-tetrahydronaphthalene

- D. <u>Esters</u>
- E. Ethers
- F. Haloalkanes and Haloaromatic Hydrocarbons

1

- G. <u>Alcohols</u>
- H. <u>Ketones</u>
- I. <u>Miscellaneous_Pure_Solvents</u>

pyridine thiophene

J. Binary Solvent Mixtures

COMPONENTS:			ORIGINAL N	ORIGINAL MEASUREMENTS:			
 (1) Thioxanthene; C₁₃H₁₀S; [261-31-4] (2) Cyclohexane; C₆H₁₂; [110-82-7] 		Coon, J.E.; Sediawan, W.B.; Auwaerter, J.E. McLaughlin, E. J. Solution Chem. 1988, 16, 519-534.					
VARIABLES:			PREPARED I	BY:			
Temperature			W.E. Acre	W.E. Acree, Jr.			
EXPERIMENTAL	VALUES		ļ		<u></u>		
T/K	x 2	* 1	T/K	<i>x</i> 2	* ₁		
318.3	0.9697	0.0303	354.8	0.8665	0.1335		
331.8	0.9483	0.0517	368.5	0.7883	0.2117		
338.5	0.9329	0.0671					
349.7	0.8916	0.1084					
		AUXILIAR	(INFORMATION	¥			
METHOD: APPAR	ATUS/PROCEDUR	E	SOURCE AND	D PURITY OF M	ATERIALS:		
thermometer.	-	and a precision	 (1) 99+ %, gift from Dr. E. J. Esienbraun, Oklahoma State University, USA, was recrystallized from toluene. 				
Mixtures of known concentrations sealed in glass ampoules and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly increased. Solubility determined by visual		(2) Gold Label, 99.9+ %, Aldrich Chemical Company, was used as received.					
	emperature at	which the last	ESTIMATED	ERRORS:			
			$\begin{array}{c} T/K: \text{ prec}\\ x_1: \pm 0.0 \end{array}$	cision <u>+</u> 0.1. 003.			

COMPONENTS :	<u> </u>		ORIGINAL MEASUREMENTS:				
(1) Thioxant	hene; C ₁₃ H ₁₀ S;	[261-31-4]	Coon, J.E	.; Auwaerter	, J.E.; McLaughlin, E.		
(2) Decahydronaphthalene; C ₁₀ H ₁₈ ; [91-17-8]			Fluid Phase Equilibr. <u>1989</u> , 44, 305-345.				
VARIABLES:			PREPARED BY:				
Temperature	Temperature			e, Jr.			
EXPERIMENTAL	VALUES		ļ				
T/K	*2	x 1	T/K	*2	x 1		
309.5	0.9648	0.0352	343.9	0.8721	0.1279		
321.1	0.9456	0.0544	353.3	0.8090	0.1910		
328.1	0.9297	0.0703					
337.8	0.8971	0.1029					
		AUXILIARY	INFORMATION				
METHOD: APPAR	ATUS/PROCEDUR	E	SOURCE AND	PURITY OF M	ATERIALS:		
Constant temperature bath and a precision thermometer.			(1) 99+ %, gift from Dr. E. J. Esienbraum, Oklahoma State University, USA, was recrystallized from toluene.				
Mixtures of known concentrations sealed in glass ampoules and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly increased. Solubility determined by visual		(2) 99+ %, Aldrich Chemical Company, having isomer ratio of 60.6 % cis and 39.4 % trans, stored over molecular sieves.					
noting the te	emperature at	which the last	ESTIMATED	ERRORS:			
	trace of solid solute disappeared.			T/K: precision + 0.1			

ESTIMATED ERRORS:

T/K	:	precision	±	0.1.
x1:	±	0.0003.		

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Components:			ORIGINAL M	IEASUREMENTS :	
(1) Thioxanthene; C ₁₃ H ₁₀ S; [261-31-4]		Coon, J.E McLaughli	.; Sediawan, .n, E.	W.B.; Auwaerter, J.E.;	
(2) Benzene; C ₆ H ₆ ; [71-43-2]		J. Soluti	on Chem. <u>19</u>	<u>88</u> , <i>16</i> , 519-534.	
VARIABLES:			PREPARED E	Y:	
Temperature		W.E. Acre	e, Jr.		
EXPERIMENTAL V	ALUES		<u>.</u>		
T/K	×2	×1	T/K	×2	x 1
319.1	0.9028	0.0972	347.7	0.7472	0.2528
329.7	0.8611	0.1389	351.9	0.6999	0.3001
341.5	0.7999	0.2001			
343.9	0.7730	0.2270			
		AUXILIARY	INFORMATION	1	
METHOD: APPAR	TUS/PROCEDUR	E	SOURCE AND	PURITY OF M	ATERIALS:
Constant temp thermometer.	perature bath	and a precision	(1) 99+ %, gift from Dr. E. J. Esienbraun, Oklahoma State University, USA, was recrystallized from toluene.		
Mixtures of known concentrations sealed in glass ampoules and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly increased. Solubility determined by visual		 (2) Gold Label, 99.9+ %, Aldrich Chemica Company, was used as received. 		%, Aldrich Chemical	
noting the te	noting the temperature at which the last trace of solid solute disappeared.		ESTIMATED	ERRORS :	
			$T/K: prec x_1: \pm 0.00$	ision <u>+</u> 0.1. 003.	

COMPONENTS:			ORIGINAL N	MEASUREMENTS			
(1) Thioxanth	nene; C ₁₃ H ₁₀ S;	[261-31-4]	Coon, J.I	E.; Auwaerter	;, J.E.; McLaughlin, E.		
(2) 1,2,3,4-Tetrahydronaphthalene; C ₁₀ H ₁₂ ; [119-64-2]			Fluid Pha	ase Equilibr.	<u>1989</u> , <i>44</i> , 305-345.		
VARIABLES:	ARIABLES:			PREPARED BY:			
Temperature			W.E. Acre	ee, Jr.			
EXPERIMENTAL V	ALUES		ļ				
T/K	*2	*1	T/K	*2	* 1		
309.2	0.9131	0.0869	344.5	0.7533	0.2467		
317.3	0.8879	0.1121	352.0	0.6936	0.3064		
328.8	0.8401	0.1599					
337.3	0.7956	0.2044					
		AUXILIARY	INFORMATION	1			
METHOD: APPARA	TUS/PROCEDUR	3	SOURCE AND	PURITY OF M	IATERIALS:		
thermometer.		and a precision	(1) 99 %, gift from Dr. E. J. Esienbraum, Oklahoma State University, USA, was recrystallized from toluene.				
Mixtures of known concentrations sealed in glass ampoules and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly increased. Solubility determined by visual		(2) 99.6+ %, Aldrich Chemical Company, was stored over molecular sieves to remove trace water.					
noting the te trace of soli	mperature at	which the last	ESTIMATED T/K: prec $x_1: \pm 0.0$	ision <u>+</u> 0.1.			

COMPONENTS :			ORIGINAL N	MEASUREMENTS	}
 (1) Thioxanthene; C₁₃H₁₀S; [261-31-4] (2) Pyridine; C₅H₅N; [110-86-1] 		Coon, J.E.; Sediawan, W.B.; Auwaerter, J.E. McLaughlin, E. J. Solution Chem. <u>1988</u> , 16, 519-534.			
VARIABLES:			PREPARED BY:		
Temperature			W.E. Acre	W.E. Acree, Jr.	
EXPERIMENTAL	VALUES	<u> </u>	-l		
T/K	*2	x 1	T/K	x 2	*1
305.6	0.9324	0.0676	339.8	0.8013	0.1987
311.9	0.9178	0.0822	350.4	0.7228	0.2772
322.7	0.8837	0.1163			
330.0	0.8524	0.1476			
		AUXILIARY	(INFORMATION	1	
METHOD: APPAR	ATUS/PROCEDUR	E	SOURCE ANI	PURITY OF M	ATERIALS:
Constant temperature bath and a precision thermometer. Mixtures of known concentrations sealed			 99+ %, gift from Dr. E. J. Esienbraun, Oklahoma State University, USA, was recrystallized from toluene. Gold Label, 99.9+ %, Aldrich Chemical Company, was used as received. 		
in glass ampoules and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly increased. Solubility determined by visual					
noting the to		which the last	ESTIMATED	ERRORS:	
			$T/K: prec x_1: \pm 0.0$	cision <u>+</u> 0.1. 003.	

COMPONENTS:			ORIGINAL MEASUREMENTS: Coon, J.E.; Sediawan, W.B.; Auwaerter, J.E.; McLaughlin, E. J. Solution Chem. <u>1988</u> , 16, 519-534. PREPARED BY:			
(1) Thioxanthene; C ₁₃ H ₁₀ S; [261-31-4] (2) Thiophene; C ₄ H ₄ S; [110-02-1]						
VARIABLES:						
Temperature			W.E. Acre	e, Jr.		
EXPERIMENTAL	VALUES		ļ			
T/K	<i>x</i> 2	×1	T/K	×2	<i>x</i> ₁	
309.2	0.9073	0.0927	338.4	0.7860	0.2140	
317.4	0.8829	0.1171	342.3	0.7593	0.2407	
325.3	0.8567	0.1433				
332.1	0.8208	0.1792				
		AUXILIARY	INFORMATION	ſ		
METHOD: APPAR	ATUS/PROCEDUR	E	SOURCE AND	PURITY OF M	ATERIALS:	
Constant temperature bath and a precision thermometer. Mixtures of known concentrations sealed in glass ampoules and placed in constant temperature to equilibrate. Samples			 (1) 99+ %, gift from Dr. E. J. Esienbraun, Oklahoma State University, USA, was recrystallized from toluene. (2) Gold Label, 99.9+ %, Aldrich Chemical Company, was used as received. 			
were rotated while bath temperature slowly increased. Solubility determined by visual						
	emperature at id solute dis	which the last appeared.	ESTIMATED	ERRORS :		
erand of form porned areappeared.			$\begin{array}{c c} T/K: \text{ prec}\\ x_1: \pm 0.0 \end{array}$	ision <u>+</u> 0.1. 003.		

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TRIPHENYLENE SOLUBILITIES IN PURE AND BINARY SOLVENT MIXTURES

A. <u>Saturated Hydrocarbons (including cycloalkanes)</u>

n-heptane

- B. <u>Alkenes</u>
- C. Aromatic Hydrocarbons

benzene benz[a]anthracene

- D. <u>Esters</u>
- E. <u>Ethers</u>
- F. <u>Haloalkanes_and_Haloaromatic_Hydrocarbons</u>
- G. <u>Alcohols</u>
- H. <u>Ketones</u>
- I. <u>Miscellaneous_Pure_Solvents</u>
- J. Binary Solvent Mixtures



59-430

COMPONENTS :	ORIGINAL MEASUREMENTS:				
(1) Triphenylene; C ₁₈ H ₁₂ ; [217-59-4]	Lissi, E.A.; Abuin, E.B.				
(2) n-Heptane; C ₇ H ₁₆ ; [142-82-5]	Bol. Soc. Chil. Quim. <u>1981</u> , 26, 19-34.				
VARIABLES:	PREPARED BY:				
<i>T</i> /K = 293	W.E. Acree, Jr.				
EXPERIMENTAL VALUES					
±/°C	mol dm ⁻³)				
20.0 0.00	056				
AUXILIARY	INFORMATION				
METHOD: APPARATUS/PROCEDURE	SOURCE AND PURITY OF MATERIALS:				
Constant temperature bath, centrifuge, thermometer, and an uv/visible spectro- photometer.	(1) Purity not given, commercial sample of unspecified source, was used as received.				
Excess solute and solvent were placed in glass vials, pre-equilibrated for several hours at 60-80 °C, and then equilibrated at 20 °C for several additional hours. After equilibration and centrifugation, concentrations determined from the mea- sured absorbance using the Beer-Lambert law.	(2) Purity and chemical source not given, purification procedure not specified.				
	ESTIMATED ERRORS:				
	$T/K: \pm 2.$				

COMPONENTS:			ORIGINAL MEASUREMENTS:				
<pre>(1) Triphenylene; C₁₈H₁₂; [217-59-4] (2) Benzene; C₆H₆; [71-43-2] VARIABLES: Temperature</pre>			McLaughlin, E.; Zainal, H.A.				
			J. Chem.	soc. <u>1959</u> ,	863-867.		
			PREPARED I	BY :			
			W.E. Acre	ee, Jr.			
EXPERIMENTAL V	VALUES		<u> </u>				
T/K	x 2	×i	T/K	<i>x</i> 2	x 1		
312.6	0.9860	0.0140	356.0	0.9503	0.0497		
320.8	0.9819	0.0181					
337.0	0.9711	0.0289					
342.6	0.9659	0.0341					
		AUXILIARY	INFORMATION	1			
ETHOD: APPAR	TUS/PROCEDUR	E	SOURCE AND	PURITY OF M	ATERIALS:		
Constant temperature bath and a precision thermometer. Mixtures of known concentrations sealed in glass ampoules and placed in constant temperature to equilibrate. Samples			Germa colum (2) "Anal	iny, was pass in with benze aR", was dri	Rutgerswerke A.G., ed over an alumina ne as eluant. ed over sodium wire lled before use.		
		emperature slowly ermined by visu-		-			
	emperature at	which the last	ESTIMATED	ERRORS:			
	·····	······································	T/K: precision ± 0.1. $x_1: \pm 0.0003$ (compiler).				

COMPONENTS:		ORIGINAL MEASUREMENTS: Sturrock, M.G.; Lawe, T. Can. J. Res., Sect. B. <u>1939</u> , 17, 71-74.			
(1) Triphenylene; C ₁₈ H ₁	2; [217-59-4]				
<pre>(2) Benz[a]anthracene; [56-55-3]</pre>	C ₁₈ H ₁₂ ;				
VARIABLES:		PREPARED BY:			
Temperature		W.E. Acree,	Jr.		
EXPERIMENTAL VALUES ^a	<u> </u>				
T _{in} /K	T _{fin} /K	*2	×1		
433.2	433.2	1.000	0.000		
427.2	421.2	0.900	0.100		
423.2	404.2	0.850	0.150		
419.2	403.2	0.800	0.200		
414.2	403.2	0.750	0.250		
405.2	403.2	0.650	0.350		
404.2	403.2	0.630	0.370		
427.2	403.2	0.500	0.500		
454.2	403.2	0.300	0.700		
456.2	412.2	0.275	0.725		
457.2	425.2	0.250	0.750		
			1 000		
470.2 ^a Binary syst x ₁ = 0.15, ature which crystalliza	470.2 em shows incomplete and from $x_1 = 0.71$ orystallization be tion of the solid s	0.000 solid solution to $x_1 = 1.00$. T_1 egins; T_{fin} is the solution conclude	1.000 from circa $x_1 = 0.00$ to in refers to the temper- e temperature at which es.		
	om choug incomplete	colid colution	from girgs $x = 0.00$ to		
^a Binary syst x ₁ = 0.15, ature which crystalliza	em shows incomplete and from $x_1 = 0.71$ for crystallization be ation of the solid s	e solid solution to x ₁ = 1.00. T _i egins; T _{fin} is the solution Conclude	from circa $x_1 = 0.00$ to x_1 refers to the temper- a temperature at which x_3 .		
	em shows incomplete and from $x_1 = 0.71$ for crystallization be ation of the solid s	e solid solution to x ₁ = 1.00. T _i egins; T _{fin} is the solution Conclude	from girgs $x = 0.00$ to		

XANTHENE SOLUBILITIES IN PURE AND BINARY SOLVENT MIXTURES

A. <u>Saturated Hydrocarbons (including cycloalkanes)</u>

cyclohexane decahydronaphthalene

- B. <u>Alkenes</u>
- C. Aromatic Hydrocarbons

benzene 1,2,3,4-tetrahydronaphthalene

- D. <u>Esters</u>
- E. <u>Ethers</u>
- F. <u>Haloalkanes and Haloaromatic Hydrocarbons</u>
- G. <u>Alcohols</u>
- H. Ketones
- I. <u>Miscellaneous Pure Solvents</u>

pyridine thiophene

J. Binary Solvent Mixtures

COMPONENTS: (1) Xanthene; C ₁₃ H ₁₀ O; [92-83-1] (2) Cyclohexane; C ₆ H ₁₂ ; [110-82-7] VARIABLES:			ORIGINAL MEASUREMENTS: Coon, J.E.; Sediawan, W.B.; Auwaerter, J.E.; McLaughlin, E. J. Solution Chem. <u>1988</u> , 16, 519-534. PREPARED BY:									
							Temperature	Temperature			æ, Jr.	
							EXPERIMENTAL V	ALUES				
T/K	×2	×1	T/K	x 2	*1							
331.7	0.7951	0.2049	354.3	0.3826	0.6174							
339.0	0.6936	0.3064	359.7	0.2784	0.7216							
344.9	0.5897	0.4103										
350.3	0.4867	0.5133										
	·	AUXILIARY	INFORMATION	ſ								
METHOD: APPAR	ATUS/PROCEDUR	E	SOURCE AND	PURITY OF M	ATERIALS:							
thermometer.	Constant temperature bath and a precision thermometer.				Chemical Company, sin, USA, was used as							
Mixtures of known concentrations sealed in glass ampoules and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly ingreased. Solubility determined by visual												
increased. Solubility determined by visual noting the temperature at which the last trace of solid solute disappeared.			ESTIMATED T/K: prec $x_1: \pm 0.0$	sision ± 0.1 .								

COMPONENTS:			ORIGINAL MEASUREMENTS:				
(1) Xanthene,	; C ₁₃ H ₁₀ O; [92-	-83-1]	Coon, J.E.; Auwaerter, J.E.; McLaughlin, E.				
<pre>(2) Decahydronaphthalene; C₁₀H₁₈; [91-17-8]</pre>			Fluid Phase Equilibr. <u>1989</u> , 44, 305-345.				
VARIABLES:			PREPARED BY:				
Temperature	Temperature			e, Jr.			
EXPERIMENTAL V	VALUES						
T/K	×2	*1	T/K	x2	×1		
316.6	0.8648	0.1352	346.7	0.5365	0.4635		
322.3	0.8218	0.1782	351.5	0.4387	0.5613		
332.4	0.7258	0.2742					
339.7	0.6188	0.3812					
		AUXILIARY	INFORMATION	ī			
METHOD: APPARA	ATUS/PROCEDURI	£	SOURCE AND	PURITY OF M	HATERIALS:		
Constant temperature bath and a precision thermometer.			 (1) 99.65 %, Aldrich Chemical Company, Mil- waukee, Wisconsin, USA, was used as received. 				
Mixtures of known concentrations sealed in glass ampoules and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly increased. Solubility determined by visual			(2) 99+ %, Aldrich Chemical Company, having isomer ratio of 60.6 % cis and 39.4 % trans, stored over molecular sieves.				
increased. Solubility determined by visual noting the temperature at which the last trace of solid solute disappeared.			ESTIMATED T/K: prec $x_1: \pm 0.0$	ision <u>+</u> 0.1.			

COMPONENTS: (1) Xanthene; C ₁₃ H ₁₀ O; [92-83-1] (2) Benzene; C ₆ H ₆ ; [71-43-2] VARIABLES: Temperature			ORIGINAL MEASUREMENTS:				
			Coon, J.E.; Sediawan, W.B.; Auwaerter, J.E.; McLaughlin, E. J. Solution Chem. <u>1988</u> , 16, 519-534.				
			PREPARED B	BY:	· · · · · · · · · · · · · · · · · · ·		
			W.E. Acree, Jr.				
EXPERIMENTAL V	VALUES		 		• • • • • • • • • • • • • • • • • • •		
T/K	x2	x 1	T/K	x2	×1		
299.6	0.8342	0.1658	336.0	0.5621	0.4379		
315.2	0.7471	0.2529	349.6	0.3876	0.6124		
315.9	0.7466	0.2534					
324.9	0.6695	0.3305					
		AUXILIARY	INFORMATION	[
ETHOD: APPAR	TUS/PROCEDUR	E	SOURCE AND	PURITY OF M	ATERIALS:		
Constant temperature bath and a precision thermometer.				ukee, Wiscon	Chemical Company, sin, USA, was used as		
Mixtures of known concentrations sealed in glass ampoules and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly increased. Solubility determined by visual noting the temperature at which the last trace of solid solute disappeared.			(2) Gold Label, 99.9+ %, Aldrich Chemical Company, was used as received.				
			ESTIMATED	ERRORS:			
CIACE OF BOIL	a solute dis	appeared.	$\frac{T/K: \text{ prec}}{x_1: \pm 0.00}$	ision <u>+</u> 0.1. 003.			

COMPONENTS: (1) Xanthene; C ₁₃ H ₁₀ O; [92-83-1] (2) 1,2,3,4-Tetrahydronaphthalene; C ₁₀ H ₁₂ ; [119-64-2] VARIABLES: Temperature			ORIGINAL MEASUREMENTS:									
			Coon, J.E.; Auwaerter, J.E.; McLaughlin, E. Fluid Phase Equilibr. <u>1989</u> , 44, 305-345. PREPARED BY: W.E. Acree, Jr.									
							EXPERIMENTAL '	VALUES				
							T/K	*2	×1	T/K	×2	×1
							304.6	0.7798	0.2202	348.9	0.3953	0.6047
318.3	0.7124	0.2876	349.9	0.3714	0.6286							
331.8	0.5978	0.4022										
340.9	0.4986	0.5014										
		AUXILIARY	INFORMATION	ī								
METHOD: APPARI	ATUS/PROCEDUR	E	SOURCE ANI	PURITY OF M	ATERIALS:							
Constant temperature bath and a precision thermometer. Mixtures of known concentrations sealed in glass ampoules and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly increased. Solubility determined by visual			 (1) 99.65 %, Aldrich Chemical Company, Mil- waukee, Wisconsin, USA, was used as received. (2) 99.64 %, Aldrich Chemical Company, was stored over molecular sieves to remove trace water. 									
						noting the te trace of soli	emperature at	which the last	ESTIMATED	ERRORS:	······································	
	4+0	appointent										

T/K: precision \pm 0.1. x₁: \pm 0.0003.

			1			
COMPONENTS :			ORIGINAL MEASUREMENTS:			
(1) Xanthene; C ₁₃ H ₁₀ O; [92-83-1]		Coon, J.E.; Sediawan, W.B.; Auwaerter, J.E.; McLaughlin, E.				
(2) Pyridine; C ₅ H ₅ N; [110-86-1]			J. Solution Chem. <u>1988</u> , 16, 519-534.			
VARIABLES:			PREPARED E	3¥:		
Temperature			W.E. Acre	e, Jr.		
EXPERIMENTAL	VALUES			<u></u>		
т/к	×2	x ₁	T/K	x 2	<i>x</i> ₁	
312.1	0.7619	0.2381	345.3	0.4420	0.5580	
315.3	0.7437	0.2563	355.6	0.3075	0.6925	
332.2	0.6090	0.3910				
340.2	0.5191	0.4809				
		AUXILIARY	INFORMATION	ĩ		
METHOD: APPARI	ATUS/PROCEDUR	E	SOURCE AND	PURITY OF M	ATERIALS:	
Constant temperature bath and a precision thermometer.				ukee, Wiscon	Chemical Company, sin, USA, was used as	
Mixtures of known concentrations sealed in glass ampoules and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly increased. Solubility determined by visual		(2) Gold Label, 99.9+ %, Aldrich Chemical Company, was used as received.				
noting the te	emperature at	which the last	ESTIMATED	ERRORS:		
trace of solid solute disappeared.			$\frac{T/K: \text{ prec}}{x_1: \pm 0.0}$	ision <u>+</u> 0.1. 003.		

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COMPONENTS:			ORIGINAL MEASUREMENTS:			
<pre>(1) Xanthene; C₁₃H₁₀O; [92-83-1] (2) Thiophene; C₄H₄S; [110-02-1] VARIABLES:</pre>			Coon, J.E.; Sediawan, W.B.; Auwaerter, J.E. McLaughlin, E. J. Solution Chem. <u>1988</u> , 16, 519-534. PREPARED BY:			
Temperature			W.E. Acree, Jr.			
EXPERIMENTAL V	ALUES					
T/K	*2	<i>*</i> 1	T/K	x 2	× ₁	
301.1	0.8082	0.1918	347.5	0.4069	0.5931	
318.2	0.7031	0.2969	355.6	0.2997	0.7003	
329.7	0.6073	0.3927				
339.8	0.5091	0.4909				
		AUXILIARY	INFORMATION	1		
METHOD: APPARA	TUS/PROCEDUR	E	SOURCE AND	D PURITY OF M	ATERIALS:	
Constant temperature bath and a precision thermometer. Mixtures of known concentrations sealed in glass ampoules and placed in constant temperature to equilibrate. Samples were rotated while bath temperature slowly increased. Solubility determined by visual			 (1) 99.65 %, Aldrich Chemical Company, Milwaukee, Wisconsin, USA, was used as received. (2) Gold Label, 99.9+ %, Aldrich Chemical Company, was used as received. 			
						increased. Solubility determined by visual noting the temperature at which the last trace of solid solute disappeared.

SYSTEM INDEX

In this volume there is a general evaluation of the compiled data in the introductory material. There are a few individual critical evaluations. Most page numbers below refer to compiled tables.

Fluoranthene

Fluorene

+phenanthrene12+2-propanone19+pyridine19+tetrachloromethane15+1,2,4,5-tetramethylbenzene6+1,2,3,5-tetranitrobenzene24+2,4,6-trinitroaniline29+1,3,5-trinitrobenzene23+2,4,6-trinitromethoxybenzene28+2,4,6-trinitromethylbenzene27+acenaphthene48+aniline54			
+ benzene 3, 4 + chlorobenzene 16 + chlorobenzene 30 + chrysene 14 + cyclohexane 3 + 2,7-dimethylnaphthalene 9 + dimethyl sulfoxide 20 + 1,3-dinitrobenzene 21 + 1,4-dinitrobenzene 22 + 2,4-dinitromethylbenzene 25 + 2,4-dinitromethylbenzene 16 + ethanol 17 + fluorene 10 + 1,4-dioxane 15 + dimethylbenzene 18 + methanol 16 + methylbenzene 10 + 1-hydroxy-2-methylbenzene 11 + fluorene 10 + arethylnaphthalene 7 + mitrobenzene 20 + naphthalene 7 + nitrobenzene 12 + 2-propanone 19 + pyridine 19 + pyridine 19 + 1,2,4,5-tetramitrobenzene 21 + 2,4,6-trinitromethybenzene 21	+	acenaphthene	13
<pre>+ chlorobenzene 16 + 2-chloro-1,3,5-trinitrobenzene 30 + chrysene 14 + cyclohexane 3 + 2,7-dimethylaphthalene 9 + dimethyl sulfoxide 20 + 1,3-dinitrobenzene 21 + 1,4-dinitrobenzene 21 + 2,4-dinitrophenol 26 + 1,4-dinitrophenol 26 + 1,4-dinitrophenol 26 + 1,4-dioxane 15 + ethanol 17 + fluorene 10 + 1-hydroxy-2-methylbenzene 18 + methylbenzene 5 + 2-methylnaphthalene 8 + 3-methyl-2,4,6-trinitrophenol 31 + naphthalene 7 + nitrobenzene 20 + 1-octanol 17, 1 + phenanthrene 12 + 2-propanone 19 + pyridine 19 + tetrachloromethane 15 + 1,2,4,5-tetramethylbenzene 24 + 2,4,6-trinitrobenzene 24 + 2,4,6-trinitrobenzene 24 + 2,4,6-trinitrobenzene 26 + 1,2,3,5-tetranitrobenzene 27 + 2,4,6-trinitromethylbenzene 28 + 2,4,6-trinitromethylbenzene 28 + 2,4,6-trinitromethylbenzene 27 + 2,4,6-trinitromethylbenzene 27 + 2,4,6-trinitromethylbenzene 35-38 + chlorobenzene 35-38 + chlorobenzene 34 + 1,3-dimethylbenzene 35 + 1,2-dimethylbenzene 35 + 1,2-dimethylbenzene 35 + 1,3-dimethylbenzene 35 + 1,3-dimethylbenzene 35 + 1,3-dimethylbenzene 35 + 1,3-dimethylbenzene 35 + 1,3-dimitrobenzene 35 + 1,3-dinitrobenzene 35 + 1,3-dinitrobenzene 35 + 1,3-dinitrobenzene 35 + 1,3-dinitrobenzene 35 + 1,3-dinitrobenzene 35 + 1,4-dinitrobenzene 35</pre>	+	anthracene	11
+ 2-chloro-1,3,5-trinitrobenzene 30 + chrysene 14 + cyclohexane 31 + 2,7-dimethylnaphthalene 9 + dimethyl sulfoxide 20 + 1,3-dinitrobenzene 21 + 1,4-dinitrobenzene 22 + 2,4-dinitrophenol 26 + 2,4-dinitrophenol 27 + 1-hydroxy-2-methylbenzene 18 + methanol 16 + methylbenzene 5 + 2-methylnaphthalene 8 + amethyl-2,4,6-trinitrophenol 31 + naphthalene 7 + nitrobenzene 19 + yridine 19 + tetrach	+	benzene	3,4
+ chrysene 14 + cyclohexane 3 + 2,7-dimethylnaphthalene 9 + dimethyl sulfoxide 20 + 1,3-dinitrobenzene 21 + 1,4-dinitrobenzene 21 + 1,4-dinitrobenzene 22 + 2,4-dinitromethylbenzene 25 + 2,4-dinitromethylbenzene 25 + 2,4-dinitrophenol 26 + 1,4-dioxane 15 + dehanol 17 + fluorene 10 + nethylbenzene 16 + methanol 16 + methylbenzene 5 + 2-methylnaphthalene 7 + naphthalene 7 + naphthalene 7 + naphthalene 17, 1 + phenanthrene 12 + 2-tyropanone 19 + tetrachloromethane </td <td>+</td> <td>chlorobenzene</td> <td>16</td>	+	chlorobenzene	16
+ cyclohexane 3 + 2,7-dimethylnaphthalene 9 + dimethyl sulfoxide 20 + 1,3-dinitrobenzene 21 + 1,4-dinitrobenzene 22 + 2,4-dinitrophenol 26 + 1,4-dinitrophenol 26 + 1,4-dioxane 15 + ethanol 17 + fluorene 10 + ethanol 16 + methanol 16 + methylbenzene 5 + 2-methyllaphthalene 8 + 2-methylnaphthalene 7 + nathrene 12 + naphthalene 7 + nitrobenzene 10 + naphthalene 17, 11 + phenanthrene 12 + naphthalene 17, 11 + phenanthrene 12 + 2,1,3-5-tetraitrobenzene 24 + 1,2,3-5-tetraitrobenzene 28	+	2-chloro-1,3,5-trinitrobenzene	30
+ 2,7-dimethylnaphthalene 9 + dimethyl sulfoxide 20 + 1,3-dinitrobenzene 21 + 1,4-dinitrobenzene 22 + 2,4-dinitrobenzene 25 + 2,4-dinitrobenzene 26 + 2,4-dinitrobenzene 26 + 2,4-dinitrobenzene 25 + 2,4-dinitrobenzene 26 + 1,4-dioxane 15 + ethanol 17 + 1-hydroxy-2-methylbenzene 18 + methanol 16 + methylbenzene 5 + 2-methylnaphthalene 8 + 3-methyl-2,4,6-trinitrophenol 31 + naphthalene 7 + nitrobenzene 20 + 1,2,4,5-tetramethylbenzene 12 + pyridine 19 + pyridine 19 + 1,3,5-trinitrobenzene 23 + 2,4,6-trinitromethylbenzene 24 +	+	chrysene	14
+ dimethyl sulfoxide 20 + 1,3-dinitrobenzene 21 + 1,4-dinitrobenzene 22 2,4-dinitrobenzene 25 + 2,4-dinitrobenzene 26 + 2,4-dinitrophenol 27 + ethanol 17 + fluorene 10 + athylogy-2-methylbenzene 10 + nethylbenzene 10 + nethylbenzene 10 + athylbenzene 11 + athylbenzene 20 + 1-octanol 17, 1 + phenanthrene 12 + 1-octanol 17, 1 + phenanthrene 12 + 1,2,4,5-tetranethylbenzene 20 + 1,2,4,5-tetranitrobenzene 21 + 1,3,5-trinitrobenzene 23 <td>+</td> <td>cyclohexane</td> <td>3</td>	+	cyclohexane	3
+ 1,3-dinitrobenzene 21 + 1,4-dinitrobenzene 22 + 2,4-dinitrophenol 26 + 1,4-dioxane 15 + ethanol 17 + fluorene 10 + fluorene 10 + nethylbenzene 18 + methanol 16 + methylbenzene 13 + acmethyl-2,4,6-trinitrophenol 31 + naphthalene 7 + nitrobenzene 20 + 1-octanol 17,1 + phenanthrene 12 + 2-propanone 19 + pyridine 19 + 2,4,6-trinitromethylbenzene 23 + 1,2,4,5-tetramethylbenzene 24 + 2,4,6-trinitromethylbenzene 26	+	2,7-dimethylnaphthalene	9
+ 1,4-dinitrobenzene 22 + 2,4-dinitromethylbenzene 25 + 2,4-dinitrophenol 26 + 1,4-dioxane 15 + ethanol 17 + fluorene 10 + ethanol 17 + fluorene 10 + nethyloxy-2-methylbenzene 18 + methanol 16 + methylbenzene 5 + 2-methylnaphthalene 8 + 3-methyl-2,4,6-trinitrophenol 31 + napthalene 7 + nitrobenzene 20 + 1-octanol 17, 1 + phenanthrene 12 + 2-propanone 19 + yz,4,5-tetranitrobenzene 24 + 2,4,6-trinitromethalene 23 + 1,3,5-trinitrobenzene 24 + 2,4,6-trinitromethylbenzene 27 * acenaphthene 48 + alinine 54	+	dimethyl sulfoxide	20
+ 2,4-dinitromethylbenzene 25 + 2,4-dinitrophenol 26 + 1,4-dioxane 15 + ethanol 17 + fluorene 10 + nethanol 17 + fluorene 10 + methanol 16 + methanol 16 + methylbenzene 5 + 2-methylnaphthalene 8 + 3-methyl-2,4,6-trinitrophenol 31 + naphthalene 7 + nitrobenzene 20 + 1-octanol 17,1 + phenanthrene 12 + 2-propanone 19 + pyridine 19 + tetrachloromethane 15 + 1,2,4,5-tetramethylbenzene 23 + 1,3,5-trinitroaniline 29 + 1,3,5-trinitromethylbenzene 28 + 2,4,6-trinitromethylbenzene 27 * acenaphthene 48 + aniline 54 + 2,4,6-trinitromethylbenzene 27 * acenaphthene 48 + aniline 54 + cyclohexane 34	+	1,3-dinitrobenzene	21
+ 2,4-dinitrophenol 26 + 1,4-dioxane 15 + ethanol 17 + fluorene 10 + 1-hydroxy-2-methylbenzene 18 + methanol 16 + methylonzene 5 + 2-methylnaphthalene 6 + 3-methyl-2,4,6-trinitrophenol 31 + naphthalene 7 + nitrobenzene 20 + 1-octanol 17,1 + phenanthrene 12 + 2-propanone 19 + pyridine 19 + tetrachloromethane 15 + 1,2,4,5-tetramethylbenzene 24 + 2,4,6-trinitromethoxybenzene 23 + 2,4,6-trinitromethylbenzene 27 + acenaphthene 48 + aniline 54 + benzene 35-38 + chlorobenzene 50 + cyclohexane 34	+	1,4-dinitrobenzene	22
+ 1,4-dioxane 15 + ethanol 17 + fluorene 10 + 1-hydroxy-2-methylbenzene 18 methanol 16 + methylbenzene 5 + 2-methylnaphthalene 8 + 3-methyl-2,4,6-trinitrophenol 31 + naphthalene 7 + nitrobenzene 20 + 1-octanol 17, 1 + phenanthrene 12 + 2-propanone 19 pyridine 19 + tetrachloromethane 15 + 1,2,3,5-tetramethylbenzene 24 + 2,4,6-trinitroaniline 29 + 1,3,5-trinitrobenzene 28 + 2,4,6-trinitromethoxybenzene 28 + 2,4,6-trinitromethoxybenzene 29 + acenaphthene 48 + aniline 54 + benzene 35-38 + chlorobenzene 50 +<	+	2,4-dinitromethylbenzene	25
+ ethanol 17 + fluorene 10 + 1-hydroxy-2-methylbenzene 18 + methanol 16 + methylbenzene 5 + 2-methylnaphthalene 8 + 3-methyl-2,4,6-trinitrophenol 31 + naphthalene 7 + nitrobenzene 20 + 1-octanol 17,1 + phenanthrene 12 + 2-propanone 19 + pyridine 19 + tetrachloromethane 15 + 1,2,4,5-tetramethylbenzene 24 + 2,4,6-trinitroaniline 29 + 1,3,5-trinitrobenzene 28 + 2,4,6-trinitromethylbenzene 27 * acenaphtene 48 + acenaphthene 48 + acenaphthene 48 + acenaphthene 35 + cyclohexane 34 + decahydronaphthalene 35	+	2,4-dinitrophenol	26
+ fluorene 10 + 1-hydroxy-2-methylbenzene 18 + methanol 16 + methylbenzene 5 2-methylnaphthalene 8 + 3-methyl-2,4,6-trinitrophenol 31 + naphthalene 7 + nitrobenzene 20 + 1-octanol 17,1 + phenanthrene 12 + 2-propanone 19 + pyridine 19 + tetrachloromethane 15 + 1,2,4,5-tetramethylbenzene 6 + 1,2,4,5-tetramethylbenzene 24 + 2,4,6-trinitrobenzene 23 + 1,3,5-trinitrobenzene 23 + 2,4,6-trinitromethylbenzene 27 * acenaphthene 48 + aniline 54 + benzene 35-38 + chlorobenzene 50 + chlorobenzene 49 + cyclohexane 34	+	1,4-dioxane	15
+ 1-hydroxy-2-methylbenzene 18 + methanol 16 + methylbenzene 5 + 2-methylnaphthalene 8 + 3-methyl-2,4,6-trinitrophenol 31 + naphthalene 7 + nitrobenzene 20 + 1-octanol 17, 1 + phenanthrene 12 + 2-propanone 19 + yridine 19 + tetrachloromethane 15 + 1,2,4,5-tetramethylbenzene 24 + 2,4,6-trinitrobenzene 23 + 2,4,6-trinitromethoxybenzene 28 + 2,4,6-trinitromethoxybenzene 28 + 2,4,6-trinitromethylbenzene 27 * acenaphthene 48 + aniline 54 + benzene 35-38 + chlorobenzene 50 + chlorobenzene 31 + decahydronaphthalene 35 + 1,3-dimet	+	ethanol	<u>1</u> 7
+ methanol 16 + methylbenzene 5 + 2-methylnaphthalene 8 + 3-methyl-2,4,6-trinitrophenol 31 + naphthalene 7 + nitrobenzene 20 + 1-octanol 17, 1 + phenanthrene 12 + 2-propanone 19 + pyridine 19 + tetrachloromethane 15 + 1,2,4,5-tetramethylbenzene 24 + 2,4,6-trinitrobenzene 23 + 2,4,6-trinitromethoxybenzene 28 + 2,4,6-trinitromethoxybenzene 28 + 2,4,6-trinitromethylbenzene 27 * acenaphthene 48 + aniline 54 + benzene 35-38 + chlorobenzene 50 + chlorobenzene 35 + chlorobenzene 35 + 1,3-dimethylbenzene 41 + 1,4-dimethylbenzene </td <td>+</td> <td></td> <td>10</td>	+		10
+ methylbenzene 5 + 2-methylnaphthalene 8 + 3-methyl-2,4,6-trinitrophenol 31 + naphthalene 7 + nitrobenzene 20 + 2-propanone 19 + pyridine 19 + pyridine 19 + tetrachloromethane 15 + 1,2,4,5-tetramitrobenzene 24 + 2,4,6-trinitroaniline 29 + 1,3,5-trinitrobenzene 28 + 2,4,6-trinitromethylbenzene 28 + 2,4,6-trinitromethylbenzene 27 * acenaphthene 48 + aniline 54 + acenaphthene 48 + aniline 54 + cy,4,6-trinitromethylbenzene <td< td=""><td>+</td><td>1-hydroxy-2-methylbenzene</td><td>18</td></td<>	+	1-hydroxy-2-methylbenzene	18
+ 2-methylnaphthalene 8 + 3-methyl-2,4,6-trinitrophenol 31 + naphthalene 7 + nitrobenzene 20 + 1-octanol 17, 1 + phenanthrene 12 + 2-propanone 19 + tetrachloromethane 15 + 1,2,4,5-tetramethylbenzene 24 + 2,4,6-trinitroaniline 29 + 1,3,5-trinitrobenzene 23 + 2,4,6-trinitromethoxybenzene 28 + 2,4,6-trinitromethylbenzene 27 * acenaphthene 48 + aniline 54 + benzene 35 - chlorobenzene 50 + chlorobenzene 49 + cyclohexane 34 </td <td>+</td> <td></td> <td>16</td>	+		16
+ 3-methyl-2,4,6-trinitrophenol 31 + naphthalene 7 + nitrobenzene 20 + nitrobenzene 17, 1 + phenanthrene 12 + 2-propanone 19 + pyridine 19 + tetrachloromethane 15 + 1,2,4,5-tetramethylbenzene 24 + 2,4,6-trinitrobenzene 23 + 1,3-5-trinitrobenzene 28 + 2,4,6-trinitromethoxybenzene 28 + 2,4,6-trinitromethylbenzene 27 + accenaphthene 48 + aniline 54 + benzene 35-38 + chlorobenzene 50 + chlorobenzene 49 + cyclohexane 34 + decahydronaphthalene <td< td=""><td>+</td><td>methylbenzene</td><td>5</td></td<>	+	methylbenzene	5
+ naphthalene 7 + nitrobenzene 20 + nitrobenzene 20 + 1-octanol 17, 1 + phenanthrene 12 + 2-propanone 19 + pyridine 19 + tetrachloromethane 15 + 1,2,4,5-tetramethylbenzene 6 + 1,2,3,5-tetranitrobenzene 24 + 2,4,6-trinitroaniline 29 + 1,3,5-trinitrobenzene 28 + 2,4,6-trinitromethoxybenzene 28 + 2,4,6-trinitromethylbenzene 27 * acenaphthene 48 + aniline 54 + benzene 35-38 + chlorobenzene 50 + cyclohexane 34 + benzene 35 + 1,3-dimethylbenzene 41 + 1,4-dimethylbenzene 42 + 1,2-dinitrobenzene 55 + 1,3-dinitrobenzene	+	2-methylnaphthalene	8
+ nitrobenzene 20 + 1-octanol 17, 1 + phenanthrene 12 + 2-propanone 19 + pyridine 19 + pyridine 19 + tetrachloromethane 15 + 1,2,4,5-tetramethylbenzene 6 + 1,2,3,5-tetranitrobenzene 24 + 2,4,6-trinitroaniline 29 + 1,3,5-trinitrobenzene 23 + 2,4,6-trinitromethoxybenzene 28 + 2,4,6-trinitromethylbenzene 27 * acenaphthene 48 + aniline 54 * benzene 35-38 * chlorobenzene 50 * chlorobenzene 49 * cyclohexane 34 * decahydronaphthalene 35 * 1,3-dimethylbenzene 41 * 1,4-dimitrobenzene 55 * 1,3-dinitrobenzene 56 * 1,4-dinitrobenzene<	+	3-methyl-2,4,6-trinitrophenol	31
+1-octanol17, 1+phenanthrene12+2-propanone19+pyridine19+tetrachloromethane15+1,2,4,5-tetramethylbenzene6+1,2,3,5-tetranitrobenzene24+2,4,6-trinitroaniline29+1,3,5-trinitrobenzene23+2,4,6-trinitromethoxybenzene28+2,4,6-trinitromethylbenzene27*acenaphthene48+aniline54+benzene35-38+chlorobenzene50+chrysene49+cyclohexane34+decahydronaphthalene35+1,3-dimethylbenzene41+1,4-dimitrobenzene55+1,3-dinitrobenzene56+1,4-dinitrobenzene57+2,4-dinitrobenzene57+2,4-dinitrobenzene51+ethanol51+ethanol51+ethanol51	+	naphthalene	7
+phenanthrene12+2-propanone19+pyridine19+tetrachloromethane15+1,2,4,5-tetramethylbenzene6+1,2,3,5-tetranitrobenzene24+2,4,6-trinitroaniline29+1,3,5-trinitrobenzene23+2,4,6-trinitromethoxybenzene28+2,4,6-trinitromethylbenzene27*acenaphthene48+aniline54+benzene35-38+chlorobenzene50+chrysene49+cyclohexane34+decahydronaphthalene35+1,3-dimethylbenzene42+2,7-dimethylnaphthalene46+1,2-dinitrobenzene55+1,3-dinitrobenzene56+1,4-dinitrobenzene57+2,4-dinitromethylbenzene60+2,4-dinitrophenol62+ethanol51+methanol51	+	nitrobenzene	20
+2-propanone19+pyridine19+tetrachloromethane15+1,2,4,5-tetramethylbenzene6+1,2,3,5-tetranitrobenzene24+2,4,6-trinitroaniline29+1,3,5-trinitrobenzene23+2,4,6-trinitromethoxybenzene28+2,4,6-trinitromethylbenzene27*acenaphthene48+aniline54+benzene35-38+chlorobenzene50+chrysene49+cyclohexane34+decahydronaphthalene35+1,3-dimethylbenzene42+2,7-dimethylnaphthalene46+1,2-dinitrobenzene55+1,3-dinitrobenzene56+1,4-dinitrobenzene57+2,4-dinitromethylbenzene60+2,4-dinitrophenol62+ethanol51+methanol51	+	1-octanol	17, 18
<pre>pyridine 19 + pyridine 19 + tetrachloromethane 15 + 1,2,4,5-tetramethylbenzene 6 + 1,2,3,5-tetranitrobenzene 24 + 2,4,6-trinitroaniline 29 + 1,3,5-trinitrobenzene 23 + 2,4,6-trinitromethoxybenzene 28 + 2,4,6-trinitromethylbenzene 27 + acenaphthene 48 + aniline 54 + benzene 35-38 + chlorobenzene 50 + chrysene 49 + cyclohexane 34 + decahydronaphthalene 35 + 1,3-dimethylbenzene 41 + 1,4-dimethylbenzene 42 + 2,7-dimethylnaphthalene 55 + 1,3-dinitrobenzene 55 + 1,3-dinitrobenzene 56 + 1,4-dinitrobenzene 57 + 2,4-dinitrophenol 62 + ethanol 51</pre>	+	phenanthrene	12
<pre>tetrachloromethane 15 + tetrachloromethane 15 + 1,2,4,5-tetramethylbenzene 6 + 1,2,3,5-tetranitrobenzene 24 + 2,4,6-trinitroaniline 29 + 1,3,5-trinitrobenzene 23 + 2,4,6-trinitromethoxybenzene 28 + 2,4,6-trinitromethylbenzene 27 + acenaphthene 48 + aniline 54 + benzene 35-38 + chlorobenzene 50 + chrysene 49 + cyclohexane 34 + decahydronaphthalene 35 + 1,3-dimethylbenzene 41 + 1,4-dimethylbenzene 55 + 1,3-dinitrobenzene 55 + 1,3-dinitrobenzene 56 + 1,4-dinitrobenzene 57 + 2,4-dinitrobenzene 57 + 2,4-dinitrophenol 62 + ethanol 51 + methanol 51</pre>	+	2-propanone	19
+1,2,4,5-tetramethylbenzene6+1,2,3,5-tetranitrobenzene24+2,4,6-trinitroaniline29+1,3,5-trinitrobenzene23+2,4,6-trinitromethoxybenzene28+2,4,6-trinitromethylbenzene27+acenaphthene48+aniline54+benzene35-38+chlorobenzene50+chrysene49+cyclohexane34+decahydronaphthalene35+1,3-dimethylbenzene41+1,4-dimethylbenzene42+2,7-dimethylnaphthalene46+1,2-dinitrobenzene55+1,3-dinitrobenzene56+1,4-dinitrobenzene57+2,4-dinitromethylbenzene60+2,4-dinitrophenol62+ethanol51+ethanol51+methanol51	+	pyridine	19
+1,2,3,5-tetranitrobenzene24+2,4,6-trinitroaniline29+1,3,5-trinitrobenzene23+2,4,6-trinitromethoxybenzene28+2,4,6-trinitromethylbenzene27+acenaphthene48+aniline54+benzene35-38+chlorobenzene50+chrysene49+cyclohexane34+decahydronaphthalene35+1,3-dimethylbenzene41+1,4-dimethylbenzene42+2,7-dimethylnaphthalene46+1,2-dinitrobenzene55+1,3-dinitrobenzene56+1,4-dinitrobenzene57+2,4-dinitrophenol62+ethanol51+ethanol51+ethanol51+methanol51	+	tetrachloromethane	15
+ $2,4,6$ -trinitroaniline 29 + $1,3,5$ -trinitrobenzene 23 + $2,4,6$ -trinitromethoxybenzene 28 + $2,4,6$ -trinitromethylbenzene 27 +acenaphthene 48 +aniline 54 +benzene 35 - 38 +chlorobenzene 50 +chrysene 49 +cyclohexane 34 +decahydronaphthalene 35 + $1,3$ -dimethylbenzene 41 + $1,4$ -dimethylbenzene 42 + $2,7$ -dimethylhaphthalene 46 + $1,2$ -dinitrobenzene 55 + $1,3$ -dinitrobenzene 56 + $1,4$ -dinitrobenzene 57 + $2,4$ -dinitrophenol 62 +ethanol 51 +ethanol 51 +ethanol 51	+	1,2,4,5-tetramethylbenzene	6
+1,3,5-trinitrobenzene23+2,4,6-trinitromethoxybenzene28+2,4,6-trinitromethylbenzene27+acenaphthene48+aniline54+benzene35-38+chlorobenzene50+chrysene49+cyclohexane34+decahydronaphthalene35+1,3-dimethylbenzene41+1,4-dimethylbenzene42+2,7-dimethylnaphthalene55+1,3-dinitrobenzene56+1,4-dinitrobenzene57+2,4-dinitrobenzene57+2,4-dinitrophenol60+2,4-dinitrophenol51+ethanol51+ethanol51+fluoranthene47+methanol51	+	1,2,3,5-tetranitrobenzene	24
+2,4,6-trinitromethoxybenzene28+2,4,6-trinitromethylbenzene27+acenaphthene48+aniline54+benzene35-38+chlorobenzene50+chrysene49+cyclohexane34+decahydronaphthalene35+1,3-dimethylbenzene41+1,4-dimethylbenzene42+2,7-dimethylnaphthalene46+1,2-dinitrobenzene55+1,3-dinitrobenzene56+1,4-dinitrobenzene57+2,4-dinitrophenol62+ethanol51+ethanol51+fluoranthene47+methanol51	+	2,4,6-trinitroaniline	29
+2,4,6-trinitromethoxybenzene28+2,4,6-trinitromethylbenzene27+acenaphthene48+aniline54+benzene35-38+chlorobenzene50+chrysene49+cyclohexane34+decahydronaphthalene35+1,3-dimethylbenzene41+1,4-dimethylbenzene42+2,7-dimethylnaphthalene46+1,2-dinitrobenzene55+1,3-dinitrobenzene56+1,4-dinitrobenzene57+2,4-dinitrophenol62+ethanol51+ethanol51+fluoranthene47+methanol51	+	1,3,5-trinitrobenzene	23
+ 2,4,6-trinitromethylbenzene 27 + acenaphthene 48 + aniline 54 + benzene 35-38 + chlorobenzene 50 + chrysene 49 + cyclohexane 34 + decahydronaphthalene 35 + 1,3-dimethylbenzene 41 + 1,4-dimethylbenzene 42 + 2,7-dimethylbenzene 55 + 1,3-dinitrobenzene 55 + 1,3-dinitrobenzene 56 + 1,4-dinitrobenzene 57 + 2,4-dinitrophenol 62 + ethanol 51 + ethylbenzene 40 + fluoranthene 47 + methanol 51	+	•	28
+acenaphthene48+aniline54+benzene35-38+chlorobenzene50+chrysene49+cyclohexane34+decahydronaphthalene35+1,3-dimethylbenzene41+1,4-dimethylbenzene42+2,7-dimethylnaphthalene46+1,2-dinitrobenzene55+1,3-dinitrobenzene56+1,4-dinitrobenzene57+2,4-dinitrophenol62+ethanol51+ethylbenzene40+fluoranthene47+methanol51	+	• •	27
+ aniline 54 + benzene 35-38 + chlorobenzene 50 + chlorobenzene 50 + chlorobenzene 49 + cyclohexane 34 + decahydronaphthalene 35 + 1,3-dimethylbenzene 41 + 1,4-dimethylbenzene 42 + 2,7-dimethylnaphthalene 46 + 1,2-dinitrobenzene 55 + 1,3-dinitrobenzene 56 + 1,4-dinitrobenzene 57 + 2,4-dinitrophenol 60 + 2,4-dinitrophenol 62 + ethanol 51 + ethylbenzene 40 + fluoranthene 47 + methanol 51		-	
+ aniline 54 + benzene 35-38 + chlorobenzene 50 + chlorobenzene 50 + chlorobenzene 49 + cyclohexane 34 + decahydronaphthalene 35 + 1,3-dimethylbenzene 41 + 1,4-dimethylbenzene 42 + 2,7-dimethylnaphthalene 46 + 1,2-dinitrobenzene 55 + 1,3-dinitrobenzene 56 + 1,4-dinitrobenzene 57 + 2,4-dinitrophenol 60 + 2,4-dinitrophenol 62 + ethanol 51 + ethylbenzene 40 + fluoranthene 47 + methanol 51			
+ benzene 35-38 + chlorobenzene 50 + chlorobenzene 49 + cyclohexane 34 + decahydronaphthalene 35 + 1,3-dimethylbenzene 41 + 1,4-dimethylbenzene 42 + 2,7-dimethylnaphthalene 46 + 1,2-dinitrobenzene 55 + 1,3-dinitrobenzene 56 + 1,4-dinitrobenzene 57 + 2,4-dinitromethylbenzene 60 + 2,4-dinitrophenol 51 + ethanol 51 + ethylbenzene 40 + fluoranthene 47 + methanol 51	+	acenaphthene	48
+chlorobenzene50+chrysene49+cyclohexane34+decahydronaphthalene35+1,3-dimethylbenzene41+1,4-dimethylbenzene42+2,7-dimethylnaphthalene46+1,2-dinitrobenzene55+1,3-dinitrobenzene56+1,4-dinitrobenzene57+2,4-dinitromethylbenzene60+2,4-dinitrophenol62+ethanol51+ethylbenzene40+fluoranthene47+methanol51	+	aniline	54
+chrysene49+cyclohexane34+decahydronaphthalene35+1,3-dimethylbenzene41+1,4-dimethylbenzene42+2,7-dimethylnaphthalene46+1,2-dinitrobenzene55+1,3-dinitrobenzene56+1,4-dinitrobenzene57+2,4-dinitrobenzene60+2,4-dinitrophenol62+ethanol51+ethylbenzene40+fluoranthene47+methanol51	+	benzene	35-38
+ cyclohexane 34 + decahydronaphthalene 35 + 1,3-dimethylbenzene 41 + 1,4-dimethylbenzene 42 + 2,7-dimethylnaphthalene 46 + 1,2-dinitrobenzene 55 + 1,3-dinitrobenzene 56 + 1,4-dinitrobenzene 57 + 2,4-dinitromethylbenzene 60 + 2,4-dinitrophenol 62 + ethanol 51 + ethylbenzene 40 + fluoranthene 47 + methanol 51	+	chlorobenzene	50
+decahydronaphthalene35+1,3-dimethylbenzene41+1,4-dimethylbenzene42+2,7-dimethylnaphthalene46+1,2-dinitrobenzene55+1,3-dinitrobenzene56+1,4-dinitrobenzene57+2,4-dinitromethylbenzene60+2,4-dinitrophenol62+ethanol51+ethylbenzene40+fluoranthene47+methanol51	+	chrysene	49
+1,3-dimethylbenzene41+1,4-dimethylbenzene42+2,7-dimethylnaphthalene46+1,2-dinitrobenzene55+1,3-dinitrobenzene56+1,4-dinitrobenzene57+2,4-dinitromethylbenzene60+2,4-dinitrophenol62+ethanol51+ethylbenzene40+fluoranthene47+methanol51	+	cyclohexane	34
+1,4-dimethylbenzene42+2,7-dimethylnaphthalene46+1,2-dinitrobenzene55+1,3-dinitrobenzene56+1,4-dinitrobenzene57+2,4-dinitromethylbenzene60+2,4-dinitrophenol62+ethanol51+ethylbenzene40+fluoranthene47+methanol51	+	decahydronaphthalene	35
+ 2,7-dimethylnaphthalene 46 + 1,2-dinitrobenzene 55 + 1,3-dinitrobenzene 56 + 1,4-dinitrobenzene 57 + 2,4-dinitromethylbenzene 60 + 2,4-dinitrophenol 62 + ethanol 51 + ethylbenzene 40 + fluoranthene 47 + methanol 51	+	1,3-dimethylbenzene	41
+ 1,2-dinitrobenzene 55 + 1,3-dinitrobenzene 56 + 1,4-dinitrobenzene 57 + 2,4-dinitromethylbenzene 60 + 2,4-dinitrophenol 62 + ethanol 51 + ethylbenzene 40 + fluoranthene 47 + methanol 51	+	1,4-dimethylbenzene	42
+ 1,2-dinitrobenzene 55 + 1,3-dinitrobenzene 56 + 1,4-dinitrobenzene 57 + 2,4-dinitromethylbenzene 60 + 2,4-dinitrophenol 62 + ethanol 51 + ethylbenzene 40 + fluoranthene 47 + methanol 51	+		46
+ 1,3-dinitrobenzene 56 + 1,4-dinitrobenzene 57 + 2,4-dinitromethylbenzene 60 + 2,4-dinitrophenol 62 + ethanol 51 + ethylbenzene 40 + fluoranthene 47 + methanol 51	+		55
+ 1,4-dinitrobenzene 57 + 2,4-dinitromethylbenzene 60 + 2,4-dinitrophenol 62 + ethanol 51 + ethylbenzene 40 + fluoranthene 47 + methanol 51	+	1,3-dinitrobenzene	56
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