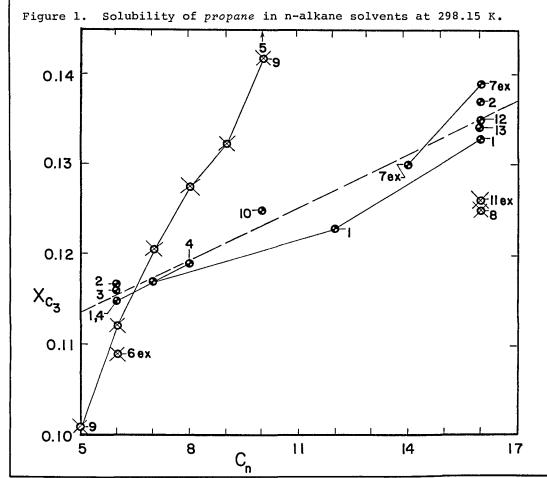
COMPONENTS :	EVALUATOR:
<pre>(1) Propane; C₃H₈; [74-98-6] Butane; C₄H₁₀; [106-97-8] 2-Methylpropane; C₄H₁₀; [75-28-5]</pre>	Walter Hayduk Department of Chemical Engineering University of Ottawa Ottawa, Canada KlN 9B4
(2) Alkane solvents	January, 1984
CRITICAL EVALUATION:	

The solubility of *propane* in the n-alkanes which are normally liquid has been studied by at least thirteen groups of workers. The The sources for the propane solubilities in the particular n-alkane solvents are: pentane (9), hexane (1,2,3,4,6), heptane (1,9), octane (4,9), nonane (9), decane (5,9,10), dodecane (1), tetradecane (7), and hexadecane (1,2,7,8,11,12,13). Data from these sources are shown in the diagram below as the mole fraction propane solubility for a gas of the number of carbon atoms in the solvent molecule, C_n . In a number of instances an extrapolation of the data was required for comparison at 298.15 K and for these cases "ex" has been added after the reference number. Except for the solubilities in hexane and heptane, the data of Jadot (9) appear to be erratic and are rejected. The chromatographic method used, effectively at low gas partial pressures, may have contributed to the apparently unreliable results. The data of Gerrard (5) for the solubility in <u>decane</u> is very much higher than any other data and is also rejected. The extrapolated data of Tilquin et al. (6) in <u>hexane</u>, of Chappelow and Prausnitz (11) in <u>hexadecane</u> and of Lin and Parcher (8) also in <u>hexadecane</u> appear to be at least 5% lower than those of several other workers and are classified as doubtful. The remaining data, classified as tentative, were used to determine a regression line which is shown in Figure 1 as a dashed line:

 $x_{C_3} = 0.1036 + 0.00197 C_n$

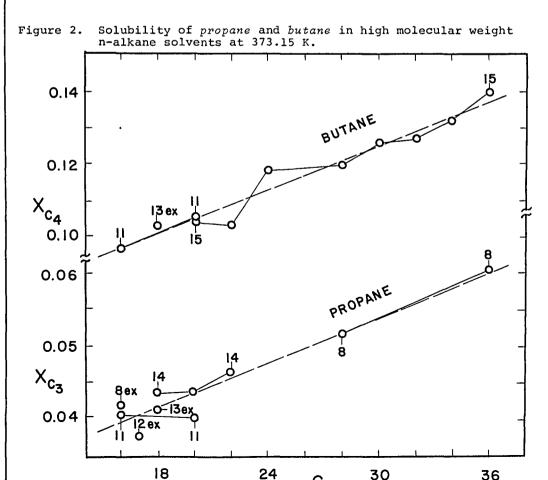
Correlation coefficient = 0.975



COMPONENTS:	EVALUATOR:
(1) Propane; C ₃ H ₈ ; [74-98-6] Butane; C ₄ H ₁₀ ; [106-97-8]	Walter Hayduk Department of Chemical Engineering University of Ottawa
2-Methylpropane; C ₄ H ₁₀ ;[75-28-5]	
(2) Alkane solvents	January, 1984
CRITICAL EVALUATION:	

There are conflicting data for the solubility in branched isomers of alkane solvents. The solubilities in the four branched C_6 solvents, <u>2-methylpentane</u>, <u>3-methylpentane</u>, <u>2,2'-dimethylbutane</u>, (neo-hexane) and <u>2,3-dimethylbutane</u> reported in ref. (3) are all similar to those in n-hexane; the mean value at 298.14 K is almost identical to that calculated from the equation shown above. These data suggest that branching in solvents has only a small effect if any on the solubility, provided that the same number of carbons are present in the solvent molecules. On the other hand, the extrapolated data for the solubility in 2,2'-dimethylbutane of Tilquin et al. (6) is some 15% higher than that for n-hexane solvent. Yet a similar comparison for butane gas solubility by those authors indicates a butane solubility in 2,2'-dimethylbutane which is significantly lower than in n-hexane. Furthermore, the propane solubility in 2,2,4,6,8,8-heptamethylnonane $(C_{16}H_{34})$ as reported by Richon and Renon (13) at 298.15 K is almost four times as great as that in n-hexadecane also as reported by the same authors, an incredible difference. In may be concluded that there are insufficient data to form a sound opinion concerning the effect of branching in alkane solvents.

The solubility of *propane* in n-alkane solvents of higher molecular weight are compared at 373.15 K, a temperature at which all the normally solid alkanes are liquids, in Figure 2. Extrapolation was



Cn

COMPONENTS .

DMPONENTS:	EVALUATOR:
<pre>(1) Propane; C₃H₈; [74-98-6] Butane; C₄H₁₀; [106-97-8] 2-Methylpropane; C₄H₁₀; [75-28-5]</pre>	Walter Hayduk Department of Chemical Engineering University of Ottawa Ottawa, Canada KlN 9B4
(2) Alkane solvents	January, 1984

CRITICAL EVALUATION:

required in several instances to estimate the solubility at 373.15 K. Although scarce, the data show a trend consistent with that of lower molecular weight alkanes, a linear increase in mole fraction solubility with number of carbons per molecule of solvent. The data sources are: for <u>heptadecane</u> (12), <u>octadecane</u> (13,14), <u>eicosane</u> (11,14), <u>docosane</u> (14), <u>octacosane</u> (8) and <u>hexatriacontane</u> (8). These data are all classified as tentative. A straight line through the (extrapolated) data points, shown as a dashed line in Figure 2, has the following constants for use at 373.15 K:

 $x_{C_3} = 0.02250 + 0.00105 C_n$ Correlation coefficient = 0.964

The solubility of *propane* in the branched alkane, 2,6,10,15,19, <u>23-hexamethyltetracosane</u> or squalane (C₃₀H₆₂) at 373.15 K (11) is similar to that for an n-alkane with the same number of carbons. The These data are also classified as tentative.

The data for the solubility of *butane* in n-alkane solvents from pentane to <u>hexadecane</u> for a temperature of 298.15 K are shown in Figure 3. The sources of data are listed according to solvent: pentageneous pent The sources of data are listed according to solvent: pentane (9), <u>hexane</u> (6,9), <u>heptane</u> (2,9), <u>octane</u> (2,9), <u>nonane</u> (9), <u>decane</u> (5,9.10), <u>dodecane</u> (2,10), and <u>hexadecane</u> (2,11,13). Except for the solvents <u>hexane</u> and <u>heptane</u>, the solubilities of Jadot (9) appear erratic as they did for propane solubilities and hence are rejected. The data of Montfort and Arriaga in <u>decane</u> and <u>dodecane</u> (10) appear too high and are also rejected. The extrapolated data of Chappelow and Prausnitz in <u>hexadecane</u> (11) appear low by more than 5% as they did for propane gas in the same solvent, and are rejected. The remaining data (2,5,6,13) are classified as tentative and were used to obtain a regression line for the mole fraction solubility at 298.15 K:

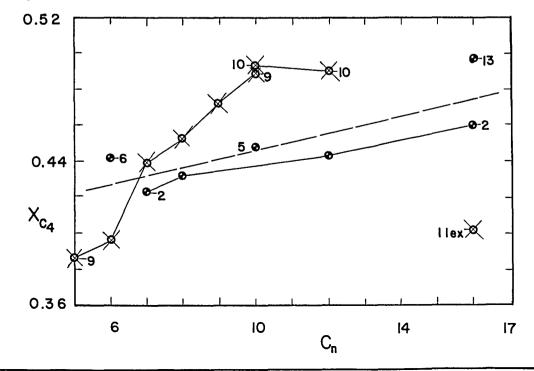


Figure 3. Solubility of butane in n-alkane solvents at 298.15 K.

EVALUATOR:

January, 1984

COMPONENTS:

(1) Propane; C₃H₈; [74-98-6] Butane; C₄H₁₀; [106-97-8] 2-Methylpropane; C₄H₁₀; [75-28-5]
Walter Hayduk Department of Chemical Engineering University of Ottawa Ottawa, Canada KlN 9B4

(2) Alkane solvents

CRITICAL EVALUATION: continued

 $x_{C_4} = 0.3975 + 0.00484 C_n$

Correlation coefficient = 0.813

The solubility of *butane* in 2,2'-dimethylbutane (neohexane)(6) is classified as tentative. The solubility in 2,2,4,4,6,8,8heptamethylnonane (13) is rejected because of an impossible fractional value for Henry's law constant.

Butane solubilities at 373.15 K in the high molecular weight (and normally solid) n-alkane solvents from <u>hexadecane</u> to <u>hexatria-</u> <u>contane</u> are shown in Figure 2. Mainly the data of Parcher et al. (15) are available for these solvents. The solvents and sources are: <u>hexadecane</u> (11), <u>octadecane</u> (13), <u>eicosane</u> (11, 15), <u>docosane</u> (15), <u>tetracosane</u> (15), <u>octacosane</u> (15), <u>triacontane</u> (15), <u>dotriacontane</u> (15), <u>tetratriacontane</u> (15) and <u>hexatriacontane</u> (15). These data are all classified as tentative. A regression equation for the solubility of *butane* at 373.15 K in high molecular weight n-alkane solvents is:

 $x_{C_{d}} = 0.06414 + 0.00203 C_{n}$ Correlation coefficient = 0.980

The solubility of *butane* in 2,6,10,15,19,23-hexamethyltetracosane $(C_{30}H_{62})(11)$, as observed for *propane*, is similar to that for an alkane with the same number of carbons. These data are classified as tentative.

There are three sources of data for the solubility of 2-methylpropane in n-alkane solvents. These are listed by solvent: pentane (9), hexane (6,9), heptane (9), octane (9), nonane (9), and decane (5,9). There are insufficient data for the solubility of 2-methylpropane alone to assess the reliability of the Jadot data (9); however, based on the erratic nature of the solubilities of propane and butane by the same worker when compared with those of other workers, these data are also rejected. Only the data of Tilquin et al. (6) in heptane and of Gerrard (5) in decane remain; these are classified as tentative.

The solubility of 2-methylpropane in <u>eicosane</u> (11) is also classified as tentative.

In all cases the regression equations given in this Critical Evaluation are *approximate* only, because they are based, at least in part, on extrapolated and/or too few data to be highly reliable. Nor is it possible to ascribe useful limits of accuracy to them.

The solubility of the gases *propane*, 2-methylpropane, and butane appear to increase in the order listed, in each of the n-alkane solvents. The order of increasing solubility of gases has been related to the order of increasing normal boiling points of the gases (17) as obtained here.

References

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- 2. Hayduk, W.; Castañeda, R. Can. J. Chem. Eng. <u>1973</u>, 51, 353-358.

 COMPONENTS: (1) Propane; C₃H₈; [74-98-6] Butane; C₄H₁₀; [101-97-8] 2-Methylpropane; C₄H₁₀; [75-28-5] (2) Alkane solvents (2) Alkane solvents (2) Alkane solvents (2) Alkane solvents (3) Fleury, D.; Hayduk, W. Can. J. Chem. Eng. <u>1975</u>, 53, 195-199. (4) Thomsen, E.S.; Gjaldbaek, J.C. Acta Chem. Scand. <u>1963</u>, 17, 134-138. (5) Gerrard, W. J. Appl. Chem. Biotechnol. <u>1973</u>, 23, 1-17. (6) Tilquin, G.; Decanniere, L.; Fontaine, R.; Claes, P. Ann. Soc. Sc. Bruzelles (Belgium) <u>1967</u>, 81, 191-199. (7) King, M.B.; Al-Najjar, H. Chem. Eng. Sci. <u>1977</u>, 32, 1241-1246. (8) Lin, P.J.; Parcher, J.F. J. Chromatog. Sci. <u>1982</u>, 20, 33-38. (9) Jadot, R. J. Chim. Phys. <u>1972</u>, 69, 1036-1040. (10) Montfort, J.P.; Arriaga, J.L. Chem. Eng. Commun. <u>1980</u>, 7, 17-25. (11) Chappelow, C.C.; Prausnitz, J.M. A.I.Ch.E.J. <u>1974</u>, 20, 1097-1104. (12) Lenoir, JY.; Renault, P.; Renon, H. J. Chem. Eng. Data <u>1971</u>, 16, 340-342. (13) Richon, D.; Renon, H. J. Chem. Eng. Data <u>1980</u>, 25, 59-60. (14) Ng, S.; Harris, H.G.; Prausnitz, J.M. J. Chem. Eng. Data, <u>1969</u>, 14, 482-483. (15) Parcher, J.F.; Weiner, P.H.; Hussey, C.L.; Westlake, T.N. J. Chem. Eng. Data <u>1975</u>, 20, 145-151. (16) Gerrard, W. Solubility of Gases and Liquids, Plenum Press, New York <u>1976</u>, Chapter 12. 	134	Alkanes			
 Butane; C₄H₁₀; [101-97-8] 2-Methylpropane; C₄H₁₀; [75-28-5] (2) Alkane solvents (2) Alkane solvents CRITICAL EVALUATION: continued 3. Fleury, D.; Hayduk, W. Can. J. Chem. Eng. <u>1975</u>, 53, 195-199. 4. Thomsen, E.S.; Gjaldbaek, J.C. Acta Chem. Scand. <u>1963</u>, 17, 134-138. 5. Gerrard, W. J. Appl. Chem. Biotechnol. <u>1973</u>, 23, 1-17. 6. Tilquin, G.; Decanniere, L.; Fontaine, R.; Claes, P. Ann. Soc. Sc. Bruxelles (Belgium) <u>1967</u>, 81, 191-199. 7. King, M.B.; Al-Najjar, H. Chem. Eng. Sci. <u>1977</u>, 32, 1241-1246. 8. Lin, P.J.; Parcher, J.F. J. Chromatog. Sci. <u>1982</u>, 20, 33-38. 9. Jadot, R. J. Chim. Phys. <u>1972</u>, 69, 1036-1040. 10. Montfort, J.P.; Arriaga, J.L. Chem. Eng. Commun. <u>1980</u>, 7, 17-25. 11. Chappelow, C.C.; Prausnitz, J.M. A.I.Ch.E.J. <u>1974</u>, 20, 1097-1104. 12. Lenoir, JY.; Renault, P.; Renon, H. J. Chem. Eng. Data <u>1971</u>, 16, 340-342. 13. Richon, D.; Renon, H. J. Chem. Eng. Data <u>1980</u>, 25, 59-60. 14. Ng, S.; Harris, H.G.; Prausnitz, J.M. J. Chem. Eng. Data, <u>1969</u>, 14, 482-483. 15. Parcher, J.F.; Weiner, P.H.; Hussey, C.L.; Westlake, T.N. J. Chem. Eng. Data <u>1975</u>, 20, 145-151. 16. Gerrard, W. Solubility of Gases and Liquids, Plenum Press, New 	COMPON	MPONENTS: EVALUATOR:			
 Fleury, D.; Hayduk, W. Can. J. Chem. Eng. <u>1975</u>, 53, 195-199. Thomsen, E.S.; Gjaldbaek, J.C. Acta Chem. Scand. <u>1963</u>, 17, 134-138. Gerrard, W. J. Appl. Chem. Biotechnol. <u>1973</u>, 23, 1-17. Tilquin, G.; Decanniere, L.; Fontaine, R.; Claes, P. Ann. Soc. Sc. Bruxelles (Belgium) <u>1967</u>, 81, 191-199. King, M.B.; Al-Najjar, H. Chem. Eng. Sci. <u>1977</u>, 32, 1241-1246. Lin, P.J.; Parcher, J.F. J. Chromatog. Sci. <u>1982</u>, 20, 33-38. Jadot, R. J. Chim. Phys. <u>1972</u>, 69, 1036-1040. Montfort, J.P.; Arriaga, J.L. Chem. Eng. Commun. <u>1980</u>, 7, 17-25. Chappelow, C.C.; Prausnitz, J.M. A.I.Ch.E.J. <u>1974</u>, 20, 1097-1104. Lenoir, JY.; Renault, P.; Renon, H. J. Chem. Eng. Data <u>1971</u>, 16, 340-342. Richon, D.; Renon, H. J. Chem. Eng. Data <u>1980</u>, 25, 59-60. Ng, S.; Harris, H.G.; Prausnitz, J.M. J. Chem. Eng. Data, <u>1969</u>, 14, 482-483. Parcher, J.F.; Weiner, P.H.; Hussey, C.L.; Westlake, T.N. J. Chem. Eng. Data <u>1975</u>, 20, 145-151. Gerrard, W. Solubility of Gases and Liquids, Plenum Press, New 		Butane; C ₄ H ₁₀ ; [101-97-8] 2-Methylpropane; C ₄ H ₁₀ ;[75-28-5]	Department of Chemical Engineering University of Ottawa Ottawa, Canada KlN 9B4		
 Thomsen, E.S.; Gjaldbaek, J.C. Acta Chem. Scand. <u>1963</u>, 17, 134-138. Gerrard, W. J. Appl. Chem. Biotechnol. <u>1973</u>, 23, 1-17. Tilquin, G.; Decanniere, L.; Fontaine, R.; Claes, P. Ann. Soc. Sc. Bruxelles (Belgium) <u>1967</u>, 81, 191-199. King, M.B.; Al-Najjar, H. Chem. Eng. Sci. <u>1977</u>, 32, 1241-1246. Lin, P.J.; Parcher, J.F. J. Chromatog. Sci. <u>1982</u>, 20, 33-38. Jadot, R. J. Chim. Phys. <u>1972</u>, 69, 1036-1040. Montfort, J.P.; Arriaga, J.L. Chem. Eng. Commun. <u>1980</u>, 7, 17-25. Chappelow, C.C.; Prausnitz, J.M. A.I.Ch.E.J. <u>1974</u>, 20, 1097-1104. Lenoir, JY.; Renault, P.; Renon, H. J. Chem. Eng. Data <u>1971</u>, 16, 340-342. Richon, D.; Renon, H. J. Chem. Eng. Data <u>1980</u>, 25, 59-60. Ng, S.; Harris, H.G.; Prausnitz, J.M. J. Chem. Eng. Data, <u>1969</u>, 14, 482-483. Parcher, J.F.; Weiner, P.H.; Hussey, C.L.; Westlake, T.N. J. Chem. Eng. Data <u>1975</u>, 20, 145-151. Gerrard, W. Solubility of Gases and Liquids, Plenum Press, New 	CRITIC	CRITICAL EVALUATION: continued			
17. Blais, C.; Hayduk, W. J. Chem. Eng. Data 1983, 28, 181-183.	3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16.	Fleury, D.; Hayduk, W. Can. J. C. Thomsen, E.S.; Gjaldbaek, J.C. A Gerrard, W. J. Appl. Chem. Biote Tilquin, G.; Decanniere, L.; Fon Sc. Bruxelles (Belgium) <u>1967</u> , 81 King, M.B.; Al-Najjar, H. Chem. Lin, P.J.; Parcher, J.F. J. Chro Jadot, R. J. Chim. Phys. <u>1972</u> , 6 Montfort, J.P.; Arriaga, J.L. Ch Chappelow, C.C.; Prausnitz, J.M. Lenoir, JY.; Renault, P.; Renc 16, 340-342. Richon, D.; Renon, H. J. Chem. E Ng, S.; Harris, H.G.; Prausnitz, 14, 482-483. Parcher, J.F.; Weiner, P.H.; Hus J. Chem. Eng. Data <u>1975</u> , 20, 145 Gerrard, W. Solubility of Gases York <u>1976</u> , Chapter 12.	 Acta Chem. Scand. <u>1963</u>, 17, 134-138. Achnol. <u>1973</u>, 23, 1-17. Ataine, R.; Claes, P. Ann. Soc. , 191-199. Eng. Sci. <u>1977</u>, 32, 1241-1246. Amatog. Sci. <u>1982</u>, 20, 33-38. 9, 1036-1040. A.I.Ch.E.J. <u>1974</u>, 20, 1097-1104. A.I.Ch.E.J. <u>1974</u>, 20, 1097-1104. Ann, H. J. Chem. Eng. Data <u>1971</u>, Ang. Data <u>1980</u>, 25, 59-60. J.M. J. Chem. Eng. Data, <u>1969</u>, Asey, C.L.; Westlake, T.N. -151. and Liquids, Plenum Press, New 		

	100
COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Propane; $C_{3}H_{6}$; [74-98-6]	Jadot, R.
(2) Pentane; C ₅ H ₁₂ ; [109-66-0] or	J. Chim. Phys. <u>1972</u> , 69, 1036-40
Hexane; C ₆ H ₁ ₄ ; [110-54-3]	
VARIABLES:	PREPARED BY:
<i>T/</i> K: 298.15 <i>P/</i> kPa: 101.3	C.L. Young
·	l
EXPERIMENTAL VALUES:	
T/K Henry's Law Constant,H /atm	Mole fraction ⁺ $\# \Delta H \infty$ at partial pressure /cal mol ⁻¹ of 101.3 kPa, $x_{C_3H_8}$ (/J mol ⁻¹)
Pentane; C	5H12; [109-66-0]
298.15 9.916	0.1008 -
Hexane; C ₆	H ₁₄ ; [110-54-3]
298.15 8.924	0.1121 200 (837)
AUXILIARY	INFORMATION
METHOD /APPARATUS / PROCEDURE :	SOURCE AND PURITY OF MATERIALS;
The conventional gas chromatographic technique was used. The carrier gas was helium. The value of Henry's law constant was calculated from the retention time. The value applies to very low partial pressures of gas and there may be a substantial difference from that measured at 1 atm. pressure. There is also considerable uncertainty in the value of Henry's constant since no	No details given.
allowance was made for surface adsorption.	ESTIMATED ERROR:
	$\delta T/K = \pm 0.05; \ \delta H = \pm 2\%$
	REFERENCES:

I3b Aika	nes
COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Propane; C ₃ H ₈ ; [74-98-6] (2) Hexane; C ₆ H ₁₄ ; [110-54-3]	Hayduk, W.; Walter, E.B.; Simpson, P. <i>J. Chem. Eng. Data</i> <u>1972</u> , 17, 59-61.
VARIABLES: T/K: 298.15 P/kPa: 101.325 EXPERIMENTAL VALUES:	PREPARED BY: W. Hayduk
T/K Ostwald Coefficient ¹ Bu	unsen Coefficient ² Mole Fraction ¹
	$msen Coefficient Mole Fraction2 m^3 (STP) m^{-3} atm^{-1} x_1$
298.15 23.75	21.76 0.115
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
A volumetric method using a glass apparatus was employed. Degassed solvent contacted the gas while flowing as a thin film, at a constant rate, through an absorption spiral into a solution buret. A constant solvent flow was obtained by means of a calibrated syringe pump. The solution at the end of the spiral was considered saturated.	 Matheson Co. Specified as instrument grade of minimum purity 99.5 per cent. Canlab. Chromatoquality grade of minimum specified purity 99.9 per cent.
Dry gas was maintained at atmosphe- ric pressure in a gas buret by mechanically raising the mercury level in the buret at an adjustable rate. The solubility was calculated from the constant slope of volume of gas dissolved and volume of solvent injected. Degassing was accomplished using a two stage vacuum process described by Clever et al.(1).	ESTIMATED ERROR: $\delta T/K = 0.1$ $\delta x_1/x_1 = 0.01$ REFERENCES: 1. Clever, H.L.; Battino, R.; Saylor, J.H.; Gross, P.M. J. Phys. Chem. <u>1971</u> , 61, 1078.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Propane; C ₃ H ₈ ; [74-98-6]	Hayduk, W.; Castañeda, R.
	Can. J. Chem. Eng. <u>1973</u> , 51,
(2) Hexane; C ₆ H ₁₄ ; [110-54-3]	353-358.
VARIABLES:	PREPARED BY:
<i>т</i> /к: 298.15	W. Hayduk
<i>P/</i> kPa: 101.325	
EXPERIMENTAL VALUES:	
T/K Ostwald Coefficient ¹ Bunsen (Coofficient ² Mole fraction ¹ AC ³
$\frac{L/\text{cm}^3 \text{ cm}^{-3}}{2} \frac{\alpha/\text{cm}^3 (S)}{2}$	$\frac{(J \text{ mol}^{-1})}{2} = \frac{x_1}{2}$
298.15 24.0	22.0 0.1166 5327.0
¹ Original data.	
² Calculated by compiler.	
³ Calculated by compiler from the fo	lowing equation:
$\Delta G^{\circ}/J \mod^{-1} = -RT \ln x_{I}$	
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE: SOURCE AND PURITY OF MATERIALS:	
	booked and funtit of infinited.
A volumetric method using a glass	1. Matheson Co. Specified as
apparatus was employed. Degassed solvent contacted the gas while	instrument grade of minimum purity 99.5 per cent.
flowing as a thin film, at a	
constant rate, through an absorption spiral into a solution buret. A	 Canlab. Specified minimum purity 99.0 per cent.
constant solvent flow was obtained by means of a calibrated syringe	
pump. The solution at the end of	
the spiral was considered saturated. Dry gas was maintainted at atmosphe- ric pressure in a gas buret by mechanically raising the mercury $\delta T/K = 0.1$	
rate. The solubility was calculated from the constant slope of volume	
of gas dissolved and volume of solvent injected.	REFERENCES:
	1. Clever, H.L.; Battino, R.;
Degassing was accomplished using a two stage vacuum process described	Saylor, J.H.; Gross, P.M.
by Clever et al. (1).	I Dhug Chom 1971 F1
	J. Phys. Chem. <u>1971</u> , 61, 1078.

138 Alka	nes
COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Propane; C ₃ H ₈ ; [74-98-6]	Thomsen, E.S.; Gjaldbaek, J.C.
(2) Hexane; C ₆ H ₁₄ ; [110-54-3]	Acta Chem. Scand. <u>1963</u> , 17, 134-138.
VARIABLES:	PREPARED BY:
<i>T/K</i> : 298.15 <i>P/</i> kPa: 101.325	E.S. Thomsen, W. Hayduk
EXPERIMENTAL VALUES:	
	unsen Coefficient ¹ Mole Fraction ² cm ³ (STP) cm ⁻³ atm ⁻¹ x_1
298.15 23.7	21.6 0.115
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
The method utilizes a combined glass manometer and bulb enclosed in an air thermostat which is shaken until equilibrium is established. Mercury is used for calibrating the volumes and as the confining liquid. Details in reference 1. The absorbed gas volume is calcula- ted from the initial dry gas, and final solvent vapor-saturated gas volume. The amount of solvent is determined by measuring the mass of mercury displaced.	_

	Aikai	nes			13
COMPONENTS: ORIGINAL MEASUREMENTS: (1) Propane; $C_{3}H_{8}$; [74-98-6] Tilquin, B.; Decanniere, L.; (2) Hexane; $C_{6}H_{14}$; [110-54-3] Fontaine, R.; Claes, P. Ann. Soc. Sc. Bruxelles (Belging 1967, 81, 191-199. VARIABLES: T/K : 288.15 p/kPa : 5.04-7.31 W. Hayduk					
		Fontaine, R.; Claes, P. Ann. Soc. Sc. Bruxelles (Belgium) <u>1967</u> , 81, 191-199. PREPARED BY:		s, P.)
EXPERIMENTAL VALUES:					
t/°C T/K Ostw coef L/c	vald ficient ¹ cm ³ cm ⁻³	М	tole fraction ² $/x_1$	Henry's constant ² <i>H</i> /atm	
15.0 288.15	29.3	_	0.1382	27.2	
METHOD ADDADATHS (DDOCEDHDE -	AUXILIARY				
quantity of liquid was measu weight. The pressure change	ure. egassed a be cally tity of deter- ure he red by	1.	AND PURITY OF MAT Source not give purity specifie mole per cent. Fluka pure grad purity specifie mole per cent.	en; minimum ed as 99.0 le; minimum	
observed after the solvent w released. Experimental details are des	as	$\delta x_1 / \delta x_$	$x_1 = 0.01$	ated by compile	r)

COMPONENTS:	ORIGINAL MEASUREMENTS:
<pre>(1) Propane; C₃H₈; [74-98-6] (2) Hexane; C₆H₁₄; [110-54-3]</pre>	Fleury, D.; Hayduk, W. <i>Can. J. Chem. Eng. <u>1975</u>, 53,</i> 195-199.
$\frac{L/\text{cm}^3 \text{ cm}^{-3}}{258.15 \\ 278.15 \\ 40.4 \\ 298.15 \\ 23.6 \\ 323.15 \\ 13.9 \\ \hline \\ 1 \text{ Original data.} \\ 2 \text{ Calculated by compiler.} \\ 3 \text{ The mole fraction solubility of th} \\ \end{array}$	
Std. deviation for $\Delta G^{\circ} = 12.3 \text{ J m}$ $ \frac{T/K}{258.15} \frac{\Delta G^{\circ}/\text{J mol}^{-1}}{273.15} \frac{x_{j}}{3472} 0.3352$ 273.15 3472 0.2168 283.15 4224 0.1662 293.15 4976 0.1298	$ \begin{array}{c} \begin{array}{c} & & \\ \hline & & \\ 298.15 & 5353 & 0.1154 \\ 303.15 & 5730 & 0.1030 \\ 313.15 & 6484 & 0.0829 \\ 323.15 & 7238 & 0.0676 \end{array} $
	INFORMATION
METHOD/APPARATUS/PROCEDURE: A volumetric method using a glass apparatus was employed. Degassed solvent contacted the gas while flowing as a thin film, at a constant rate, through an absorption spiral into a solution buret. A constant solvent flow was obtained by means of a calibrated syringe pump. The solution at the end of the spiral was considered saturated. Dry gas was maintained at atmosphe- ric pressure in a gas buret by mechanically raising the mercury level in the buret at an adjustable rate. The solubility was calculated from the constant slope of volume of gas dissolved and volume of solvent injected. Degassing was accomplished using a two stage vacuum process described by Clever et al. (1).	minimum purity 99.0 per cent. ESTIMATED ERROR: $\delta T/K = 0.1$

Components :	ORIGINAL MEASUREMENTS:
(1) Propane; C ₃ H ₈ ; [74-98-6]	Fleury, D.; Hayduk, W.
(2) 2-Methylpentane; C ₆ H ₁₄ ; [107-83-5]	Can. J. Chem. Eng. <u>1975</u> , 53, 195–199
VARIABLES:	PREPARED BY:
T/K: 258.15-323.15	W. Hayduk
<i>P/</i> kPa: 101.325	
EXPERIMENTAL VALUES:	
•	unsen Coefficient ² Mole Fraction ¹ cm ³ (STP) cm ⁻³ atm ⁻¹ x_1
258.15 84.5 278.15 40.4 298.15 24.0 323.15 14.1	89.4 0.342 $(0.339)^3$ 39.7 0.190 (0.192) 22.0 0.118 (0.118) 11.9 0.0695 (0.0694)
$\frac{T/K}{258.15} \frac{\Delta G^{\circ}/J \text{ mol}^{-1}}{258.15} \frac{x_1}{3439}$ $\frac{773.15}{283.15} \frac{3439}{4185} \frac{0.220}{0.169}$	$\frac{T/K}{298.15} \frac{\Delta G^{\circ}/J \text{ mol}^{-1}}{5304} \frac{x_{1}}{0.118}$ $\frac{7/K}{303.15} \frac{5304}{5677} \frac{0.118}{0.105}$ $\frac{1}{313.15} \frac{6423}{0.0848} = 0.000$
	323.15 7169 0.0694 INFORMATION
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
A volumetric method using a glass apparatus was employed. Degassed solvent contacted the gas while flowing as a thin film, at a constant rate, through an absorption spiral into a solution buret. A Constant solvent flow was obtained by means of a calibrated syringe pump. The solution at the end of the spiral was considered saturated.	 Matheson Co. Specified as instrument grade of minimum purity 99.5 per cent. Phillips Petroleum. Specified minimum purity 99.0 per cent.
Dry gas was maintained at atmosphe- ric pressure in a gas buret by mechanically raising the mercury level in the buret at an adjustable rate. The solubility was calculated from the constant slope of volume of gas dissolved and volume of	ESTIMATED ERROR: $\delta T/K = 0.1$ $\delta x_1/x_1 = 0.01$ DEFEDENCING
Degassing was accomplished using a two stage vacuum process described by Clever et al. (1).	<pre>REFERENCES: 1. Clever, H.L.; Battino, R.; Saylor, J.H.; Gross, P.M. J. Phys. Chem. <u>1971</u>, 61, 1078.</pre>

42	Alkanes			
COMPONENTS :		ORIGINAL MEASUREMENTS:		
(1) Propa	ра. С.Н. [74-98-6]	Fleury, D.; Hayd	nk W	
(I) FIOPA	ne; C ₃ H ₈ ; [74-98-6]			
(2) 3-Metl	hylpentane; C ₆ H ₁₄ ;	Can. J. Chem. Eng	g. <u>1975</u> , 53,	
[96-1	4-0] 6 14	195-199		
ARIABLES:	: 258.15-323.15	PREPARED BY:		
-	: 101.325	W. Hayduk		
- <u>-</u>				
XPERIMENTAL V	ALUES:			
Т/К	Ostwald Coefficient ¹ L/cm ³ cm ⁻³ a,	Bunsen Coefficient ¹ /cm ³ (STP)cm ⁻³ atm ⁻¹	Mole Fraction ¹	
258.15	84.2	89.1	$0.338 (0.339)^3$	
278.15	42.2	41.4	0.193 (0.190)	
298.15	23.3	21.3	0.113 (0.115)	
323.15	13.8	11.7	0.0673 (0.0669)	
¹ Original	data.			
	ed by compiler.			
	fraction solubility of the	e original data wag	used to determine	
the foll	owing equations for ΔG° as	nd $\ln x_1$ and table of	smoothed values:	
	$ol^{-1} = -RT \ln x_{1} = 76.094$	1		
	1			
	n $x_1 = 2083.7/T - 9.1525$			
Std. de	viation for $\Delta G^\circ = 33.7 \text{ J/}$	mol ⁻¹ ; Correlation	coefficient = 0.99	
Т/К	$\Delta G^{\circ}/J \mod^{-1} x_{1}$	<i>T</i> /Κ ΔG°/J m	x_1	
258.15	2319 0.339	298.15 5363	0.115	
273.15	3460 0.218	303.15 5743		
283.15	4221 0.166	313.15 6504		
293.15	4982 0.130	323.15 7265	0.0669	
		Y INFORMATION		
merico landana			(APP 2 + 1 - 2	
ETHOD/APPARA	rus/procedure:	SOURCE AND PURITY OF N	ATERIALS:	
A volumetr	ic method using a glass	1. Matheson Co.	Specified as	
apparatus '	was employed. Degassed	instrument g	rade of minimum	
	ntacted the gas while	purity 99.5	per cent.	
flowing as a thin film, at a constant rate, through an absorption 2. Phi		n) Dh_{1}	2. Phillips Petroleum. Specified	
	o a solution buret. A		ty 99.0 per cent.	
+	olvent flow was obtained	i intritindin putt	-1 2210 her cent.	
	f a calibrated syringe	1		
	solution at the end of			
	was considered saturated			
Dry gas was maintained at atmosphe- ric pressure in a gas buret by		ESTIMATED ERROR:		
mechanical	ly raising the mercury	$\delta T/K = 0.1$		
	he buret at an adjustable			
	solubility was calculate	$d \delta x_1 / x_1 = 0.01$		
of gas dis	onstant slope of volume solved and volume of	REFERENCES:		
solvent in	jected.			
Degassing	was accomplished using a	1. Clever, H.L.	; Battino, R.;	
	vacuum process described	Saylor, J.H.	; Gross, P.M.	
	et al. (1).	J. Phys. Che	m. 1971, 61,	
		1078.		
)		
		1078.		

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COMPONENTS: (1) Propane; C ₃ H ₈ ; [74-98-6]		
	ORIGINAL MEASUREMENTS:	
(1) 110pane, 0308, 100 00	Tilquin, B.; Decann Fontaine, R.; Claes	
(2) 2,2'-Dimethylbutane (Neo-hexane); C ₆ H ₁₄ ; [75-83-2]	Ann. Soc. Sc. Bruxe	· ·
(100 101110), 06-14, 210 00 25	<u>1967</u> , <i>81</i> , 191-199.	
•		
VARIABLES:	PREPARED BY:	
T/K: 288.15		
P/kPa: 2.15-2.47	W. Haydul	`
EXPERIMENTAL VALUES:	I	
t/°C T/K Ostwald	Mole fraction ²	Henry's
coefficient ¹ L/cm ³ cm ⁻³	* 1	constant ² H/atm
15.0 288.15 37.0	0.1735	35.0
		······································
¹ Original data at low pressure repor	ted as a distribution	n coefficient;
if Henry's law and ideal gas law ap	ply, the distribution	n coefficient
is equivalent to the Ostwald coeffi	cient as snown nere.	
² Calculated by compiler for a gas pa	rital pressure of 10	1.325 kPa
assuming that Henry's law and ideal	gas law apply.	
]		
AUXILIARY	INFORMATION	
AUXILIARY METHOD/APPARATUS/PROCEDURE:	<u></u>	TERIALS :
	INFORMATION SOURCE AND PURITY OF MAT	TERIALS :
	SOURCE AND PURITY OF MAT	en; minimum
METHOD/APPARATUS/PROCEDURE: An all glass apparatus was used at	SOURCE AND PURITY OF MA 1. Source not give purity specific	en; minimum
METHOD/APPARATUS/PROCEDURE: An all glass apparatus was used at a very low gas partial pressure.	SOURCE AND PURITY OF MAY 1. Source not give purity specific mole per cent.	en; minimum ed as 99.0
METHOD/APPARATUS/PROCEDURE: An all glass apparatus was used at a very low gas partial pressure. It contained a replaceable degassed solvent ampule equipped with a	SOURCE AND PURITY OF MAY 1. Source not give purity specific mole per cent. 2. Fluka pure grad	en; minimum ed as 99.0 de; minimum
METHOD/APPARATUS/PROCEDURE: An all glass apparatus was used at a very low gas partial pressure. It contained a replaceable degassed solvent ampule equipped with a breakable point which could be	SOURCE AND PURITY OF MAY 1. Source not give purity specific mole per cent.	en; minimum ed as 99.0 de; minimum
METHOD/APPARATUS/PROCEDURE: An all glass apparatus was used at a very low gas partial pressure. It contained a replaceable degassed solvent ampule equipped with a breakable point which could be broken by means of a magnetically activated plunger. The quantity of	 SOURCE AND PURITY OF MAY Source not give purity specifie mole per cent. Fluka pure grad purity specifie 	en; minimum ed as 99.0 de; minimum
METHOD/APPARATUS/PROCEDURE: An all glass apparatus was used at a very low gas partial pressure. It contained a replaceable degassed solvent ampule equipped with a breakable point which could be broken by means of a magnetically activated plunger. The quantity of gas fed into the system was deter-	 SOURCE AND PURITY OF MAY Source not give purity specifie mole per cent. Fluka pure grad purity specifie 	en; minimum ed as 99.0 de; minimum
METHOD/APPARATUS/PROCEDURE: An all glass apparatus was used at a very low gas partial pressure. It contained a replaceable degassed solvent ampule equipped with a breakable point which could be broken by means of a magnetically activated plunger. The quantity of gas fed into the system was deter- mined by measuring the pressure change in a known volume. The	 SOURCE AND PURITY OF MAY Source not give purity specific mole per cent. Fluka pure grad purity specific mole per cent. 	en; minimum ed as 99.0 de; minimum
METHOD/APPARATUS/PROCEDURE: An all glass apparatus was used at a very low gas partial pressure. It contained a replaceable degassed solvent ampule equipped with a breakable point which could be broken by means of a magnetically activated plunger. The quantity of gas fed into the system was deter- mined by measuring the pressure change in a known volume. The quantity of liquid was measured by	 SOURCE AND PURITY OF MAY 1. Source not give purity specific mole per cent. 2. Fluka pure grad purity specific mole per cent. ESTIMATED ERROR: 	en; minimum ed as 99.0 de; minimum ed as 99.0
METHOD/APPARATUS/PROCEDURE: An all glass apparatus was used at a very low gas partial pressure. It contained a replaceable degassed solvent ampule equipped with a breakable point which could be broken by means of a magnetically activated plunger. The quantity of gas fed into the system was deter- mined by measuring the pressure change in a known volume. The	<pre>SOURCE AND PURITY OF MAY 1. Source not give purity specific mole per cent. 2. Fluka pure grad purity specific mole per cent. ESTIMATED ERROR: T/K = 0.05 (estin)</pre>	en; minimum ed as 99.0 de; minimum
METHOD/APPARATUS/PROCEDURE: An all glass apparatus was used at a very low gas partial pressure. It contained a replaceable degassed solvent ampule equipped with a breakable point which could be broken by means of a magnetically activated plunger. The quantity of gas fed into the system was deter- mined by measuring the pressure change in a known volume. The quantity of liquid was measured by weight. The pressure change was	 SOURCE AND PURITY OF MAY 1. Source not give purity specific mole per cent. 2. Fluka pure grad purity specific mole per cent. ESTIMATED ERROR: 	en; minimum ed as 99.0 de; minimum ed as 99.0
METHOD/APPARATUS/PROCEDURE: An all glass apparatus was used at a very low gas partial pressure. It contained a replaceable degassed solvent ampule equipped with a breakable point which could be broken by means of a magnetically activated plunger. The quantity of gas fed into the system was deter- mined by measuring the pressure change in a known volume. The quantity of liquid was measured by weight. The pressure change was observed after the solvent was	<pre>SOURCE AND PURITY OF MAY 1. Source not give purity specific mole per cent. 2. Fluka pure grad purity specific mole per cent. ESTIMATED ERROR: T/K = 0.05 (estin)</pre>	en; minimum ed as 99.0 de; minimum ed as 99.0
METHOD/APPARATUS/PROCEDURE: An all glass apparatus was used at a very low gas partial pressure. It contained a replaceable degassed solvent ampule equipped with a breakable point which could be broken by means of a magnetically activated plunger. The quantity of gas fed into the system was deter- mined by measuring the pressure change in a known volume. The quantity of liquid was measured by weight. The pressure change was observed after the solvent was released.	SOURCE AND PURITY OF MAY 1. Source not give purity specific mole per cent. 2. Fluka pure grad purity specific mole per cent. ESTIMATED ERROR: T/K = 0.05 (estin $\delta x_1/x_1 = 0.01$ REFERENCES:	en; minimum ed as 99.0 de; minimum ed as 99.0 mated by compiler)
METHOD/APPARATUS/PROCEDURE: An all glass apparatus was used at a very low gas partial pressure. It contained a replaceable degassed solvent ampule equipped with a breakable point which could be broken by means of a magnetically activated plunger. The quantity of gas fed into the system was deter- mined by measuring the pressure change in a known volume. The quantity of liquid was measured by weight. The pressure change was observed after the solvent was released. Experimental details are described	SOURCE AND PURITY OF MAY 1. Source not give purity specific mole per cent. 2. Fluka pure grad purity specific mole per cent. ESTIMATED ERROR: T/K = 0.05 (estin $\delta x_1/x_1 = 0.01$ REFERENCES: 1. Rzad, S.; Claes	en; minimum ed as 99.0 de; minimum ed as 99.0 mated by compiler) s, P.
METHOD/APPARATUS/PROCEDURE: An all glass apparatus was used at a very low gas partial pressure. It contained a replaceable degassed solvent ampule equipped with a breakable point which could be broken by means of a magnetically activated plunger. The quantity of gas fed into the system was deter- mined by measuring the pressure change in a known volume. The quantity of liquid was measured by weight. The pressure change was observed after the solvent was released. Experimental details are described	SOURCE AND PURITY OF MAY 1. Source not give purity specific mole per cent. 2. Fluka pure grad purity specific mole per cent. ESTIMATED ERROR: T/K = 0.05 (estin $\delta x_1/x_1 = 0.01$ REFERENCES: 1. Rzad, S.; Claes	en; minimum ed as 99.0 de; minimum ed as 99.0 mated by compiler)
METHOD/APPARATUS/PROCEDURE: An all glass apparatus was used at a very low gas partial pressure. It contained a replaceable degassed solvent ampule equipped with a breakable point which could be broken by means of a magnetically activated plunger. The quantity of gas fed into the system was deter- mined by measuring the pressure change in a known volume. The quantity of liquid was measured by weight. The pressure change was observed after the solvent was released. Experimental details are described	SOURCE AND PURITY OF MAY 1. Source not give purity specific mole per cent. 2. Fluka pure grad purity specific mole per cent. ESTIMATED ERROR: T/K = 0.05 (estin $\delta x_1/x_1 = 0.01$ REFERENCES: 1. Rzad, S.; Clae Bull. Soc. Chin	en; minimum ed as 99.0 de; minimum ed as 99.0 mated by compiler) s, P.

44		Alka	nes	
COMPONENTS:	·····		ORIGINAL MEASUREMENTS:	
	ne; C ₃ H ₈ ; [74-98- imethylbutane; C ₆ 3-2]		Fleury, D.; Haydu Can. J. Chem. Eng 195-199.	
ARIABLES:			PREPARED BY:	······································
	258.15-313.15 101.325		W. Hayduk	
XPERIMENTAL V	ALUES:			<u> </u>
т/к	Ostwald Coeffici L/cm ³ cm ⁻³		unsen Coefficient ² cm ³ (STP)cm ⁻³ atm ⁻¹	Mole Fraction ¹ $\frac{x_1}{2}$
258.15 278.15 298.15 313.15	86.7 41.9 23.8 15.6		91.7 41.1 21.8 13.6	0.346 (0.3467) ³ 0.195 (0.1954) 0.116 (0.1146) 0.0779 (0.0786)
	$x_1 = 41.6253 - 7$ viation for $\Delta G^\circ =$	7.6860 ln	ln $T - 346.07 T$ T l ⁻¹ ; Correlation co	efficient = 0.9999
Std. dev <i>T/K</i> 258.15 273.15 278.15	Plation for $\Delta G^{\circ} =$ $\frac{\Delta G^{\circ}/J \text{ mol}^{-1}}{2273}$ 3391 3776	7.6860 ln 18.9 J mo $\frac{x_1}{0.3467}$ 0.2246 0.1954	T 1 ⁻¹ ; Correlation co T/K ΔG°/J mol 293.15 4963 298.15 5370 303.15 5783	$ \begin{array}{c} -1 & x_{1} \\ 0.1305 \\ 0.1146 \\ 0.1008 \end{array} $
Std. dev <u>T/K</u> 258.15 273.15	$\frac{\Delta G^{\circ}/J \text{ mol}^{-1}}{2273}$ 3391	7.6860 ln 18.9 J mo $\frac{x_1}{0.3467}$ 0.2246 0.1954 0.1704	T 1 ⁻¹ ; Correlation co T/K ΔG°/J mol 293.15 4963 298.15 5370 303.15 5783 313.15 6623	$\frac{x_1}{0.1305}$ 0.1146
Std. dev <u>T/K</u> 258.15 273.15 278.15 283.15	Plation for $\Delta G^{\circ} =$ $\frac{\Delta G^{\circ}/J \text{ mol}^{-1}}{2273}$ 3391 3776	7.6860 ln 18.9 J mo $\frac{x_1}{0.3467}$ 0.2246 0.1954 0.1704	T 1 ⁻¹ ; Correlation co T/K ΔG°/J mol 293.15 4963 298.15 5370 303.15 5783	$ \begin{array}{c} -1 & x_{1} \\ 0.1305 \\ 0.1146 \\ 0.1008 \\ 0.0786 \\ \end{array} $
Std. dev T/K 258.15 273.15 278.15 283.15 283.15 METHOD/APPARAT A volumetr apparatus solvent co flowing as constant r spiral int constant s by means c pump. The the spiral Dry gas wa ric pressu	AG°/J mol ⁻¹ 2273 3391 3776 4166 TUS/PROCEDURE: Tus/PROCEDURE: The method using a was employed. De ontacted the gas was a thin film, at tate, through an a to a solution bure of a calibrated sy e solution at the was considered sy to maintained at a the maintained	7.6860 ln 18.9 J mo <u>x</u> 0.3467 0.2246 0.1954 0.1954 0.1704 AUXILIARY AUXILIARY AUXILIARY a glass egassed while a absorption et. A obtained yringe end of saturated. atmosphe- t by	T 1 ⁻¹ ; Correlation co T/K ΔG°/J mol 293.15 4963 298.15 5370 303.15 5783 313.15 6623 INFORMATION SOURCE AND PURITY OF N 1. Matheson Co. instrument gr purity 99.5 p 2. Phillips Petr minimum purit ESTIMATED ERROR:	$\frac{-1}{2} \frac{x_1}{0.1305}$ 0.1146 0.1008 0.0786 MATERIALS: Specified as rade of minimum
Std. dev T/K 258.15 273.15 273.15 278.15 283.15 METHOD/APPARAT A volumetr apparatus solvent co flowing as constant r spiral int constant s by means c pump. The the spiral Dry gas wa ric pressu mechanical level in t rate. The from the c	AG°/J mol ⁻¹ 2273 3391 3776 4166 TUS/PROCEDURE: TUS/PROCEDURE: Tus/PROCEDURE: Automatical the gas was employed. Definition of the second se	7.6860 ln 18.9 J mo <u>x</u> 0.3467 0.2246 0.1954 0.1954 0.1704 AUXILIARY	T 1^{-1} ; Correlation co T/K $\Delta G^{\circ}/J$ mol 293.15 4963 298.15 5370 303.15 5783 313.15 6623 INFORMATION SOURCE AND PURITY OF N 1. Matheson Co. instrument gr purity 99.5 p 2. Phillips Petr minimum purit ESTIMATED ERROR: $\delta T/K = 0.1$ $\delta x_1/x_1 = 0.01$ REFERENCES:	$\frac{-1}{x_{1}}$ 0.1305 0.1146 0.1008 0.0786 4ATERIALS: Specified as rade of minimum per cent. coleum. Specified

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	anes 14
COMPONENTS:	ORIGINAL MEASUREMENTS:
 Propane; C₃H₈; [74-98-6] 2,3-Dimethylbutane; C₆H₁₄; [79-29-8] 	Fleury, D.; Hayduk, W. Can. J. Chem. Eng. <u>1975</u> , 53, 195-199.
VARIABLES: <i>T</i> /K: 258.15-318.15 <i>P</i> /kPa: 101.325	PREPARED BY: W. Hayduk
EXPERIMENTAL VALUES:	
	nsen Coefficient ² Mole Fraction ¹ m ³ (STP) cm ⁻³ atm ⁻¹ x_1
258.1586.3278.1541.9298.1524.2318.1514.7	91.3 0.341 $(0.344)^3$ 41.1 0.191 (0.190) 22.2 0.115 (0.114) 12.6 0.0718 (0.0724)
$\Delta G^{\circ}/J \text{ mol}^{-1} = -RT \ln x_{1} = 77.533$ $\ln x_{1} = 2131.8/T - 9.3256$ Std. deviation for $\Delta G^{\circ} = 26./J$ mo $T/K \Delta G^{\circ}/J \text{ mol}^{-1} \qquad x_{1}$	1^{-1} ; Correlation coefficient = 0.9999 $T/K \Delta G^{\circ}/J \text{ mol}^{-1} \qquad x_1$
258.15 2291 0.344 273.15 3454 0.219 283.15 4229 0.166	298.15 5392 0.114 303.15 5780 0.101 313.15 6555 0.0806 318.15 6943 0.0724
AUXILIARY	INFORMATION
METHOD / APPARATUS / PROCEDURE :	SOURCE AND PURITY OF MATERIALS:
A volumetric method using a glass apparatus was employed. Degassed solvent contacted the gas while flowing as a thin film, at a constant rate, through an absorption spiral into a solution buret. A constant solvent flow was obtained by means of a calibrated syringe pump. The solution at the end of the spiral was considered saturated. Dry gas was maintained at atmosphe-	minimum purity 99.0 per cent.
ric pressure in a gas buret by mechanically raising the mercury level in the buret at an adjustable rate. The solubility was calculated from the constant slope of volume of gas dissolved and volume of	ESTIMATED ERROR: $\delta T/K = 0.1$ $\delta x_1/x_1 = 0.01$ REFERENCES:
solvent injected.	1. Clever, H.L.; Battino, R.;

	Alkanes
COMPONENTS:	ORIGINAL MEASUREMENTS:
 Propane; C₃H₈; [74-98-6] Heptane; C₇H₁₆; [142-82-5] 	Hayduk, W.; Walter, E.B.; Simpson, P. J. Chem. Eng. Data <u>1972</u> , 17, 59-61.
VARIABLES:	PREPARED BY:
<i>T</i> /K: 298.15-318.15 <i>P</i> /kPa: 101.325	W. Hayduk
EXPERIMENTAL VALUES:	
T/K Ostwald Coefficient ¹ L/cm ³ cm ⁻³	Bunsen Coefficient ² Mole Fraction ¹ α/cm^3 (STP) $cm^{-3}atm^{-1}$ x_1
298.15 21.65 308.15 17.30 318.15 14.60	19.80.11715.30.094212.50.0798
$\begin{array}{c ccccc} T/K & \Delta G^{\circ}/J \ \text{mol}^{-1} & x_{1} \\ \hline 298.15 & 5335 & 0.116 \\ 303.15 & 5677 & 0.105 \\ 308.15 & 6020 & 0.0954 \\ \hline \end{array}$	$\frac{T/K}{313.15} \qquad \frac{\Delta G^{\circ}/J \text{ mol}^{-1}}{6362} \qquad \frac{x_1}{0.0868}$ 318.15 6705 0.0793
AUXILIA	
	ARY INFORMATION
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
METHOD/APPARATUS/PROCEDURE: A volumetric method using a glass apparatus was employed. Degassed solvent contacted the gas while flowing as a thin film, at a constant rate, through an absorpti spiral into a solution buret. A constant solvent flow was obtained by means of a calibrated syringe pump. The solution at the end of the spiral was considered saturate Dry gas was maintained at atmosphe ric pressure in a gas buret by mechanically raising the mercury level in the buret at an adjustabl	<pre>SOURCE AND PURITY OF MATERIALS: 1. Matheson Co. Specified as instrument grade of minimum purity 99.5 per cent. 2. Canlab. Chromatoquality grade of minimum specified purity 99.0 per cent. ed. ed. ESTIMATED ERROR:</pre>

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COMPONENTS :	ORIGINAL MEASUREMENTS:	
(1) Propane; C ₃ H ₈ ; [74-98-6]	Jadot, R.	
(2) Heptane; C ₇ H ₁₆ ; [142-82-5]	J. Chim. Phys. <u>1972</u> , 69, 1036-40)
or		
Octane; C ₈ H ₁₈ ; [111-65-9] VARIABLES:		
T/K: 298.15	PREPARED BY: C.L. Young	
<i>P/</i> kPa: 101.3	C.1. 100119	
EXPERIMENTAL VALUES:		
T/K Henry's Law Constant, H/atm	Mole fraction ⁺ $\# \Delta H^{\infty}$ at partial pressure /cal mol ⁻¹ of 101.3 kPa, $x_{C_3H_8}$ (/J mol ⁻¹)	
Heptane; C	7H16; [142-82-5]	
298.15 8.29	0.1206 215 (900)	
Octane; C ₈	H18; [111-65-9]	
298.15 7.84	0.1276 230 (962)	
	INFORMATION	<u></u>
METHOD /APPARATUS / PROCEDURE :	SOURCE AND PURITY OF MATERIALS:	
The conventional gas chromatographic technique was used. The carrier gas was helium. The value of Henry's law constant was calculated from the retention time. The value applies to very low partial pressures of gas and there may be a substantial difference from that measured at l atm. pressure. There is also considerable uncertainty in the value of Henry's constant since no allowance was made for surface adsorption.		

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COMPONENTS :	ORIGINAL MEASUREMENTS:
(1) Propane; C ₃ H ₈ ; [74-98-6] (2) Octane; C ₈ H ₁₈ ; [111-65-9]	Thomsen, E.S.; Gjaldbaek, J.C. Acta Chem. Scand. <u>1963</u> , 17, 134-138.
VARIABLES: T/K: 298.15 P/kPa: 101.325 EXPERIMENTAL VALUES:	PREPARED BY: E.S. Thomsen, W. Hayduk
	unsen Coefficient ¹ Mole Fraction ² cm ³ (STP)cm ⁻³ atm ⁻¹ x ₁
298.15 19.86	18.1 0.1191
AUXILIARY	INFORMATION
METHOD /APPARATUS / PROCEDURE :	SOURCE AND PURITY OF MATERIALS:
The method utilizes a combined glass manometer and bulb enclosed in an air thermostat which is shaken until equilibrium is established. Mercury is used for calibrating the volumes and as the confining liquid. Details in reference 1. The absorbed gas volume is calcula- ted from the initial dry gas, and final solvent vapor-saturated gas volume. The amount of solvent is determined by measuring the mass of mercury displaced.	 Phillips Petroleum Co. Specified as research grade and GC analysis indicated
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COMPONENTS:	ORIGINAL MEASUREMENTS:	
(1) Propane; C ₃ H ₈ ; [74-98-6]	Jadot, R.	
(2) Nonane; C ₉ H ₂₀ ; [111-84-2]	J. Chim. Phys. <u>1972</u> , 6	9, 1036-40
or		
Decane; C ₁₀ H ₂₂ ; [124-18-5]		
VARIABLES: <i>T</i> /K: 298.15	PREPARED BY:	
<i>P/</i> kPa: 101.3	C.L. Young	
EXPERIMENTAL VALUES:		
T/K Henry's Law Constant, H/atm	at partial pressure /	∆H∞ cal mol ⁻¹ /J mol ⁻¹)
Nonane; Ce	H ₂₀ ; [111-84-2]	
298.15 7.566	0.1322 2	60 (1088)
Decane; C ₁	₀ H ₂₂ ; [124-18-5]	
298.15 7.058	0.1417 2	70 (1130)
+ Calculated by compiler assumin	$g x_{C,H} = 1/H$	
# Excess partial molar enthalpy	• •	ilution.
	INFORMATION	
METHOD / APPARATUS / PROCEDURE :	SOURCE AND PURITY OF MATERIA	.s:
The conventional gas chromatographic technique was used. The carrier		
gas was helium. The value of Henry' law constant was calculated from the		
retention time. The value applies t very low partial pressures of gas an		en.
there may be a substantial difference from that measured at 1 atm. pressur	2	en.
		en.
There is also considerable uncertain		en.
There is also considerable uncertain ty in the value of Henry's constant since no allowance was made for	-	en.
There is also considerable uncertain ty in the value of Henry's constant	ESTIMATED ERROR:	
There is also considerable uncertain ty in the value of Henry's constant since no allowance was made for	-	
There is also considerable uncertain ty in the value of Henry's constant since no allowance was made for	ESTIMATED ERROR: $\delta T/K = \pm 0.05;$	
There is also considerable uncertain ty in the value of Henry's constant since no allowance was made for	ESTIMATED ERROR:	
There is also considerable uncertain ty in the value of Henry's constant since no allowance was made for	ESTIMATED ERROR: $\delta T/K = \pm 0.05;$	
There is also considerable uncertain ty in the value of Henry's constant since no allowance was made for	ESTIMATED ERROR: $\delta T/K = \pm 0.05;$	

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Alkanes
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150 AIK	anes
COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Propane; $C_{3}H_{6}$; [74-98-6] (2) Decane; $C_{10}H_{22}$; [124-18-5]	Gerrard, W. J. Appl. Chem. Biotechnol.
(2) Decane; $C_{10}R_{22}$; [124-18-5]	<u>1973</u> , 23, 1-17.
VARIABLES:	PREPARED BY:
T/K: 268.2-298.2 P/kPa: 101.3	C. L. Young
EXPERIMENTAL VALUES:	
Total pressu	re = 101.3 kPa
T/K Mole ratio	Mole fraction of propane [#]
268.2 0.355	0.262
273.2 0.322 278.2 0.303	0.244 0.233
283.2 0.287 293.2 0.266	0.223 0.210
298.2 0.258	0.205
AUXILIARY	INFORMATION
METHOD /APPARATUS / PROCEDURE :	SOURCE AND PURITY OF MATERIALS:
Gas was passed into a known weight	
of pure liquid in a bubbler tube	No details given except that
at a total pressure measured using	"all compounds were purified
a manometer assembly. The amount of absorbed gas was estimabed by weighing. The temperature was	by conventional procedures".
controlled to within 0.2 K. The	ESTIMATED ERROR:
apparatus and procedure are	$\delta T/K = \pm 0.1; \delta x/x = \pm 3\%$
described by Gerrard, ref. (1).	(estimated by compiler).
	REFERENCES:
	l. Gerrard, W.
	J. Appl. Chem. Biotechnol. 1972, 22, 623.

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COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Propane; C ₃ H ₈ ; [74-98-6]	Monfort, J. P.; Arriaga, J. L.
	Chem. Eng. Commun.
(2) Decane; C ₁₀ H ₂₂ ; [124-18-5]	<u>1980</u> , 7, 17-25.
VARIABLES:	PREPARED BY:
T/K: 298.15	
<i>P/</i> kPa: 101.325	C. L. Young
EXPERIMENTAL VALUES:	
T/K Henry's Law Constant	Mole fraction [*] of propane at 101.3 kPa , <i>H</i> /atm partial pressure ^x C ₃ H ₈
298.15 8.02	0.125
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Chromatographic determination with exponential dilutor. Solvent saturated with gas. A stripping gas was slowly passed through the solution and the concentration of dissolved gas measured using gas	 Matheson sample, purity 99 per cent by mass. Merck spectroscopic grade.
chromatography. Details in source.	ESTIMATED ERROR:
	$\delta T/K = \pm 0.03; \ \delta H = \pm 3$ %.
	REFERENCES :

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OMPONENTS:	ORIGINAL MEASUREMENTS:
<pre>(1) Propane; C₃H₈; [74-98-6] (2) Dodecane; C₁₂H₂₆; [112-40-3]</pre>	Hayduk, W.; Walter, E.B.; Simpson, P <i>J. Chem. Eng. Data</i> <u>1972</u> , 17, 59-61.
VARIABLES: T/K: 298.15-318.15 P/kPa: 101.325	PREPARED BY: W. Hayduk
EXPERIMENTAL VALUES:	
	unsen Coefficient ² Mole Fraction ¹ cm^3 (STP) $cm^{-3}atm^{-1}$ $\frac{x_1}{2}$
298.15 14.95 308.15 12.24 318.15 10.21	13.70 0.123 10.85 0.101 8.77 0.0831
$\frac{T/K}{298.15} \frac{\Delta G^{\circ}/J \text{ mol}^{-1}}{5190} \frac{x_1}{0.123}$	$\frac{1^{-1}; \text{ Correlation coefficient} = 0.9999}{\frac{T/K}{313.15} \frac{\Delta G^{\circ}/J \text{ mol}^{-1}}{6576}} \frac{x_{1}}{0.0914}}{0.0832}$
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
A volumetric method using a glass apparatus was employed. Degassed	1. Matheson Co. Specified as instrument grade of minimum purity 99.5 per cent.
solvent contacted the gas while flowing as a thin film, at a constant rate, through an absorption spiral into a solution buret. A constant solvent flow was obtained by means of a calibrated syringe pump. The solution at the end of the spiral was considered saturated. Dry gas was maintained at atmosphe-	 Canlab. Specified olefin-free and of minimum purity 99.0 per cent.
flowing as a thin film, at a constant rate, through an absorption spiral into a solution buret. A constant solvent flow was obtained by means of a calibrated syringe pump. The solution at the end of	2. Canlab. Specified olefin-free and of minimum purity 99.0 per cent. ESTIMATED ERROR: $\delta T/K = 0.1$

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COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Propane; C ₃ H ₈ ; [74-98-6]	King, M.B.; Al-Najjar, H.
(2) Tetradecane; C ₁₄ H ₃₀ ; [629-59-4]	Chem. Eng. Sci. <u>1977</u> , 32, 1241-1246.
VARIABLES: T/K: 303.15-343.15	PREPARED BY:
<i>P</i> /kPa: 101.325	W. Hayduk, C.L. Young
EXPERIMENTAL VALUES:	
T/K Ostwald Coefficient ² E	Bunsen Coefficient ² Mole Fraction ¹
	$(\text{cm}^3 \text{ (STP)}\text{ cm}^{-3}\text{ atm}^{-1} x_1$
303.15 12.36 323.15 8.71	$\begin{array}{ccccc} 11.07 & 0.117 & (0.117)^3 \\ 7.30 & 0.0817(0.0817) \end{array}$
343.15 6.47	5.10 0.0596(0.0596)
	· · · · · · · · · · · · · · · · · · ·
¹ Original data.	
² Calculated by compiler.	
³ The mole fraction solubility of the	e original data was used to determine
the following equations for ΔG° and	I ln x_1 and table of smoothed values:
$\Delta G^{\circ}/J \ mol^{-1} = -RT \ ln \ x_{1} = 65.955$	5 T - 14585.2
	Correlation coefficient = 0.9999
T/K $\Delta G^{\circ}/J \mod^{-1} x_{1}$	T/K $\Delta G^{\circ}/J \text{ mol}^{-1}$ x_1
303.15 5408.4 0.1170	333.15 7387.0 0.0695
313.15 6068.0 0.0972	343.15 8046.6 0.0596
323.15 6727.5 0.0817	
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS;
The apparatus consists of a gas burette, an absorption spiral, a	 Source not specified. Impurities not exceeding 0.6%.
degassing chamber, a solution	
pipette and a magnetic stirrer. The solvent is decassed by spraying	2. Source and purity not specified.
into an evacuated chamber. The	Specifica.
solvent is then displaced by con- tinuously injecting mercury, forcing	r -
the solvent into the absorption	
spiral which is also connected to the gas burette. Absorption takes	ESTIMATED ERROR:
place in the spiral while mixing	$\delta T/K = 0.1$
is provided in the solution pipette at the gas-liquid interface to	$\delta x_1 / x_1 = 0.013 \text{ (authors)}$
ensure that equilibrium is achieved. The volume of solution collected and	
and corresponding volume of dry gas	REFERENCES :
expelled from the gas burette are used in the calculation of solubi-	
lity.	

54 Alka	ines
COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Propane; C ₃ H ₈ ; [74-98-6] (2) Hexadecane; C ₁₆ H ₃₄ ; [544-76-3]	Hayduk, W.; Walter, E.B.; Simpson, P. J. Chem. Eng. Data <u>1972</u> , 17, 59-61.
VARIABLES: T/K: 298.15-318.15 P/kPa: 101.325	PREPARED BY: W. Hayduk
EXPERIMENTAL VALUES:	
	unsen Coefficient ² Mole Fraction ¹ cm ³ (STP) cm ⁻³ atm ⁻¹ x_1
298.15 12.65 308.15 10.25 318.15 8.58	11.59 0.133 9.09 0.109 7.37 0.0896
$\frac{T/K}{298.15} \frac{\Delta G^{\circ}/J \text{ mol}^{-1}}{4996} \frac{x_1}{0.133}$	$\frac{T/K}{1-1}; \text{ Correlation coefficient} = 0.9999}{\frac{T/K}{313.15}} \frac{\Delta G^{\circ}/J \text{ mol}^{-1}}{6032} \frac{x_1}{0.0986}}{0.0986}$ 318.15 6377 0.0897
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE: A volumetric method using a glass apparatus was employed. Degassed solvent contacted the gas while flowing as a thin film, at a constant rate, through an absorption spiral into a solution buret. A constant solvent flow was obtained by means of a calibrated syringe pump. The solution at the end of the spiral was considered saturated. Dry gas was maintained at atmosphe- ric pressure in a gas buret by mechanically raising the mercury level in the buret at an adjustable rate. The solubility was calculated from the constant slope of volume of gas dissolved and volume of solvent injected. Degassing was accomplished using a two stage vacuum process described by Clever et al. (1).	and of minimum purity 99.0 per cent. ESTIMATED ERROR: $\delta T/K = 0.1$ $\delta \pi / \pi = 0.01$

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COMPONENTS:	ORIGINAL MEASUREMENTS:		
(1) $D_{2} = 0.000 = 0.000 = 0.00000 = 0.00000 = 0.00000 = 0.00000 = 0.00000 = 0.00000 = 0.00000 = 0.00000000$			
(1) Propane; C ₃ H ₈ ; [74-98-6]	Hayduk, W.; Castañeda, R. Can. J. Chem. Eng. 1973, 51,		
(2) Hexadecane; $C_{16}^{H}_{34}$; [544-76-3]	353-358.		
VARIABLES: <i>T</i> /K: 298.15	PREPARED BY:		
<i>P/</i> kPa: 101.325	W. Hayduk		
EXPERIMENTAL VALUES:	· · · · · · · · · · · · · · · · · · ·		
T/K Ostwald Coefficient ¹ Bunsen	Coefficient ² Mole Fraction ¹ $\Delta G^{o 3}$		
$L/cm^3 cm^{-3}$ α/cm (S	TP) cm ⁻³ atm ⁻¹ x_1 /J mol ⁻¹		
298.15 12.93	11.85 0.1370 4927.3		
¹ Original data.			
² Calculated by compiler.			
³ Calculated by compiler from the fo	llowing equation:		
$\Delta G^{\circ}/J \mod^{-1} = -RT \ln x_{1}$			
1			
AUXILIARY	INFORMATION		
AUXILIARY METHOD/APPARATUS/PROCEDURE:	INFORMATION SOURCE AND PURITY OF MATERIALS:		
METHOD/APPARATUS/PROCEDURE: A volumetric method using a glass	SOURCE AND PURITY OF MATERIALS: 1. Matheson Co. Specified as		
METHOD/APPARATUS/PROCEDURE: A volumetric method using a glass apparatus was employed. Degassed solvent contacted the gas while	SOURCE AND PURITY OF MATERIALS:		
METHOD/APPARATUS/PROCEDURE: A volumetric method using a glass apparatus was employed. Degassed solvent contacted the gas while flowing as a thin film, at a	SOURCE AND PURITY OF MATERIALS: 1. Matheson Co. Specified as instrument grade of minimum purity 99.5 per cent.		
METHOD/APPARATUS/PROCEDURE: A volumetric method using a glass apparatus was employed. Degassed solvent contacted the gas while flowing as a thin film, at a constant rate, through an absorption spiral into a solution buret. A	SOURCE AND PURITY OF MATERIALS: 1. Matheson Co. Specified as instrument grade of minimum purity 99.5 per cent.		
METHOD/APPARATUS/PROCEDURE: A volumetric method using a glass apparatus was employed. Degassed solvent contacted the gas while flowing as a thin film, at a constant rate, through an absorption spiral into a solution buret. A constant solvent flow was obtained by means of a calibrated syringe	 SOURCE AND PURITY OF MATERIALS: 1. Matheson Co. Specified as instrument grade of minimum purity 99.5 per cent. 2. Canlab. Specified minimum 		
METHOD/APPARATUS/PROCEDURE: A volumetric method using a glass apparatus was employed. Degassed solvent contacted the gas while flowing as a thin film, at a constant rate, through an absorption spiral into a solution buret. A constant solvent flow was obtained by means of a calibrated syringe pump. The solution at the end of the spiral was considered saturated.	 SOURCE AND PURITY OF MATERIALS: 1. Matheson Co. Specified as instrument grade of minimum purity 99.5 per cent. 2. Canlab. Specified minimum 		
METHOD/APPARATUS/PROCEDURE: A volumetric method using a glass apparatus was employed. Degassed solvent contacted the gas while flowing as a thin film, at a constant rate, through an absorption spiral into a solution buret. A constant solvent flow was obtained by means of a calibrated syringe pump. The solution at the end of the spiral was considered saturated. Dry gas was maintained at atmosphe-	 SOURCE AND PURITY OF MATERIALS: 1. Matheson Co. Specified as instrument grade of minimum purity 99.5 per cent. 2. Canlab. Specified minimum 		
METHOD/APPARATUS/PROCEDURE: A volumetric method using a glass apparatus was employed. Degassed solvent contacted the gas while flowing as a thin film, at a constant rate, through an absorption spiral into a solution buret. A constant solvent flow was obtained by means of a calibrated syringe pump. The solution at the end of the spiral was considered saturated. Dry gas was maintained at atmosphe- ric pressure in a gas buret by mechanically raising the mercury	 SOURCE AND PURITY OF MATERIALS: 1. Matheson Co. Specified as instrument grade of minimum purity 99.5 per cent. 2. Canlab. Specified minimum purity 99.0 per cent. ESTIMATED ERROR: δT/K = 0.1 		
METHOD/APPARATUS/PROCEDURE: A volumetric method using a glass apparatus was employed. Degassed solvent contacted the gas while flowing as a thin film, at a constant rate, through an absorption spiral into a solution buret. A constant solvent flow was obtained by means of a calibrated syringe pump. The solution at the end of the spiral was considered saturated. Dry gas was maintained at atmosphe- ric pressure in a gas buret by mechanically raising the mercury level in the buret at an adjustable rate. The solubility was calculated	 SOURCE AND PURITY OF MATERIALS: 1. Matheson Co. Specified as instrument grade of minimum purity 99.5 per cent. 2. Canlab. Specified minimum purity 99.0 per cent. ESTIMATED ERROR: δT/K = 0.1 δm (m = 0.01) 		
METHOD/APPARATUS/PROCEDURE: A volumetric method using a glass apparatus was employed. Degassed solvent contacted the gas while flowing as a thin film, at a constant rate, through an absorption spiral into a solution buret. A constant solvent flow was obtained by means of a calibrated syringe pump. The solution at the end of the spiral was considered saturated. Dry gas was maintained at atmosphe- ric pressure in a gas buret by mechanically raising the mercury level in the buret at an adjustable rate. The solubility was calculated from the constant slope of volume of gas dissolved and volume of	 SOURCE AND PURITY OF MATERIALS: 1. Matheson Co. Specified as instrument grade of minimum purity 99.5 per cent. 2. Canlab. Specified minimum purity 99.0 per cent. ESTIMATED ERROR: δT/K = 0.1 δm (m = 0.01) 		
METHOD/APPARATUS/PROCEDURE: A volumetric method using a glass apparatus was employed. Degassed solvent contacted the gas while flowing as a thin film, at a constant rate, through an absorption spiral into a solution buret. A constant solvent flow was obtained by means of a calibrated syringe pump. The solution at the end of the spiral was considered saturated. Dry gas was maintained at atmosphe- ric pressure in a gas buret by mechanically raising the mercury level in the buret at an adjustable rate. The solubility was calculated from the constant slope of volume	<pre>SOURCE AND PURITY OF MATERIALS: 1. Matheson Co. Specified as instrument grade of minimum purity 99.5 per cent. 2. Canlab. Specified minimum purity 99.0 per cent. ESTIMATED ERROR:</pre>		
METHOD/APPARATUS/PROCEDURE: A volumetric method using a glass apparatus was employed. Degassed solvent contacted the gas while flowing as a thin film, at a constant rate, through an absorption spiral into a solution buret. A constant solvent flow was obtained by means of a calibrated syringe pump. The solution at the end of the spiral was considered saturated. Dry gas was maintained at atmosphe- ric pressure in a gas buret by mechanically raising the mercury level in the buret at an adjustable rate. The solubility was calculated from the constant slope of volume of gas dissolved and volume of solvent injected. Degassing was accomplished using a	<pre>SOURCE AND PURITY OF MATERIALS: 1. Matheson Co. Specified as instrument grade of minimum purity 99.5 per cent. 2. Canlab. Specified minimum purity 99.0 per cent. ESTIMATED ERROR:</pre>		
METHOD/APPARATUS/PROCEDURE: A volumetric method using a glass apparatus was employed. Degassed solvent contacted the gas while flowing as a thin film, at a constant rate, through an absorption spiral into a solution buret. A constant solvent flow was obtained by means of a calibrated syringe pump. The solution at the end of the spiral was considered saturated. Dry gas was maintained at atmosphe- ric pressure in a gas buret by mechanically raising the mercury level in the buret at an adjustable rate. The solubility was calculated from the constant slope of volume of gas dissolved and volume of solvent injected.	SOURCE AND PURITY OF MATERIALS: 1. Matheson Co. Specified as instrument grade of minimum purity 99.5 per cent. 2. Canlab. Specified minimum purity 99.0 per cent. ESTIMATED ERROR: $\delta T/K = 0.1$ $\delta x_1/x_1 = 0.01$ REFERENCES: 1. Clever, H.L.; Battino, R.;		

COMPONENTS:			ORIGINAL MEASUREMENTS:		
 Propane; C₃H₈; [74-98-6] Hexadecane; C₁₆H₃₄; [544-76-3] 		King, M.B.; Al-Najjar, H. Chem. Eng. Sci. <u>1977</u> , 32,			
(2) heade	16"34, ¹		1241-1240	5.	
VARIABLES:			PREPARED BY:		
-	<pre>X: 303.15-343.15 A: 101.325</pre>		W. Hayduk, C.L. Young		
EXPERIMENTAL V	ALUES:				
T/K	Ostwald Coeffici L/cm ³ cm ⁻³		unsen Coeff: cm³ (STP)cm		ole Fraction ¹
303.15 323.15 343.15	11.86 8.25 6.06		10.62 6.91 4.77	0	.125 (0.1246) ³ .0865(0.0871) .0625(0.0623)
¹ Original data. ² Calculated by compiler. ³ The mole fraction solubility of the original data was used to determine the following equations for ΔG° and $\ln x_{1}$ and table of smoothed values: $\Delta G^{\circ}/J \mod^{-1} = -RT \ln x_{1} = 46.512 T \ln T - 248.46 T$ $\ln x_{1} = 29.883 - 5.5941 \ln T$, Correlation coefficient = 0.9998					
T/K	$\Delta G^{\circ}/J \text{ mol}^{-1}$	x ₁	T/K	ΔG°/J mol	
303.15 313.15 323.15	5249.8 5895.9 6556.6	0.1246 0.1039 0.0871	333.15 343.15	7231.7 7920.9	
	·····	AUXILIARY	INFORMATION		
METHOD/APPARAT	TUS/PROCEDURE:		SOURCE AND PU	RITY OF MATER	IALS:
The apparatus consists of a gas burette, an absorption spiral, a degassing chamber, a solution pipette and a magnetic stirrer. The solvent is degassed by spraying into an evacuated chamber. The solvent is then displaced by con- tinuously injecting mercury, forcing the solvent into the absorption spiral which is also connected to the gas burette. Absorption takes place in the spiral while mixing is provided in the solution pipette at the gas-liquid interface to ensure that equilibrium is achieved. The volume of solution collected and corresponding volume of dry gas expelled from the gas burette are used in the calculation of solubi- lity.		 Sourd Imput Sourd spect 	ce not spec rities not ce and puri ified.	ified. exceeding 0.6%.	
		•	OR: 0.1 0.013 (aut	hors)	

	Alkanes	15
COMPONENTS:	ORIGI	NAL MEASUREMENTS:
(1) Propane; C ₃ H ₈ ; [74-98-6] Cha	ppelow, C.C.; Prausnitz, J.M.
(2) Hexadecane; C ₁₆ H ₃₄ ; [54		. <i>Ch.E.J.</i> <u>1974</u> , 20, 1097-1104.
WARIABLES: T/K: 300-475	PREPA	RED BY:
P/kPa: 101.325	C.1	. Young
EXPERIMENTAL VALUES:		
т/К Не	nry's Constant # /atm	Mole fraction ^b of propane at 1 atm. partial pressure, ${}^{x}C_{3}H_{8}$
300	8.34	0.120
325	12.9	0.0775
350	18.6	0.0538
375	25.4	0.0394
400	33.2	0.0301
425	41.6	0.0240
450	50.1	0.0200
475	58.4	0.0171
^b Calculated by compiler as fraction and pressure.	suming linear	relationship between mole
	AUXILIARY INFOR	MATION
METHOD/APPARATUS/PROCEDURE: Volumetric apparatus simila that descrived by Dymond an Hildebrand (1). Pressure m with a null detector and pr gauge. Details in ref. (2)	r to Sol d giv easured ecision	E AND PURITY OF MATERIALS: .vent degassed, no other details /en.
	REFE	MATED ERROR: $\delta T/K = \pm 0.1; \ \delta x_{C_3H_8} = \pm 1\%$ RENCES: Dymond, J.; Hildebrand, J.H. Ind. Eng. Chem. Fundam. <u>1967</u> , δ , 130.

Alka	1185
COMPONENTS:	ORIGINAL MEASUREMENTS:
 Propane; C₃H₈; [74-98-6] Hexadecane; C₁₆H₃₄; [544-76-3] or 	Richon, D.; Renon, H. <i>J. Chem. Eng. Data</i> <u>1980</u> , 25, 59-60.
Octadecane; C ₁₈ H ₃₈ ; [593-45-3]	
VARIABLES: <i>T</i> /K: 298.15, 323.15 <i>P</i> /kPa: 101.3	PREPARED BY: C.L. Young
EXPERIMENTAL VALUES:	
Limiting val T/K Henry's consta H∞/atm	
Hexadecan 298.15 7.45	e 0.134
Octadecan 323.15 11.3	e 0.0885
AUXILIARY	INFORMATION
METHOD 'APPARATUS/PROCEDURE: Inert gas stripping plus gas chromatographic method. Details	SOURCE AND PURITY OF MATERIALS:
given in ref. (1). Method based on passing constant stream of inert gas through dissolved gas-solvent mixture and periodically injecting mixture into gas chromatograph. Henry's law constant determined from variation of gas peak area with time.	 L'Air Liquide sample, purity 99.5 mole per cent. Hexadecane was a Merck sample, Octadecane was a Fluka sample, both had purities of not less than 99 mole per cent. ESTIMATED ERROR: δT/K = ±0.05; δx_{C3H8} = ±4% (estimated by compiler). REFERENCES: Leroi, J. C.; Masson, J. C.;

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Propane; C ₃ H ₈ ; [74-98-6]	Richon, D.; Renon, H.
(2) 2,2,4,4,6,8,8-Heptamethyl nonane;	
C ₁₆ H ₃₄ ; [4390-04-9]	J. Chem. Eng. Data <u>1980</u> , 25, 59-60.
VARIABLES: <i>T</i> /K: 298.15	PREPARED BY:
P/kPa: 101.3	C. L. Young
EXPERIMENTAL VALUES:	
EXPERIMENTAL VALUES:	
T/K Limiting value of	Henry's constant, H [∞] /atm
298.15	2.01
AUXILIARY	INFORMATION
METHOD 'APPARATUS / PROCEDURE :	SOURCE AND PURITY OF MATERIALS:
Inert gas stripping plus gas	1. L'Air Liquide sample, purity
chromatographic method. Details	99.5 mole per cent.
given in ref. (1). Method based	2. Sigma sample, purity not less
on passing constant stream of inert	than 99 mole per cent.
gas through dissolved gas-solvent	
mixture and periodically injecting	
mixture into gas chromatograph.	
Henry's law constant determined	ESTIMATED ERROR:
from variation of gas peak area with time.	$\delta T/K = \pm 0.05; \delta H^{\infty} = \pm 4\%$
with time.	(estimated by compiler).
	REFERENCES :
	1. Leroi, J. C.; Masson, J. C.;
	Renon, H.; Fabries, J. F.;
	Sannier, H. Ind. Eng. Chem.
	Process. Des. Develop. 1977, 16,

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Propane; $C_{3}H_{B}$; [74-98-6]	Ng. S.; Harris, H.G.; Prausnitz,
	J.M.
(2) Octadecane; C ₁₈ H ₃₈ ; [593-45-3]	J. Chem. Eng. Data. <u>1969</u> , 14, 482-3.
VARIABLES:	PREPARED BY:
T/K: 308.2-423.2	C.L. Young
P/kPa: 101.325	
EXPERIMENTAL VALUES:	
T/K Henry's Constant,	Mole fraction ⁺
H/atm.	of propage in
	liquid, $x_{C_3H_8}$
308.2 8.0	0.125
323.2 10.7	0.0935
343.2 15.1 363.2 20.6	0.0662 0.0485
373.2 23.1	0.0433
423.2 39.2	0.0255
AUXILIARY	INFORMATION
METHOD /APPARATUS / PROCEDURE :	SOURCE AND PURITY OF MATERIALS:
Gas chromatographic method. Solvent supported on Chromosorb P in 6m	 Matheson sample, purity greater than 99 mole per cent.
column. Gas injected as sample, helium used as carrier gas. Henry's	2. Matheson, Coleman and Bell
law constant calculated from know- ledge of retention time and flow	sample, m.pt. 27-28.5°C.
rate.	
	ESTIMATED ERROR:
	$\delta T/K = \pm 0.1; \ \delta H/atm = \pm 5$ %.
	PEEPPENCING
	REFERENCES :

	Alkanes		
OMPONENTS:	ORIGINAL MEASUREMENTS:		
(1) Propane; C ₃ H ₈ ; [74-98-6]	Chappelow, C.C.; Prausnitz, J.M.		
(2) Eicosane; C ₂₀ H ₄₂ ; [112-95-8]	A.I.Ch.E.J. <u>1974</u> , 20, 1097-1104.		
VARIABLES: T/K: 325-475	PREPARED BY:		
P/kPa: 101.325	C.L. Young		
EXPERIMENTAL VALUES:			
T/K Henry's Con H/atm	stant ^a Mole fraction ^b of propane at 1 atm. partial pressure, ${^xC_3}H_8$		
325 12.7	0.0787		
350 18.3	0.0546		
375 25.6	0.0391		
400 34.1	0.0293		
425 43.1	0.0232		
450 52.0	0.0192		
475 60.3	0.0166		
fraction and pressure.	near relationship between mole		
AUXILIARY	INFORMATION		
AUXILIARY METHOD/APPARATUS/PROCEDURE:			
	INFORMATION		
METHOD/APPARATUS/PROCEDURE: Volumetric apparatus similar to that described by Dymond and Hildebrand (1). Pressure measured with a null detector and precision	INFORMATION SOURCE AND PURITY OF MATERIALS: Solvent degassed; no other details given.		
METHOD/APPARATUS/PROCEDURE: Volumetric apparatus similar to that described by Dymond and Hildebrand (1). Pressure measured with a null detector and precision	INFORMATION SOURCE AND PURITY OF MATERIALS: Solvent degassed; no other details		
METHOD/APPARATUS/PROCEDURE: Volumetric apparatus similar to that described by Dymond and Hildebrand (1). Pressure measured with a null detector and precision	INFORMATION SOURCE AND PURITY OF MATERIALS: Solvent degassed; no other details given.		

ORIGINAL MEASUREMENTS:
Ng. S.; Harris, H.G., Prausnitz, J.M
J. Chem. Eng. Data, <u>1969</u> , 14, 482-3.
PREPARED BY:
C. L. Young
l
* Mole fraction of propane in liquid, ${}^{x}C_{_{3}}H_{_{8}}$
0.0943 0.0671 0.0437 0.0346 0.0275
calculated by compiler assuming
calculated by compiler assuming
calculated by compiler assuming INFORMATION
INFORMATION SOURCE AND PURITY OF MATERIALS: 1. Matheson sample, purity greater than 99 mole per cent. 2. Matheson, Coleman and Bell

COMPONENTS:	
	ORIGINAL MEASUREMENTS:
(1) Propane; $C_{3}H_{8}$; [74-98-6]	Ng, S.; Harris, H.G.; Prausnitz, J.M
(2) Docosane; C ₂₂ H ₄₆ ; [629-97-0]	J. Chem. Eng. Data, <u>1969</u> , 14, 482-3.
VARIABLES: <i>T</i> /K: 333.2-473.2	PREPARED BY:
P/kPa: 101.325	C. L. Young
EXPERIMENTAL VALUES:	*
T/K Henry's Constant, H/atm	
333.2 12.3	0.0813
383.2 24.9 408.2 33.6	0.0402 0.0298
433.2 44.0 453.2 48.9	0.0227 0.0204
473.2 60.5	0.0165
* At 1 atmosphere partial pressure,	
mole fraction equals 1/H.	
AUXILIARY	INFORMATION
AUXILIARY METHOD/APPARATUS/PROCEDURE:	INFORMATION SOURCE AND PURITY OF MATERIALS:
AUXILIARY	INFORMATION
AUXILIARY METHOD/APPARATUS/PROCEDURE: Gas chromatographic method. Solvent supported on Chromosorb P in 6 m column. Gas injected as sample, helium used as carried gas. Henry's law constant calculated from knowledge of retention time and flow	INFORMATION SOURCE AND PURITY OF MATERIALS: 1. Metheson sample; purity greater than 99 mole per cent. 2. Matheson, Coleman and Bell

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Propane; C ₃ H ₈ ; [74-98-6]	Chappelow, C.C.; Prausnitz, J.M.
<pre>(2) 2,6,10,15,19,23-Hexamethyl- tetracosane, (squalane); C₃₀H₆₂; [111-01-3]</pre>	A.I.Ch.E.J. <u>1974</u> , 20, 1097-1104.
VARIABLES:	PREPARED BY:
T/K: 300-475 P/kPa: 101.325	C.L. Young
EXPERIMENTAL VALUES:	

Т/К	Henry's Constant ^a <i>H</i> /atm	Mole fraction ^b of propane at 1 atm. partial pressure, ^x C ₃ H ₈
300	5.66	0.177
325	8.83	0.113
350	13.0	0.0769
375	17.9	0.0559
400	23.5	0.0426
425	29.6	0.0338
450	35.9	0.0279
475	41.7	0.0240

^a Authors stated measurements were made at several pressures and values of solubility used were all within the Henry's law region.

^b Calculated by compiler assuming linear relationship between mole fraction and pressure.

AUXILIARY INFORMATION	
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Volumetric apparatus similar to that described by Dymond and Hildebrand (1). Pressure measured with a null detector and precision gauge. Details in ref. (2).	Solvent degassed; no other details given.
	ESTIMATED ERROR:
	$\delta T/K = \pm 0.1; \ \delta x_{C_3H_8} = \pm 1\%$
	REFERENCES :
	<pre>1. Dymond, J.; Hildebrand, J.H. Ind. Eng. Chem. Fundam. <u>1967</u>, 6, 130.</pre>
	 Cukor, P.M.; Prausnitz, J.M. Ind. Eng. Chem. Fundam. <u>1971</u>, 10, 638.

166 Alka	anes		
COMPONENTS:	ORIGINAL MEASUREMENTS:		
(1) Propane; $C_{3}H_{8}$; [74-98-6] (2) Hexadecane; $C_{16}H_{34}$; [544-76-3] Octacosane; $C_{28}H_{58}$; [630-02-4] Hexatriacontane; $C_{36}H_{74}$; [630-06-8]	Lin, P. J.; Parcher, J. F. J. Chromatog. Sci. <u>1982</u> , 20, 33-38.		
VARIABLES: <i>T/K</i> : 298.2-413.2 <i>P₁/kPa</i> : 101.325	PREPARED BY: C. L. Young		
EXPERIMENTAL VALUES:			
Henry's law T/K constant, H/atm	Mole fraction at a partial pressure of 1 atmosphere ^x C ₃ H ₈		
Hexadecane; C ₁₆ H ₃₄ ; 298.2 7.99 313.2 10.1 328.2 13.4	[544-76-3] 0.125 0.0990 0.0746		
Octacosane; C ₂₈ H ₅₈ ; 353.2 15.4 373.2 19.3 393.2 24.7	[630-02-4] 0.0649 0.0518 0.0405		
Hexatriacontane; C ₃ 353.2 12.7 373.2 16.5 393.2 21 413.2 25.7	0.0787 0.0606 0.0476 0.0389		
AUXILIAR	Y INFORMATION		
METHOD/APPARATUS/PROCEDURE: Henry's law constant determined from retention volume of gas on a chromatographic column. Helium was used as a carrier gas and a mass spectrometer was used as a detector. The measured Henry's law constants were independent of sample size, flow rate and composi- tion of injected sample. The dead volume was determined by two independent methods and the values agreed within experimental error.			

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Butane; $C_{4}H_{10}$; [106-97-8]	Jadot, R.
(2) Pentane; C ₅ H ₁₂ ; [109-66-0]	J. Chim. Phys. <u>1972</u> ,69,1036-40
or Hexane; $C_{6}H_{14}$; [110-54-3]	
VARIABLES:	PREPARED BY:
<i>T/</i> K: 298.15 <i>P/</i> kPa: 101.3	C.L. Young
EXPERIMENTAL VALUES:	
T/K Henry's Law Constant, H/atm	Mole fraction ⁺ $\# \Delta H \infty$ at partial pressure /cal mol ⁻¹ of 101.3 kPa, $x_{C_4H_{10}}$ (/J mol ⁻¹)
Pentane; C	5H12; [109-66-0]
298.15 2.594	0.3858 -
Hexane; C ₆ 1	H14; [110-54-3]
298.15 2.524	0.3962 150 (628)
AUXILIARY	INFORMATION
METHOD /APPARATUS / PROCEDURE :	SOURCE AND PURITY OF MATERIALS:
The conventional gas chromatographic technique was used. The carrier gas was helium. The value of Henry's law constant was calculated from the retention time. The value applies to very low partial pressures of gas and there may be a substantial difference from that measured at 1 atm. pressure. There is also considerable uncertainty in the value of Henry's constant since no	No details given.
allowance was made for surface adsorption.	ESTIMATED ERROR:
	$\delta T/K = \pm 0.05; \ \delta H = \pm 2\%$
	REFERENCES :

8 Alkar	nes		
OMPONENTS:	ORIGINAL MEASUREMENTS:		
 Butane; C₄H₁₀; [106-97-8] Hexane; C₆H₁₄; [110-54-3] 	Hayduk, W., Castañeda, R. <i>Can. J. Chem.</i> <u>1973</u> , <i>51</i> , 353-358.		
	PREPARED BY: W. Hayduk		
T/K: 278.15-323.15 P/kPa: 101.325			
XPERIMENTAL VALUES:			
	unsen Coefficient ² cm ³ (STP)cm ⁻³ atm ⁻¹	Mole Fraction ¹	
278.15480.3298.15113.4323.1547.4	471.7 103.9 40.1	0.737 (0.732) ³ 0.386 (0.390) 0.199 (0.198)	
283.15 1124 0.621 3	T/K ΔG°/J mol ⁻ 303.15 2737 313.15 3543 323.15 4350	$ \frac{x_1}{x_1} \\ 0.338 \\ 0.256 \\ 0.198 $	
298.15 233 0.390 AUXILIARY METHOD/APPARATUS/PROCEDURE:	INFORMATION SOURCE AND PURITY OF MA	TEDTAIC.	
A volumetric method using a glass apparatus was employed. Degassed solvent contacted the gas while flowing as a thin film, at a constant rate, through an absorption spiral into a solution buret. A constant solvent flow was obtained by means of a calibrated syringe pump. The solution at the end of the spiral was considered saturated. Dry gas was maintained at atmosphe- ric pressure in a gas buret by mechanically raising the mercury level in the buret at an adjustable rate. The solubility was calculated from the constant slope of volume of gas dissolved and volume of solvent injected.	 Matheson Co. instrument gra purity 99.5 pe Canlab. Speci purity 99.0 pe ESTIMATED ERROR:	Specified as de of minimum r cent. fied minimum er cent.	

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	anes 16		
COMPONENTS:	ORIGINAL MEASUREMENTS:		
(1) Butane; C ₄ H ₁₀ ; [106-97-8] (2) Hexane; C ₆ H ₁₄ ; [110-54-3]	Tilquin, B.; Decanniere, L.; Fontaine, R.; Claes, P. Ann. Soc. Sc. Bruxelles (Belgium) 1967, 81, 191-199.		
VARIABLES: T/K: 288.15 P/kPa: 7.97-8.11 EXPERIMENTAL VALUES:	PREPARED BY: W. Hayduk		
t/°C T/K Ostwald Coefficient ¹ L/cm ³ cm ⁻³	Mole fraction ² Henry's /x ₁ constant ² H/atm		
15.0 288.15 142.1	0.441 2.267		
AUXILIARY	INFORMATION		
METHOD/APPARATUS/PROCEDURE: An all glass apparatus was used at a very low gas partial pressure. It contained a replaceable degas- sed solvent ampule equipped with a breakable point which could be broken by means of a magnetically	 SOURCE AND PURITY OF MATERIALS: Source not given; minimum purity specified as 99.0 mole per cent. Fluka pure grade; minimum purity specified as 99.0 mole per cent. 		

COMPONENTS:	ORIGINAL MEASUREMENTS:		
(1) Butane; C ₄ H ₁₀ ; [106-97-8]	Tilquin, B.; Decanniere, L.; Fontaine, R.; Claes, P.		
(2) 2,2'-Dimethylbutane (Neo-hexane); C ₆ H ₁₄ ; [75-83-2]	Ann. Soc. Sc. Bruxelles (Belgium) <u>1967</u> , 81, 191–199.		
VARIABLES:	PREPARED BY:		
T/K: 288.15	W. Hayduk		
<i>P/</i> kPa: 3.68-3.71			
EXPERIMENTAL VALUES:			
$t/^{\circ}C$ T/K Ostwald coefficient ¹	Mole Fraction ² Henry's $/x_1$ constant ² H/atm		
15.0 288.15 70.4	0.290 3.448		
is equivalent to the Ostwald coeffic ² Calculated by compiler for a gas par assuming that Henry's law and ideal	rtial pressure of 101.325 kPa		
AUXILIARY	INFORMATION		
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:		
An all glass apparatus was used at a very low gas partial pressure. It contained a replaceable degassed solvent ampule equipped with a breakable point which could be broken by means of a magnetically activated plunger. The quantity of gas fed into the system was deter- mined by measuring the pressure change in a known volume. The	 Fluka pure grade; minimum purity specified as 99.0 mole per cent. 		
quantity of liquid was measured by weight. The pressure change was observed after the solvent was released.	ESTIMATED ERROR: T/K = 0.05 (estimated by compiler) $\delta x_1/x_1 = 0.01$		
Experimental details are described by Rzad and Claes(1).	<pre>REFERENCES: 1. Rzad, S.; Claes, P. Bull. Soc. Chim. Belges, <u>1964</u>, 73, 689.</pre>		

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DRIGINAL MEASUREMENTS: Hayduk, W.; Castañeda, R. Can. J. Chem. Eng. 1973, 51, 353-358. PREPARED BY: W. Hayduk msen Coefficient ² Mole Fraction ¹ m^3 (STP) cm ⁻³ atm ⁻¹ x_1 572 0.794 (0.795) ³ 108.3 0.423 (0.423) 39.2 0.214 (0.214)
Can. J. Chem. Eng. <u>1973</u> , 51, 353-358. PREPARED BY: W. Hayduk msen Coefficient ² Mole Fraction ¹ $m^{3} (STP) cm^{-3} atm^{-1} \qquad x_{1}$ 572 0.794 (0.795) ³ 0.423 (0.423)
W. Hayduk msen Coefficient ² Mole Fraction ¹ $m^{3} (STP) cm^{-3} atm^{-1}$ 572 108.3 Mole Fraction ¹ x_{1} $0.794 (0.795)^{3}$ 0.423 (0.423)
$\frac{\text{m}^{3} (\text{STP}) \text{cm}^{-3} \text{atm}^{-1}}{572} \qquad \frac{x_{1}}{0.794 (0.795)^{3}} \\ 108.3 \qquad 0.423 (0.423)$
$\frac{\text{m}^{3} (\text{STP}) \text{cm}^{-3} \text{atm}^{-1}}{572} \qquad \frac{x_{1}}{0.794 (0.795)^{3}} \\ 108.3 \qquad 0.423 (0.423)$
108.3 0.423 (0.423)
$\frac{T/K}{13.15} = \frac{\Delta G^{\circ}/J \text{ mol}^{-1}}{23.15} = \frac{x_1}{10.214}$
INFORMATION
SOURCE AND PURITY OF MATERIALS:
 Matheson Co. Specified as instrument grade of minimum purity 99.5 per cent. Canlab. Specified minimum purity 99.0 per cent. ESTIMATED ERROR: δT/K = 0.1 δx₁/x₁ = 0.01 REFERENCES: Clever, H.L.; Battino, R.; Saylor, J.H.; Gross, P.M. J. Phys. Chem. <u>1971</u>, 61, 1078.

2 Alkanes			
COMPONENTS:	ORIGINAL MEASUREMENTS:		
(1) Butane; C ₄ H ₁₀ ; [106-97-8]	Jadot, R.		
(2) Heptane; C ₇ H ₁₆ ; [142-82-5]	J. Chim. Phys. <u>19</u>	72,69,1036-40.	
or Octane; C ₈ H ₁₈ ; [111-65-9]			
VARIABLES:	PREPARED BY:		
P/kPa: 101.3	C.L. Young		
EXPERIMENTAL VALUES:		<u> </u>	
T/K Henry's Law Constant, H/atm	Mole fraction ⁺ at partial pressure of 101.3 kPa, x _{C4H10}	#∆H∞ /cal mol ⁻¹ (/J mol ⁻¹)	
Heptane; (C ₇ H ₁₆ ; [142-82-5]		
298.15 2.280	0.4386	160 (669)	
Octane; C	₈ H ₁₈ ; [111-65-9]		
298.15 2.21	0.452	180 (753)	
AUXILIAR	Y INFORMATION		
METHOD /APPARATUS / PROCEDURE :	SOURCE AND PURITY OF MATE	RIALS:	
The conventional gas chromatographic technique was used. The carrier gas was helium. The value of Henry's law constant was calculated from the retention time. The value applies to very low partial pressures of gas and there may be a substantial difference from that measured at 1 atm. pressure. There is also considerable uncertainty in the value of Henry's constant since no	No details give	en.	
allowance was made for surface adsorption.	ESTIMATED ERROR:		
-	$\delta T/K = \pm 0.05;$	$SH = \pm 2\%$	
	REFERENCES.		

COMPONENTS:	OMPONENTS:		ORIGINAL M	EASUREMENTS:	
	4 10		Hayduk, W.; Castañeda, R. <i>Can. J. Chem. Eng. <u>1973</u>, 51,</i> 353-358.		
$\frac{L/\text{cm}^3 \text{ cm}^{-3}}{278.15 \\ 298.15 \\ 323.15 \\ 298.15 \\ 43.4 \\ 1 \text{ Original data.} \\ 2 \text{ Calculated by compiler.} \\ 3 The mole fraction solubility of the following equations for ΔG° and ΔG° $		cm ³ (STP) 5: 1(duk efficient ² 0 cm ⁻³ atm ⁻¹ 35 01.1 36.7	Mole Fraction ¹ x_1 0.799 (0.801) ³ 0.432 (0.430) 0.220 (0.220) used to determine smoothed values:	
lr	$D1^{-1} = -RT \ln x_{1}$ $m_{1} = 2578.1/T$ wiation for $\Delta G^{\circ} = \frac{\Delta G^{\circ}/J \text{ mol}^{-1}}{513.0}$ 907.5 1697 2091	- 9.4905 = 9.1 J mo <u>x₁</u> 0.801 0.680			$\frac{x_{1}}{0.373}$ 0.284 0.220
		AUXILIARY	INFORMATIC	N	
METHOD/APPARATUS/PROCEDURE: A volumetric method using a glass apparatus was employed. Degassed solvent contacted the gas while flowing as a thin film, at a constant rate, through an absorption spiral into a solution buret. A constant solvent flow was obtained by means of a calibrated syringe pump. The solution at the end of the spiral was considered saturated. Dry gas was maintained at atmosphe- ric pressure in a gas buret by mechanically raising the mercury level in the buret at an adjustable rate. The solubility was calculated from the constant slope of volume of gas dissolved and volume of solvent injected. Degassing was accomplished using a two stage vacuum process described by Clever et al. (1).		1. Mating put 2. Can put 2. Can put δT $\delta T/K$ $\delta x_1/x_1$ REFERENC 1. Closs Sat J.	strument gra rity 99.5 pe nlab. Speci rity 99.0 pe D ERROR: = 0.1 = 0.01 ES:	Specified as de of minimum r cent. fied minimum er cent Battino, R.; Gross, P.M.	

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4 Alkanes		
COMPONENTS: (1) Butane; C ₄ H ₁₀ ; [106-97-8]	ORIGINAL MEASUREMENTS: Jadot, R.	
<pre>(2) Nonane; C₉H₂₀; [111-84-2] or Decane; C₁₀H₂₂; [124-18-5]</pre>	J. Chim. Phys. <u>1972</u> ,69,1036-40	
VARIABLES:	PREPARED BY:	
T/K: 298.15	C.L. Young	
P/kPa: 101.3		
EXPERIMENTAL VALUES:		
T/K Henry's Law Constant, H/atm	Mole fraction ⁺ $\# \Delta H \infty$ at partial pressure /cal mol ⁻¹ of 101.3 kPa, $x_{C_4H_{10}}$ (/J mol ⁻¹)	
Nonane; C ₉	H ₂₀ ; [111-84-2]	
298.15 2.12	0.472 205 (858)	
Decane; C ₁	0H22; [124-18-5]	
298.15 2.0	0.4888 210 (879)	
AUXILIARY	INFORMATION	
METHOD /APPARATUS / PROCEDURE :	SOURCE AND PURITY OF MATERIALS;	
The conventional gas chromatographic technique was used. The carrier gas was helium. The value of Henry's law constant was calculated from the retention time. The value applies to very low partial pressures of gas and there may be a substantial difference from that measured at l atm. pressure. There is also considerable uncertainty in the value of Henry's constant since no	No details given.	
allowance was made for surface adsorption.	LSTIMATED ERROR:	
	$\delta T/K = \pm 0.05; \ \delta H = \pm 2\%$	
	REFERENCES :	

Alkanes	
COMPONENTS :	ORIGINAL MEASUREMENTS:
(1) Butane; C_4H_{10} ; [106-97-8] (2) Decane; $C_{10}H_{22}$; [124-18-5]	Monfort, J. P.; Arriaga, J. L. Chem. Eng. Commun. <u>1980</u> , 7, 17-25.
/ARIABLES:	PREPARED BY:
P/kPa: 101.325	C. L. Young
EXPERIMENTAL VALUES:	
T/K Henry's Law Consta H/atm	nt, Mole fraction ⁺ , ^x C ₄ H ₁₀
298.15 2.03	0.4926
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Chromatographic determination with exponential dilutor. Solvent saturated with gas. A stripping	 Matheson sample, purity 99 per cent by mass.
gas was slowly passed through the solution and the concentration of dissolved gas measured using gas	2. Merck spectroscopic grade.
chromatography. Details in source.	
	ESTIMATED ERROR:
	$\delta T/K = \pm 0.03; \delta H = \pm 3 \varepsilon.$
	REFERENCES:

176 Alka			nes	
COMPONENTS:		ORIGINAL MEASUREMENTS:		
<pre>(1) Butane; C₄H₁₀; [106-97-8] (2) Decane; C₁₀H₂₂; [124-18-5]</pre>		Gerrard, W. J. Appl. Chem. Biotechnol. <u>1973</u> , 23, 1-17.		
VARIABLES:		PREPARED BY:		
-	/K: 268.2-298. Pa: 73.3, 101		C. L. Young	
EXPERIMENTAL	L VALUES:			
т/к	p*/mmHg	P [*] /kPa	Mole · ratio	Mole fraction # of propane #
268.2 278.2 283.2 293.2 298.2	550 760 760 760 760 760	73.3 101.3 101.3 101.3 101.3 101.3	7.33 4.23 2.334 1.040 0.810	0.880 0.809 0.700 0.510 0.448
		AUXILIARY	INFORMATION	
METHOD /APPARATUS / PROCEDURE :		SOURCE AND PUR	RITY OF MATERIALS:	
Gas was passed into a known weight of pure liquid in a bubbler tube at a total pressure measured using a manometer assembly. The amount of absorbed gas was estimated by weighing. The temperature was controlled to within 0.2 K. The		"all c	ails given except that compounds were purified aventional procedures".	
1	is and procedured by Gerrard,			OR: = ± 0.1 ; $\delta x/x = \pm 3$ % mated by compiler).
		J.	crard, W. Appl. Chem. Biotechnol. 7 <u>2</u> , 22, 623.	

Alkd	ines 1/	
COMPONENTS:	ORIGINAL MEASUREMENTS:	
<pre>(1) Butane; C₄H₁₀; [106-97-8] (2) Dodecane; C₁₂H₂₆; [112-40-3]</pre>	Monfort, J. P.; Arriaga, J. L. Chem. Eng. Commun. <u>1980</u> , 7, 17-25.	
VARIABLES: T/K: 278.15, 298.15 P/kPa: 101.325	PREPARED BY: C. L. Young	
EXPERIMENTAL VALUES:		
T/K Henry's La H/at	aw Constant, Mole fraction ⁺ , tm ^x C _{4H10}	
278.15 298.15	1.02 0.9804 2.04 0.4902	
AUXILIARY	INFORMATION	
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:	
Chromatographic determination with exponential dilutor. Solvent saturated with gas. A stripping gas was slowly passed through the solution and the concentration of	 Matheson sample; purity 99 per cent by mass. Merck spectroscopic grade. 	
dissolved gas measured using gas		
dissolved gas measured using gas chromatography. Details in source.	ESTIMATED ERROR: $\delta T/K = \pm 0.03; \delta H = \pm 3$ %.	

COMPONENTS :	ORIGINAL MEASUREMENTS:	
(1) Butane; C ₄ H ₁₀ ; [106-97-8]	Hayduk, W.; Castañ	eda, R.
(2) Dodecane; C ₁₂ H ₂₆ ; [112-40-3]	Can. J. Chem. Eng.	<u>1973, 51,</u>
(1) 50000000, 012-26, [112 10 0]	353-358.	
VARIABLES: T/K: 278.15-323.15	PREPARED BY:	
<i>P/</i> kPa: 101.325	W. Hayduk	
	·	
EXPERIMENTAL VALUES:		
T/K Ostwald Coefficient ¹ B	unsen Coefficient ²	Mole Fraction ¹
	cm ³ (STP) cm ⁻³ atm ⁻¹	<i>x</i> ₁
		I
278.15 429 298.15 83.8	421.3 76.8	$0.814 (0.0810)^3$
323.15 34.1	28.8	0.443 (0.447) 0.236 (0.235)
		······································
¹ Original data.		
² Calculated by compiler.		
³ The mole fraction solubility of the the following equations for AG° and	e original data was d ln r and table of	used to determine
$\Delta G^{\circ}/J \text{ mol}^{-1} = -RT \ln x_{1} = 75.594$		Smoother futuest
$\ln x_1 = 2470.5/T - 9.0924$		
Std. deviation for $\Delta G^\circ = 17.1 \text{ Jm}$	ol^{-1} : Correlation co	efficient = 0.9999
T/K $\Delta G^{\circ}/J \mod^{-1} x_{1}$	<u>T/K</u> ΔG°/J mol ⁻	<u> </u>
	303.15 2377	0.390
283.15 864.7 0.693 293.15 1621 0.514	313.15 3133 323.15 3888	0.300 0.235
298.15 1999 0.447		
AUXILIARY	INFORMATION	
METHOD / APPARATUS / PROCEDURE :	SOURCE AND PURITY OF MA	TERIALS:
A volumetric method using a glass	1. Matheson Co.	
apparatus was employed. Degassed solvent contacted the gas while	instrument gra purity 99.5 pe	
flowing as a thin film, at a		
constant rate, through an absorption spiral into a solution buret. A	2. Canlab. Speci purity 99.0 pe	
constant solvent flow was obtained	P	
by means of a calibrated syringe pump. The solution at the end of		
the spiral was considered saturated.	,	
Dry gas was maintained at atmosphe- ric pressure in a gas buret by	ESTIMATED ERROR:	
mechanically raising the mercury level in the buret at an adjustable	$\delta T/K = 0.1$	
rate. The solubility was calculated	$\delta x_1 / x_1 = 0.01$	
from the constant slope of volume gas dissolved and volume of	REFERENCES :	· · · · · · · · · · · · · · · · · · ·
solvent injected.		
Degassing was accomplished using a	1. Clever, H.L.;	Battino, R.;
two stage vacuum process described	Saylor, J.H.;	
by Clever et al. (1).	J. Phys. Cehm. 1078,	1971, 61,
	10/0.	

		175
COMPONENTS:	ORIGINAL MEASUREMENTS:	
(1) Butane; C ₆ H ₁₄ ; [106-97-8]	Hayduk, W.; Castai	ñeda, R.
(2) Hexadecane; C ₁₆ H ₃₄ ; [544-76-3]	Can. J. Chem. Eng 353-358.	. <u>1973</u> , <i>61</i> ,
VARIABLES: T/K: 298.15-323.15 P/kPa: 101.325	PREPARED BY: W. Hayduk	
EXPERIMENTAL VALUES:		
T/K Ostwald Coefficient ¹ L/cm ³ cm ⁻³	Bunsen Coefficient ² α/cm^3 (STP) $cm^{-3}atm^{-1}$	Mole Fraction ¹
298.15 68.8 323.15 28.5	63.0 24.1	0.460 0.249
$\Delta G^{\circ}/J \text{ mol}^{-1} = -RT \ln x_{1} = 72.4$ $\ln x_{1} = 2365.4/T - 8.7102$ $\frac{T/K}{298.15}$ 303.15 303	mol ⁻¹ 25 87	$ \frac{x_1}{0.460} 0.404 0.315 $
323.15 37	RY INFORMATION	0.249
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MA	TERIALS:
A volumetric method using a glass apparatus was employed. Degassed solvent contacted the gas while flowing as a thin film, at a constant rate, through an absorptio spiral into a solution buret. A constant solvent flow was obtained by means of a calibrated syringe pump. The solution at the end of the spiral was considered saturated Dry gas was maintained at atmospheric pressure in a gas buret by mechanically raising the mercury level in the buret at an	purity 99.0 per	e of minimum cent. ed minimum
adjustable rate. The solubility	$\delta T/K = 0.1$ $\delta x_1/x_1 = 0.01$	

PB-G*

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COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Butane; C ₄ H ₁₀ ; [106-97-8]	Chappelow, C.C., Prausnitz, J.M.
(2) Hexadecane; C ₁₆ H ₃₄ ; [544-76-3]	A.I.Ch.E.J. <u>1974</u> , 20, 1097-1104.
VARIABLES:	PREPARED BY:
<i>T</i> /K: 300-475 <i>P</i> /kPa: 101.325	C.L. Young
EXPERIMENTAL VALUES:	
T/K Henry's Cons	tant ^a Mole fraction ^b of butane
H/Atm	at 1 atm. partial pressure, ${^xC_4}^{H_{10}}$
300 2.60	0.3846
325 4.18	0.2392
350 7.08	0.1412
375 10.8	0.0925
400 15.4	0.0649
425 20.8	0.0481
450 26.8	0.0373
475 33.1	0.0302
^b Calculated by compiler assuming lin fraction and pressure.	ear relationship between mole
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Volumetric apparatus similar to that described by Dymond and Hildebrand (1). Pressure measured with a null detector and precision gauge. Details in ref. (2).	Solvent degassed; no other details given.
	ESTIMATED ERROR:
	$\delta T/K = \pm 0.1; \ \delta x_{C_4 H_{10}} = \pm 1\%$
	<pre>REFERENCES: 1. Dymond, J.; Hildebrand, J.H. Ind. Eng. Chem. Fundam. 1967, 6, 130. 2. Cukor, P.M.; Prausnitz, J.M. Ind. Eng. Chem. Fundam. 1971, 10, 638.</pre>

COMPONENTS :	ORIGINAL MEASUREMENTS:	
<pre>(1) Butane; C₄H₁₀; [106-97-8] (2) 2,2,4,4,6,8,8-Heptamethyl nonane; C₁₆H₃₄; [4390-04-9]</pre>	Richon, D.; Renon, H. J. Chem. Eng. Data <u>1980</u> , 25, 59-60.	
VARIABLES: <i>T/K</i> : 298.15 <i>P/</i> kPa: 101.3	PREPARED BY: C. L. Young	
EXPERIMENTAL VALUES:		
T/K Limiting value of	Henry's constant, H [∞] /atm	
298.15	0.566	
one (giving a mole fraction solubil: value is rejected.	tty greater than one); hence this	
AUXILIARY	INFORMATION	
METHOD /APPARATUS / PROCEDURE :	SOURCE AND PURITY OF MATERIALS;	
Inert gas stripping plus gas chromatographic method. Details given in ref. (1). Method based on passing constant stream of inert gas through dissolved gas-solvent mixture and periodically injecting mixture into gas chromatograph.	 L'Air Liquide sample, purity 99 mole per cent. Sigma sample, purity not less than 99 mole per cent. 	
Henry's law constant determined from variation of gas peak area with time.	ESTIMATED ERROR: $\delta T/K = \pm 0.05; \delta H^{\infty} = \pm 4\%$ (estimated by compiler).	
	REFERENCES: 1. Leroi, J. C.; Masson, J. C.; Renon, H.; Fabries, J. F.; Sannier, H. Ind. Eng. Chem. Process. Des. Develop. <u>1977</u> , 16, 139.	

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Alkanes
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ORIGINAL MEASUREMENTS:			
Richon, D.; Renon, H. J. Chem. Eng. Data <u>1980</u> , 25, 59-60.			
PREPARED BY: C. L. Young			
of Henry's constant, H [∞] /atm			
Hexadecane 2.01			
Octadecane 3.72			
INFORMATION			
 SOURCE AND PURITY OF MATERIALS: 1. L'Air Liquide sample, purity 99 mole per cent. 2. Hexadecane was a Merck sample, Octadecane was a Fluka sample, both had purities of not less than 99 mole per cent. ESTIMATED ERROR: δT/K = ±0.05; δH[∞] = ±4% (estimated by compiler). REFERENCES. 1. Leroi, J. C.; Masson, J. C.; Renon, H.; Fabries, J. F.; Sannier, H. Ind. Eng. Chem. 			

Alkanes	
COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Butane; C ₄ H ₁₀ ; [106-97-8]	Chappelow, C.C.; Prausnitz, J.M.
(2) Eicosane; C ₂₀ H ₄₂ ; [112-95-8]	A.I.Ch.E.J. <u>1974</u> , 20, 1097-1104.
VARIABLES:	PREPARED BY:
<i>T/K</i> : 325-475 <i>P/</i> kPa: 101.325	C.L. Young
EXPERIMENTAL VALUES:	
T/K Henry's Cons H/atm	stant ^a Mole fraction ^b of butane at 1 atm. partial pressure, ${^xC_4}^{H}_{10}$
325 3.90	0.2564
350 6.30	0.1587
375 9.88	0.1012
400 14.0	0.0714
425 18.8	0.0532
450 24.8	0.0403
475 29.4	0.0340
fraction and pressure.	
AUXILIARY	INFORMATION
METHOD / APPARATUS / PROCEDURE :	SOURCE AND PURITY OF MATERIALS:
Volumetric apparatus similar to that described by Dymond and Hildebrand (1). Pressure measured with a null detector and precision gauge. Details in ref. (2).	Solvent degassed; no other details given.
	ESTIMATED ERROR: $\delta T/K = \pm 0.1; \ \delta x_{C_4}H_{10} = \pm 1\%$ REFERENCES: 1. Dymond, J.; Hildebrand, J.H. Ind. Eng. Chem. Fundam. <u>1967</u> , δ , 130. 2. Cukor, P.M.; Prausnitz, J.M.
	Ind. Eng. Chem. Fundam. <u>1971</u> , 10, 638.

184	Alka	ines	
COMPONENTS:		ORIGINAL MEASUREMEN	TS:
(1) Butane; ($C_{4}H_{10};$ [106-97-8]	Parcher, J. F.	.; Weiner, P. H.;
(2) Eicosane;	$C_{20}H_{42};$ [112-95-8]	Hussey, C. L.	; Westlake, T. N.
	C ₂₂ H ₄₆ ; [629-97-0]	J. Chem. Eng.	Data
		<u>1975, 20, 145</u> -	-151.
VARIABLES:		PREPARED BY:	
•	353.2-393.2	_	
P ₁ /kPa:	101.325	с.	L. Young
EXPERIMENTAL VAL	UES:	. <u>.</u>	
			Mala franchian at
T/K	Specific retention volume	Henry's law Constant ^a	Mole fraction at a partial pressure
•	$/cm^3 g^{-1}$	H/atm	of 1 atm b
	<u> </u>		
	Eicosane; $C_{20}H_{42}$; [1]		
353.2	11.48	6.91	0.145
	Docosane; $C_{22}H_{46}$; [62		0.140
353.2 373.2	10.69 7.42	6.75 9.72	0.148 0.103
393.2	5.63	12.82	0.0780
	osphere.		
<u></u>	AUXILIARY	INFORMATION	
METHOD/APPARATUS	/PROCEDURE :	SOURCE AND PURITY O	OF MATERIALS:
Gas chromato	graphic method in which	1	
butane was u	sed as injected solute	2. No impurity	y detected when
and long cha	in alkane as stationary	analysed by	y GC on SE-30
liquid. The	ermal conductivity	column.	
detector used	d. Calculation of mole		
fraction at	l atmosphere pressure		
involves con	siderable approximation.		
No allowance	was made for the pre-	ESTIMATED ERROR:	<u> </u>
sence of the	carrier gas when esti-	$\delta T/K = \pm 0.1;$	$\delta H/atm = \pm 1.0$ %
mating gas pl	hase imperfection contri-	(estimated by	compiler).
bution to He	nry's law constant.		
Henry's law	constant given by	REFERENCES:	
	273.15R		
$H = \frac{1}{MW}$ solv	ent × Specific retention		
SOLV	volume		
		}	
		1	

/cm³ g ⁻¹ H/atmof 1 atmTetracosane; C224H50; [646-31-1]353.210.346.400.156373.27.828.460.118Octacosane; C226H58; [630-02-4]353.29.955.710.175373.26.848.300.120393.25.0011.350.0881	18:		162	Alka	
(2) Tetracosane; C _{2x} H ₅₀ ; [646-31-1] Hussey, C. L.; Westlake, T. N. J. Chem. Eng. Data 1975, 20, 145-151. VARIABLES: T/K: 353.2-393.2 P/kPa: 101.325 PREPARED BY: C. L. Young T/K Specific retention Youme Youm		rs:	DRIGINAL MEASUREMENT		COMPONENTS:
T/K: 353.2-393.2 P/kPa: 101.325 EXPERIMENTAL VALUES: C. L. Young T/K Specific retention volume /cm ³ g ⁻¹ Henry's law Constant ^a B/atm Mole fraction a partial pres B/atm T/K Specific retention volume /cm ³ g ⁻¹ Henry's law Constant ^a B/atm Mole fraction a partial pres B/atm 353.2 10.34 6.40 0.156 373.2 7.82 8.46 0.118 Octacosane; C2eHse; [630-02-4] 353.2 9.95 5.71 0.175 373.2 6.84 8.30 0.120 393.2 5.00 11.35 0.0681 a Calculated by compiler using equation given by authors (see below). Source and purity of MATERIALS: AUXILIARY INFORMATION MUXILIARY INFORMATION MUXILIARY INFORMATION MUXILIARY INFORMATION MUXILIARY INFORMATION MUXILIARY INFORMATION C. L. Young MUXILIARY INFORMATION MUXILIARY INFORMATION MUXILIARY INFORMATION MUXILIARY		; Westlake, T. N. Data	Hussey, C. L.; J. Chem. Eng.	$c_{2 \ 8}H_{5 \ 8};$	(2) Tetracosar [646-31-1] or Octacosane
T/K volume /cm³ g ⁻¹ Constant a H/atm a partial press of 1 atm Tetracosane; C2+H50; [646-31-1] 353.2 0.134 6.40 0.156 373.2 7.82 8.46 0.118 Octacosane; C2+H50; [630-02-4] 353.2 9.95 5.71 0.175 373.2 6.84 8.30 0.120 393.2 5.00 11.35 0.0881 a calculated by compiler using equation given by authors (see below). b Calculated by compiler assuming Henry's law is valid up to 1 atmosphere. 1 AUXILIARY INFORMATION MUXILIARY INFORMATION Source AND PURITY OF MATERIALS; Gas chromatographic method in which		L. Young		101.325	T/K: P/kPa:
T/K volume /cm³ g ⁻¹ Constant a H/atm a partial press of 1 atm Tetracosane; C22,H50; [646-31-1] 353.2 10.34 6.40 0.156 373.2 7.82 8.46 0.118 Octacosane; C22,H50; [630-02-4] 353.2 9.95 5.71 0.175 373.2 6.84 8.30 0.120 Ottacosane; C22,8H50; [630-02-4] 353.2 9.95 5.71 0.175 373.2 6.84 8.30 0.120 Ottacosane; C22,8H50; [630-02-4] String colspan="2">Ottacosane; C22,8H50; [630-02-4] String colspan="2">Ottacosane; C22,8H50; [630-02-4] Ottacosane; C22,8H50; [630-02-4] String colspan="2">Ottacosane; C22,8H50; [630-02-4] String colspan="2">Ottacosane; C22,8H50; [630-02-4] Ottacosane; C22,8H50; [630-02-4] Ottacosane; C22,8H50; [630-02-4] Ottacosane; C22,8H50; [630-02-4] Ottacosane; C22,8H50; [640-31-1] Ottacosane; C22,8H50; [630-02-4] Auxilianteditiane: Sign colspane: Sign colspane: Sign colspan="2">Ottaco		Mole fraction a	Henry's law	Specific retention	
353.2 10.34 6.40 0.156 373.2 7.82 8.46 0.118 Octacosane; C28H58; [630-02-4] 353.2 9.95 5.71 0.175 373.2 6.84 8.30 0.120 393.2 5.00 11.35 0.0881 Auxiliary information Auxiliary information METHOD/APPARATUS/PROCEDURE: Gas chromatographic method in which butane was used as injected solute and long chain alkane as stationary liquid. Thermal conductivity detector used. Calculation of mole fraction at 1 atmosphere pressure involves considerable approximation. No allowance was made for the pre- Source and pure: Surreinvolves considerable approximation.	sure	a partial pressu of 1 atm b	Constant ^a	volume	т/к
373.2 7.82 8.46 0.118 Octacosane; C20H50; [630-02-4] 353.2 9.95 5.71 0.175 373.2 6.84 8.30 0.120 393.2 5.00 11.35 0.0881 a Calculated by compiler using equation given by authors (see below). b Calculated by compiler assuming Henry's law is valid up to 1 atmosphere. b Calculated by compiler assuming Henry's law is valid up to 1 atmosphere. AUXILIARY INFORMATION MUXILIARY INFORMATION Gas chromatographic method in which butane was used as injected solute and long chain alkane as stationary liquid. Thermal conductivity Source AND PURITY OF MATERIALS: Gas chromatographic method in mole fraction at 1 atmosphere pressure involves consi			[646-31-1]	Tetracosane; C ₂₄ H ₅₀ ;	<u></u>
353.2 9.95 5.71 0.175 373.2 6.84 8.30 0.120 393.2 5.00 11.35 0.0881 a Calculated by compiler using equation given by authors (see below). b Calculated by compiler assuming Henry's law is valid up to 1 atmosphere. b Calculated by compiler assuming Henry's law is valid up to 1 atmosphere. SOURCE AND PURITY OF MATERIALS: Gas chromatographic method in which butane was used as injected solute and long chain alkane as stationary liquid. Thermal conductivity detector used. Calculation of mole fraction at 1 atmosphere pressure involves considerable approximation. No allowance was made for the pre- SURCE AND PURITY OF MATERIALS:					• • • • •
373.2 6.84 8.30 0.120 393.2 5.00 11.35 0.0881 a Calculated by compiler using equation given by authors (see below). b Calculated by compiler assuming Henry's law is valid up to 1 atmosphere. b Calculated by compiler assuming Henry's law is valid up to 1 atmosphere. AUXILIARY INFORMATION AUXILIARY INFORMATION METHOD/APPARATUS/PROCEDURE: Gas chromatographic method in which butane was used as injected solute and long chain alkane as stationary liquid. Thermal conductivity detector used. Calculation of mole fraction at 1 atmosphere pressure involves considerable approximation. No allowance was made for the pre- SURCE AND PURITY OF MATERIALS:			630-02-4]	Octacosane; C ₂₈ H ₅₈ ;	
below). ^b Calculated by compiler assuming Henry's law is valid up to l atmosphere. AUXILIARY INFORMATION METHOD/APPARATUS/PROCEDURE: Gas chromatographic method in which butane was used as injected solute and long chain alkane as stationary liquid. Thermal conductivity detector used. Calculation of mole fraction at l atmosphere pressure involves considerable approximation. No allowance was made for the pre-		0.120	8.30	6.84	373.2
METHOD/APPARATUS/PROCEDURE:SOURCE AND PURITY OF MATERIALS:Gas chromatographic method in which butane was used as injected solute and long chain alkane as stationary liquid. Thermal conductivity detector used. Calculation of mole fraction at 1 atmosphere pressure involves considerable approximation. No allowance was made for the pre-SOURCE AND PURITY OF MATERIALS:Source and Purity of Materials:2. No impurity detected when analysed by GC on SE-30 column.Source and Purity of Materials:Source and Purity of Materials: </th <th></th> <th></th> <th><u></u></th> <th></th> <th></th>			<u></u>		
Gas chromatographic method in which butane was used as injected solute and long chain alkane as stationary liquid. Thermal conductivity detector used. Calculation of mole fraction at 1 atmosphere pressure involves considerable approximation. No allowance was made for the pre-			INFORMATION	AUXILIARY	
and long chain alkane as stationary liquid. Thermal conductivity detector used. Calculation of mole fraction at 1 atmosphere pressure involves considerable approximation. No allowance was made for the pre-		F MATERIALS:	SOURCE AND PURITY O		
liquid. Thermal conductivity column. detector used. Calculation of mole fraction at 1 atmosphere pressure involves considerable approximation. No allowance was made for the pre- ESTIMATED ERROR:		-		-	
No allowance was made for the pre- ESTIMATED ERROR:		y GC on SE-30		ermal conductivity A. Calculation of mole	liquid. The detector used
No arrowance was made for the pre			10 m t + + + + + + + + + + + + + + + + + +		
condo of the derries denote then extin 1 $fm/r = \pm 0.1$. $fn/-\pm m$		\$U/atm - +1 00		-	
sence of the carrier gas when estimating gas phase imperfection contri- $\delta T/K = \pm 0.1; \delta H/atm = \pm 1.0\%$ (estimated by compiler).		•		-	
bution to Henry's law constant.					
Henry's law constant given by			REFERENCES:	constant given by	Henry's law o
$H = \frac{273.15R}{MW_{solvent} \times Specific retention}$				273.15R ent × Specific retention volume	$H = \frac{1}{MW}$ solve

186 Alka	ines
COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Butane; C ₄ H ₁₀ ; [106-97-8]	Chappelow, C.C.; Prausnitz, J.M.
<pre>(2) 2,6,10,15,19,23-Hexamethyl- tetracosane, (squalane); C_{30^H62}; [111-01-3]</pre>	A.I.Ch.E.J. <u>1974</u> , 20, 1097-1104.
VARIABLES:	PREPARED BY:
<i>T/K</i> : 300-475 <i>P/</i> kPa: 101.325	C.L. Young
EXPERIMENTAL VALUES:	
T/K Henry's Con H/atm	Mole fraction ^b of butane at 1 atm. partial pressure, ^x C ₄ H ₁₀
300 2.10	0.4762
325 2.95	0.3390
350 5.15	0.1942
375 8.34	0.1199
400 12.2	0.0820
425 16.3	0.0613
450 20.3	0.0493
475 24.0	0.0417
of solubility used were all within ^b Calculated by compiler assuming lin fraction and pressure.	
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Volumetric apparatus similar to that described by Dymond and Hildebrand (1). Pressure measured with a null detector and precision gauge. Details in ref. (2).	Solvent degassed; no other details given.
	ESTIMATED ERROR:
	$\delta T/K = \pm 0.1; \ \delta x_{C_4H_{10}} = \pm 1\%$
	REFERENCES: 1. Dymond, J.; Hildebrand, J.H. Ind. Eng. Chem. Fundam. <u>1967</u> , 6, 130.
	2. Cukor, P.M.; Prausnitz, J.M. Ind. Eng. Chem. Fundam. <u>1971</u> , 10, 638.

EMENTS:
. F.; Weiner, P. H.; L.; Westlake, T. N. ng. Data 145-151.
C. L. Young
Mole fraction at a partial pressure of l atm ^b
0.175 0.0907
0.193 0.127 0.0962
TTY OF MATERIALS:
rity detected when d by GC on SE-30 R: l; δ <i>H</i> /atm = ±1.0% l by compiler).

88	Alk	anes	
COMPONENTS:		ORIGINAL MEASUREMEN	TS:
(1) Butane;	C ₄ H ₁₀ ; [106-97-8]	Parcher, J. F.	.; Weiner, P. H.;
	iacontane; C ₃₄ H ₇₀ ;	· · ·	; Westlake, T. N.
[14167-9	-	J. Chem. Eng.	Data
or Hexatria [630-06-	acontane; C ₃₆ H ₇₄ ; -8]	<u>1975</u> , 20, 145-	-151.
VARIABLES:		PREPARED BY:	
•	K: 353.2-393.2	c.	L. Young
P/kP	a: 101.325		
EXPERIMENTAL	VALUES:		
т/к	Specific retention	Henry's law	Mole fraction at
	$volume / cm^3 g^{-1}$	Constant a H/atm	a partial pressur of 1 atm b
	/cm² g -		
	Tetratriacontane; C ₃₄	H ₇₀ ; [14167-59-0	<u>ן</u>
353.2	9.22	5.08	0.197
373.2 393.2	6.18 4.69	7.57 9.98	0.132 0.100
2 2 2 2	Hexatriacontane; C ₃₆ E		0.100
252.2		4.88	0.205
353.2 373.2	9.05 6.19	4.88	0.140
393.2	4.55	9.72	0.103
	atmosphere.		
		INFORMATION	
METHOD/APPARA	TUS/PROCEDURE:	SOURCE AND PURITY (OF MATERIALS:
Gas chromat	tographic method in which		
	used as injected solute	2. No impurity	y detected when
and long chain alkane as stationary			Y GC on SE-30
liquid. Thermal conductivity		column.	
detector u	-		
fraction a	t l atmosphere pressure		
	onsiderable approximation.		
	ce was made for the pre-	ESTIMATED ERROR:	
			$\delta H/\text{atm} = \pm 1.0$ %
sence of the	ce was made for the pre-	$\delta T/K = \pm 0.1;$	
sence of t mating gas	ce was made for the pre- he carrier gas when esti-	$\delta T/K = \pm 0.1;$ (estimated by	
sence of t mating gas bution to B	ce was made for the pre- he carrier gas when esti- phase imperfection contri-	$\delta T/K = \pm 0.1;$	
sence of t mating gas bution to B	ce was made for the pre- he carrier gas when esti- phase imperfection contri- Henry's law constant. w constant given by	$\delta T/K = \pm 0.1;$ (estimated by	
sence of the mating gas bution to H Henry's law	ce was made for the pre- he carrier gas when esti- phase imperfection contri- Henry's law constant. w constant given by 273.15R	$\delta T/K = \pm 0.1;$ (estimated by	
sence of the mating gas bution to H Henry's law	ce was made for the pre- he carrier gas when esti- phase imperfection contri- Henry's law constant. w constant given by	$\delta T/K = \pm 0.1;$ (estimated by	
sence of the mating gas bution to H Henry's law	ce was made for the pre- he carrier gas when esti- phase imperfection contri- Henry's law constant. w constant given by 273.15R lyent × Specific retention	$\delta T/K = \pm 0.1;$ (estimated by	

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) 2-Methylpropane; C ₄ H ₁₀ ;	Jadot, R.
[75-28-5]	J. Chim. Phys. 1972, 69, 1036-40.
(2) Pentane; C ₅ H ₁₂ ; [109-66-0]	
or Versee 0 V (110 54 2)	
Hexane; C ₆ H ₁₄ ; [110-54-3]	
VARIABLES:	PREPARED BY:
T/K: 298.15	C.L. Young
<i>P/</i> kPa: 101.325	_
EXPERIMENTAL VALUES:	
T/K Henry's Law Constant, <i>H</i> /atm	Mole fraction ⁺ #∆H∞ at partial pressure /cal mol ⁻¹
	of 101.3 kPa, $x_{C_4H_{10}}$ (/J mol ⁻¹)
	C4H10
Pentane; C	5H12; [109-66-0]
298.15 3.744	0.2650 -
Hexane; C ₆	H14; [110-54-3]
298.15 3.600	0.2778 230 (962)
AUXILIARY	INFORMATION
METHOD /APPARATUS / PROCEDURE :	SOURCE AND PURITY OF MATERIALS:
The conventional gas chromatographic technique was used. The carrier gas was helium. The value of Henry's law constant was calculated from the retention time. The value applies to very low partial pressures of gas and there may be a substantial difference from that measured at l atm. pressure. There is also considerable uncertainty in the value of Henry's constant since no allowance was made for surface adsorption.	No details given. ESTIMATED ERROR:
	$\delta T/K = \pm 0.05; \ \delta H = \pm 2\%$ REFERENCES:

INAL MEASUREMENTS: lquin, B.; Decanniere, L.; ntaine, R.; Claes, P. n. Soc. Sc. Bruxelles (Belgium) 67, 81, 191-199. PARED BY: W. Hayduk Mole fraction ² Henry's x_1 O.313 3.195 as a distribution coefficient; the distribution coefficient tt as shown here. 1 pressure of 101.325 kPa law apply.
<pre>mtaine, R.; Claes, P. n. Soc. Sc. Bruxelles (Belgium) 67, 81, 191-199. PARED BY: W. Hayduk Mole fraction² Henry's x_1 Constant² H/atm 0.313 3.195 as a distribution coefficient; the distribution coefficient t as shown here. 1 pressure of 101.325 kPa</pre>
<u>67</u> , 81, 191-199. PARED BY: W. Hayduk Mole fraction ² Henry's x_1 Constant ² H/atm 0.313 3.195 as a distribution coefficient; the distribution coefficient t as shown here. I pressure of 101.325 kPa
W. Hayduk Mole fraction ² Henry's x_1 Constant ² H/atm 0.313 3.195 as a distribution coefficient; the distribution coefficient the shown here. I pressure of 101.325 kPa
W. Hayduk Mole fraction ² Henry's x_1 Constant ² H/atm 0.313 3.195 as a distribution coefficient; the distribution coefficient the shown here. I pressure of 101.325 kPa
x_{1} $\frac{x_{1}}{0.313}$ x_{1} $\frac{H/atm}{3.195}$ as a distribution coefficient; the distribution coefficient the distribution coefficient the shown here.
x_{1} $\frac{x_{1}}{0.313}$ x_{1} $\frac{H/atm}{3.195}$ as a distribution coefficient; the distribution coefficient the distribution coefficient the shown here.
as a distribution coefficient; the distribution coefficient t as shown here.
the distribution coefficient at as shown here.
RMATION
RCE AND PURITY OF MATERIALS: Source not given; minimum purity specified as 99.0 mole per cent. Fluka pure grade; minimum purity specified as 99.0 mole per cent. TMATED ERROR: T/K = 0.05 (estimated by compiler) $w_1/w_1 = 0.01$
T č

COMPONENTS:	ORIGINAL MEASUREMENTS:
<pre>(1) 2-Methylpropane (isobutane); C₄H₁₀; [75-28-5]</pre>	Tilquin, B.; Decanniere, L.; Fontaine, R.; Claes, P.
(2) 2,2'-Dimethylbutane (Neo-hexane); C ₆ H ₁₄ ; [75-83-2]	Ann. Soc. Sc. Bruxelles (Belgium) <u>1967</u> , 81, 191–199.
VARIABLES:	PREPARED BY:
T/K: 288.15	
P/kPa: 2.11-3.03	W. Hayduk
· · · · · · · · · · · · · · · · · · ·	
EXPERIMENTAL VALUES:	
t/°C T/K Ostwald coefficient ¹ L/cm ³ cm ⁻³	Mole fraction ² Henry's ^x ₁ Constant ² ^{H/atm}
15.0 288.15 125.9	0.420 2.381
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
An all glass apparatus was used at a very low gas partial pressure. It contained a replaceable degassed solvent ampule equipped with a breakable point which could be broken by means of a magnetically activated plunger. The quantity of gas fed into the system was deter- mined by measuring the pressure change in a known volume. The quantity of liquid was measured by weight. The pressure change was observed after the solvent was released. Experimental details are described by Rzad and Claes(1).	 Source not given; minimum purity specified as 99.0 mole per cent. Fluka pure grade; minimum purity specified as 99.0 mole per cent. ESTIMATED ERROR: T/K = 0.05 (estimated by compiler) δx₁/x₁ = 0.01 REFERENCES: Rzad, S.; Claes, P. Bull. Soc. Chim. Belges, <u>1964</u>, 73, 689.

192 Alka	nes
COMPONENTS: (1) 2-Methylpropane; C ₄ H ₁₀ ; [75-28-5] (2) Heptane; C ₇ H ₁₆ ; [142-82-5] or	ORIGINAL MEASUREMENTS: Jadot, R. J. Chim. Phys. <u>1972</u> ,69,1036-40.
Octane; C ₈ H ₁₈ ; [111-65-9] VARIABLES: T/K: 298.15 P/kPa: 101.325	PREPARED BY: C.L. Young
EXPERIMENTAL VALUES:	
T/K Henry's Law Constant, H/atm	Mole fraction ⁺ $\#\Delta H\infty$ at partial pressure /cal mol ⁻¹ of 101.3 kPa, $x_{C_4H_{10}}$ (/J mol ⁻¹)
Heptane; C	7H16; [142-82-5]
298.15 3.352	0.2983 415 (1736)
Octane; C ₈	H ₁₈ ; [111-65-9]
298.15 3.109	0.3216 550 (2301)
	INFORMATION
METHOD APPARATUS/PROCEDURE: The conventional gas chromatographic technique was used. The carrier gas was helium. The value of Henry's law constant was calculated from the retention time. The value applies to very low partial pressures of gas and there may be a substantial difference from that measured at 1 atm. pressure There is also considerable uncertain- ty in the value of Henry's constant since no allowance was made for surface adsorption.	
	ESTIMATED ERROR: $\delta T/K = \pm 0.05; \ \delta H = \pm 2\%$
	REFERENCES :

	Alkanes		193
COMPONENTS:	ORIG	INAL MEASUREMENTS:	
 (1) 2-Methylpropane, (isobutane) C₄H₁₀; [75-28-5] (2) Decane; C₁₀H₂₂; [124-18-5] 	Sol	rard, W. ubility of Gases and Liquids, num,New York, <u>1976</u> , Chapter 12.	
VARIABLES: <i>T</i> /K: 273.15	PREP	ARED BY:	
P/kPa: 13.3-101.3		C.L. Young	
EXPERIMENTAL VALUES:			
T/K P/mmHg	P/kPa	Mole fraction of 2-methyl propane in liquid, $x_{C_4H_{10}}$	
273.15 100	13.3	0.093	
200	26.7	0.180	
300	40.0	0.270	
400	53.3	0.345	
500	66.7	0.438	
600	80.0	0.520	
700	93.3	0.600	
760	101.3	0.645	
AUXI	LIARY INFO	RMATION	
METHOD/APPARATUS/PROCEDURE:	SOUR	CE AND PURITY OF MATERIALS:	
Gas was passed into a known weig of pure liquid in a bubbler tube a total pressure measured by a manometer assembly. The amount absorbed gas was estimated by weighing The temperature was manually controlled to within 0. The apparatus and procedure are described by Gerrard (1,2).	at of) details given.	
	δτ (e REFI	MATED ERROR: $/K = \pm 0.1; \ \delta x/x = \pm 3\%$ stimated by compiler) ERENCES:	
	1.	Gerrard, W. J. Appl. Chem. Biotechnol. <u>197</u> 22, 623-650. Gerrard, W. Solubility of Gases and Liquid	

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COMPONENTS:	ORIGINAL MEASUREMENTS:		
<pre>(1) 2-Methylpropane; C₄H₁₀; [75-28-5]</pre>	Jadot, R.		
(2) Nonane; C ₉ H ₁₀ ; [111-84-2] or	J. Chim. Phys. <u>1972</u>	<i>,69,</i> 1036-40.	
Decane; $C_{10}H_{22}$; [124-18-5]			
VARIABLES: <i>T</i> /K: 298.15	PREPARED BY:		
P/kPa: 101.325	C.L. Young		
EXPERIMENTAL VALUES:			
T/K Henry's Law Constant, H/atm	Mole fraction ⁺ at partial pressure of 101.3kPa, x _{C4H10}	$ \frac{\# \Delta H^{\infty}}{(J \text{ mol}^{-1})} $	
Nonane; C ₉ I	H ₂₀ ; [111-84-2]		
298.15 2.984	0.3351	700 (2929)	
Decane; C ₁	H ₂₂ ; [124-18-5]		
298.15 2.880	0.3472	790 (3305)	
# Excess partial molar enthalpy of the second se	of solution at infinit	e dilution.	
# Excess partial molar enthalpy of the second se	of solution at infinit	e dilution.	
	of solution at infinit	e dilution.	
AUXILIARY	INFORMATION	RIALS :	
AUXILIARY METHOD APPARATUS/PROCEDURE: The conventional gas chromatographic technique was used. The carrier gas was helium. The value of Henry's law constant was calculated from the retention time. The value applies to very low partial pressur- es of gas and there may be a substantial difference from that measured at 1 atm pressure. There is also considerable uncertainty in the value of Henry's constant since no allowance was made for	INFORMATION SOURCE AND PURITY OF MATER No details giv	RIALS: en.	
AUXILIARY METHOD APPARATUS/PROCEDURE: The conventional gas chromatographic technique was used. The carrier gas was helium. The value of Henry's law constant was calculated from the retention time. The value applies to very low partial pressur- es of gas and there may be a substantial difference from that measured at 1 atm pressure. There is also considerable uncertainty in the value of Henry's constant since no allowance was made for	INFORMATION SOURCE AND PURITY OF MATER No details giv ESTIMATED ERROR:	RIALS: en.	
AUXILIARY METHOD APPARATUS/PROCEDURE: The conventional gas chromatographic technique was used. The carrier gas was helium. The value of Henry's law constant was calculated from the retention time. The value applies to very low partial pressur- es of gas and there may be a substantial difference from that measured at 1 atm pressure. There is also considerable uncertainty in the value of Henry's constant since no allowance was made for	INFORMATION SOURCE AND PURITY OF MATER No details giv ESTIMATED ERROR:	RIALS: en.	
AUXILIARY METHOD APPARATUS/PROCEDURE: The conventional gas chromatographic technique was used. The carrier gas was helium. The value of Henry's law constant was calculated from the retention time. The value applies to very low partial pressur- es of gas and there may be a substantial difference from that measured at 1 atm pressure. There is also considerable uncertainty in the value of Henry's constant since no allowance was made for	INFORMATION SOURCE AND PURITY OF MATER No details giv ESTIMATED ERROR: δT/K = ±0.05; δ	RIALS: en.	
AUXILIARY METHOD APPARATUS/PROCEDURE: The conventional gas chromatographic technique was used. The carrier gas was helium. The value of Henry's law constant was calculated from the retention time. The value applies to very low partial pressur- es of gas and there may be a substantial difference from that measured at 1 atm pressure. There is also considerable uncertainty in the value of Henry's constant since no allowance was made for	INFORMATION SOURCE AND PURITY OF MATER No details giv ESTIMATED ERROR: δT/K = ±0.05; δ	RIALS: en.	

Alkanes		
COMPONENTS :	ORIGINAL MEASUREMENTS:	
 (1) 2-Methylpropane; (isobutane), C₄H₁₀; [75-28-5] (2) Eicosane; C₂₀H₄₂; [112-95-8] 	Chappelow, C.C.; Prausnitz, J.M., A.I.Ch.E.J. <u>1974</u> , 20, 1097-1104.	
VARIABLES:	PREPARED BY:	
<i>T/K</i> : 325-475 <i>P/</i> kPa: 101.325	C.L. Young	
EXPERIMENTAL VALUES:		
T/K Henry's Con: H/atm	stant ^a Mole fraction of 2- methyl propane at 1 atm. partial pressure, ^x C4 ^H 10	
325 5.80	0.1724	
350 9.15	0.1093	
375 13.3	0.0752	
400 18.1	0.0552	
425 23.6	0.0424	
450 29.8	0.0336	
475 36.0	0.0278	
^D Calculated by compiler assuming lin fraction and pressure.	lear relationship between more	
AUXILIARY	INFORMATION	
METHOD /APPARATUS / PROCEDURE :	SOURCE AND PURITY OF MATERIALS:	
Volumetric apparatus similar to that described by Dymond and Hildebrand (1). Pressure measured with a null detector and precision gauge. Details in ref. (2).	Solvent degassed; no other details given.	3
	ESTIMATED ERROR:	
	$\delta T/K = \pm 0.1; \ \delta x_{C_4 H_{10}} = \pm 1\%$	
	REFERENCES: 1. Dymond, J.; Hildebrand, J.H. Ind. Eng. Chem. Fundam. <u>1967</u> , 6, 130.	
	2. Cukor, P.M.; Prausnitz, J.M. Ind. Eng. Chem. Fundam. <u>1971</u> , 10, 638.	