COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) 1-Methylphenanthrene; $C_{15}H_{12}$; [832-69-6] (2) Water; H_2O; [7732-18-5]	May, W.E.; Wasik, S.P.; Freeman, D.H. *Anal. Chem.* 1978, *50*, 175-9 and 997-1000.
VARIABLES:	**PREPARED BY:**
Temperature: 6.6-29.9°C	A. Maczynski

EXPERIMENTAL VALUES:

Solubility of 1-methylphenanthrene in water

t/°C	μg(1)/kg(2)	10^5 g(1)/100 g sln (compiler)	$10^8 x_1$ (compiler)
6.6	95.2 ± 0.2	0.952	0.892
8.9	114.0 ± 4.0	1.14	1.07
14.0	147.0 ± 1.0	1.47	1.38
19.2	193.0 ± 1.0	1.93	1.81
24.1	255.0 ± 5.0	2.55	2.39
25.0	269.0 ± 3.0	2.69	2.69
26.9	304.0 ± 1.0	3.04	2.85
29.9	355.0 ± 2.0	3.55	3.32

$$\mu g(1)/kg(2) = 55.42 + 6.8016\ t + 0.1301\ t^2 + 0.0080\ t^3$$

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

The dynamic coupled column liquid chromatography (DCCLC) method was based on generating saturated solutions by pumping water through a column packed with glass beads that have been coated with the component (1) (generator column). The concentration of (1) in the effluent of the generator column was measured by a modification of the coupled column liquid chromatographic process that has been described in ref 1.

SOURCE AND PURITY OF MATERIALS:

(1) commercial product; less than 3% impurities.

(2) distilled over $KMnO_4$ and NaOH and passed through a column packed with XAD-2 (Rohm and Hass, Philadelphia, Pa).

ESTIMATED ERROR:

temp. ± 0.05°C
soly. stand. dev. see above

REFERENCES:

1. May, W.; Chesler, S.; Cram, S.; Gump, B.; Hertz, H.; Enagonio, D.; Dyszel, S. *J. Chromatogr. Sci.* 1975, *13*, 535.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) 1-Methylphenanthrene; $C_{15}H_{12}$; [832-69-9] (2) Sodium Chloride; NaCl; [7647-14-5] (3) Water; H_2O; [7732-18-5]	May, W.E.; Wasik, S.P.; Freeman, D.H. *Anal. Chem.* 1978, *50*, 997-1000.
VARIABLES:	**PREPARED BY:**
One temperature: 25°C Salinity: 0-40 g(2)/kg sln	W.Y. Shiu and D. Mackay

EXPERIMENTAL VALUES:

The solubility of 1-methylphenanthrene in aqueous sodium chloride is reported in terms of the Setschenow equation:

$$\log(S_o/S) = K_s C_s$$

where;

S_o is the solubility of (1) in water (mg/L)

S is the solubility of (1) in saline solution (mg/L)

K_s is the Setschenow constant (L/mol)

C_s in the concentration of sodium chloride (mol/L)

evaluating the equation for S over the range of C_s 0-0.7 mol/L, K_s = 0.211 with S_o = 0.269.

The corresponding mass percent and mole fraction x_1, at salinity = 35 g(2)/kg sln calculated by the compilers are 1.95×10^{-5} g(1)/100 g sln and 1.87×10^{-8}.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
A saturated solution of (1) was prepared by pumping salt water through a "generation column" which was packed with glass beads coated with 1% by weight of (1). The saturated solution was extracted with an "extractor column" packed with a superficially porous bonded C_{18} stationary phase, then a water-acetonitrile solvent was passed through for extraction. The extract was introduced into a liquid chromatograph and the concentration of (1) was measured with a UV detector.	(1) greater than 97% pure. (2) reagent grade. (3) distilled from potassium permanganate-sodium hydroxide and passed through an XAD-2 column.
	ESTIMATED ERROR: temp ± 0.05°C K_s ± 0.018 S_o ± 0.003
	REFERENCES: