In a number of attempted measurements of decomposition temperatures, the capsules ruptured violently. Because of this effect, reproducible decomposition temperature measurements could not be obtained for *N,N'*-bis(*m*-ethoxyphenyl)-terephthalamide, and for *N,N'*-bis(β-naphthyl)terephthalamide.

Infrared absorption spectra were determined with a Beckman IR-5 spectrophotometer, using potassium bromide pellets containing 0.5% by weight of the sample.

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Isothermal Vapor-Liquid Equilibrium Data by Total Pressure Method

SIR:

Equilibrium data for the binary system, acetaldehyde and water, have been determined (*1*) using an isoteniscope. Activity coefficients were calculated by the Redlick-Kister equation using the experimentally determined total pressure at a known liquid composition and temperature.

By use of Equation 1 (*1*) and the Redlich-Kister coefficients for acetaldehyde and water in Table II of the article, the activity coefficient for acetaldehyde at infinite dilution in water were calculated as shown in Table I.

Table I. Acetaldehyde Activity Coefficients at Infinite Dilution Decrease with Increasing Temperature

t,°C	γ_1^∞	t,°C	γ_1^∞
10	5.46	25	3.57
15	4.26	30	3.54
20	3.60		

Data in Table I were used to calculate the heat of mixing at infinite dilution (L_1^∞) from the following thermodynamic relationship:

$$\left(\frac{d \ln \gamma_1}{dT}\right)_{P, X_1 \to 0} = \left(\frac{H_1^\circ - \bar{H}_1}{RT^2}\right)_{P, X_1 \to 0} = -\frac{L_1^\infty}{RT^2}$$

At 15°C the heat of solution at infinite dilution for acetaldehyde in water was calculated to be 6.8 kcal/g-mol and to have a positive value which indicates an endothermic heat of solution.

However, data reported in the literature (*2, 3*) show that the heat of solution for acetaldehyde in water at infinite dilution is exothermic.

With exothermic heats of solution the activity coefficient of acetaldehyde in water should increase with increasing temperature. However, the data show high endothermic heats of solution especially at the lower temperatures, 10–15°C. Since these data indicate a very large change in the heat of mixing with temperature, it is suggested that a constant error may be present. To determine equilibrium data by the total pressure method is difficult experimentally because small constant errors may lead to substantial ones in the calculated results. For example, if in degassing the samples in sections *A* and *B* residual air remained, the calculated activity coefficient of acetaldehyde in water would be too high, especially at the lower temperatures.

In summary, other literature data indicate that the heat of solution at infinite dilution for acetaldehyde in water is exothermic and that the activity coefficient of acetaldehyde increases with increasing temperature. Consequently, the use of the data obtained by the total pressure method at other temperatures will lead to serious error. Also these data illustrate the experimental difficulties of obtaining equilibrium data by the total pressure method.

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