Investigation of the isothermal (vapour plus liquid) equilibria of aqueous 2-amino-2-methyl-1-propanol (AMP), N-benzylethanolamine, or 3-dimethylamino-1-propanol solutions at several temperatures

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Abstract :

The vapour pressures of (2-amino-2-methyl-1-propanol (AMP) + water), (N-benzylethanolamine + water), or (3-dimethylamino-1-propanol + water) binary mixtures, and of pure AMP and 3-dimethylamino-1-propanol components were measured by means of two static devices at temperatures between 283 K and 363 K. The data were correlated with the Antoine equation. From these data, excess Gibbs functions (G(E)) were calculated for several constant temperatures and fitted to a fourth-order Redlich-Kister equation using the Barker's method. The (2-amino-2-methyl-1-propanol (AMP) + water) binary mixture exhibits negative deviations in G(E) (at T < 353.15 K) and a sinusoidal shape for G(E) for the higher temperatures over the whole composition range. For the aqueous N-benzylethanolamine solution, a S shape is observed for the G(E) for all investigated temperatures over the whole composition range. The (3-dimethylamino-1-Propanol + water) binary mixture exhibits negative deviations in G(E) (at T < 293.15 K), positive deviations in G(E) (for 293.15 K < T < 353.15 K) and a sinusoidal shape for G(E) for the higher temperatures over the whole composition range.

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