

New interpretation of the concentration dependence of the compressibility of aqueous solutions of nonelectrolytes.

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The parabolic-like plots of compressibility versus concentration of nonelectrolytes (ethanol as the example) in water are explained and described assuming the hydrate formation equilibrium reaction. Only two fitted parameters, the hydration number n_h and the cumulative formation constant of the hydrate β_{nh} , are used to reproduce the experimental data, including the minima of the adiabatic compressibility κ_S versus composition at low solute contents. Another discussed option is a set of subsequent equilibrium reactions of hydration from which formation constants can also be determined. Calculations were performed for the water–ethanol system, and the results were compared with those obtained by a model recently developed by the authors.

Słowa kluczowe

Aqueous solutions, Compressibility, Hydrates, Nonelectrolytes

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