



Structure of water + acetonitrile solutions from acoustic and positron annihilation measurements.

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Streszczenie

We report the results of acoustic and positron annihilation measurements in aqueous solutions of acetonitrile (CH_3CN). Hydrophobicity of the solute is discussed, as well as the possibility of describing the title system in terms of hydrophobic solvation. A new method of calculating the "ideal" positronium lifetimes is proposed, based on the mean volume of cavities (holes) in liquid structure available for positronium pseudoatom. The results are almost identical with those obtained from molar volumes using the concept of Levay et al. On the other hand, the same calculations performed using the "bubble" model of annihilation yield very different results. It seems that either acetonitrile forms with water clathrate-like hydrates of untypical architecture, or it is too weak hydrophobic agent to form clathrate-like hydrates at all. The former interpretation seems to be more probable.

Słowa kluczowe

Water, Aqueous solutions, Acetonitrile, Hydrophobic solvation, Hydration, Sound velocity, Density, Positron annihilation

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