Complexation and proton transfer in the binary system propionic acid-triethylamine. Evidence from the composition dependencies of mixture properties.

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Streszczenie

The density, heat of mixing, shear viscosity, optical refractive index, as well as NIR and dielectric spectra of propionic acid–triethylamine mixtures have been measured as a function of mole fraction x_b of the base. The dielectric spectra have been evaluated to yield the extrapolated low frequency and high frequency permittivity, the specific electric dc conductivity, and the dielectric relaxation time. The parameters are discussed to show that several complex species exist, including neutral hydrogen bonded structures, proton transfer complexes, and dissociated ionic species, and that the mixtures are governed by a complicated scheme of complex formation. The composition dependencies indicate the preferential presence of special complexes at some mole fractions x_b, in particular 2:1 acid–amine structures, resulting in extrema of several parameters at $x_b = 0.33$.

Słowa kluczowe

Complex formation, Proton transfer, Acid–base complexes, Binary mixtures

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