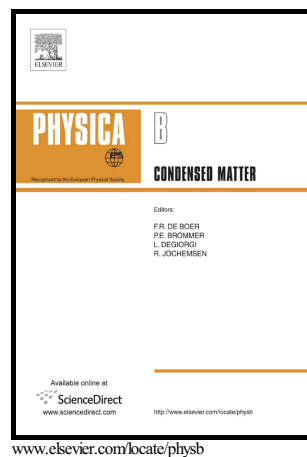


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Dielectric dispersion, relaxation dynamics and thermodynamic studies of Beta-Alanine in aqueous solutions using picoseconds time domain reflectometry

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Abstract

The aqueous solution of beta-alanine characterised and studied by their dispersive dielectric properties and relaxation process in the frequency domain of $10 \times 10^6 \text{ Hz}$ to $30 \times 10^9 \text{ Hz}$ with varying concentration in mole fractions and temperatures. The molecular interaction and dielectric parameters are discussed in terms of counter-ion concentration theory. The static permittivity (ϵ_0), high frequency dielectric permittivity (ϵ_∞) and excess dielectric parameters are accomplished by frequency depended physical properties and relaxation time (τ). Molecular orientation, ordering and correlation factors are reported as confirmation of intermolecular interactions. Ionic conductivity and thermo dynamical properties are concluded with the behaviour of the mixture constituents. Solute–solvent, solute–solute interaction, structure making and breaking abilities of the solute in aqueous medium are interpreted. Fourier Transform Infrared (FTIR) spectra of beta- alanine single crystal and liquid state have been studied. The ^{13}C

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