

Excess Thermo-Acoustical Parameters in Ternary Mixture Containing Aqueous Sodium Hydroxide and Dimethyl Foramide at Different Temperatures

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Abstract: Density (ρ), Ultrasonic velocity (U), viscosity (η) for the ternary mixture of aqueous sodium hydroxide and Dimethyl foramide in the whole range of composition has been carried out at different temperatures 298.15, 303.15 and 308.15K. Using experimental data ρ , U , and η , some excess thermo-acoustical parameters such as β_a^E , L_f^E , V_f^E , π_i^E , Z^E . & excess free energy ΔG^E have been calculated. The present paper shows the nonlinear characteristics of velocity and the thermodynamic properties that lead to dipole- ion interaction between dimethyl foramide and aqueous sodium hydroxide which is shown to be stronger than dipole- ion interaction between water and aqueous sodium hydroxide. These thermodynamic characteristics with composition of the mixture are explained in terms of weak force solutions.

Keywords: Ultrasonic velocity, acoustical parameters, molecular interactions, normality (1N), aqueous sodium hydroxide (aq. NaOH) and dimethylforamide (DMF)

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