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Evaluation of molecular interactions between *o*-methoxy nitrobenzene and certain alcohols in *n*-hexane medium using ultrasonic sound at 303K

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The parameters like ultrasonic velocity, density and viscosity of ternary liquid mixtures containing di-substituted benzene [*o*-methoxynitrobenzene (*o*-MNB)] with 1-alkanols (1-propanol/1-butanol/1-pentanol) in *n*-hexane medium have been measured experimentally at 303K for the equimolar concentration of 1:1 ratio and the concentration ranges from 1×10^{-3}M to 1×10^{-2}M. The normal acoustical properties and their excess properties such as excess ultrasonic velocity (U^E), excess acoustic compressibility (κ^E), excess free length (L_f^E), excess free volume (V^E_f) and excess internal pressure (π^E_i) have been computed. The molecular interactions and their strength have been quantitatively assessed and the cyclic structure is proposed from the determination of thermodynamic parameters like formation constant (K), free energy of formation (ΔG_F), enthalpy change (ΔH) and entropy change (ΔS) through the formation of the hydrogen bonded complexes. The results are discussed in terms of intermolecular interaction based on existence of carbon profile between the components present in the ternary liquid mixtures.

Keywords: Ultrasonic velocity, Primary alcohols, Interaction, Ternary liquid mixtures, *o*-Methoxy nitrobenzene