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Applications of Nonlinear Models to Measure and Predict Thermo Physical Properties of Binary Liquid Mixtures1, 4 Dioxane with Bromo Benzene at Various Temperatures

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Abstract : The study conducted in this research are Viscosities, η, and Densities ,ρ, of 1, 4-dioxane with Bromobenzene at different mole fractions and various temperatures in the atmospheric pressure condition. From experimentations excess volumes, VE, and deviations in viscosities, Δη, of mixtures at infinite dilutions have been obtained. The measured systems exhibited positive values of VmE and negative values of Δη. The binary mixture 1, 4 dioxane + Bromobenzene show positive VE and negative Δη with increasing temperatures. The outcomes clearly indicate that weak interactions present in mixture. It is mainly because of number and position of methyl groups exist in these aromatic hydrocarbons. These measured data tailored to the nonlinear models to derive the binary coefficients. Standard deviations have been considered between the fitted outcomes and the calculated data is helpful deliberate mixing behavior of the binary mixtures. It can conclude that in our cases, the data found with the values correlated by the corresponding models very well. The molecular interactions existing between the components and comparison of liquid mixtures were also discussed.

Keywords : 1,4 dioxane, bromobenzene, density, excess molar volume
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