Study of Thermodynamic and Transport Properties of Glycine, Diglycine, and Triglycine in Aqueous Tartrazine at Different Temperatures

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The densities (ρ), viscosities (η), and refractive indices (n_D) of (0.01, 0.05, 0.10, 0.15, and 0.20 m) amino acid, glycine, and peptides, diglycine and triglycine in 0.01 m aqueous tartrazine solution were determined at 288.15, 293.15, 298.15, 303.15, 308.15, and 313.15 K. The density data were utilized to evaluate apparent molar volumes (ϕ_v) which, in turn, were used to determine partial molar volumes (ϕ_v°) using Masson's equation. The transfer volumes were also calculated. The viscosity data were analyzed using the Jones-Dole equation to determine the viscosity coefficients and the activation parameters. The activation parameters of viscous flow were obtained to throw light on the mechanism of viscous flow. The molar refraction was calculated using the refractive index data. The results were interpreted in the light of ion-ion, ion-nonpolar, and nonpolar-nonpolar interactions and the effect of increasing hydrophobicity as we move from glycine to triglycine on these interactions in presence of the dye tartrazine was also investigated.