Dielectric Relaxation of Mixtures of *N*-Methylacetamide and *N*,*N*-Dimethylformamide Solved in Benzene Using Microwave Absorption Data

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The dielectric relaxation times τ and dipole moments μ of *N*-methylacetamide (NMA) mixed with *N*,*N*-dimethylformamide (DMF) in benzene solutions have been obtained using standard standing wave microwave techniques and Gopala Krishna's single frequency (9.90 GHz) concentration variational method at 25, 30, 35, and 40 °C. The energy parameters (ΔH_ε, ΔF_ε, ΔS_ε) for the dielectric relaxation process of mixtures with equal amounts of NMA and DMF have been calculated and compared with the corresponding energy parameters (ΔH_η, ΔF_η, ΔS_η) for the viscous flow. On the basis of the observations it is found that the dielectric relaxation process can be treated as a rate process like the viscous flow. Solute-solute and solute-solvent types of the molecular associations have been predicted.

Key words: Dielectric Relaxation; Solute-Solute Interaction; Relaxation Times; Microwave Absorption Studies.