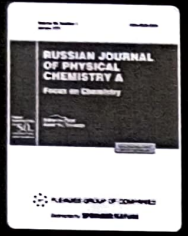

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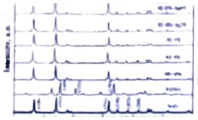

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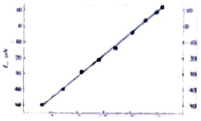

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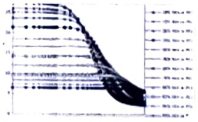

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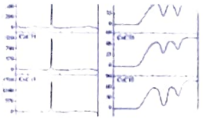

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Dielectric Study of Methyl Acetate with Propylene Glycol Using Time Domain Reflectometry Technique

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S. B. Kolhe, P. B. Undre, A. P. Maharolkar & P. W. Khirade

Abstract

Dielectric relaxation study of methyl acetate with propylene glycol binary mixture has been done over the frequency range of 10 MHz–20 GHz and in the temperature range of 288 to 318 K using time domain reflectometry (TDR) technique. The dielectric parameters viz. static dielectric constant (ε_s), relaxation time (τ), excess dielectric constant $(\varepsilon_s)^E$, excess inverse relaxation time $(1/\tau)^E$, Kirkwood correlation factor (g^{eff}), Bruggeman factor (f_B), and thermodynamic parameters are also calculated to study the intermolecular interaction. Dielectric constant and relaxation time values decrease with increasing concentration of methyl acetate in the mixture also with increase in temperature. Excess static permittivity values are positive and excess inverse relaxation time values are negative for all concentrations and temperatures. Kirkwood correlation factor values are less than

unity. The Bruggeman plot shows a deviation from linearity. Molar enthalpy of activation values are positive and molar entropy of activation values are negative for all concentrations.

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