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61

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Section B: Dielectric Properties

Dielectric Relaxation in Water-Ethanolamine Mixtures as a Function of Composition and Temperature

Vandana Jadhavpatil, [Prabhakar Undre](#) & Sangram Helambe

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Abstract

Dielectric relaxation measurements on water-ethanolamine solvent mixtures have been carried out across the entire concentration range using Time Domain Reflectometry technique at 288 K, 298 K, 308 K, and 318 K over the frequency range from 10 MHz to 20 GHz. The mixtures exhibit a principle dispersion of the Davidson-Cole relaxation type at microwave frequencies. Bilinear calibration method is used to obtain complex permittivity $\epsilon^*(\omega)$ from complex reflection coefficient $\rho^*(\omega)$ over the frequency range 10 MHz to 10 GHz. The excess permittivity (ϵ^E), excess inverse relaxation time $(1/\tau)^E$, Kirkwood correlation factor (g^{eff}) and thermodynamic parameters are also calculated to study the Solute-Solvent interaction.

Q Keywords: Dielectric relaxation excess properties hydrogen bonding TDR thermodynamic parameters Kirkwood correlation factor

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