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Section B: Dielectric Properties

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

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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 ε*(ω) from complex reflection coefficient ρ*(ω) 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.

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

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