

The Coexistence Curves for Nonaqueous Microemulsion of {Dimethylacetamide + Sodium Di(2-Ethyl-1-Hexyl)Sulphosuccinate + Octane} in the Critical Region

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The nonaqueous microemulsions have bright and broad prospects in industrial applications. They have been reported as the potentially useful mediums for organic reactions such as Diels-Alder and other stereo-selective reactions. However, the literature about the critical behavior of nonaqueous microemulsions is so far scanty. In this work, we present precise coexistence curves of temperature-refractive index and temperature-volume fraction for nonaqueous microemulsion system consisting of dimethylacetamide (DMA), sodium di(2-ethyl-1-hexyl)sulphosuccinate (AOT), and octane at constant pressure and the constant molar ratio of DMA to AOT. The critical temperature and critical volume fraction are 311.499 K and 0.360, respectively. The critical exponents, the critical amplitudes, the Wegner correction terms and the diameters of coexistence curves have been deduced from the coexistence curves. The results indicate that the critical exponent deduced from the coexistence curves in the critical region is close to 0.365, which is consistent with the Fisher-Renormalization group theory.

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