

THE EFFECT OF ALCOHOLS ON THE LAMELLAR TO SPHERICAL
STRUCTURAL TRANSITION IN AQUEOUS AEROSOL OT SYSTEM

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ABSTRACT

The objective of the proposed research was to investigate the effect of various alcohols on the structural transition from lamellar to spherical micelles in the aerosol OT System. The birefringent solutions of Aerosol OT in 1% NaCl were titrated with various alcohols. Upon addition of a specific amount of alcohol, the birefringent solution of Aerosol OT became isotropic and clear. Upon further addition of alcohol, it became turbid and subsequently phase separation took place. These transitions were studied also by the band-width measurements of the high resolution NMR spectra of the Aerosol OT System. In general, it was observed that the higher the solubility of alcohol in water, the less effective they were in converting the lamellar structure to spherical micelles. The relative ability of spherical micelles of Aerosol OT to solubilize various alcohols was determined from the second transition (isotropic to turbid). The free energy of adsorption of various alcohols at the Aerosol OT lamellae/water interface was calculated from the titration data.