

Abstract Submitted
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Aggregation and Transport Properties of Spherical Brij-35 Micelles KIRIL STRELETZKY, MIKE LEKAN, Cleveland State University — Dynamic light scattering (DLS) spectroscopy was used to measure the mutual diffusion coefficient of Brij-35 micelles in water and probe diffusion of polystyrene latex spheres with diameter of 50, 186, 282nm in aqueous solution of Brij-35. We studied the both mutual and probe diffusion over the surfactant concentration range of 3 to 100g/l and a temperature range of 10 to 70C. Assuming a simple hard sphere model for micelles and probes we found micelle hydrodynamic radius (a_m), aggregation number of surfactant molecule per micelle (N), and hydration number (δ) as a function of solution temperature. We found a_m increasing from 4.4 to 4.8 nm, N increasing from 33 to 67 molecules per micelle, and δ decreasing from 4.5 to 2.4 g H₂O/g Brij-35. These results agree with the literature. While in all of our probe diffusion experiments probes were the dominating scatterers, the spectra of our largest 780nm probes in water solutions of Brij-35 showed unusual bimodality. One mode is reminiscent of probe diffusion and the other of mutual micelle diffusion. Both observed simultaneously. A possible explanation for this finding is discussed.

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