

019 Characterization of Effect of Sodium dodecyl sulfate on Dynamics of Latex Nanoparticles in aqueous solution by Pulsed Field Gradient Nuclear Magnetic Resonance Spectroscopy and Asymmetrical Flow Field Flow Fractionation

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ABSTRACT:

The unique effect of sodium dodecyl sulfate (SDS) on the dynamics of polystyrene latex (PS-latex) in aqueous solution was characterized by Pulsed Field Gradient Nuclear Magnetic Resonance (PFG-NMR) method and Asymmetrical Flow Field Flow Fractionation – Multi Angle Light Scattering (AFFFF-MALS) method. The observed size of PS-latex became smaller with increase of the amount of SDS, indicating that the movement of PS-latex was restricted by interparticle interactions. However, such a tendency could not be observed on the measurement using AFFFF-MALS method. These results revealed that the diffusion of PS-latex was promoted by the addition of SDS caused of the increase of electrostatic interactions between PS-latex particles. Zeta potential measurement showed that the small amount of addition of SDS caused increment of the electrostatic inter-particle repulsive interaction, resulting in increasing of the effective size and the diffusion coefficients of PS-latex nanopartilces.

Keywords Nanoparticles, Field Flow Fractionation, Light Scattering, Pulsed Field Gradient Nuclear Magnetic Resonance