

Abstract Submitted
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Use of Fluorescence Correlation Spectroscopy for Studying Polyelectrolyte-Nanoparticle Interaction in Aqueous Solution NADIA EDWIN, DENIS PRISTINSKI, CHENGQING WANG, VIVEK PRABHU, NIST — Formation of polyelectrolyte complexes is very facile via layer-by-layer sequential adsorption of oppositely charged species method. This method has been used to fabricate versatile materials with tailored properties. However, the fundamental assembly mechanisms of these advanced engineering materials and the adsorption kinetics of these systems is not completely understood. We use fluorescence correlation spectroscopy (FCS), which analyzes fluctuations in the fluorescence emission of molecular ensembles and provides the concentration, mobility, and dynamics of fluorescently labeled molecules, to study the interaction of polyelectrolyte-nanoparticle assembled structures to establish what's driving the adsorption of these systems, the dependence of molecular weight and the effects of variations in the solution environment with pH and ionic strength. Layer-by-layer assembly was performed on fluorescent dye-labeled spherical nanoparticles and amine and carboxyl functionalized polyelectrolytes in aqueous solution. Changes in the dynamics of the polyelectrolyte-nanoparticle system in response to various salt and pH conditions will be presented.

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