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Concentration dependence of nanoparticle surface coverage for ionic self-assembled monolayers VINCENT KIM, BRIAN SIMPSON, ANDREW SEREDINSKI, ERIC SCHWEN, DAN MAZILU, IRINA MAZILU, Washington and Lee University — We investigate the concentration dependence of the surface coverage of thin films that consist of silica nanoparticles deposited on the substrates via the ISAM (ionically self-assembled monolayers) technique. Several experiments were conducted in order to investigate the factors that affected the quality of the coatings and one significant factor observed was the concentration of the colloidal silica solution. Using SEM micrographs, we analyzed the surface coverage and compared it to the analytical results obtained using a cooperative sequential adsorption model. The results we obtained matched the linear relation between particle density and the inverse of the concentration predicted by the theory.

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