Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

**Influence of dielectric inhomogeneities in aggregation of charged nanoparticles in polymer solutions** RITUPARNA SAMANTA, VENKAT GANESAN, Univ of Texas, Austin — We study the structural characteristics in a system of charged nanoparticles in a neutral polymer solution while accounting for the differences in the dielectric constant of the particle from the polymer and the solvent. We use a hybrid computational methodology which uses a combination of single chain in mean-field simulations and the solution of the Poisson-Boltzmann equation. In the absence of polymers, similarly charged macro-ions experience increased repulsion with increase in dielectric inhomogeneities, leading to less aggregation. In presence of polymers, similar effects manifest, but with the additional complexity of the polymer density profiles being influenced by their dielectric constant. We discuss the resulting radial distribution functions as a function of particle charge and polymer concentrations.

Rituparna Samanta
Univ of Texas, Austin

Date submitted: 20 Nov 2016 Electronic form version 1.4