Abstract Submitted
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Sulfonated Poly(styrene) Chains Grafted on Magnetic Nanoparticles[1] YANG JIAO, ANTON YEVELEV, JAVIER PARRA, PINAR AKCORA, Stevens Institute of Technology, STEVENS INSTITUTE OF TECHNOLOGY TEAM — Iron oxide nanoparticles functionalized with poly(styrene) (PS) chains at various grafting densities and loadings present stable and ordered nanostructures for tuning the mechanical and conductive properties in polymer composites. Strings, spherical and anisotropic clusters and well-dispersed particles are achieved with PS-grafted Fe_3O_4 nanoparticles in PS matrices upon varying the system parameters. In this work, we report the effect of sulfonic group locations on the aggregation state of polymer-grafted nanoparticles. Structures formed by the random and diblock copolymers of PS-poly(styrene sulfonate) (PSS) grafted particles will be discussed with small-angle x-ray scattering (SAXS) measurements in solution and melts. The conformational changes in PS-grafted chains and ion-containing grafts will be also presented in small-angle neutron-scattering (SANS) results to understand the role of polymer on the assembly of particles at the low grafting density.

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