SUPPORTING INFORMATION

Structure and Entanglement Factors on Dynamics of Polymer-Grafted Nanoparticles

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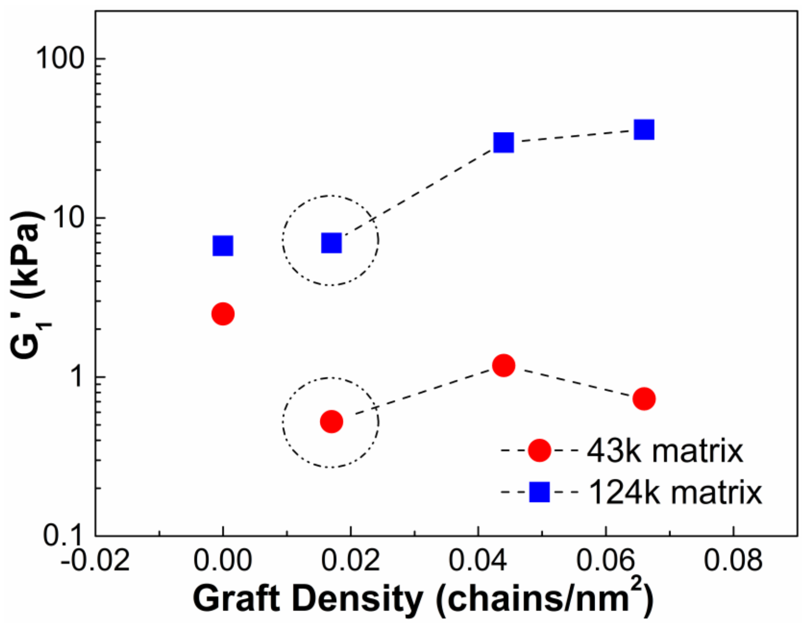

Figure S1. Elastic moduli of PS (43 kg/mol)-grafted iron oxide nanoparticles at different grafting densities dispersed in two PS matrices of 43 kg/mol and 124 kg/mol molecular weights. Circled data points are Sample A (in 124 kg/mol) and Sample B (in 43 kg/mol). Data are collected at 100% strain amplitude at 150°C. Composites contain 5 wt% particles. From reference 11.

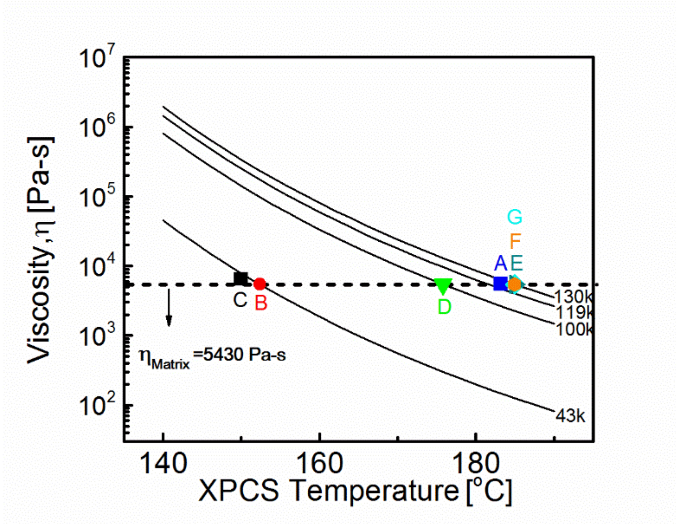

Figure S2. Temperature dependence of polystyrene viscosity at different molecular weights. Matrix viscosity in each sample was matched by adjusting the measurement temperature according to WLF curves calculated based on shift factors obtained for 130 kg/mol PS at T_{ref} = 170°C.

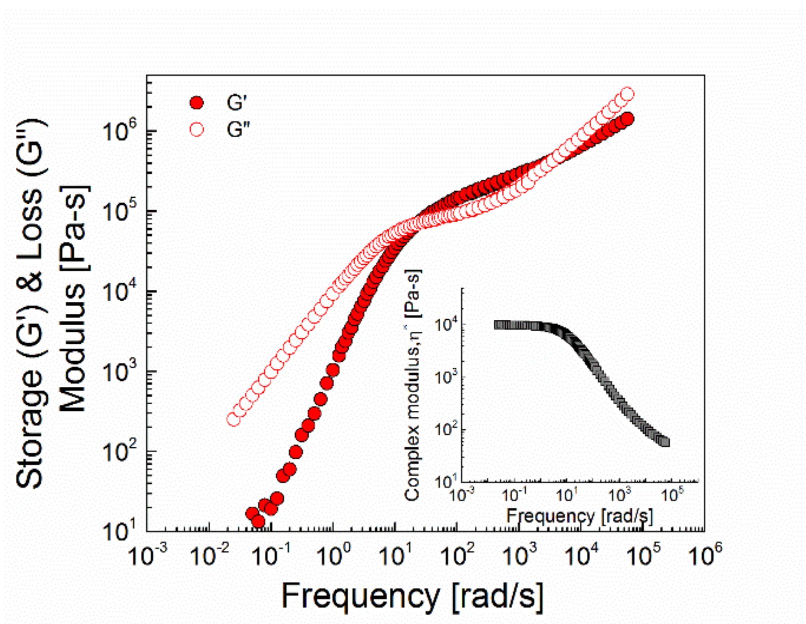

Figure S3. Linear viscoelastic mastercurve for 130 kg/mol PS obtained by time-temperature-superposition at T_{ref} = 170°C. The inset displays the complex viscosity.

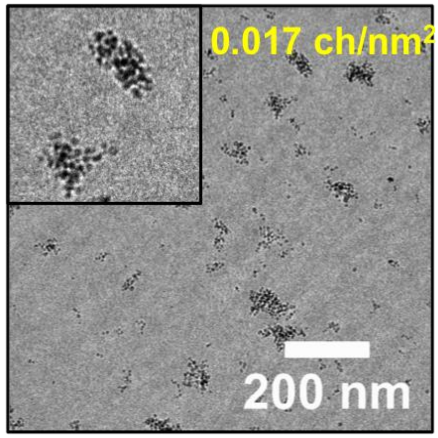

Figure S4. TEM micrograph of sheared Sample A (43 kg/mol PS-grafted nanoparticles at 0.017 chains/nm^2 density in 124 kg/mol PS matrix). Sample is deformed under oscillatory shear at 100% strain at 1 rad/s.

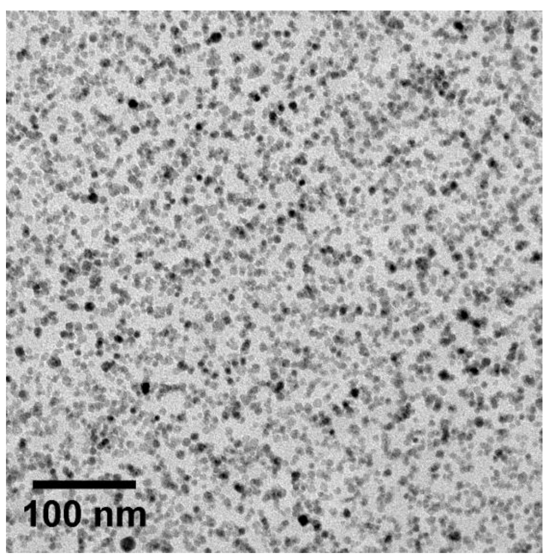

Figure S5. TEM micrograph of Sample E.

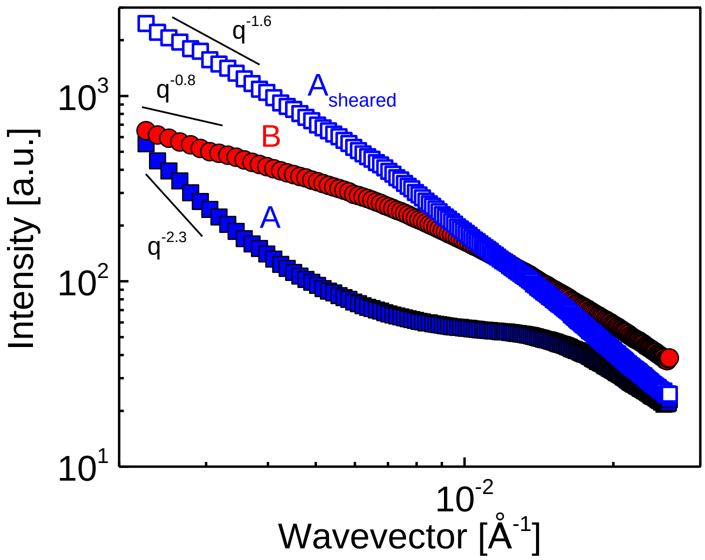

Figure S6. SAXS profiles of samples in Figure 1.

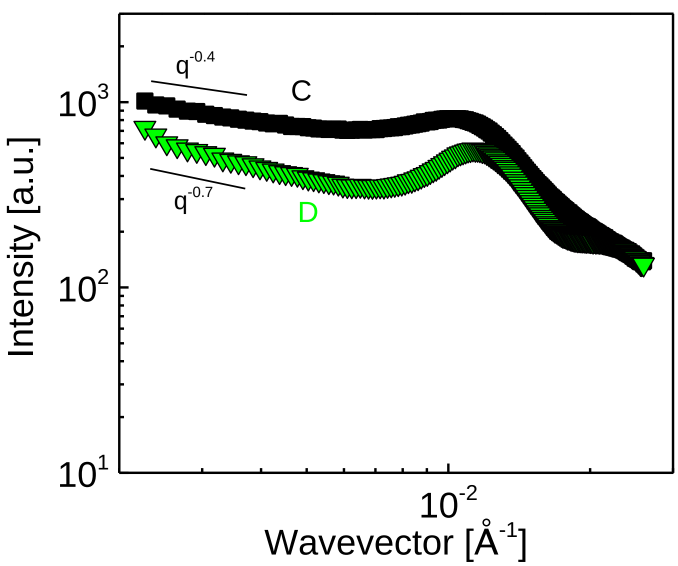

Figure S7. SAXS profiles of samples in Figure 2.

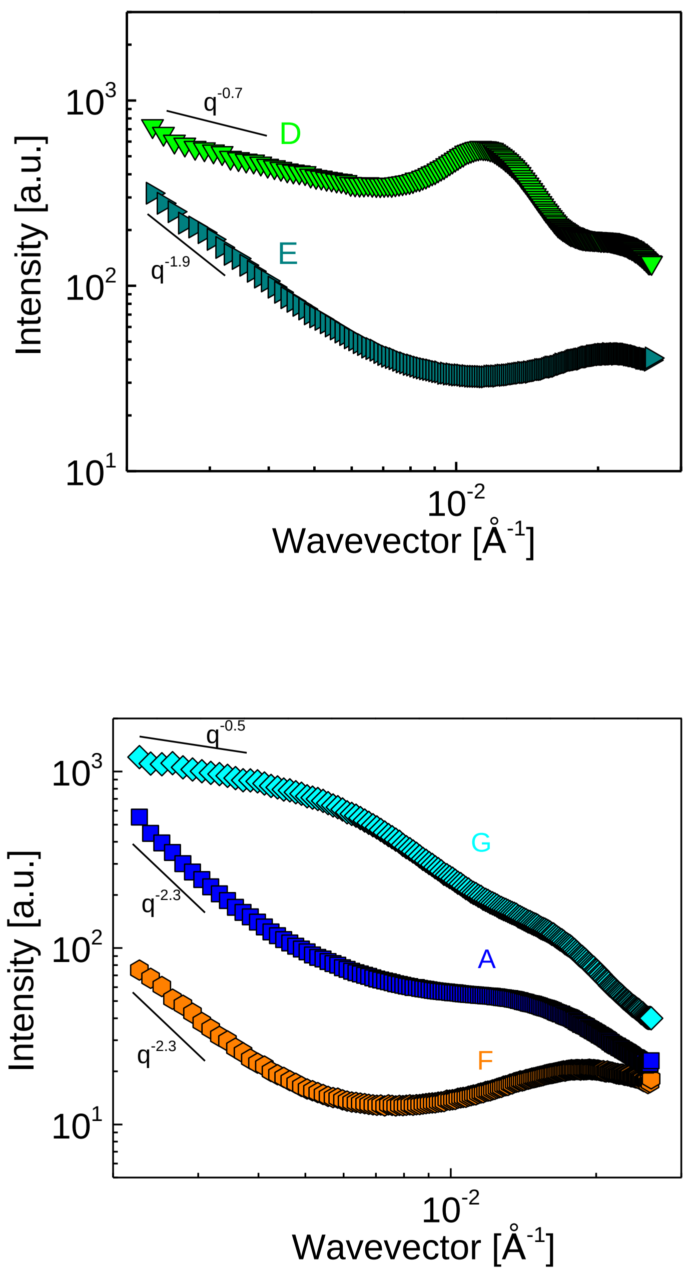

Figure S8. SAXS profiles of samples discussed in Figures 3 and 4.