

Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Dispersion of Magnetic Brushes in Polymer Melts YANG JIAO, PINAR AKCORA, Stevens Institute of Technology — It is now known that polymer grafted amphiphilic spherical silica nanoparticles can self-assemble into anisotropic nanostructures. In this study, we will show how dipolar interactions can affect the self-assembly mechanism of magnetic nanoparticles in polymer composite melts. Hydrophobic iron oxide nanoparticles of 6nm in size are synthesized and then decorated with poly(styrene) by reversible addition fragmentation chain transfer (RAFT) polymerization at various grafting densities and brush lengths. Dispersion of these magnetic brushes are examined in poly(styrene) matrices in TEM. Structures obtained from the balance of attractive dipolar interactions and repulsive forces between polymer chains are investigated. The influence of grafting densities and grafted chain lengths on the dispersion of magnetic nanoparticles and formation of the “equilibrium” structures will be discussed.

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Date submitted: 18 Nov 2010

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