Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Supramolecular Assembly in a Polymer Nanocomposite RICK BEYER, AARON JACKSON, SAMUEL PRICE, CHRISTOPHER GOLD, Army Research Laboratory, ANDREW DUNCAN, E. I. du Pont de Nemours and Company — Overcoming the inherent tendency of nanoparticles to aggregate is critical and has typically been the main focus of research on the fabrication of polymer nanocomposites. Developing specific or organized arrangements of nanoparticles is even more technically challenging, but also more appealing due to the possibility of creating nanocomposites with desired optical, electrical, or magnetic properties. Successful approaches in this area often rely on the polymer matrix to organize the nanoparticle additive, but are limited when one considers the high-throughput processing procedures used industrially. In this presentation, the preliminary findings of a research effort to use the strong, reversible, interparticle or intermolecular interactions found in supramolecular assembly to promote synergistic organization of the polymer matrix and dispersion of nanoparticles in a polymer nanocomposite will be described. Here, the effect of incorporating functionalized metal nanoparticles into a supramolecularly assembling metallopolymer based on reversible bonds formed between a metal atom (such as Zn^{2+}) and the "mebip" ligand (2,6-bis(19-methylbenzimidazolyl)pyridine) will be discussed.

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Date submitted: 27 Nov 2011 Electronic form version 1.4