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**Dispersion of bimodal polymer brushes functionalized anisotropic gold nanoparticles in polymer nanocomposites**<sup>1</sup> LILI ZHU, Peking University Shenzhen Graduate School, GI XUE, Nanjing University, LINDA REVEN, McGill University — Polymer nanocomposites (PNCs), which are composed of the nanofiller component and polymer matrix, have attracted growing interests due to their fascinating properties. Great efforts have been made to achieve high compatibility between the nanofillers and the polymer matrix. The dispersion of spherical gold nanoparticles (GNPs) in the matrix have been extensively studied, while there are few studies using anisotropic GNPs. The goal of this work is to produce homogeneous PNCs of anisotropic NPs in stimuli responsive polymer matrix. We compared the dispersion of gold nanoprisms (GNPRs) with single and bimodal poly(2-vinylpyridine) P2VP brushes. Bimodal brushes consisted of mixture of low and high molecular weight (Mw) polymers. GNPRs with P2VP were dispersed into polymer matrix and the Mw of the matrix was systematically varied to investigate the Mw effect. UV-Visible-Near Infrared spectroscopy was utilized to monitor the special plasmonic properties and architectures of GNPRs. The dispersion and morphology of PNCs were characterized by electron microscopy. This work will help to establish the correlations between the properties of anisotropic NPs (shape and protecting ligands) and the miscibility of corresponding PNCs.

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