**Synthesis and Properties of Polyaniline and Polypyrrole Nanoparticles using a Carboxymethyl Chitin Template**

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**Particulate dispersions of conducting polymers, such as polyaniline (PANI) and polypyrrole (PPY), in biocompatible matrices, are attractive candidates for certain biomedical applications, including sensors and electromechanical devices**. **Recently, the creation of PANI nanostructures has become of particular interest for such application because of the enhanced sensitivity to stimuli due to their high surface area. We demonstrate the use of carboxymethylchitin (CM-chitin) as an inexpensive template to create PANI and PPY nanoparticles via oxidative polymerization of the monomers. The templating mechanism is believed to be the result of sequestration of the aniline monomer within the polymer coils via CH- bonding. The resulting nanoparticles are spherical in shape but with radially-oriented dendritic protrusions on the surface. Control of particle size can be achieved either by varying the template concentration, or crosslinking the template. We demonstrate enhanced dispersability of doped PPY nanoparticles relative to conventional PPY macroparticles in sodium alginate, using rheological analysis. Remarkably, the shear viscosity of the PPY nanoparticle dispersions *decreases* with increase of PPY volume fraction to a minimum value and then increases. The viscosity of similarly-prepared conventional PPY dispersions increases with viscosity and shows highly elastic behavior, emblematic of interparticle bridging by alginate chains. Studies of the effect on dispersion rheology of nanoparticle size, comparison of the rheology of dispersions of doped versus dedoped nanoparticles, and dynamic light scattering analysis of the nanoparticle size in the presence and absence of alginate, indicate the enhanced dispersion is due to the formation of a tightly-bound layer of alginate on the dendritic nanoparticle surfaces.**