

Abstract Submitted  
for the MAR12 Meeting of  
The American Physical Society

**Synthesis and morphology of hydroxyapatite/polyethylene oxide nanocomposites with block copolymer compatibilized interfaces** JI HOON LEE, MEISHA SHOFNER, Georgia Institute of Technology —

In order to exploit the promise of polymer nanocomposites, special consideration should be given to component interfaces during synthesis and processing. Previous results from this group have shown that nanoparticles clustered into larger structures consistent with their native shape when the polymer matrix crystallinity was high. Therefore in this research, the nanoparticles are disguised from a highly-crystalline polymer matrix by cloaking them with a matrix-compatible block copolymer. Specifically, spherical and needle-shaped hydroxyapatite nanoparticles were synthesized using a block copolymer templating method. The block copolymer used, polyethylene oxide-b-polymethacrylic acid, remained on the nanoparticle surface following synthesis with the polyethylene oxide block exposed. These nanoparticles were subsequently added to a polyethylene oxide matrix using solution processing. Characterization of the nanocomposites indicated that the copolymer coating prevented the nanoparticles from assembling into ordered clusters and that the matrix crystallinity was decreased at a nanoparticle spacing of approximately 100 nm.

Meisha Shofner  
Georgia Institute of Technology

Date submitted: 11 Nov 2011

Electronic form version 1.4