

Abstract Submitted  
for the MAR05 Meeting of  
The American Physical Society

**Nanostructured Organosilicates from Self-assembled Block Copolymers/Silsesquioxanes Mixtures** HO-CHEOL KIM, IBM Almaden Research Center, ERIK FREER, JENNIFER CHA, JAMES HEDRICK, ROBERT MILLER, IBM Almaden Research Center — Block copolymers have been used as a structure-directing agent for generating nanostructures in inorganic materials. Domain-selective chemical reactions have been studied using pre-assembled block copolymer films or mixtures of block copolymer and ceramic precursor for sol-gel reaction. We report a simple route to nanostructured organosilicates from binary mixtures of amphiphilic block copolymers and silsesquioxanes. Ordered microdomains of spheres, cylinders and lamellae were generated by varying mixing ratio which determines the volume fraction of each microdomain phase. Atomic force microscopy (AFM) and cross-sectional transmission electron microscopy (TEM) were used to image the nanostructures. Small angle x-ray scattering (SAXS) was used to characterize the microstructures. Potential applications of the nanostructures will be discussed in correlation with microdomain morphologies of the thin films of silsesquioxanes.

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Date submitted: 04 Nov 2004

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