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Preparation of Surface Patterned Silica from Poly(dimethylsiloxane)-Containing Block Copolymer Thin Films MAURICE WADLEY, The University of Akron, KEVIN CAVICCHI, The University of Akron — The self-assembly of block copolymers into ordered nanostructures such as spheres, cylinders, and lamellae in the range of 10-100 nm makes them interesting materials for patterning surfaces. Thin films of poly(dimethylsiloxane) (PDMS)-containing block copolymers are attractive for patterning due to their conversion to silica under ultraviolet/ozone treatment which offers a functional, topographically patterned inorganic substrate. In this work a series of AB block copolymers with PDMS and either a poly(ethyl acrylate) or poly(styrene) block have been prepared via RAFT polymerization. Thin films of these polymers were treated with ultraviolet/ozone to produce periodic, nanoscale silica features. The effect of the mobility of the non-PDMS block on the solvent and thermal annealing of thin films of cylindrical and spherical morphologies will be discussed.

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