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A Simple Route for Preparation of Nanoporous Templates SOO-JIN PARK, JIA-YU WANG, BOKYUNG KIM, THOMAS RUSSELL, University of Massachusetts, Amherst — Spin-coating method of block copolymers represents a very simple means of producing thin films for the fabrication of nanostructured materials. However, the orientation and long-range ordering of the block copolymer microdomains must be controlled to maximize areal density. Here, spin coated films of poly(styrene-b-4-vinylpyridine) (PS-b-P4VP) diblock copolymers in THF/toluene solvent mixtures were investigated and it was found that highly oriented cylindrical microdomains with long-range lateral order were obtained on a variety of substrates, such as silicon oxide, polystyrene, polyimide, poly(butylene terephthalate), and germanium. The preferential solvation of P4VP block with an alcohol enabled a surface reconstruction to produce a structure of the block copolymer film that leads to the generation of a nanoporous template upon drying. The gold evaporation on the reconstructed films produces thermally stable and plasma resistant films.

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