

Abstract Submitted
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Amplification of Self-Assembled Nanopatterns: Bilayer Approach to High Aspect-Ratio Cylindrical Nanopore Arrays and Their Use for Templating Functional Materials HO-CHEOL KIM, IBM Almaden Research Center, OUN-HO PARK, JOY CHENG, MARK HART, ROBERT MILLER, HIROSHI ITO, IBM ALMADEN RESEARCH CENTER TEAM — Thin films containing well-defined nanoscopic cylindrical pores oriented perpendicular to the surface are highly desirable for a variety of applications. Of great interest is to use the porous structures for templating a variety of functional materials into 3D nanostructures. Previous reports employ the porous oxide of anodized aluminum or thin films of block copolymers for generating high aspect-ratio nanoporous films. It is, however, still desirable to develop a generalized, simple and reliable method to fabricate nanoporous templates with controlled pore dimensions, high aspect-ratio, substrate non-selectivity and uniformity over large areas. We report a relatively simple and reproducible method for generating nanoporous templates. The approach we used in this study provides nanoporous films with controlled pore diameters (8nm - 25nm in this study) and high aspect-ratio over large areas of a variety of substrates. We also report the application of the templates for generation of nanostructured copper sulfide and titania and their functional properties.

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