

Growth of High Aspect-Ratio Anodic Aluminum Oxide Templates on Silicon

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Porous alumina templates with high aspect-ratio ordered nanopores were fabricated by controlling anodizing progress of Al films on Si substrates in sulfuric acid solution. An AAO template having pores of average diameter 40nm and height 500nm was successfully prepared by two-step anodic oxidation of an aluminum film on a silicon substrate. The ordering of nanopore arrangement with a hexagonal symmetry was found to be closely related to thickness of the deposited Al film, growth temperature, applied voltage, and solution concentration. We have obtained silicon-wafer scale AAO templates of ordered arrays with easy handing, and this kind of template can be expected to have applications in nanoelectronics and optoelectronics.

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