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The Effects of pH and Acid Type on Porous Alumina Formation

ADAM FRIEDMAN, DERRICK BRITTAIN, LATIKA MENON, Northeastern University Dept. of Physics — Porous aluminum oxide prepared by anodization has an enormous variety of uses in nanomanufacturing, as it can be used as scaffolding to grow nanowires and tubes of exacting size specifications. However, there is no complete physical model for its growth. Three models in particular have been suggested in the past. We experimentally study the stability of porous alumina formation and the effects of changing anodization voltage, acid pH, and acid type. Using this information, we show that the models err in their primary assumptions, we pinpoint the location of these errors, and we suggest a method to correct them.

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