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**Fabrication of canonical nanoporous templates by variational anodic oxidation of aluminum** ATAUR CHOWDHURY, PATRICK WALLACE, University of Alaska Fairbanks — The interesting effects of quantum confinement critically depend on the shape and size of the nanocrystals. Preliminary results of an experimental study of production of templates with conical profiles are presented here. These templates will be ideal for fabrication of nanocrystals with the same profile. Templates were fabricated in aluminum with the anodic oxidation process by carefully controlling the anodization parameters to control the shape of the resulting templates. Different combinations of these parameters such as electrolyte, pH of the solution, applied voltage, and current density were studied to ascertain the right condition of growth for conically porous templates. The most dominant parameter was the applied voltage and the voltage was continuously changed slowly during the process of growth. Attempt was made to control the pore diameter to a size less than 20 nm with an aspect ratio of about 1.0. Structural and morphological studies were done with AFM and SEM. The details of the results will be presented.

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