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Fabrication and Characterization of Cadmium Sulfide Nanowires on Aluminum Oxide Template

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Abstract : Cadmium supplied nanowires have unique electrical and optical properties and applications. To obtain cadmium supplied nanowires with regular and good aspect ratio, they can be synthesized by template synthesis method. Porous anodized aluminum oxide is the most promising template with regular hexagonal shapes. Their aspect ratio can be controlled by controlling the pores' depth and diameter which greatly depend on anodization voltage and temperature of the electrolyte. In this research, high purity aluminium was used to prepare nanotemplates at 5-6°C in 1M phosphoric acid and cadmium supplied was deposited electrochemically using a co-solution of thiourea, cadmium acetate and ammonium acetate. pH was maintained at 11 in a heat bath at 75°C with the help of aqueous ammonia solution. Both porous anodized alumina and cadmium supplied nanowires were characterized suing SEM. A good quality Nanowires were obtained in bunches with reasonably high aspect ratio.

Keywords : bunches, electrodeposition, hexagonal, thiourea
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