

Abstract Submitted
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Fabrication of Uniform Magnetic Nanowire Arrays¹ W.J. YEH, KUN YANG, Dept. of Physics, Univ. of Idaho — Nickel nanowire arrays with high aspect ratio and large packing densities have been grown in thin nanochannel glass template by an electrochemical deposition method. The template initially was polished and etched to obtain parallel, uniform, hollow channels. One of surfaces of a template was then coated with a copper film layer of around 150 nm in thickness to provide an electrode to drive the electrochemical deposition. The *pH* value of NiSO₄ aqueous solution was set to be 1 to 2 and the deposition potential was to be 1.2 V versus the saturated Calomel electrode. Obtained nickel wires were uniform and circular with diameter of down to 80 nm, depending on the size of nanochannel itself. The length of wires was controlled, typically about 140 μ m, depending on the deposition time. Finally, scanning electron microscopy (SEM) has been used to characterize the structures of nanowires. Magnetic properties of nickel nanowire arrays have been also investigated using a superconducting quantum interference device magnetometer (SQUID). In this presentation, the authors will also present some results of cobalt nanowire arrays grown by superfluid deposition.

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