

Electrodeposition of Pt-Ni nanowires using various alumina templates and characterization of their magnetic properties

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High aspect ratio porous aluminum oxide membranes of various pore diameter and interpore distance were used as templates for the synthesis of electrodeposited magnetic Pt-Ni nanowire arrays. The pulsed electrodeposition potential sequence consisted of 1000 cycles comprising deposition, discharge and rest pulse, which results in PtNi₃ nanowire composition and length of around 1 μm . The morphology and composition of Pt-Ni nanowires were determined by scanning electron microscopy and energy dispersive X-ray spectroscopy. The temperature dependence of susceptibility was measured in zero-field cooled (ZFC) and field-cooled (FC) mode in the temperature range from 2 K to 300 K. The position of maximum in ZFC magnetic moment was taken as the blocking temperature $T_B \sim 5$ K.

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