Abstract Submitted
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Synthesis and Characterization of Iron-Nickel ($\mathbf{Fe}_x\mathbf{Ni}_{1-x}$) Nanowires RAKESH SHAH, IGOR DUBENCO, AMELIA CHURCH, XIAN-FENG ZHANG, SHANE STADLER, SAIKAT TALAPATRA, NAUSHAD ALI, Department of Physics, Southern Illinois University Carbondale — Electrochemical deposition method was used to synthesize ordered arrays of Fe_xNi_{1-x} ($25 < x < 85$) nanowires into porous anodic alumina template. These nanowires were structurally characterized by scanning electron microscope (SEM) and transmission electron microscope (TEM). An estimate regarding the elemental composition of the nanowires was obtained by Energy dispersive spectroscopy (EDS). X-ray diffraction studies revealed that the nanowires exhibit a phase transition from face-centered-cubic (FCC) to base-centered-cubic (BCC) crystal structure with increasing iron concentration. The effect of the variation of the compositional ratio of iron and nickel on the magnetic properties of the nanowires will also be presented.

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