

Abstract Submitted
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Synthesis of Fe Nanowires via a Novel Approach KINJAL H. GANDHA, KEVIN ELKINS, J. PING LIU, Department of Physics, University of Texas at Arlington — Iron nanowires with high magnetization and high coercive force were fabricated via reduction of as-synthesized α -FeOOH nanowires. Thermal treatment is used to facilitate subsequent phase transformation from the precursor to α -Fe phase. Increasing reduction time and temperature leads to agglomeration and sintering of the nanowires. By using fluid bed technique and by adjusting the reaction temperature, time and gas component in the process of heat treatment, α -Fe nanowires with length of 200nm–300nm and diameter of 20nm–30nm were prepared. The iron nanowires have a coercive force of 628 Oe and saturation magnetization of 197 emu/g at room temperature. This novel process is effective to produce iron nanowires with well controlled morphology and composition.

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