

Abstract Submitted
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Magnetite (Fe_3O_4) Core-Shell Nanowires and Nanotubes: Synthesis and Magnetoresistance DAIHUA ZHANG, ZUQIN LIU, SONG HAN, CHAO LI, BO LEI, CHONGWU ZHOU, University of Southern California — Single crystalline magnetite (Fe_3O_4) core-shell nanowires and nanotubes have been successfully synthesized using pulsed laser deposition and selective chemical etching techniques. The material composition and stoichiometric ratio have been carefully examined and confirmed with a variety of characterization techniques. These novel structures have rendered unique opportunities to investigate the transport behavior and spintronic property of Fe_3O_4 in its one-dimensional form. Room temperature magnetoresistance of $\sim 1.2\%$ was observed in the as synthesized nanowires under a magnetic field of $B = 1.8$ T, which has been accounted for the tunneling of spin-polarized electrons across the anti-phase boundaries.

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