

Abstract Submitted
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Structure and magnetic properties of Co/CoO core-shell nanowires KINJAL GANDHA, KEVIN ELKINS, NARAYAN POU DYAL, J. PING LIU, Department of Physics, The University of Texas at Arlington — Cobalt nanowires with high coercivity have been synthesized via a solvothermal chemical process. A record high room-temperature coercivity value of 12.5 kOe has been measured in aligned Co nanowires with a diameter of about 15 nm and a mean length of 200 nm. When the surface of the Co nanowires were oxidized, exchange-bias (EB) was detected at low temperatures owing to the exchange coupling between the ferromagnetic (FM) Co core and the antiferromagnetic (AFM) CoO shell of the nanowires. EB fields of ~ 2.0 kOe were measured at 10 K, along the parallel direction of nanowires. Manipulation and control of the EB in the nanowires may lead to a better understanding of the EB effect and the applications of the nanowires in for future permanent magnets and recording media.

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