

Abstract Submitted
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A Generic Synthesis of Transition Metal Oxide Core-Shell Nanowires SONG HAN, CHAO LI, ZUQIN LIU, BO LEI, DAIHUA ZHANG, WU JIN, XIAOLEI LIU, TAO TANG, CHONGWU ZHOU — A generic nonequilibrium synthesis technique has been developed to produce novel transition metal oxide nanowires, including $\text{YBa}_2\text{Cu}_3\text{O}_{6.66}$, $\text{La}_{0.67}\text{Ca}_{0.33}\text{MnO}_3$, $\text{PbZr}_{0.58}\text{Ti}_{0.42}\text{O}_3$ and Fe_3O_4 . Key to our success is the growth of vertically aligned single-crystalline MgO nanowires, which worked as excellent templates for epitaxial deposition of the desired transition metal oxides and led to high-quality core-shell nanowires. Transport studies on $\text{La}_{0.67}\text{Ca}_{0.33}\text{MnO}_3$ nanowires have revealed the remarkable persistence of metal-insulator transition and magnetoresistance down to nanometer scale. Our technique will enable various in-depth studies such as phase transition in nanoscale oxides and may pave the way for novel applications of these fascinating materials.

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