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Synthesis and Characterization of CoFe nanowires PO-CHING TSAI, YAJING ZHANG, GIRIJA S. CHAUBEY, NARAYAN POUDYAL , CHUANBING RONG, J. PING LIU, Department of Physics, The University of Texas at Arlington, Arlington, TX 76019 — CoFe and CoNi nanocrystals with different size, shape and compositions were successfully synthesized via a non-catalyst chemical solution method. It was found that the structure and morphology of the nanocrystals with high aspect ratio can be controlled by varying parameters such as solvent amount, surfactant ratio, reducing agent and heating rate. The elongation of the nanowires can be adjusted by changing surfactant ratio and catalyst amount. It has also been observed that the growth mechanisms for CoFe and CoNi nanowires are different. Magnetic properties of the nanocrystals are size and shape dependent. By optimizing the synthesis conditions, nanowires with enhanced magnetization and coercivity can be obtained.

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