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Ferromagnetic and Semiconducting CoTe Nanostructures[1]
BISHNU R. DAHAL, KESHAB R. SAPKOTA, RAJENDRA P. DULAL, IAN L. PEGG, JOHN PHILIP, The Catholic University of America, Washington DC — One dimensional Cobalt-Telluride, CoTe nanostructures were synthesized with modified hydrothermal route. Morphology of the nanostructures was analyzed by using scanning electron microscope and found that the length of the nanowires varied from 20-80 μm while diameter varied from 50-300 nm. The crystal structure of as grown nanostructures was studied by using X-ray diffractometer and found that they exhibit the hexagonal crystal structure with the space group, p63/mmc and having the lattice parameters a=3.893 A, c=5.375 A. Magnetic characteristics were studied using the vibrating sample magnetometer and found that the as grown nanostructures were ferromagnetic at room temperature for Co and Te ratio 1:1. I-V characteristics were analyzed from single NW devices, fabricated using e-beam lithography, and found that they exhibit semiconducting behavior.

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