Superantiferromagnetic EuTe Nanoparticles: Room Temperature Colloidal Synthesis, Structural Characterization, and Magnetic Properties

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Fig. S-1(a) and Fig. S-1(b) show the FTIR images of 6.5 nm EuTe nanoparticles and EuTe nanospindles. Peaks ¹⁰ identification: O–H vibration, 3500 to 3000 cm⁻¹; C–H stretching band, 3000 to 2800 cm⁻¹; C–C and C–H bending, 1460 to 1130 cm⁻¹; C–O and C–N stretching, 1100 to 890 cm⁻¹; C–C–O vibrations, 880 to 690 cm⁻¹. Physisorbed and chemisorbed water, 3500 to 3000 cm⁻¹ and 1800 to 1500 cm⁻¹.



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Figure S-1 (a). FTIR spectrum of 6.5 nm EuTe nanoparticles and (b) EuTe nanospindles

Fig. S-2 illustrates images of the 7.3 nm and 5.5 nm nanocrystals and their associated size distributions: (a). 7.3 ± 1.7 nm and (c) 5.5 ± 1.5 nm. The corresponding histograms of size distributions for 7.3 nm and 5.5 nm nanoparticles showing in (b) and (d).

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Figure S-2 HR-TEM images of 7.3 nm and 5.5 nm EuTe nanoparticles

Fig. S-3 shows selected area electron diffraction (SAED) pattern image of as-synthesized EuTe nanospindles. (220) and (200) planes are obviously noticed in the pattern.



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Figure S-3 Electron diffraction pattern of EuTe nanospindles

Fig. S-4 shows the EDS spectrum for 6.5 EuTe NPs, confirming the presence of both europium and tellurium in the nanocrystals.

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Figure S-4 Energy Dispersive X-ray (EDS) spectrum of 6.5 nm EuTe nanoparticles

Fig. S-5 shows the hysteresis curve of 6.5 nm EuTe nanoparticles from -4 T to 4 T at 2 K by vibrating sample magnetometry with a Quantum Design Physical Property Measurement System (PPMS) in National High Magnetic Field Laboratory of USA.



Figure S-5 Hysteresis curve of 6.5 nm EuTe nanoparticles