

Supporting Information

Colloidal Chromium-Doped In_2O_3 Nanocrystals as Building Blocks for High- T_C Ferromagnetic Transparent Conducting Oxide Structures

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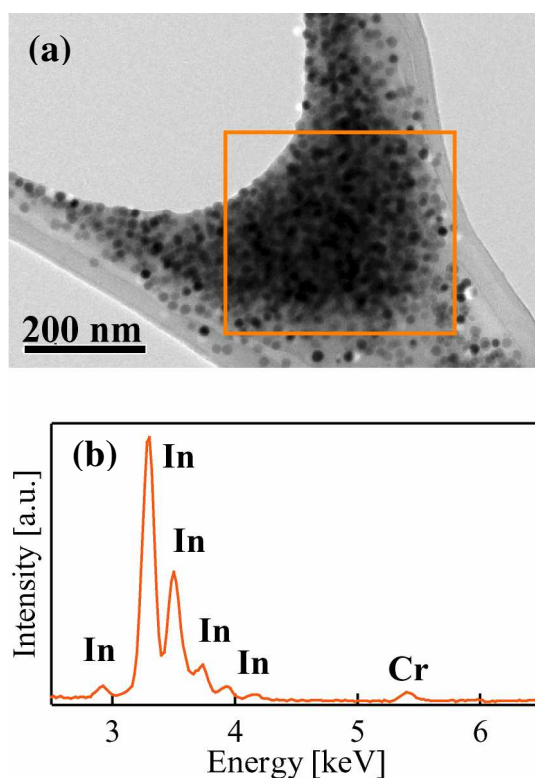


Figure S1. (a) STEM image of a large number of $\text{Cr}^{3+}:\text{In}_2\text{O}_3$ NCs as described in the text. The region analyzed with EDX spectroscopy is marked with the orange rectangle. (b) EDX spectrum of the designated region in a).

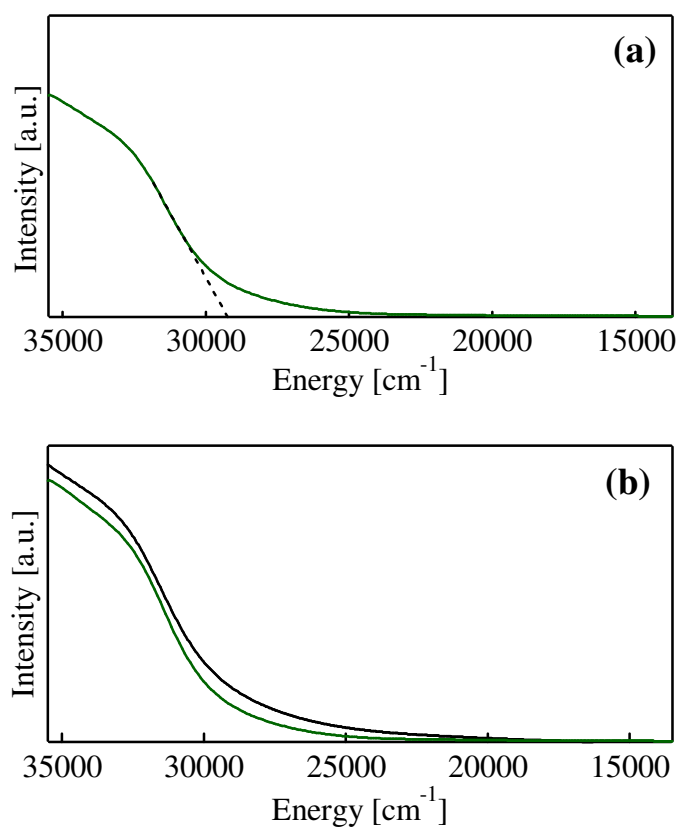


Figure S2. (a) Absorption spectrum of 2.7 % Cr³⁺:In₂O₃ NCs. The dashed line is a fit to the low-energy tail of the band gap, from which the band gap energy is estimated to be 30250 cm⁻¹ (ca. 3.75 eV). This value is in a very good agreement with the In₂O₃ band gap energy reported for a similar spectrum in reference 8. (b) Absorption spectra of pure In₂O₃ (black trace) and Cr³⁺:In₂O₃ (green trace) NCs showing nearly identical band gap energies.

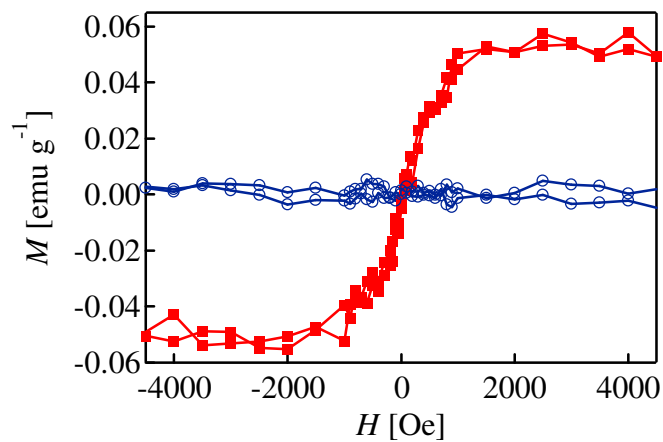


Figure S3. M vs. H data for In_2O_3 nanocrystalline film (blue circles) measured at 300 K, showing no ferromagnetic ordering. Hysteresis loop for 2.7 % $\text{Cr}^{3+}:\text{In}_2\text{O}_3$ nanocrystalline film (red circles) recorded at 300 K is shown for comparison. Both loops were corrected for diamagnetic contribution.

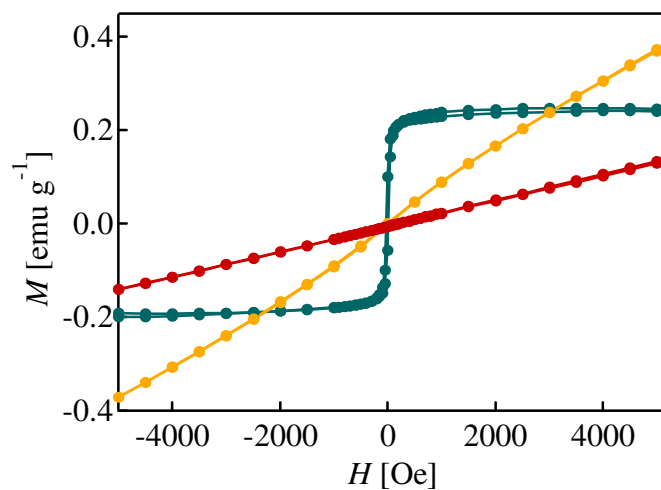


Figure S4. M vs. H data for nanocrystalline Cr_2O_3 measured at 5 K (blue-green dots), 100 K (yellow dots) and 300 K (red dots). No ferromagnetic ordering is observed at 300 K, while the sample is superparamagnetic at 5 K and very weakly superparamagnetic at 100 K.