

Abstract Submitted
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Enhanced luminescence in terbium-cerium co-doped tin oxide quantum dots CHRISTIE LAROCHELLE, KELLY MCCUTCHEON, Franklin & Marshall College, REBECCA SOBEL, MIT — SnO₂ quantum dots doped with Tb³⁺ exhibit strong luminescence from the Tb³⁺ dopants due to efficient energy transfer from the SnO₂ donors to the Tb³⁺ acceptor ions. We report results from a study of the effect of co-doping the SnO₂ dots with both Tb³⁺ and Ce³⁺ on the photoluminescence properties of the samples. The dots were synthesized using a sol-gel technique and the Ce³⁺/Tb³⁺ ratio was varied while keeping the total doping level at 1wt%. X-ray diffraction and TEM results confirm the presence of nanocrystals of less than 10 nm in diameter. Photoluminescence results indicate that the Tb³⁺ ions are incorporated in a crystalline environment and that co-doping with Ce³⁺ enhances the energy transfer efficiency and therefore the intensity of the Tb³⁺ luminescence.

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