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**Enhanced Luminescence in Tb/Ce co-doped Zinc- and Tin-Oxide quantum dots** CHRISTIE LAROCHELLE, JINGJING XU, Franklin & Marshall College, KELLY MCCUTCHEON, Virginia Tech — SnO<sub>2</sub> and ZnO quantum dots doped with Tb<sup>3+</sup> exhibit strong luminescence from the Tb<sup>3+</sup> dopants due to efficient energy transfer from the semiconductor donors to the Tb<sup>3+</sup> acceptor ions. We report results from a study of the effect of co-doping the SnO<sub>2</sub> and ZnO dots with both Tb<sup>3+</sup> and Ce<sup>3+</sup> on the photoluminescence properties of the samples. The dots were synthesized using a sol-gel technique and the Ce<sup>3+</sup>/Tb<sup>3+</sup> 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 Tb<sup>3+</sup> ions are incorporated in a crystalline environment and that co-doping with Ce<sup>3+</sup> enhances the energy transfer efficiency and therefore the intensity of the Tb<sup>3+</sup> luminescence. The effect of heat treatment on the size of the dots and the impact of size on luminescence properties was also investigated.

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