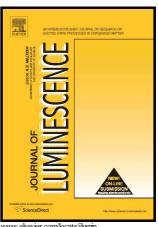
### Author's Accepted Manuscript

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#### **ACCEPTED MANUSCRIPT**

# Effect of $Tb^{3+}$ Concentration on Luminous Properties of $Y_{0.92-x}PO_4:0.08Ce, xTb$ Microparticles

Chong-Nian Ou, Xu-Yan Liu\*, Gen-Ouan Li and Zhi-Wen Lu

College of Mechanical & electronic Engineering, Nanyang Normal University, Nanyang 473061, People's Republic of China

Rare earth alloy Engineering Research Center of Henan province, Nanyang Normal University, Nanyang 473061, People's Republic of China

nyliuxuyan@126.com

#### **Abstract**

Uniform Y<sub>0.92-x</sub>PO<sub>4</sub>:0.08Ce, *x*Tb microparticles were fabricated by hydrothermal method, and their structural and luminous properties were characterized. SEM and TEM images confirmed the existence of clavate and prismatic microparticles, with a good lattice structure. XRD analysis showed a pure tetragonal phase of the samples. The growth mechanism and the function of sodium citrate (Na<sub>3</sub>C<sub>6</sub>H<sub>5</sub>O<sub>7</sub>·2H<sub>2</sub>O, Na<sub>3</sub>Cit) on the morphology and size of Y<sub>0.92-x</sub>PO<sub>4</sub>:0.08Ce, *x*Tb microparticles were discussed. The photoluminescence (PL) spectra indicated that the Ce<sup>3+</sup>/Tb<sup>3+</sup> co-doped YPO<sub>4</sub> exhibits a strong green illumination under the long-wave ultraviolet (UV) excitation. What's More, the PL spectra, decay time and quantum efficiency with different doped concentration of Tb<sup>3+</sup> were discussed.

**Key words**: Ce<sup>3+</sup>/Tb<sup>3+</sup> co-doped YPO<sub>4</sub>; hydrothermal synthesis; phosphor; photoluminescence; quantum yield

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