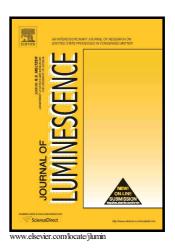
## Author's Accepted Manuscript

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### **Yellow Light-Emitting for Warm White LEDs**

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#### Abstract

The new system of  $[(Gd_{0.9}Y_{0.1})_{0.9-x}Tb_{0.1}Ce_x]AG$  phosphors have been successfully obtained by using a modified co-precipitation method which include the precursor synthesis and post treatment at 1300 °C. The crystal structure stabilization, morphology, PL/PLE spectra, fluorescence decay analysis and thermal property have been studied in detail. The metastable GdAG:Tb<sup>3+</sup>/Ce<sup>3+</sup> samples could be effectively stabilized via smaller 10 at.% Y<sup>3+</sup> doping, which can develop a new phosphor of [(Gd<sub>0.9</sub>Y<sub>0.1</sub>)<sub>0.9-x</sub>Tb<sub>0.1</sub>Ce<sub>x</sub>]AG for exploring the field of the opto-functionality. The presence of Gd<sup>3+</sup> and Tb<sup>3+</sup> excitation bands in the PLE spectra monitoring the Ce<sup>3+</sup> yellow emission directly  $Gd^{3+} \rightarrow Ce^{3+}$  and  $Tb^{3+} \rightarrow Ce^{3+}$  energy of provides evidence transfer. The [(Gd<sub>0.9</sub>Y<sub>0.1</sub>)<sub>0.9-x</sub>Tb<sub>0.1</sub>Ce<sub>x</sub>]AG phosphors with good dispersion show various luminescence properties monitoring at 275 nm, 331 nm and 452 nm excitation, respectively. The optimized (Gd<sub>0.9</sub>Y<sub>0.1</sub>)<sub>0.89</sub>Tb<sub>0.1</sub>Ce<sub>0.01</sub>]AG phosphor has a red-shifted emission and the applicable emission intensity because of the energy transfer of  $Gd^{3+} \rightarrow Ce^{3+}$  and  $Tb^{3+} \rightarrow Ce^{3+}$ , thus being more suitable for the application of warm-white lighting than YAG:Tb<sup>3+</sup>/Ce<sup>3+</sup> and LuAG:Tb<sup>3+</sup>/Ce<sup>3+</sup>. The Stokes shift

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