Tunable Luminescence of Ce^{3+}/Mn^{2+}-coactivated $Ca_2Gd_8(SiO_4)_6O_2$ through Energy Transfer and Modulation of Excitation: Potential Single-Phase White / Yellow-Emitting Phosphors

Guogang Li, [a,b] **Dongling Geng,** [a,b] **Mengmeng Shang,** [a,b] **Chong Peng,** [a,b] **Ziyong Cheng** [a] **and Jun Lin*** [a]

Received (in XXX, XXX) Xth XXXXXXXXX 201X, Accepted Xth XXXXXXXXX 201X
First published on the web Xth XXXXXXXXX 201X
DOI: 10.1039/b000000x

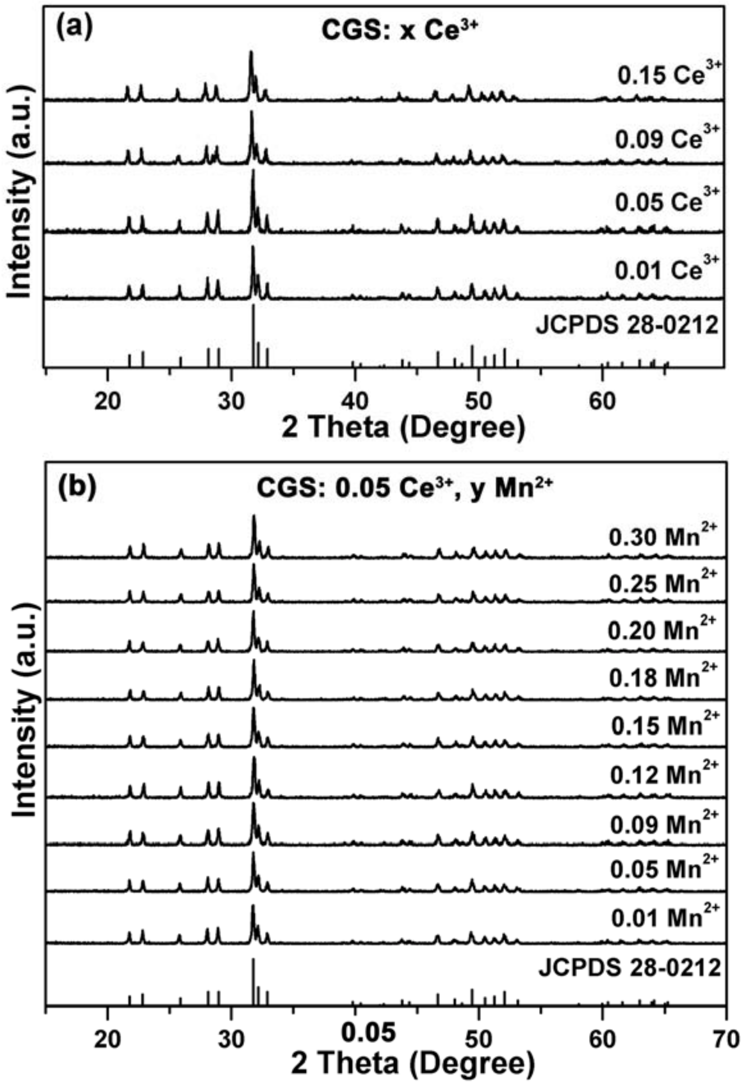

Figure S1. The XRD patterns of (a) CGS: x Ce^{3+} (x = 0.01-0.09) and (b) CGS: 0.05 Ce^{3+}, y Mn^{2+} (y = 0.01-0.30) samples sintered at 1350 °C for 2 h in H_2/N_2 (5%/95%). The standard data of $Ca_2Gd_8(SiO_4)_6O_2$ (JCPDS No.28-0212) is shown as reference.

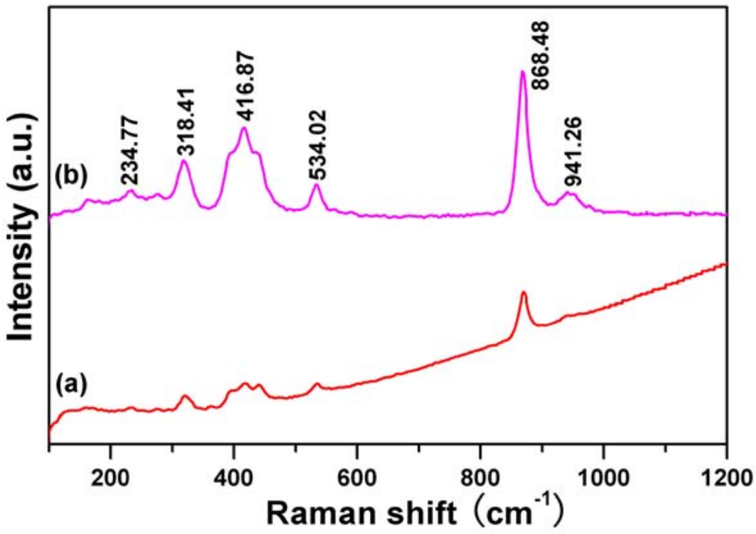

Figure S2. Raman spectrum of the prepared polycrystalline material $Ca_2Gd_8(SiO_4)_6O_2$ (a) and $Ca_2Gd_8(SiO_4)_6O_2$: $0.05Ce^{3+}$, $0.03Mn^{2+}$ (b) samples.

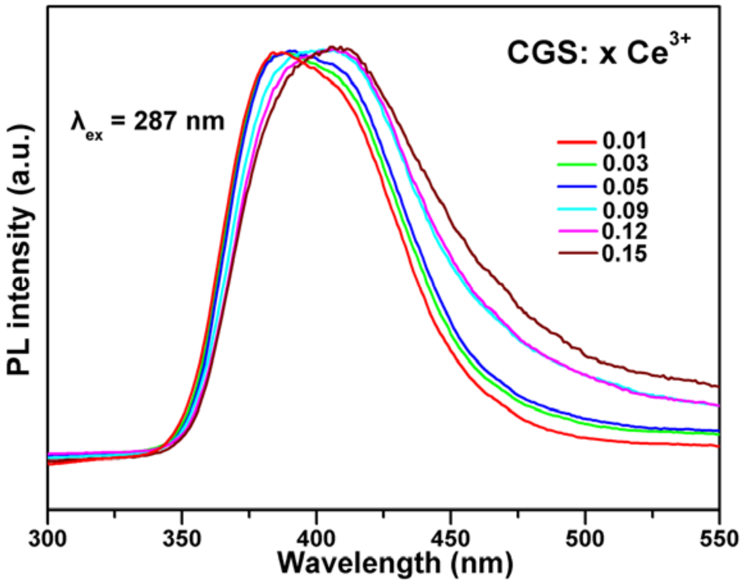

Figure S3. The variation of PL spectra of CGS: x Ce^{3+} samples with the Ce^{3+} concentration (x, mol%) under 287 nm UV excitation.

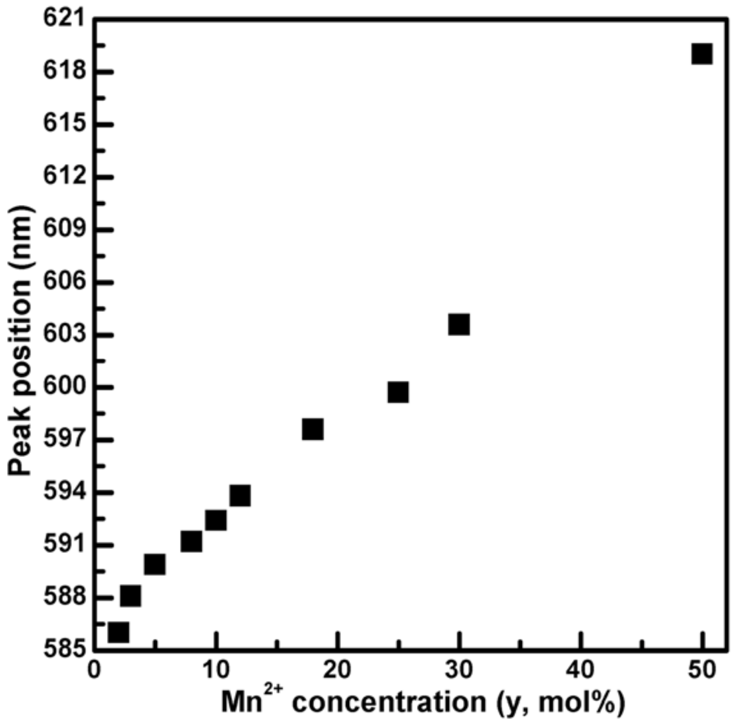

Figure S4. The peak position of CGS: $0.05Ce^{3+}$, yMn^{2+} samples as a function of Mn^{2+} concentration (y) under 287 nm UV excitation.

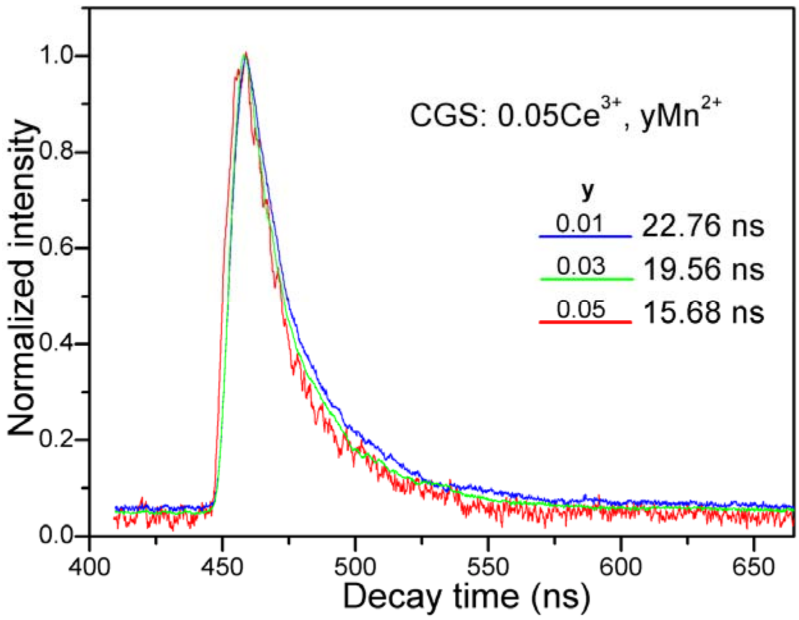

Figure S5. Decay curves of Ce^{3+} emission in CGS: $0.05Ce^{3+}$, yMn^{2+} (y = 0.01, 0.03, 0.05) samples excited at 355 nm and monitored at 428 nm.

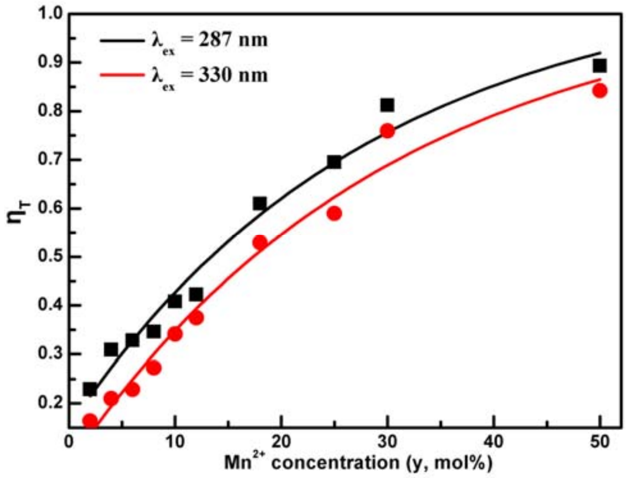

Figure S6. Energy transfer efficiency from Ce^{3+} to Mn^{2+} in CGS: $0.05Ce^{3+}$, yMn^{2+} (0-0.50) samples (λ_{ex} = 287 and 330 nm).