

Fig.S1. Emission spectra of  $\text{Ca}_2\text{PO}_4\text{Cl}:0.03\text{Ce}^{3+}$ , and  $\text{Ca}_2\text{PO}_4\text{Cl}:0.03\text{Ce}^{3+}, 0.03\text{Na}^+$  ( $\lambda_{\text{ex}}=334 \text{ nm}$ ).

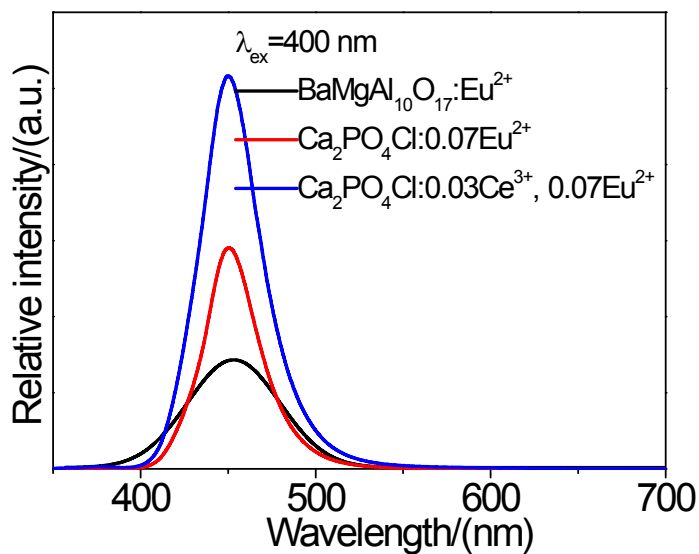


Fig.S2. Emission spectra of  $\text{Ca}_2\text{PO}_4\text{Cl}:0.07\text{Eu}^{2+}$ ,  $\text{Ca}_2\text{PO}_4\text{Cl}:0.03\text{Ce}^{3+}, 0.07\text{Eu}^{2+}$  and  $\text{BaMgAl}_{10}\text{O}_{17}:\text{Eu}^{2+}$  ( $\lambda_{\text{ex}}=400 \text{ nm}$ ).