

Supporting information

An efficient rare-earth free red-emitting $\text{Ca}_2\text{YSbO}_6:\text{Mn}^{4+},\text{M}(\text{M}=\text{Li}^+, \text{Na}^+, \text{K}^+, \text{Mg}^{2+})$ phosphors for white light-emitting diodes

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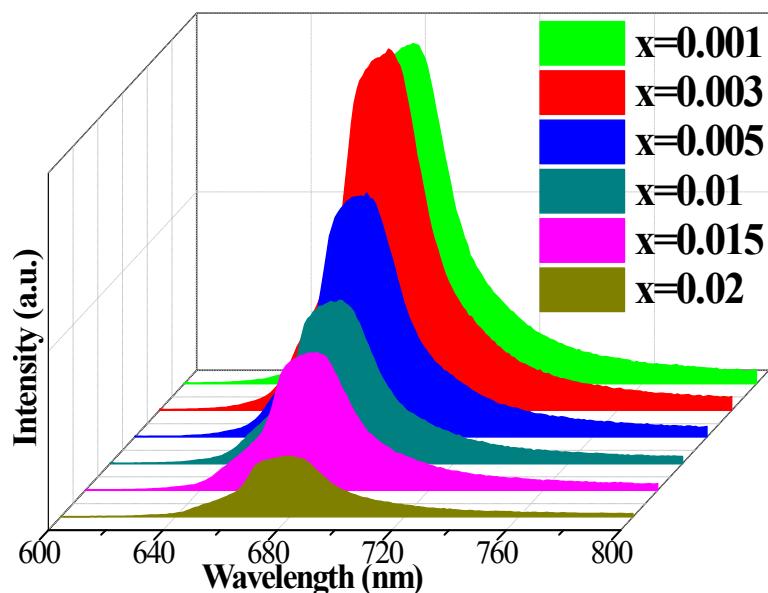


Fig.S1 PL spectra of the as-prepared $\text{Ca}_2\text{YSbO}_6:\text{xMn}^{4+}$ samples with various Mn^{4+} concentrations

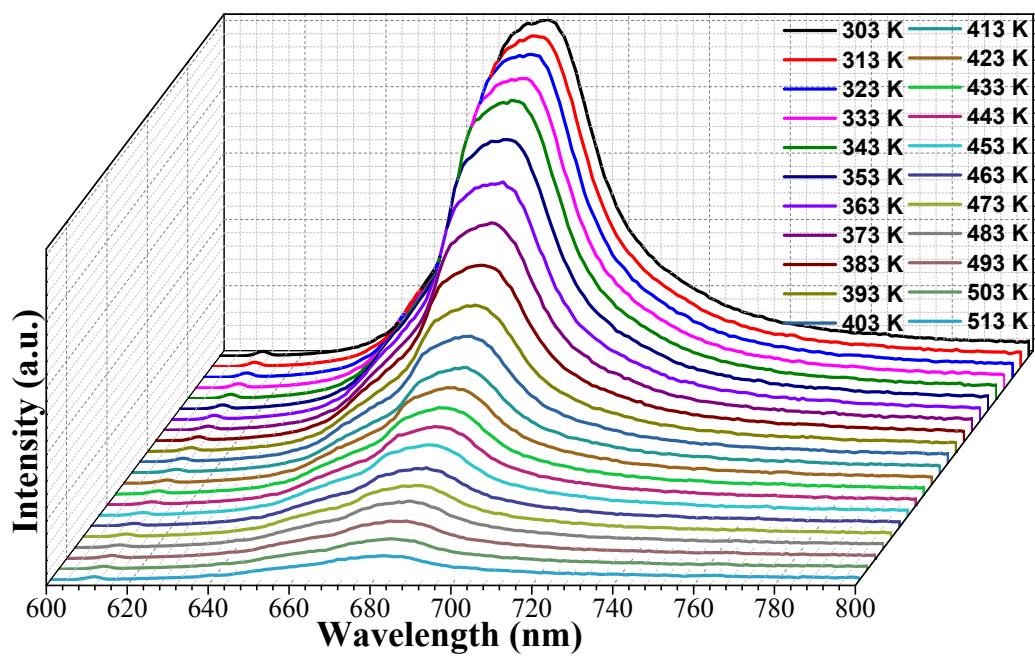


Fig. S2 Temperature dependence of the PL properties of $\text{Ca}_2\text{Y}\text{SbO}_6:0.003 \text{Mn}^{4+}$.

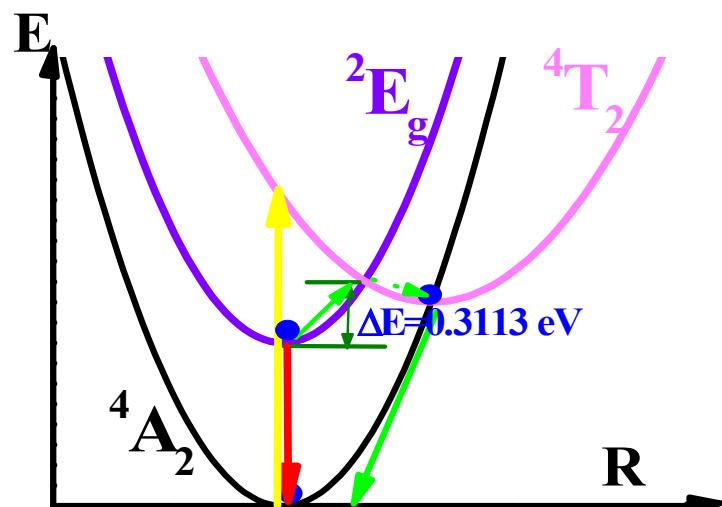


Fig. S3 The configurational coordinate diagram of Mn^{4+} in octahedral environment.

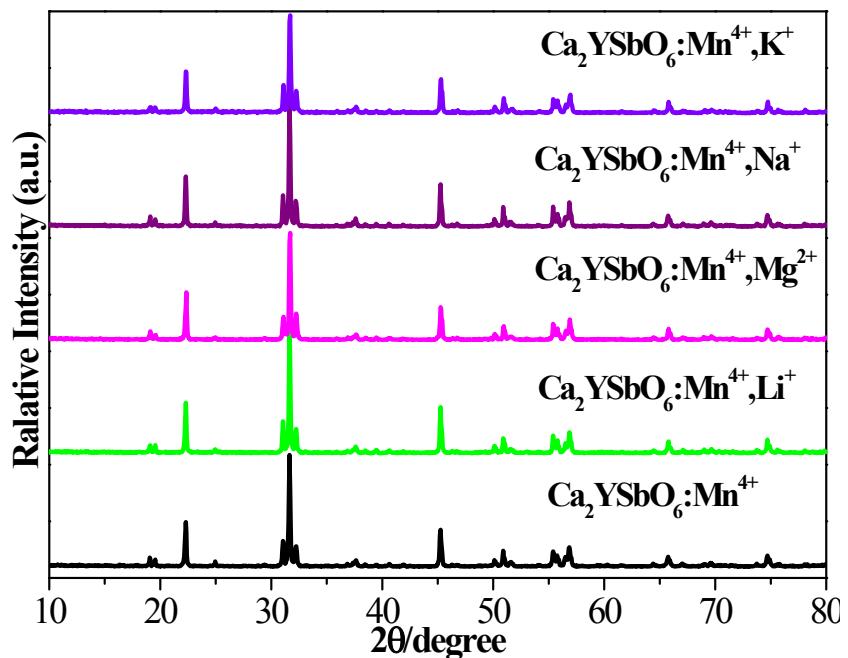


Fig. S4 XRD patterns of the as-prepared $\text{Ca}_2\text{YSbO}_6:0.003\text{ Mn}^{4+}$ and $\text{Ca}_2\text{YSbO}_6:0.003\text{ Mn}^{4+}, 0.003\text{M}$ ($\text{M}=\text{Li}^+, \text{Na}^+, \text{K}^+, \text{Mg}^{2+}$) phosphors.