

Supporting information

Narrow-band red-emitting $\text{KZnF}_3: \text{Mn}^{4+}$ fluoroperovskite: insights into electronic/vibronic transition and thermal quenching behavior

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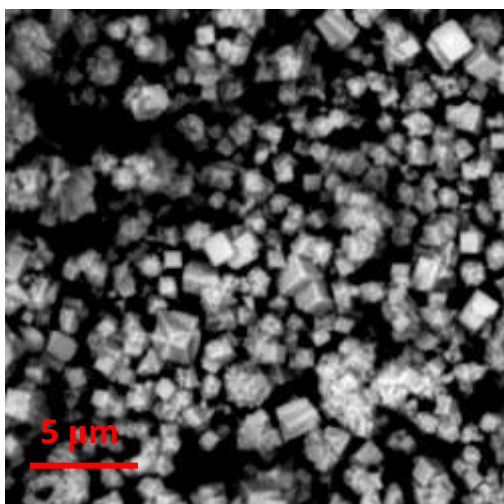


Fig. S1 SEM image of $\text{KZnF}_3: \text{Mn}^{4+}$

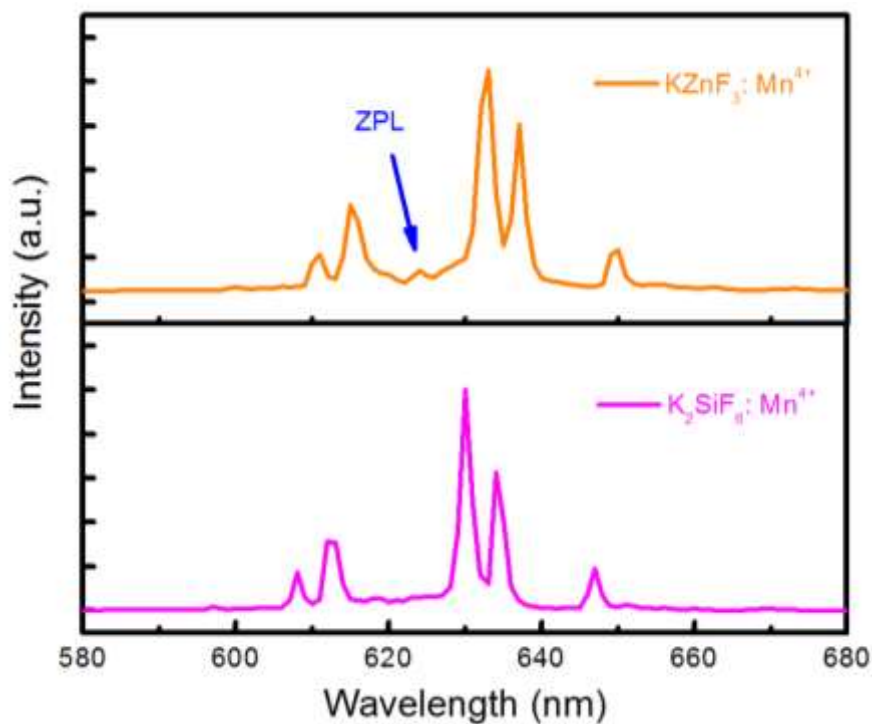


Fig. S2 PL spectra of $\text{KZnF}_3: \text{Mn}^{4+}$ and $\text{K}_2\text{SiF}_6: \text{Mn}^{4+}$

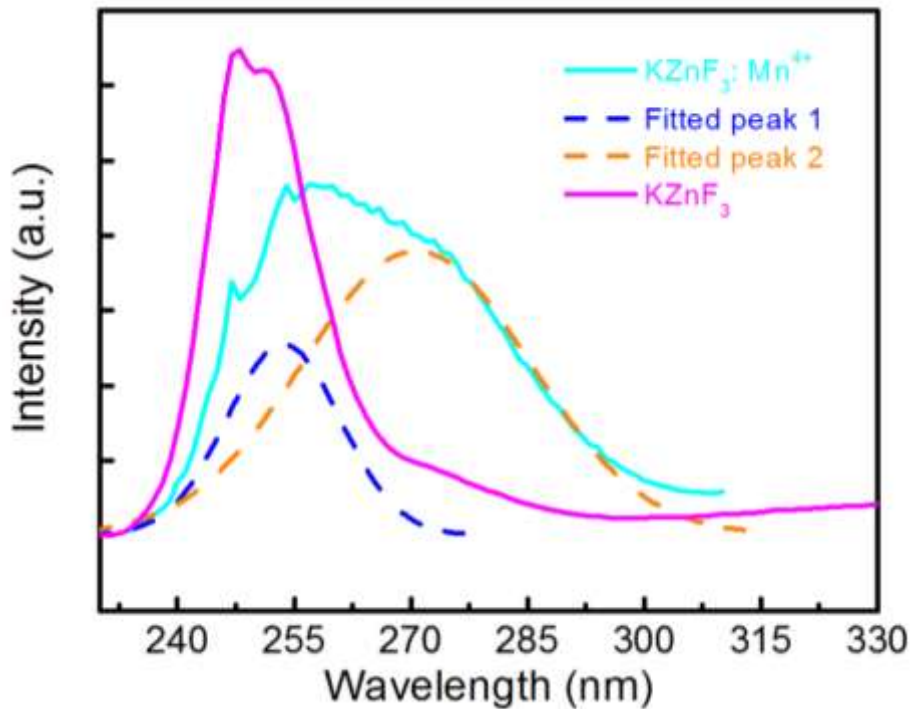


Fig. S3 PLE spectra of $\text{KZnF}_3: \text{Mn}^{4+}$ and KZnF_3 by monitoring at 633 nm and 400 nm emission, respectively. The dash peaks are the two Gaussian-fitted peaks for $\text{KZnF}_3: \text{Mn}^{4+}$

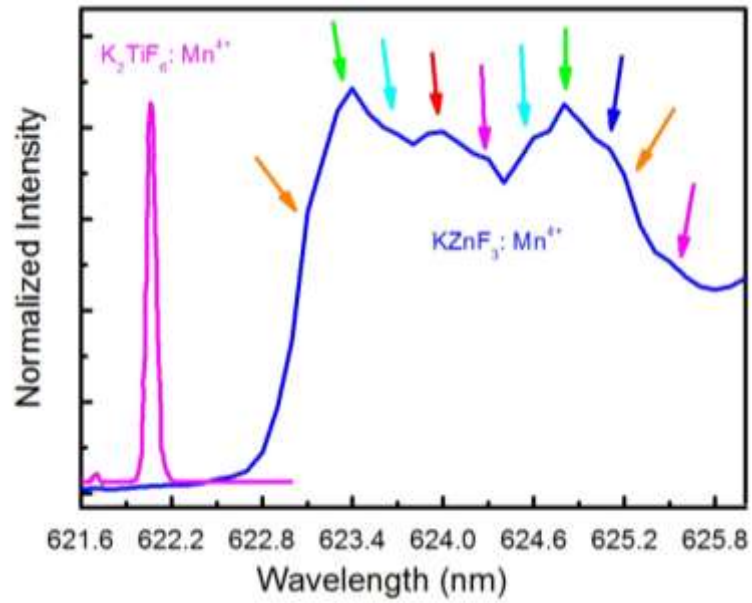


Fig. S4 The enlarged view at ZPLs of $K_2TiF_6: Mn^{4+}$ and $KZnF_3: Mn^{4+}$ at 10 K

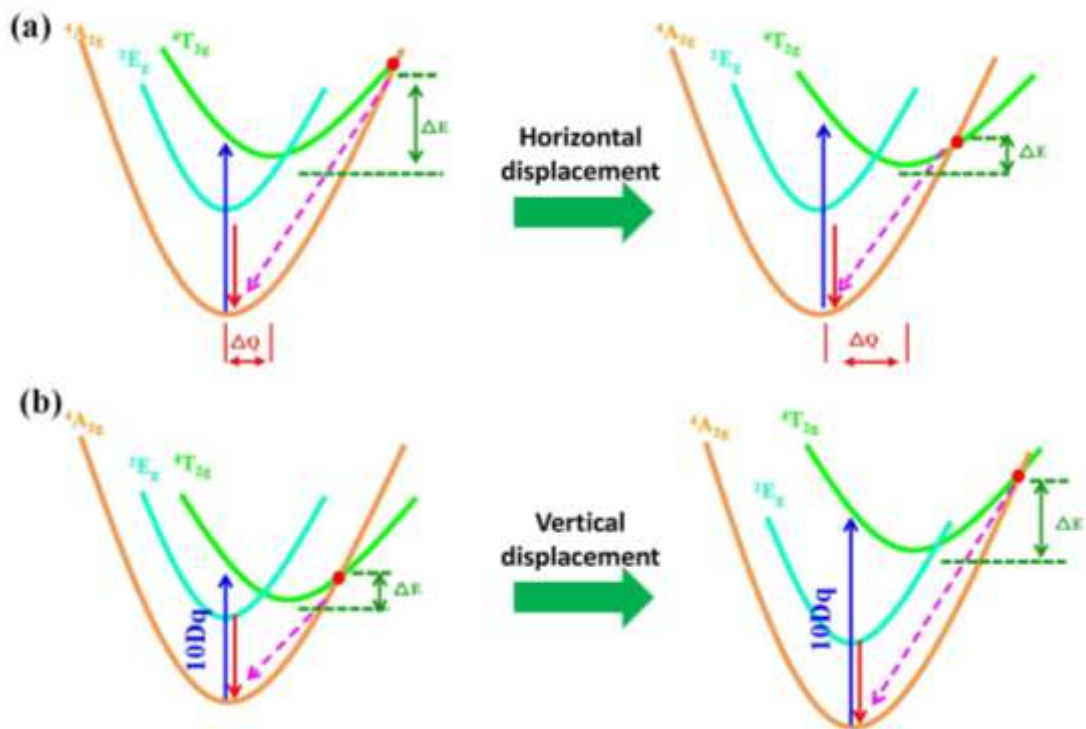


Fig. S5 Schematic illustration of the influence of $Mn^{4+}: 4T_{2g}$ location on thermal activation energy ΔE of Mn^{4+}