Electronic Supplementary Material (ESI) for Journal of Materials Chemistry C

Supplementary Information

Sol-gel Preparation of Efficient Red Phosphor $Mg_2TiO_4:Mn^{4+}$ and XAFS Investigation on the Substitution of Mn^{4+} for Ti^{4+}

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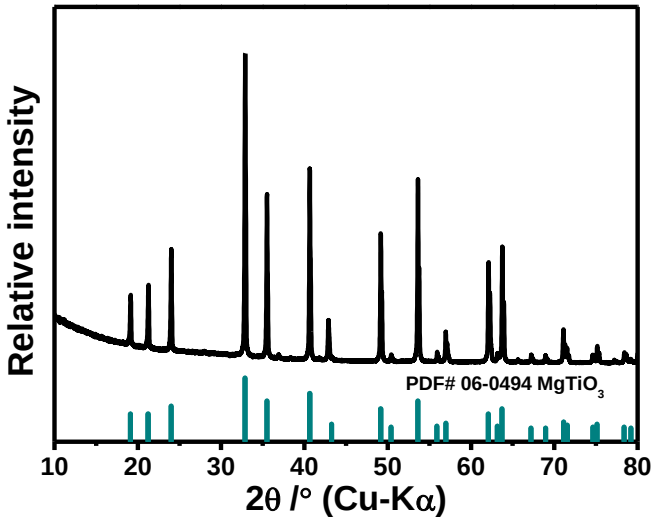

Fig. S1 XRD pattern of the sample with molar ratio Mg/Ti=1:1

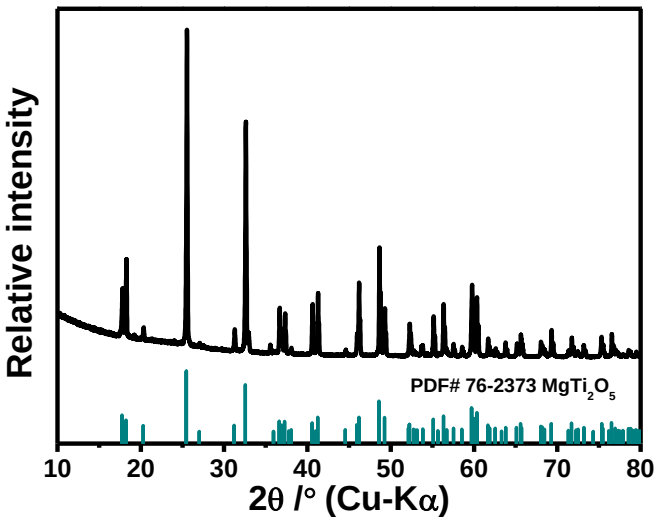

Fig. S2 XRD pattern of the sample with molar ratio Mg/Ti=1:2

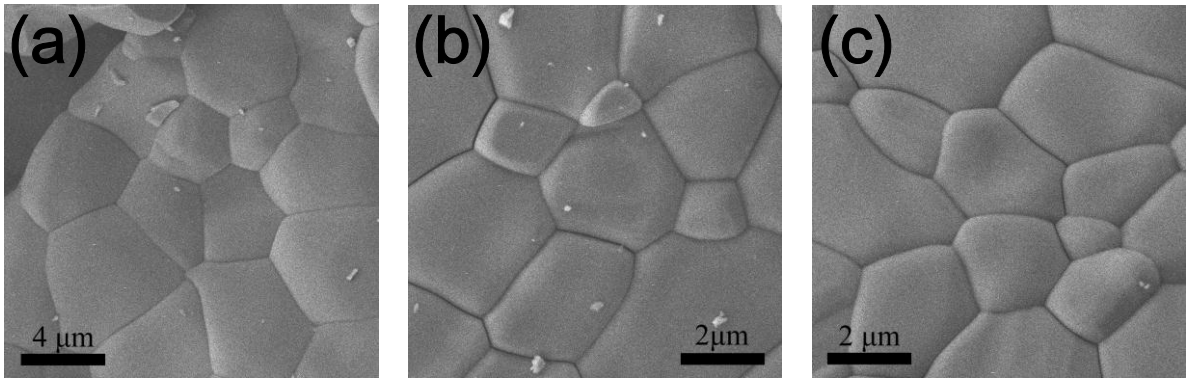

Fig. S3 SEM images of the samples with a molar ratio of (a) Mg/Ti=2:1, (b) Mg/Ti=1:1, and (c) Mg/Ti=1:2.

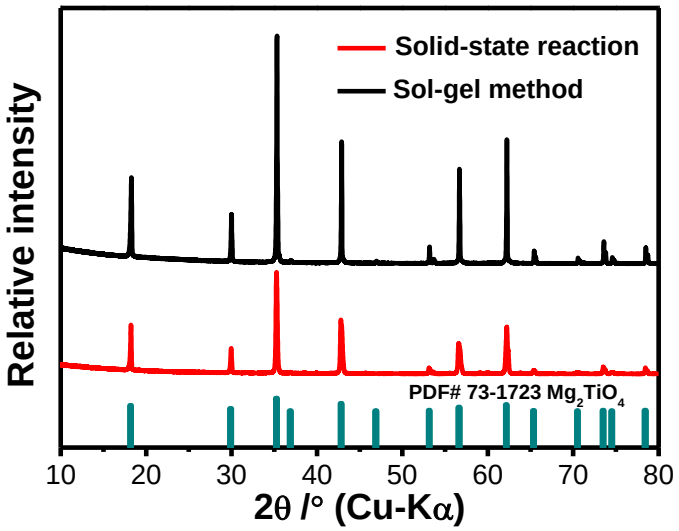

Fig. S4 The XRD pattern of the as-prepared sample $Mg_2TiO_4:Mn^{4+}$ $n_{Mn}/(n_{Mn}+n_{Ti})$=0.10% phosphor and the reference product $Mg_2TiO_4:Mn^{4+}$ $n_{Mn}/(n_{Mn}+n_{Ti})$=0.10% prepared from solid-state reaction

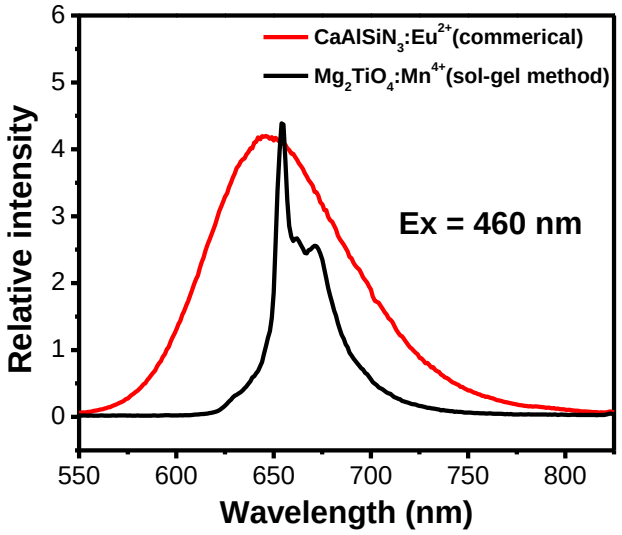

Fig. S5 The emission spectra of the as-prepared $Mg_2TiO_4:Mn^{4+}$, $n_{Mn}/(n_{Mn}+n_{Ti})=0.10\%$ and the commercial phosphor $CaAlSiN_3:Eu^{2+}$ purchased from Intematix company. The excitation wavelength is 460 nm.

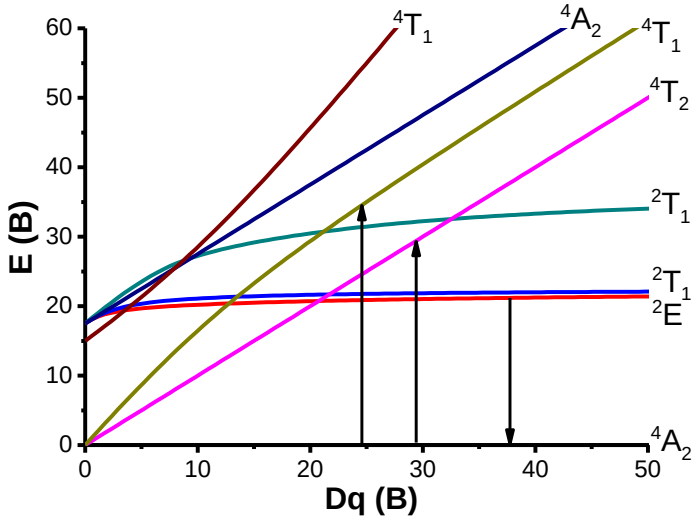

Fig. S6 Tanabe–Sugano energy level diagram for a $3d^3$ system in the octahedral symmetry Mn^{4+}.