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Supplementary Information

Designing dual-emission phosphors for temperature warning indication and dual-mode luminescence thermometry

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Keywords: Dual-emission center, LIR, Lifetime, Luminescence thermometry

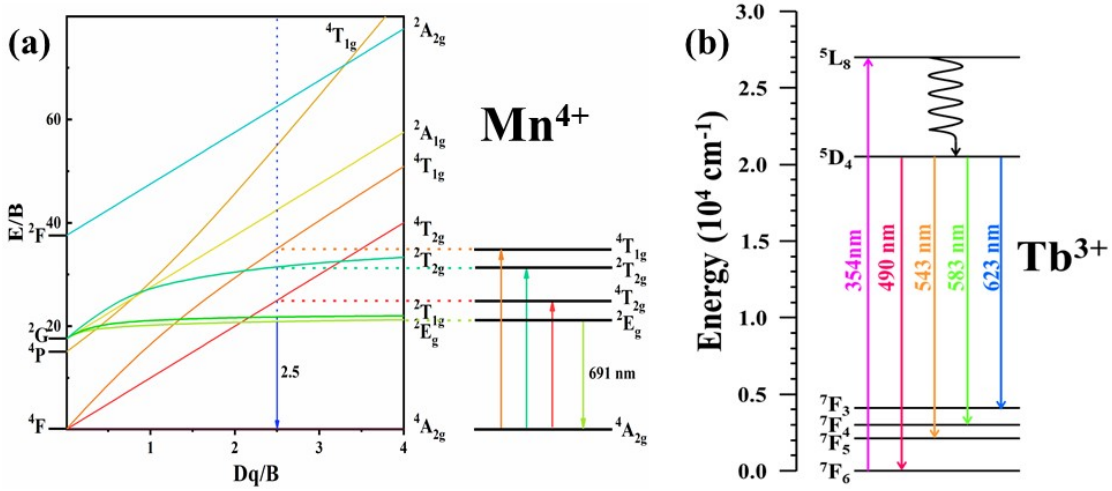

Fig. S1. (a) Tanabe-Sugano energy-level diagram of $Mn4^{4+}$ in an octahedral crystal field. (b) Simplify energy transfer process from Tb^{3+}.

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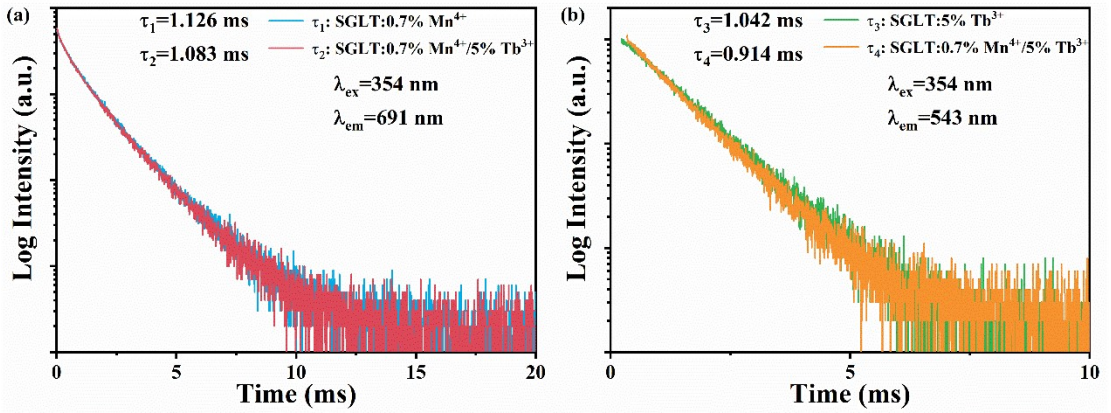

Fig. S2. The fluorescence decay curves of (a) Mn^{4+} ions at 691nm and (b) Tb^{3+} ions at 543nm are excitation at 354nm.

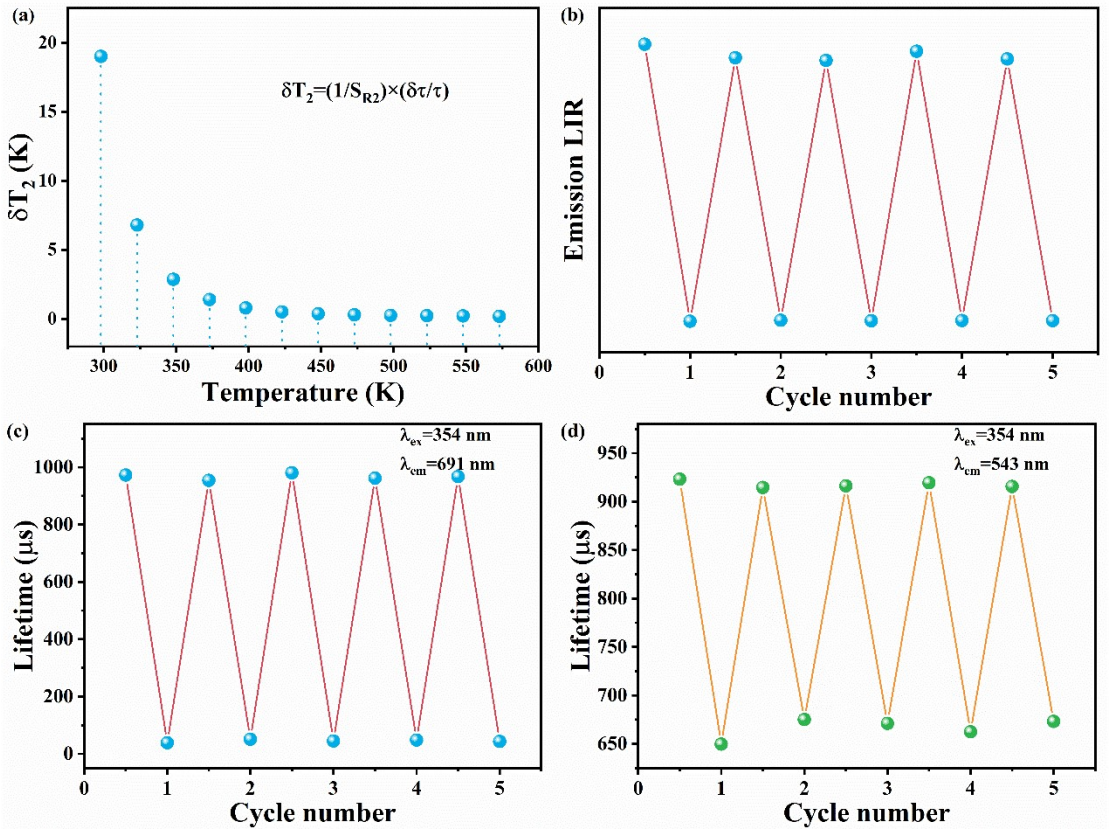

Fig. S3. (a) Temperature uncertainty based on lifetime monitoring at 691 nm under excitation at 354nm. (b) LIR stability of the SGLT: 0.7%Mn^{4+}/5%Tb^{3+} phosphor under the 354nm excitation. Lifetime stability of the SGLT: 0.7%Mn^{4+}/5%Tb^{3+} phosphor monitoring at (c) 691 nm and (d) 543 nm under excitation at 354nm.