

Supporting Information

Understanding the broadband near-infrared luminescence in a highly distorted garnet $\text{Ca}_4\text{HfGe}_3\text{O}_{12}:\text{Cr}^{3+}$ phosphor

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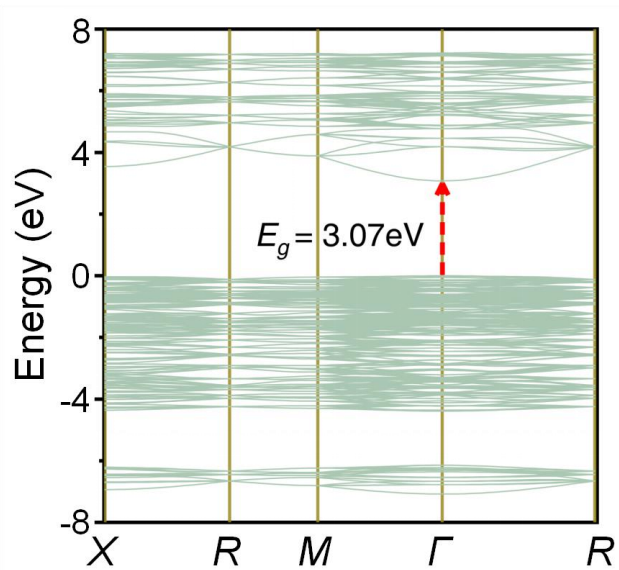


Fig. S1. Electronic band structure of $\text{Ca}_4\text{HfGe}_3\text{O}_{12}$ calculated with DFT-PBE functional.

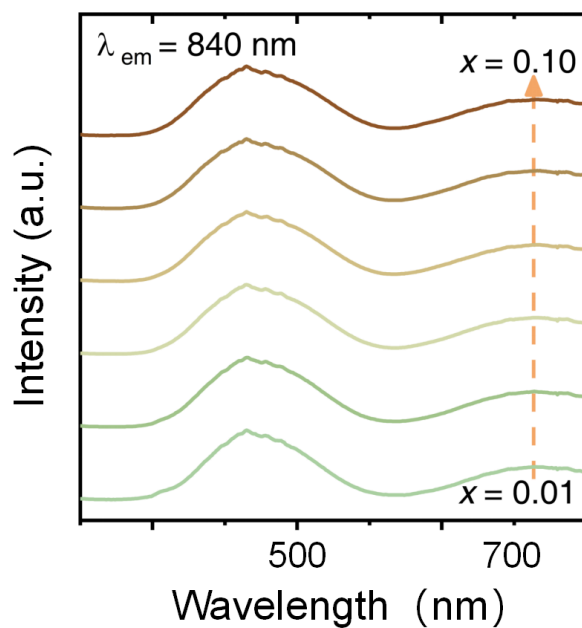


Fig. S2. PLE spectra of $\text{Ca}_4\text{Hf}_{1-x}\text{Ge}_3\text{O}_{12}:x\text{Cr}^{3+}$ ($x = 0.01, 0.02, 0.04, 0.06, 0.08,$ and 0.10) monitored at 840 nm.

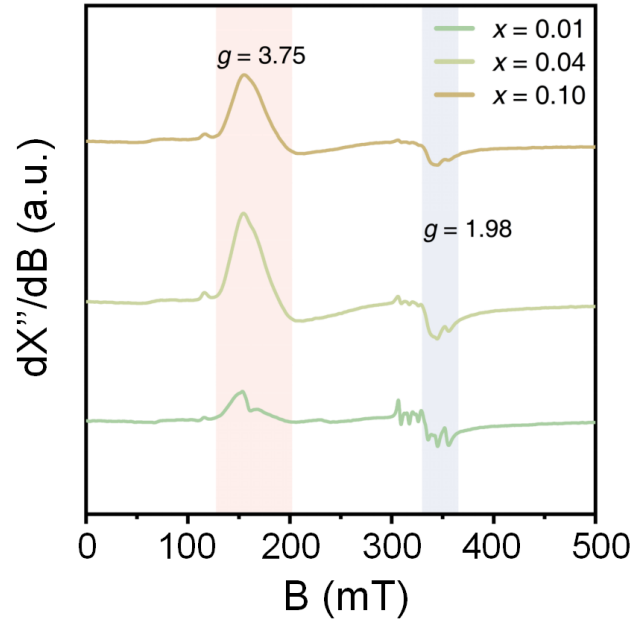


Fig. S3. EPR spectra of $\text{Ca}_4\text{Hf}_{1-x}\text{Ge}_3\text{O}_{12}:x\text{Cr}^{3+}$ ($x = 0.01, 0.04, \text{ and } 0.10$).

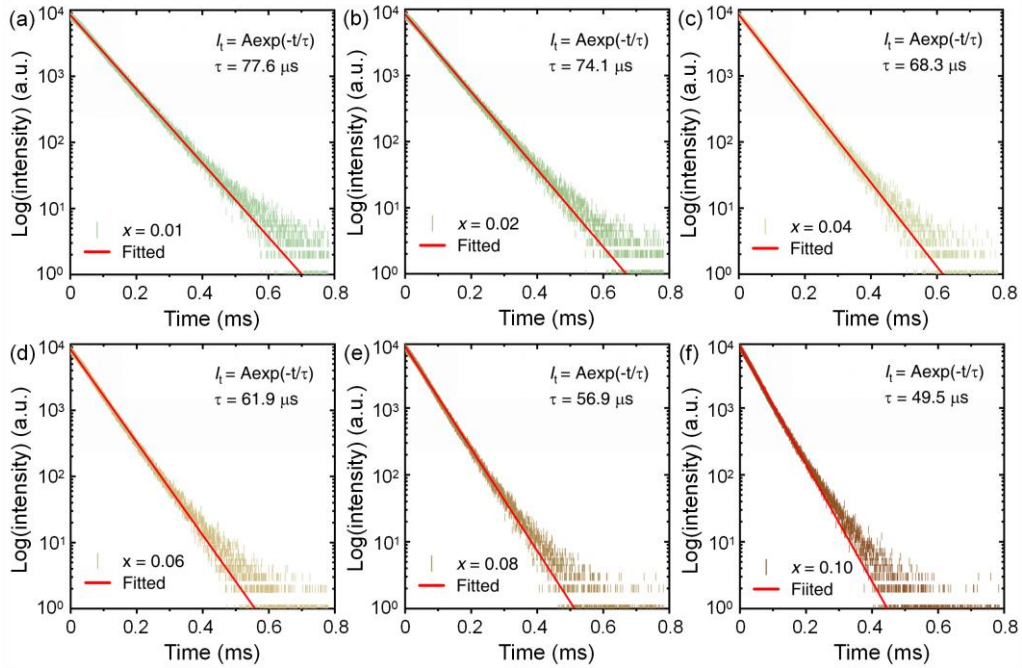


Fig. S4. Decay curves fitted by single-exponential function of $\text{Ca}_4\text{Hf}_{1-x}\text{Ge}_3\text{O}_{12}:x\text{Cr}^{3+}$ ($x=0.01, 0.02, 0.04, 0.06, 0.08, \text{ and } 0.10$).