Supplemental information

Preparation of Pr$^{3+}$ doped or Tb$^{3+}$-Mg codoped CaSnO$_3$ perovskite phosphor by polymerized complex method

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1. Supplemental FESEM images

Supplemental FESEM images of Tb$^{3+}$-Mg codoped powder samples and samples prepared by SSR method are shown in Figures SI-1(a) and (b).

![Figure SI-1(a) FESEM images of Tb$^{3+}$-Mg codoped powder samples heat-treated at various temperatures.](image)

![Figure SI-1(b) FESEM images of PC and SSR samples heat-treated at 1400 °C.](image)
2. PL intensities of samples

To compare PL intensities of samples, PL spectra of commercial LaPO₄:Tb³⁺,Ce³⁺ phosphor, which was used as a reference, were measured before and after the measurements of samples. The PL spectra of the reference and samples were measured without changing any conditions of the spectrometer. Since the PL intensities of the reference were almost the same before and after the sample measurements, we were able to compare the PL intensities between the samples without any artificial normalization. As shown in Figures SI-2(a) and (b), the PL intensities of the PC samples were approximately one-third of those of the reference.

Figures SI-2(a), (b)  PL spectra of Pr³⁺ doped samples (a) and Tb³⁺-Mg codoped samples (b) prepared by PC and SSR methods under uv excitation (λ_ex = 254 nm) along with those of a LaPO₄:Tb³⁺,Ce³⁺ reference phosphor. PL spectra of the reference were measured before (solid line) and after (dashed line) the measurements of the PC and SSR samples.