Electronic Supplementary Material (ESI) for Physical Chemistry Chemical Physics.

Pechini synthesis of lanthanide (Eu^{3+}/Tb^{3+}or Dy^{3+}) ions activated $BaGd_2O_4$ nanostructured phosphors: an approach for tunable emissions

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Characterizations:

XRD pattern of the needles type NBs were recorded on Mac Science (M18XHF-SRA) X-ray powder diffractometer with CuKα= 1.5406 Å with a step of 0.02°. The morphology, SAED pattern, and HRTEM analysis were perofmed using the field emission transmission electron microscope (FE-TEM JEOL JEM-2100F), fitted with the energy dispersive X-ray spectromenter (Oxford INCA). KBr pellet based infrared spectrum was recorded in the range of 450-1000 cm^{-1} with a Perkin Elmer spectrum-100 Fourier transform infrared (FTIR) spectrometer. The room-temperature PL and PLE spectra were recorded on a Photon Technology International (PTI, USA) fluorimeter with a Xe-arc lamp of 60 W power. The digital photographs were taken at the time of PL measurment using Samsung Galaxy-S5 smart phone.The quantum yield measurements were carried out using a fluorescence spectrophotometer equipped with the integrating sphere (Hamamatsu Photonics C9920-02). The CL properties were measured by a Gatan (UK) MonoCL3 system attached with the SEM (Hitachi S-4300 SE).

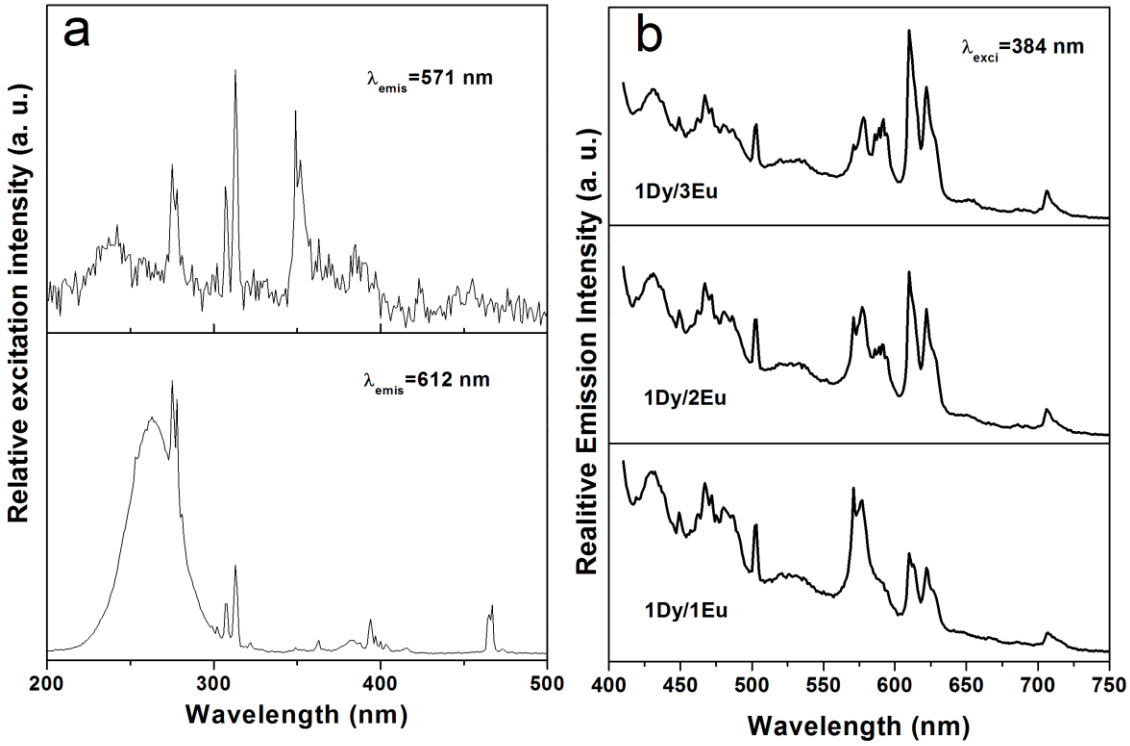

Fig S1. (a) PLE and (b) PL spectra of Eu^{3+} ions co-activated BG:Dy^{3+}

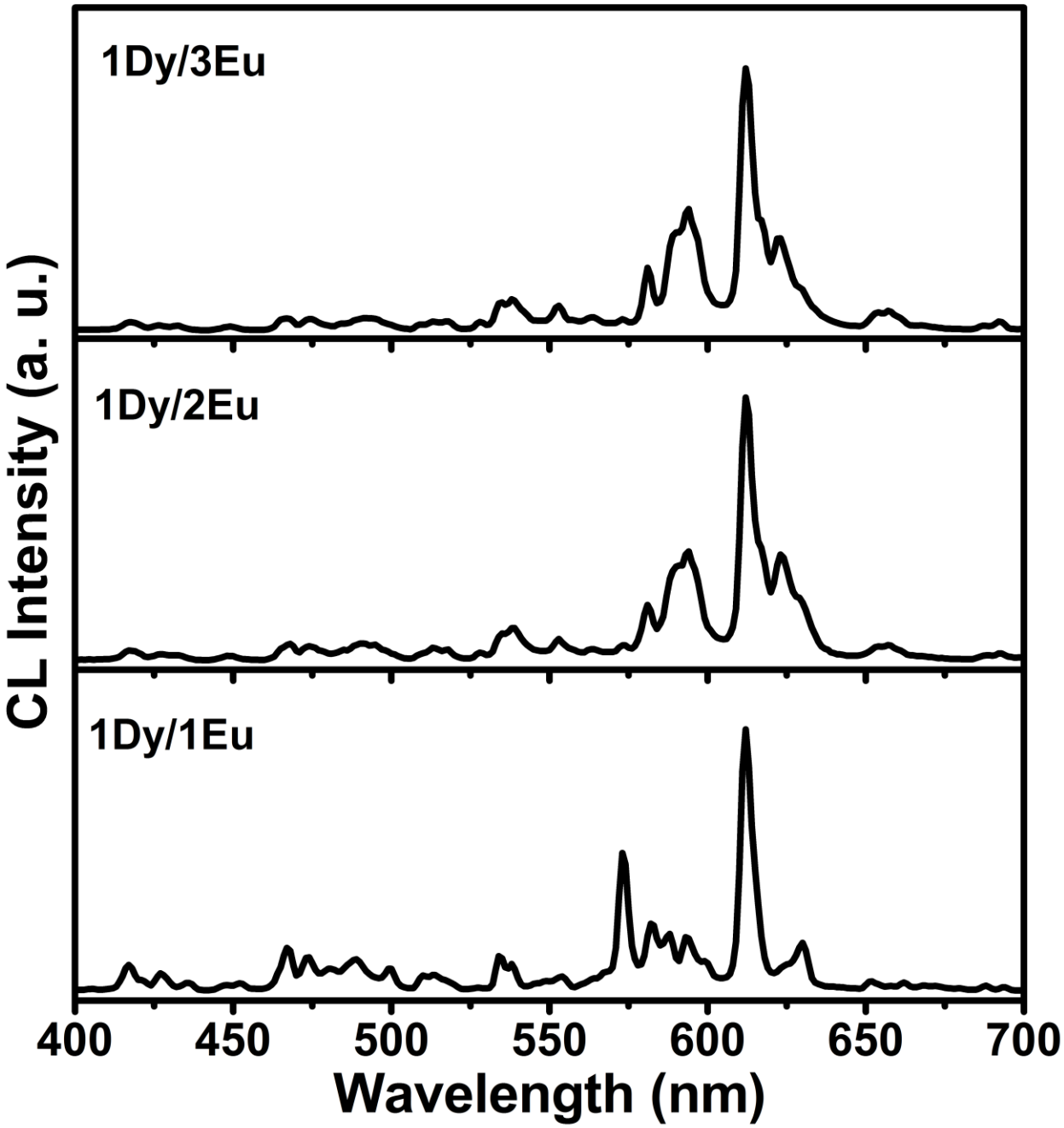

Fig S2. CL spectra of Eu^{3+} ions co-activated BG:Dy^{3+} phosphors at the accelerating voltage of 5kV, and filament current of 55 μA