Supporting Information

Langmuir

Electrophoretically Deposited $Y_2O_3:Bi^{3+},Eu^{3+}$ Nanosheet Films with High Transparency for Near-Ultraviolet to Red Light Conversion

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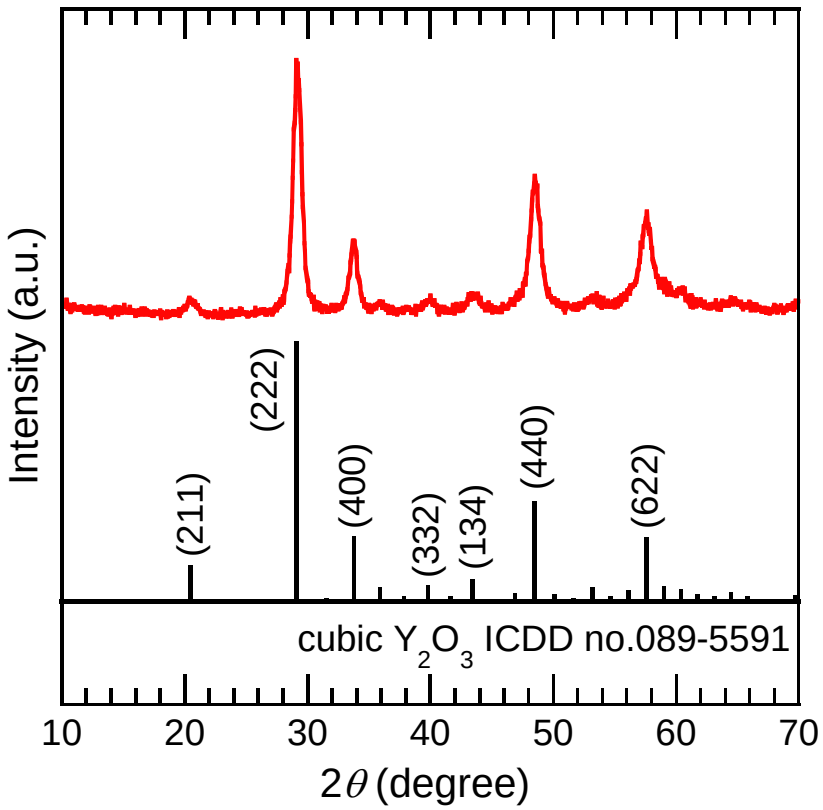

Figure S1. XRD profile of calcined sample.

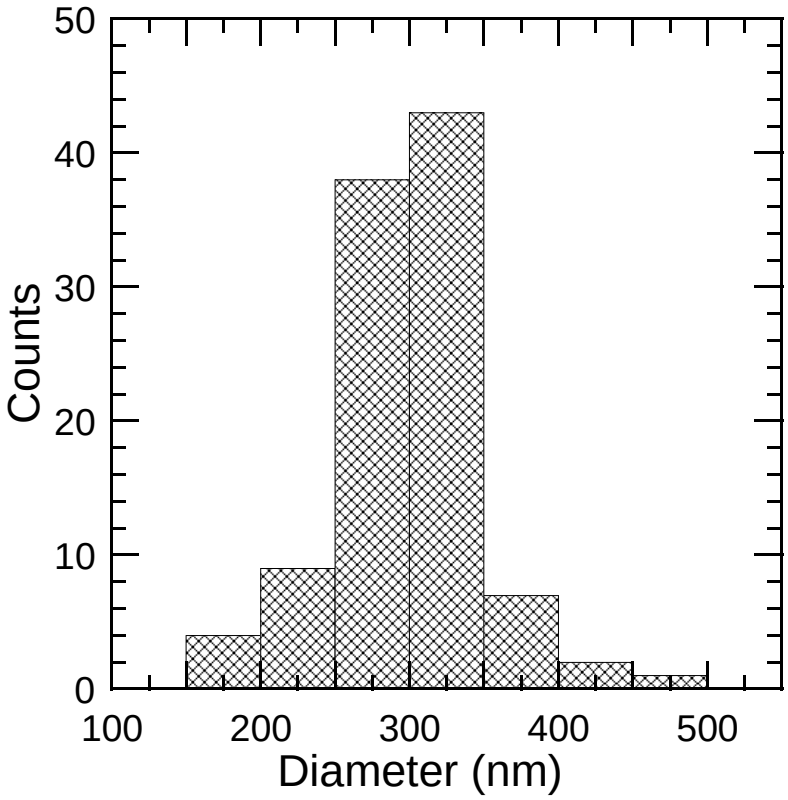

Figure S2. Particle size distribution of calcined sample. The lateral dimensions of 100 nanosheets were measured from SEM images.

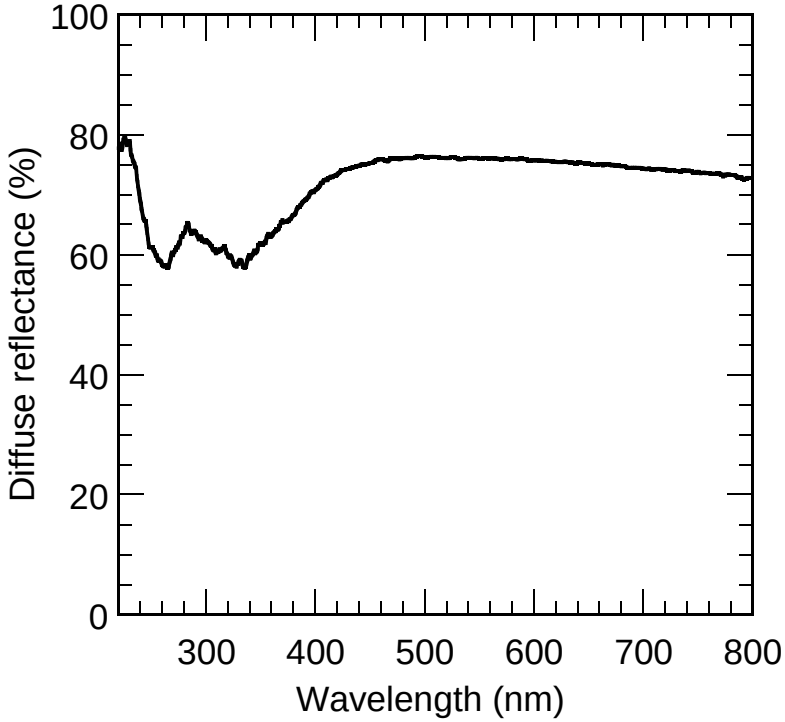

Figure S3. UV-vis diffuse reflectance spectrum of calcined sample.

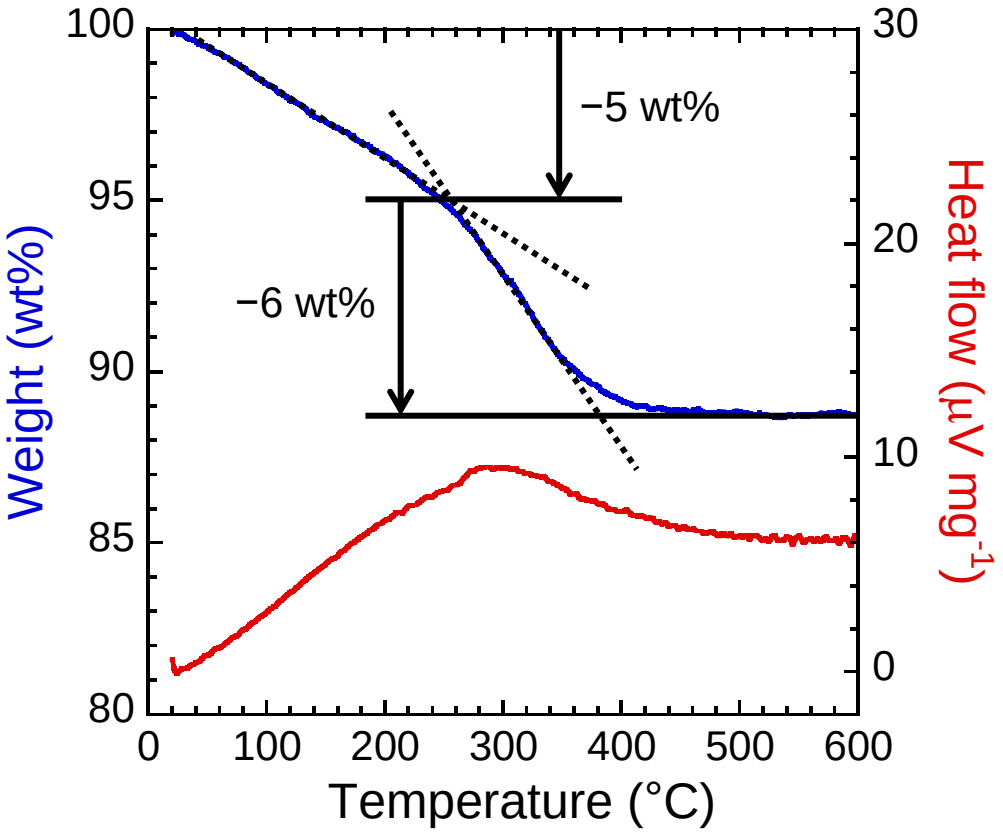

Figure S4. TG-DTA profiles of Y_2O_3:Bi^{3+},Eu^{3+} nanosheet film. A two-step weight loss was observed in the TG profile. Furthermore, an exothermic peak appeared at ~290 °C in the DTA profile, indicating combustion of organic material. The 1st and 2nd stages of the weight loss were therefore assigned to desorption of H_2O and combustion of PEI in the film, respectively.

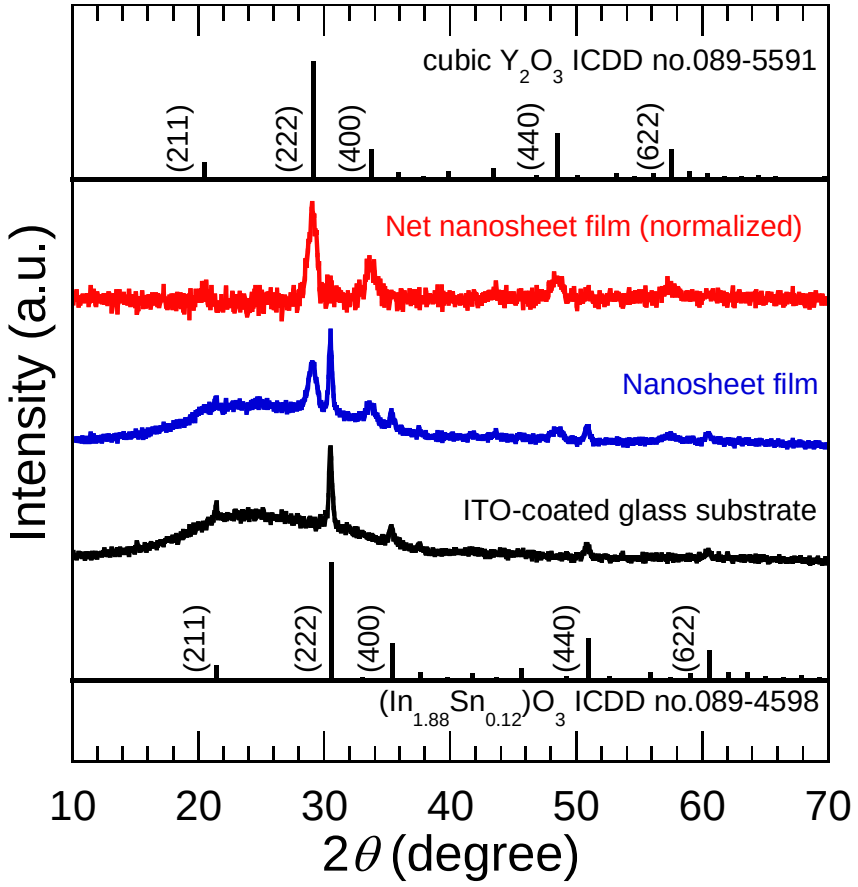

Figure S5. XRD profiles of Y_2O_3:Bi^{3+},Eu^{3+} nanosheet film sample (deposited for 5 min) and a bare ITO-coated glass substrate. Net profile of nanosheet film obtained by subtracting the intensity of the bare substrate from that of the nanosheet film sample is also shown.

Table S1. Comparison of relative peak intensities of the XRD profiles between deposited film and powdered Y_2O_3:Bi^{3+},Eu^{3+} nanosheets.

Miller index	Film (Net profile)		Powder	
	Peak position 2θ (degree)	Relative intensity* (-)	Peak position 2θ (degree)	Relative intensity* (-)
(222)	29.05	100	29.15	100
(400)	33.60	45.6	33.73	26.8
(440)	48.50	25.3	48.47	42.5
(622)	57.25	24.6	57.50	26.7

*: Calculated from the net XRD peak intensity.

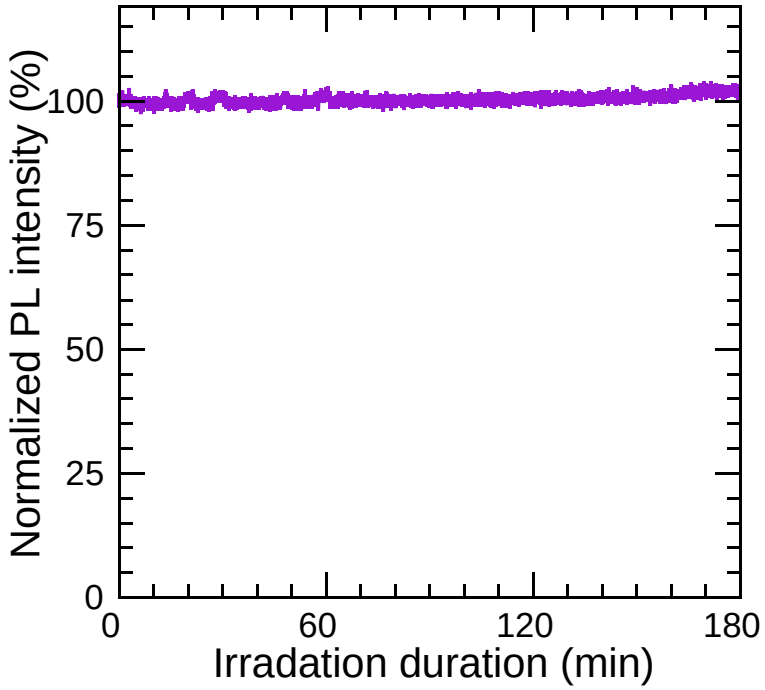

Figure S6. Change in PL intensity of Y_2O_3:Bi^{3+},Eu^{3+} nanosheet film (deposited for 5 min) under continuous excitation. λ_{em} = 612.4 nm, λ_{ex} = 330.1 nm.

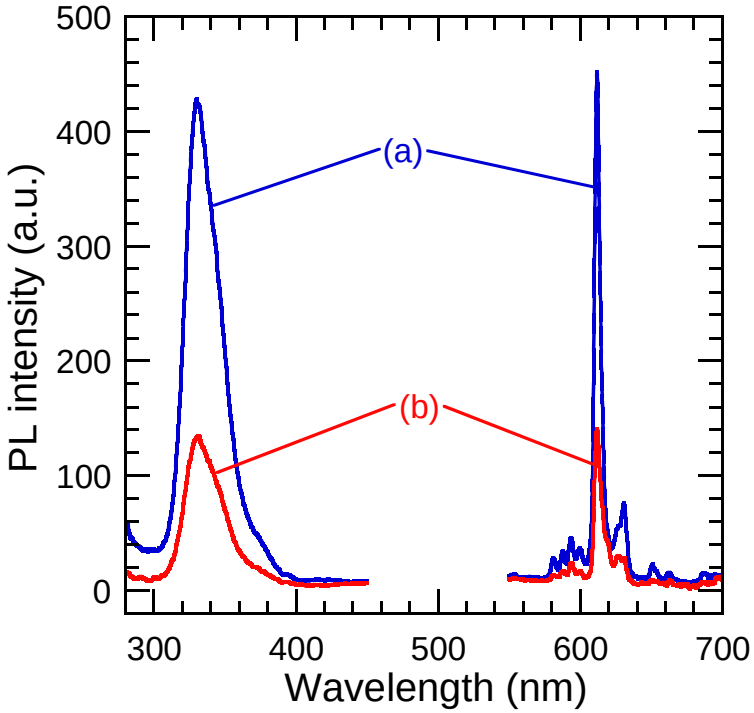

Figure S7. PLE and PL spectra of Y_2O_3:Bi^{3+},Eu^{3+} nanosheet film sample (deposited for 5 min) (a) before and (b) after PVP coating. λ_{em}=612.4 nm, λ_{ex}=330.3 nm.