Electronic Supplementary Information

RSC Advances

Synthesis of Y$_2$O$_3$:Bi$^{3+}$,Yb$^{3+}$ Nanosheets from Layered Yttrium Hydroxide Precursor and their Photoluminescence Properties

Keita Higashi, Yutaka Watanabe, Yoshiki Iso* and Tetsuhiko Isobe*

Department of Applied Chemistry, Faculty of Science and Technology, Keio University,
3-14-1 Hiyoshi, Kohoku-ku, Yokohama 223-8522, Japan

*Corresponding authors

E-mail address: iso@appc.keio.ac.jp (Y.I.), isobe@appc.keio.ac.jp (T.I.);
Tel: +81 45 566 1558 (Y.I.), +81 45 566 1554 (T.I.); Fax: + 81 45 566 1551
Fig. S1 High-precision (222) XRD peaks of Y$_2$O$_3$:Bi$^{3+}$,Yb$^{3+}$ nanosheets synthesized at each calcination temperature.
Fig. S2 Average lateral sizes, measured from TEM images, of LYH:Bi$^{3+}$,Yb$^{3+}$ precursor and Y$_2$O$_3$:Bi$^{3+}$,Yb$^{3+}$ nanosheets as a function of calcination temperature. Red circles: length; blue triangles: width.
Fig. S3 High-precision (220) XRD peak of LYH:Bi$^{3+}$,Yb$^{3+}$ precursor nanosheet.
Fig. S4 AFM image of Y$_2$O$_3$:Bi$^{3+}$,Yb$^{3+}$ nanosheet synthesized at calcination temperature of 700 °C.
Fig. S5 AFM image of $\text{Y}_2\text{O}_3$;Bi$^{3+}$,Yb$^{3+}$ nanosheet synthesized at calcination temperature of 1000 °C.
Fig. S6 Change in relative PL intensity with irradiation time for $\text{Y}_2\text{O}_3:\text{Bi}^{3+},\text{Yb}^{3+}$ nanosheets synthesized at each calcination temperature. $\lambda_{\text{ex}} = 332$ nm, $\lambda_{\text{em}} = 976$ nm.