

Fig. S1. A luminescence picture of a $\text{Bi}_{4(1-x-y)}\text{Si}_3\text{O}_{12}:\text{Ce}^{3+}_{4x}, \text{Lu}^{3+}_{4y}$ library under a UV excitation ($\lambda_{\text{ex}} = 254 \text{ nm}$), recorded by a digital camera; A designed doping composition (x,y) map of the same $\text{Bi}_{4(1-x-y)}\text{Si}_3\text{O}_{12}:\text{Ce}^{3+}_{4x}, \text{Lu}^{3+}_{4y}$ library (unit: mol %).

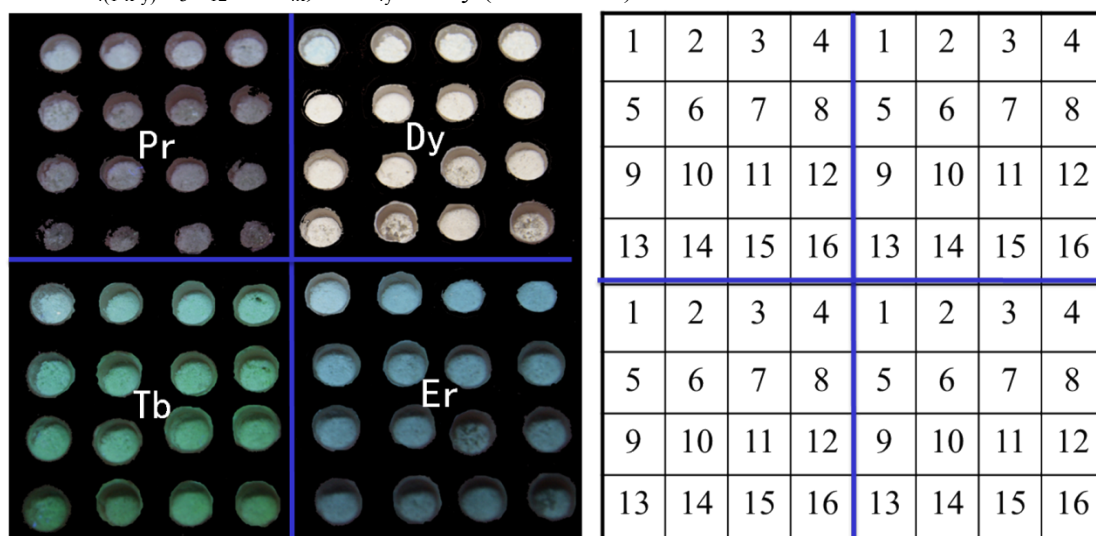


Fig. S1.(left) A luminescence picture of a $\text{Bi}_{4(1-x)}\text{Si}_3\text{O}_{12}:\text{RE}^{3+}_{4x}$ (RE = Pr, Dy, Tb, Er) library under a UV excitation ($\lambda_{\text{ex}} = 254 \text{ nm}$), recorded by a digital camera; (right) A designed doping composition (x) map of the same $\text{Bi}_{4(1-x)}\text{Si}_3\text{O}_{12}:\text{RE}^{3+}_{4x}$ (RE = Pr, Dy, Tb, Er) library (unit: mol %).

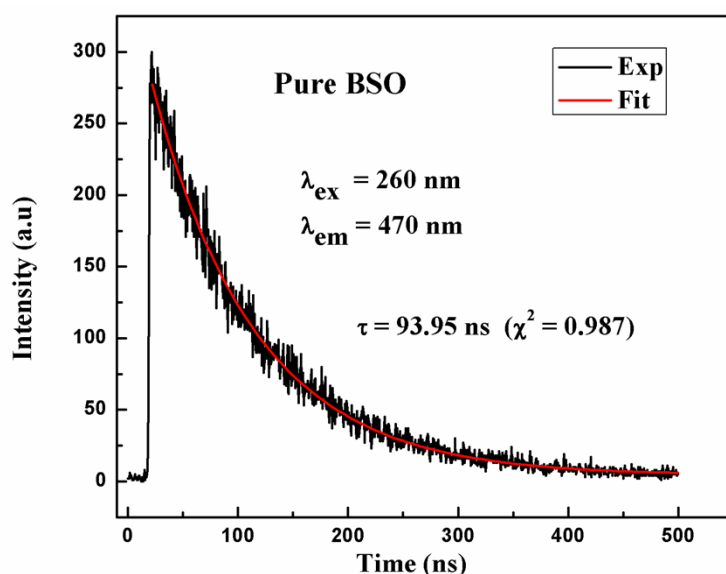


Fig. S2. Decay curves of 460 nm of Bi^{3+} emission in $\text{Bi}_{3.84}\text{Si}_3\text{O}_{12}:\text{Dy}_{0.16}$