

Figure S1. XRD patterns of $\text{Ba}_3\text{Tb}_{1-y}(\text{PO}_4)_3:y\text{Eu}^{3+}$ ($y=0-0.15$).

Standard data of $\text{Ba}_3\text{Bi}(\text{PO}_4)_3$ (ICSD No. 91803) is shown as reference.

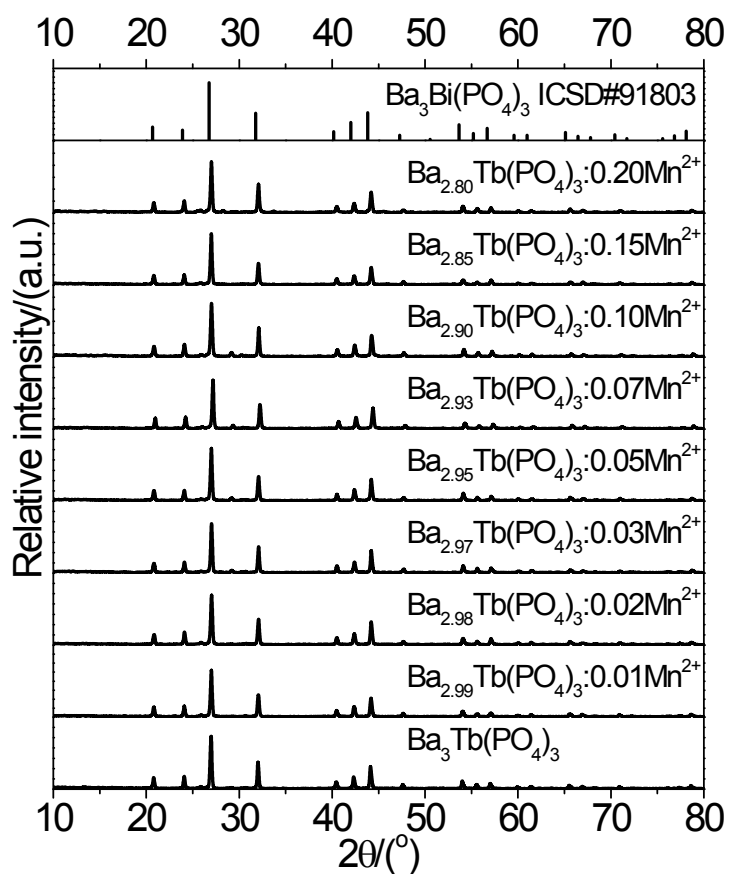


Figure S2. XRD patterns of $\text{Ba}_{3-z}\text{Tb}(\text{PO}_4)_3:z\text{Mn}^{2+}$ ($z=0-0.20$).

Standard data of $\text{Ba}_3\text{Bi}(\text{PO}_4)_3$ (ICSD No. 91803) is shown as reference.

Table S1 Lifetimes of $\text{Ba}_3\text{Tb}(\text{PO}_4)_3:x\text{Sm}^{3+}$, $\text{Ba}_3\text{Tb}(\text{PO}_4)_3:y\text{Eu}^{3+}$, $\text{Ba}_3\text{Tb}(\text{PO}_4)_3:z\text{Mn}^{2+}$ ($\lambda_{\text{ex}}=377$ nm)

Samples	τ (ms)	Samples	τ (ms)
$\text{Ba}_3\text{Tb}(\text{PO}_4)_3$	2.864	$y=0.05$	1.208
$x=0.001$	2.798	$y=0.07$	1.032
$x=0.005$	1.919	$y=0.10$	0.912
$x=0.01$	0.379	$z=0.01$	2.110
$x=0.02$	0.155	$z=0.02$	0.430
$x=0.03$	0.115	$z=0.03$	0.179
$x=0.05$	0.067	$z=0.05$	0.078
$x=0.07$	0.065	$z=0.07$	0.067
$x=0.10$	0.057	$z=0.10$	0.063
$x=0.15$	0.054	$z=0.07$	0.060
$y=0.01$	2.571	$z=0.15$	0.011
$y=0.03$	1.621	$z=0.20$	0.010