

Supplementary Information for

A promising yellow-emitting langbeinite-type phosphor $\text{NaBaY}_2(\text{PO}_4)_3: \text{Eu}^{2+}$ for WLEDs

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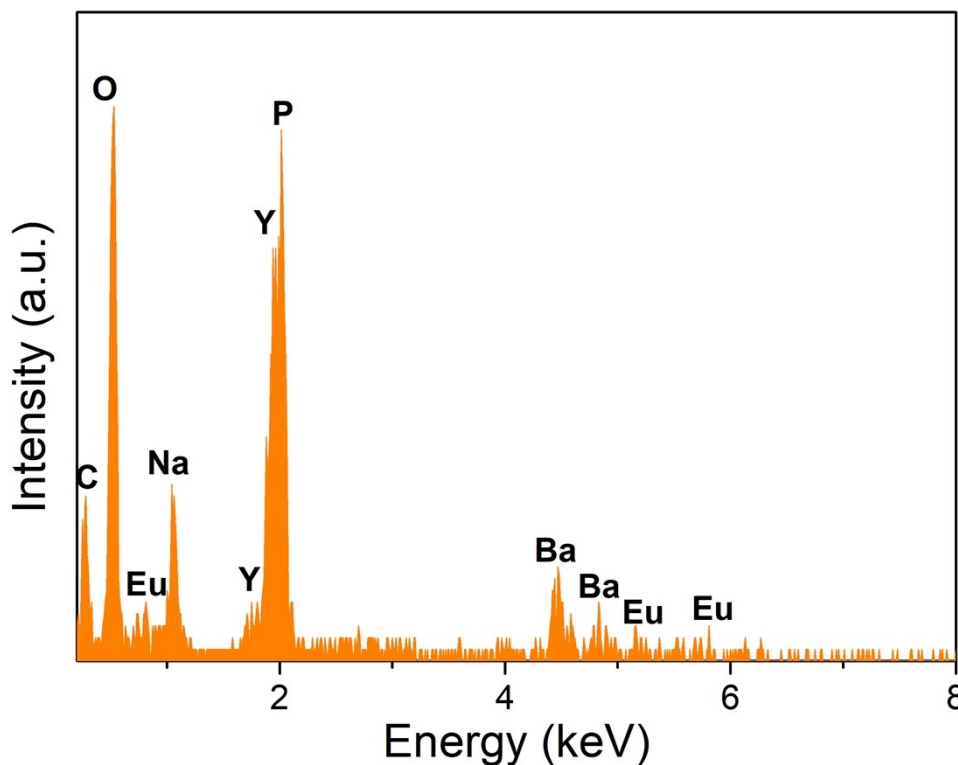


Fig. S1 EDS spectrum of the representative sample NBYP: 0.01Eu²⁺.

Table S1 Crystallographic parameters for NBYP host.

Formula	NaBaY ₂ (PO ₄) ₃
Symmetry	cubic
Space group	<i>P</i> 2 ₁ 3
<i>a</i> / Å	10.1912(5)
<i>b</i> / Å	10.1912(5)
<i>c</i> / Å	10.1912(5)
α	90.0
β	90.0
γ	90.0
Volume/ Å ³	1058.46(17)
<i>Z</i>	4
<i>R</i> _{wp}	8.68%
<i>R</i> _p	6.96%
χ^2	1.539

Table S2 Atomic coordinates for NBYP host.

Atom	<i>x</i>	<i>y</i>	<i>z</i>	<i>Occ.</i>	Uiso
Na/Ba(1)	0.8073(8)	0.8073(8)	0.8073(8)	1.0	0.0725(4)
Na/Ba(2)	0.0540(1)	0.0540(1)	0.0540(1)	1.0	0.0312(5)
Y(1)	0.3208(2)	0.3208(2)	0.3208(2)	1.0	0.0593(7)
Y(2)	0.5825(9)	0.5825(9)	0.5825(9)	1.0	0.0569(3)
P	0.2228(7)	0.3589(1)	0.0130(2)	1.0	0.0376(9)
O(1)	0.3398(8)	0.2930(4)	-0.0554(9)	1.0	0.1057(4)
O(2)	0.0891(6)	0.2566(8)	0.0236(7)	1.0	0.0831(4)
O(3)	0.2035(6)	0.4846(4)	-0.0953(5)	1.0	0.0947(9)
O(4)	0.2882(7)	0.4475(4)	0.1073(1)	1.0	0.1377(7)

Table. S3 The bond length (Å) of Na/Ba1-O and Na/Ba2-O.

Na/Ba1-O3	2.7951	Na/Ba2-O1	2.8878
Na/Ba1-O3	2.7951	Na/Ba2-O1	2.8878
Na/Ba1-O3	2.7951	Na/Ba2-O1	2.8878
Na/Ba1-O4	2.6642	Na/Ba2-O2	2.4626
Na/Ba1-O4	2.6642	Na/Ba2-O2	2.4626
Na/Ba1-O4	2.6642	Na/Ba2-O2	2.4626
Average	2.7297	Average	2.6752