

Supporting Information:

Presence of Irregular Oxidation State of Bi⁴⁺ and Single-Element White Emission in YAl₃(BO₃)₄: Bi

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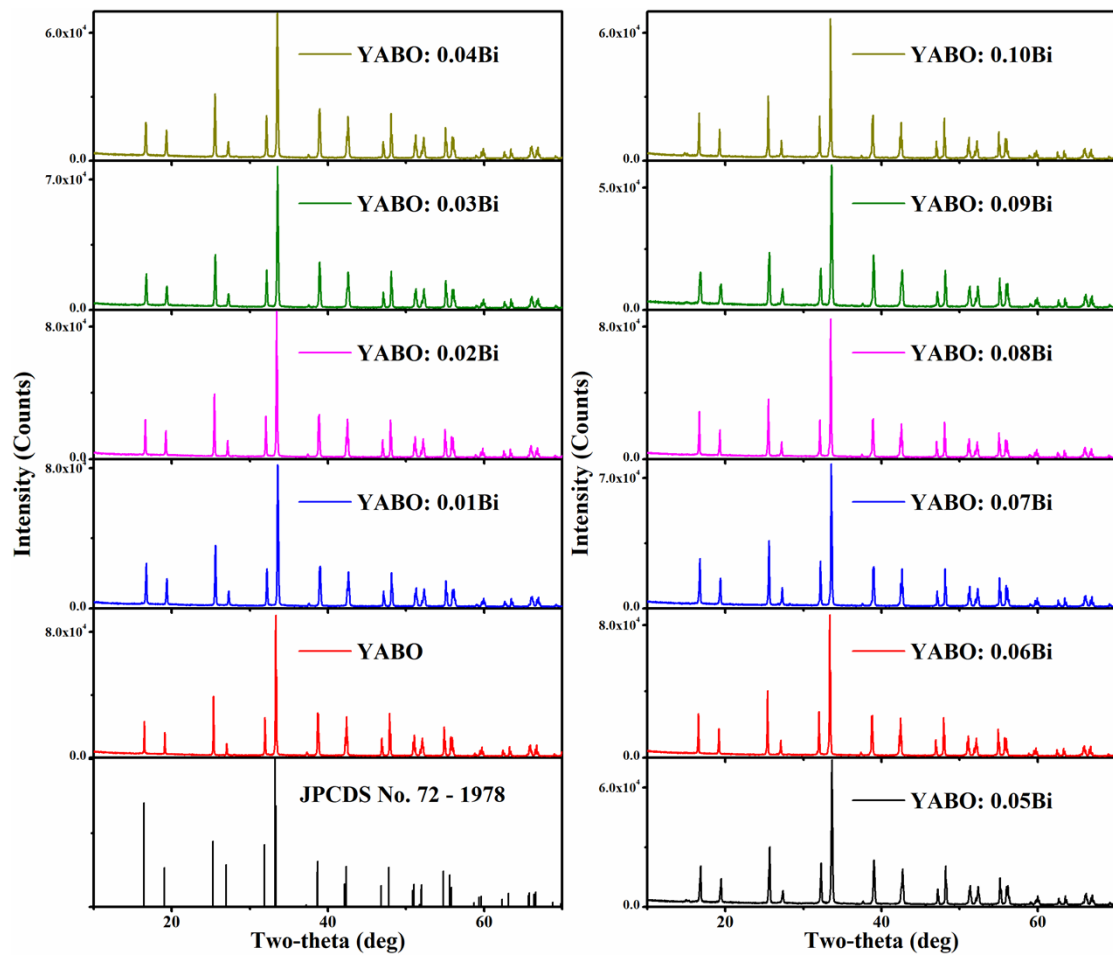


Figure S1. The XRD patterns of YABO and YABO: Bi phosphors.

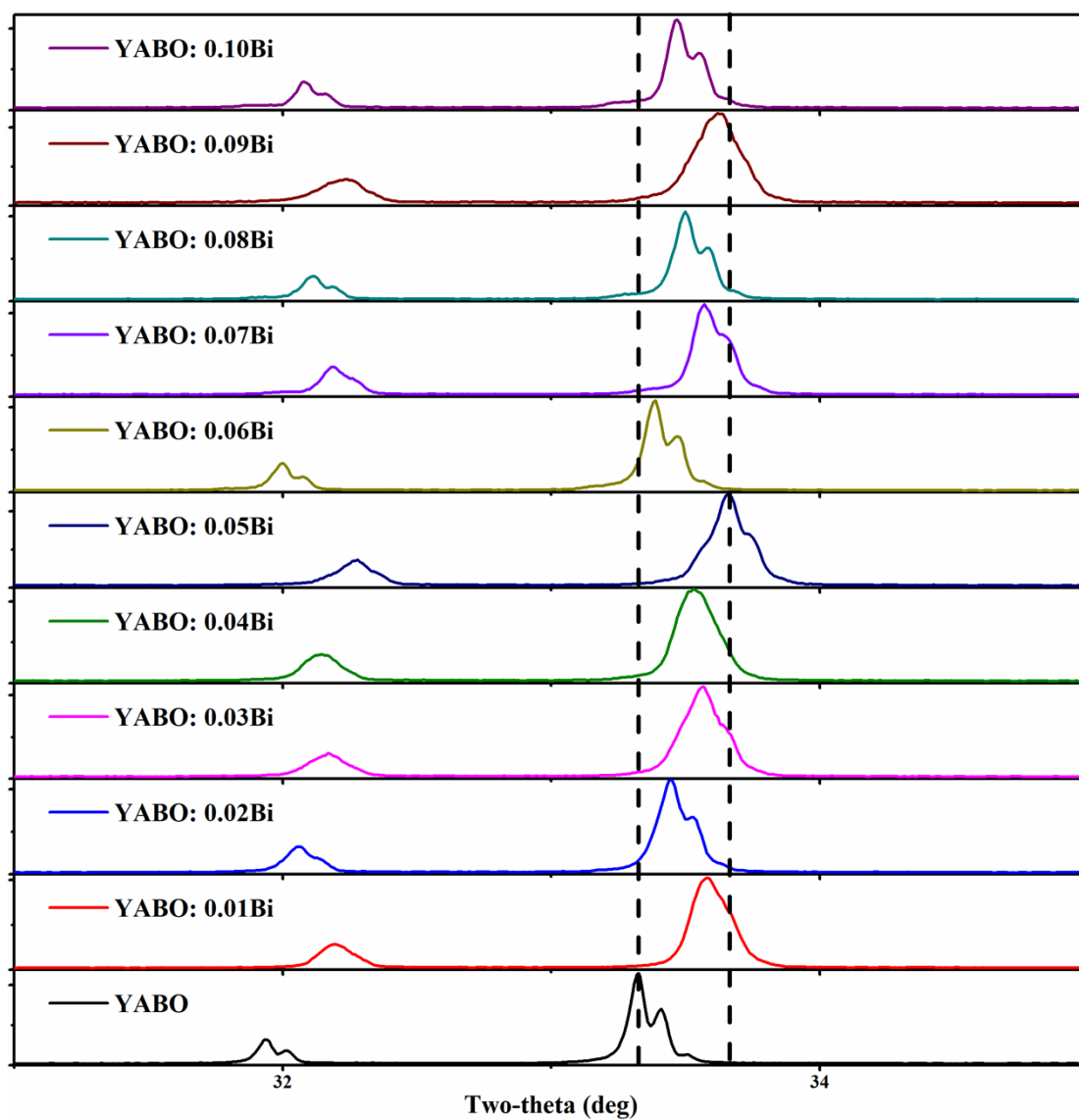


Figure S2. The shift of the XRD peaks for various YABO: Bi phosphors in the 2θ range of $31\sim 35^\circ$.

Table S1. The lattice parameters and Rietveld refinement parameters for YABO and YABO:0.01Bi

	YABO	YABO:0.01Bi
Space group	$P6_3$	$P6_3$
a (Å)	9.28355	9.27495
b (Å)	9.28355	9.27495
c (Å)	7.22959	7.22388
V (Å ³)	539.601	538.0769
R _{wp}	9.90 %	6.660 %
R _p	7.60 %	5.184 %
R _{exp}	5.897 %	2.517 %
gof	1.68	1.17

Table S2. Atomic coordinates of YABO obtained by Rietveld refinement

Atom	x	y	z	occupancy
Y1	0	0	0	1.0
Al1	0.55517	0	0	1.0
B1	0	0	0.5	1.0
B2	0.4317	0	0.5	1.0
O1	0.84955	0	0.5	1.0
O2	0.58618	0	0.5	1.0
O3	0.44504	0.14799	0.52948	1.0

Table S3. Atomic coordinates of YABO: 0.01Bi obtained by Rietveld refinement

Atom	x	y	z	occupancy
Y	0	0	0	0.99
Bi	0	0	0	0.01
Al	0.55528	0	0	1.0
B1	0	0	0.5	1.0
B2	0.44322	0	0.5	1.0
O1	0.85058	0	0.5	1.0
O2	0.59066	0	0.5	1.0
O3	0.44843	0.14899	0.52435	1.0

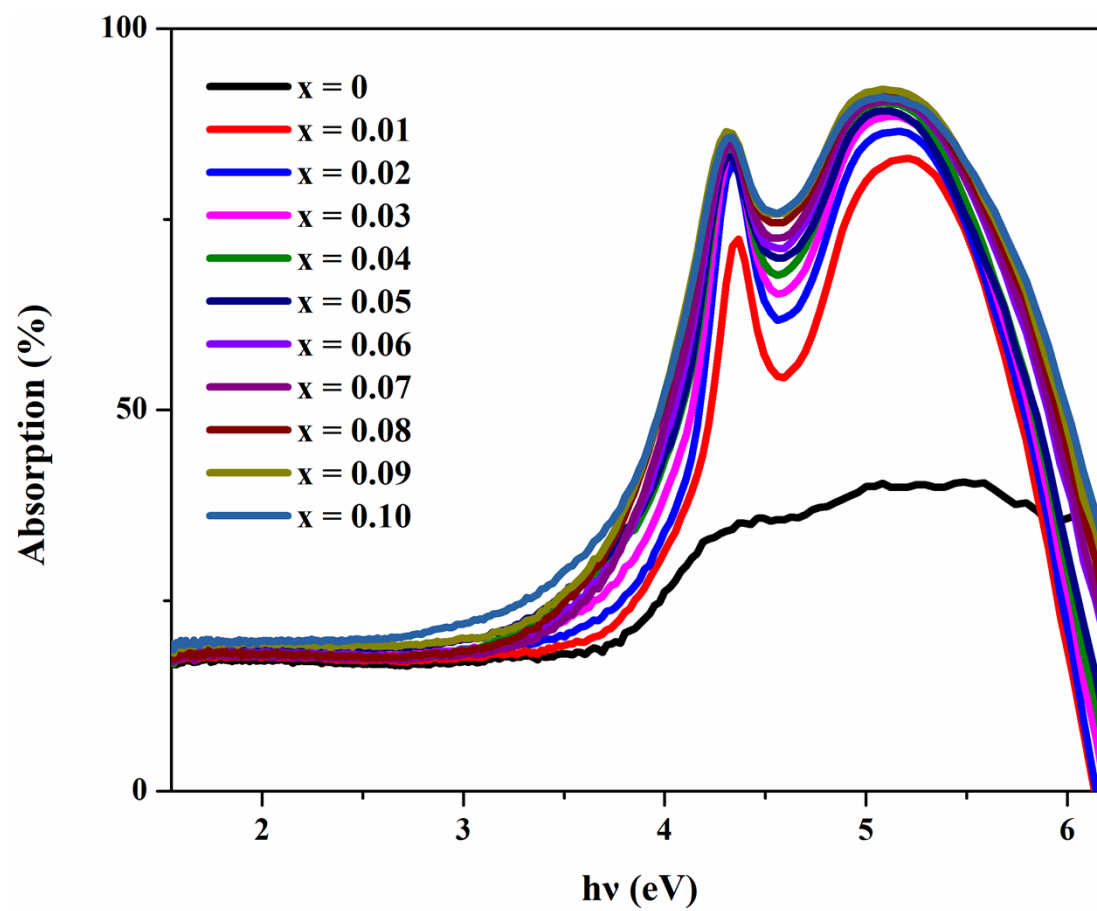


Figure S3. The UV-Vis diffuse reflectance spectrum of YABO:Bi phosphors.