

Supporting Information

Creation of near-infrared luminescent phosphors enabled by topotactic reduction of bismuth-activated red-emitting crystals

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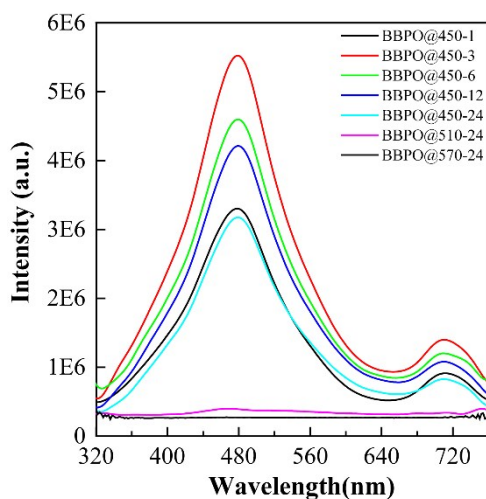


Fig. S1 PL excitation spectrum obtained on Bi-doped BaBPO₅ reduced sample with $\lambda_{em}=1164\text{nm}$

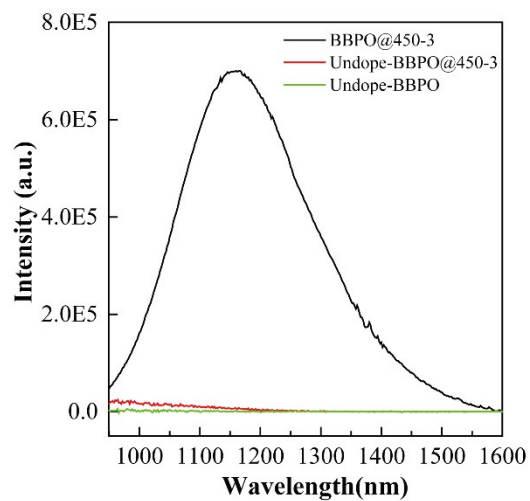


Fig. S2 PL spectra of the undoped BaBPOs before and after topotactic reduction. The PL spectrum of the BBPO@450-3 taken under the same conditions is shown for comparison.

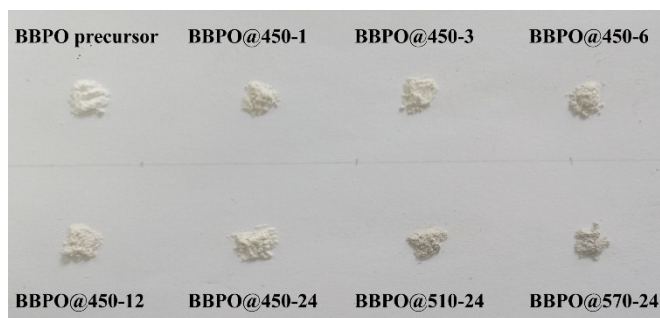


Fig. S3 Images of the precursor and reduced samples. All images were taken by the same CCD camera.

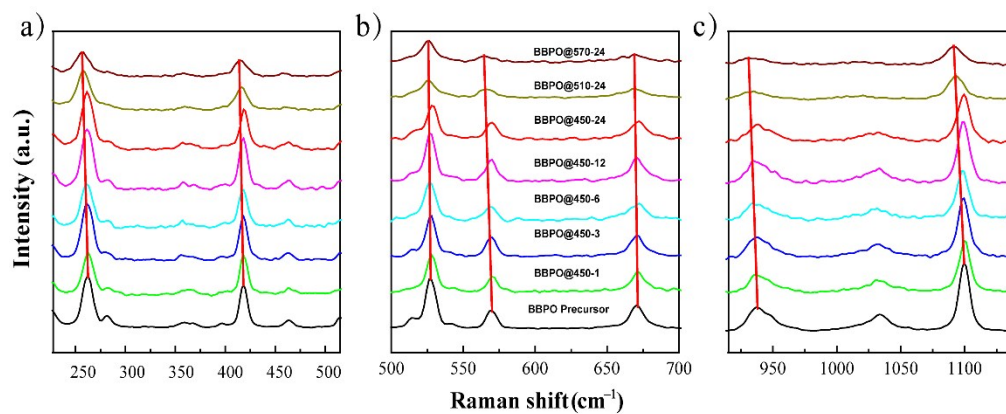


Fig. S4 Enlarged Raman spectra of the precursor and reduced samples.

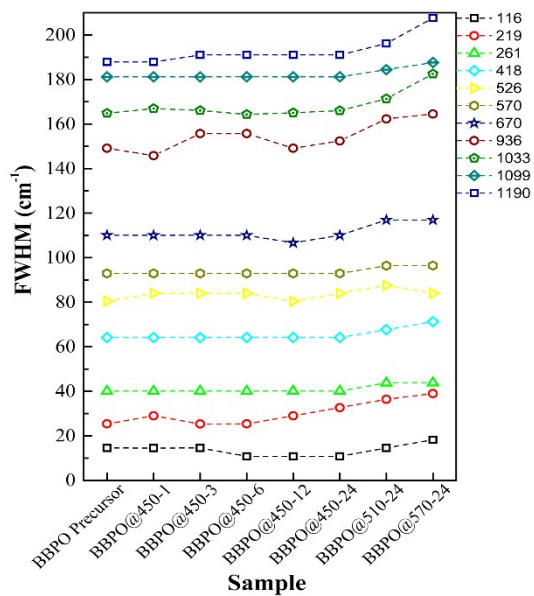


Fig. S5 FWHMs of Raman peaks of the precursor and reduced samples. Note that the scattering peaks at 359,

462 and 745 cm^{-1} are too weak and their FWHMs are difficult to be determined.

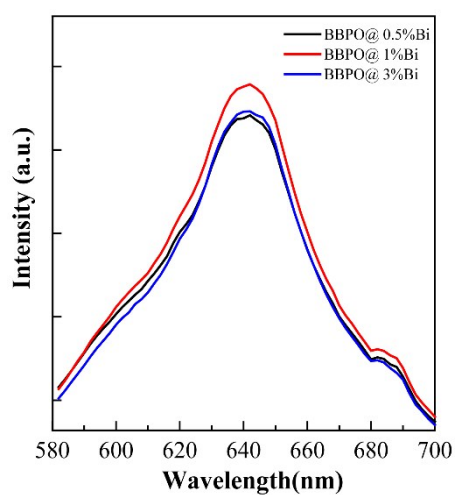


Fig. S6 Emission spectra of the samples BaBPO₅@y%Bi (y=0.5, 1.0, 3.0) under 268 nm excitation.

$$\tau_{eff} = \frac{\int_0^{\infty} tI(t)dt}{\int_0^{\infty} I(t)dt}$$

Table S1. Effective lifetimes at 1164 nm, calculated by the equation , for the reduced samples.

Sample	BBPO@450-1	BBPO@450-3	BBPO@450-6	BBPO@450-12	BBPO@450-24	BBPO@510-24
Lifetime (μs)	94.38	88.49	82.51	81.71	84.15	115.81