Supporting Information

A Promising Ultraviolet Nonlinear Optical Crystal: $Rb_3Ba_3Li_2Al_4B_6O_{20}F$—Crystal Growth, Physical Properties and 266 nm Laser Generation

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**Table S1.** Experimental results of flux ratios

Molar ration RBLABF:Li_2CO_3:BaF_2:H_3BO_3	Crystal morphology	Results	Quality
1:4:3:5	parallelepiped	RBLABF	medium
1:4:2:5	parallelepiped	RBLABF	medium
1:4:0:5	Platelike	$LiBa_2B_5O_{10}$	
Molar ration RBLABF:$LiBO_2$:BaF_2			
1:8:3	Platelike	RBLABF	medium
1:8:1	Platelike	RBLABF	medium
1:5.5:0.6	triangle	RBLABF	Good
1:3.5:0.6	triangle	RBLABF	Good
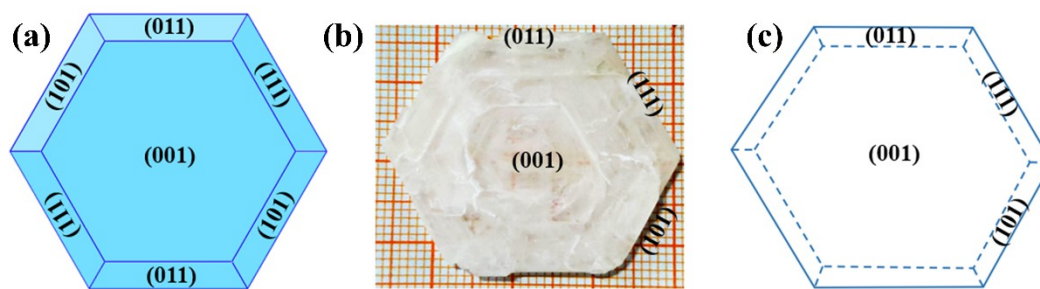
Figure S1. (a) The simulated morphology with {001} prominent faces; (b) the grown RBLABF crystal with [001]-oriented seed; (c) the morphology of RBLABF crystal with [001]-oriented seed;
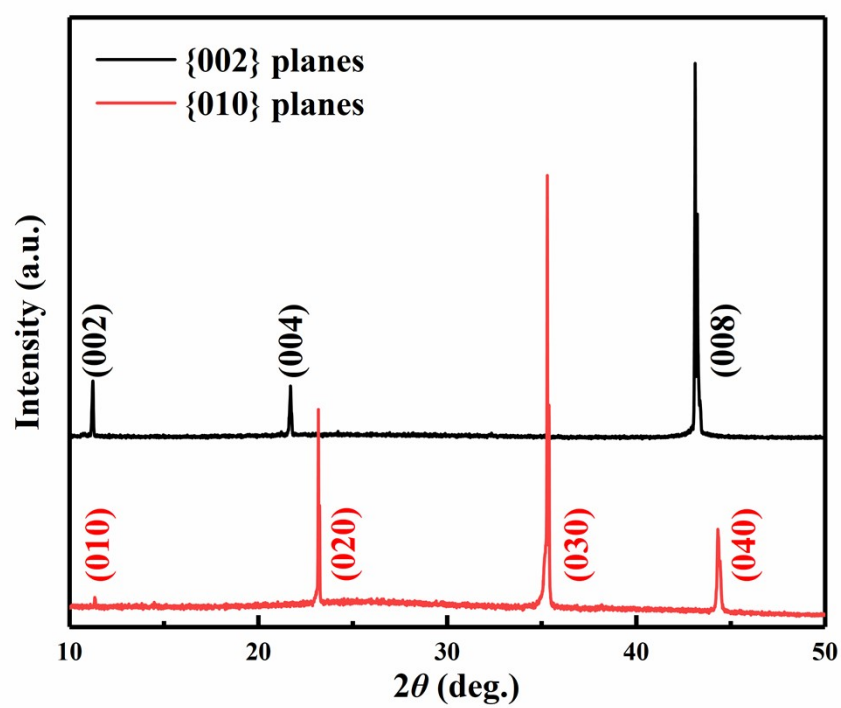
Figure S2. XRD patterns of {010} and {002} planes for RBLABF.
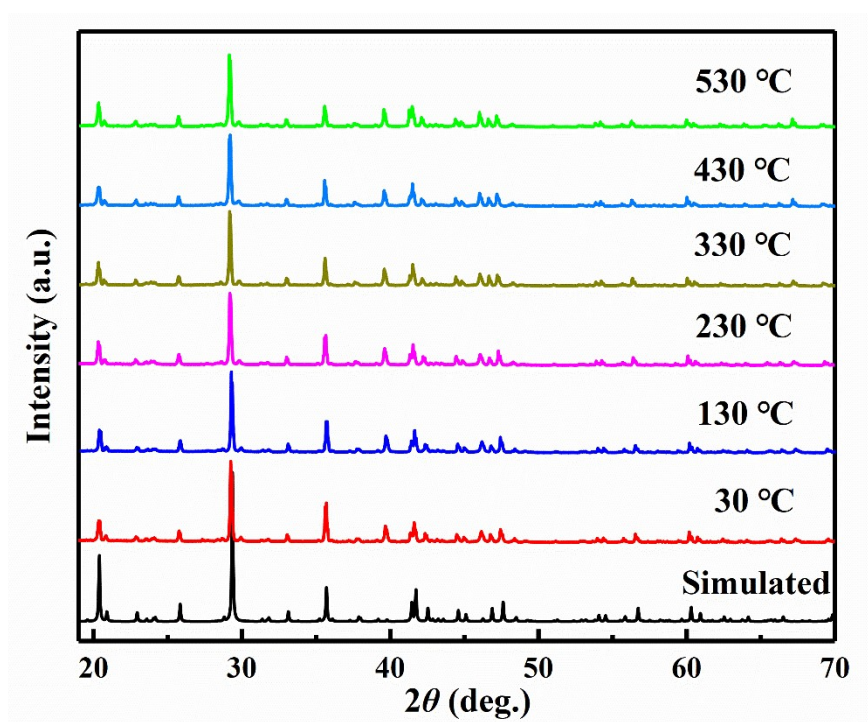
Figure S3. The temperature-dependent XRD patterns of RBLABF.

$$\begin{bmatrix} P_x^{(2\omega)} \\ P_y^{(2\omega)} \\ P_Z^{(2\omega)} \end{bmatrix} = \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & d_{22} \\ d_{22} & d_{22} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix} \cdot \begin{bmatrix} E_x^2 \\ E_y^2 \\ E_z^2 \\ 2E_yE_z \\ 2E_zE_x \\ 2E_xE_y \end{bmatrix} \quad equation\ (1)$$

Equation S1. The NLO coefficient (d_{ij}) matrix of RBLABF.