Supplementary data

Enhanced visible light photocatalytic activity of bismuth oxybromide lamellas with decreasing lamella thicknesses

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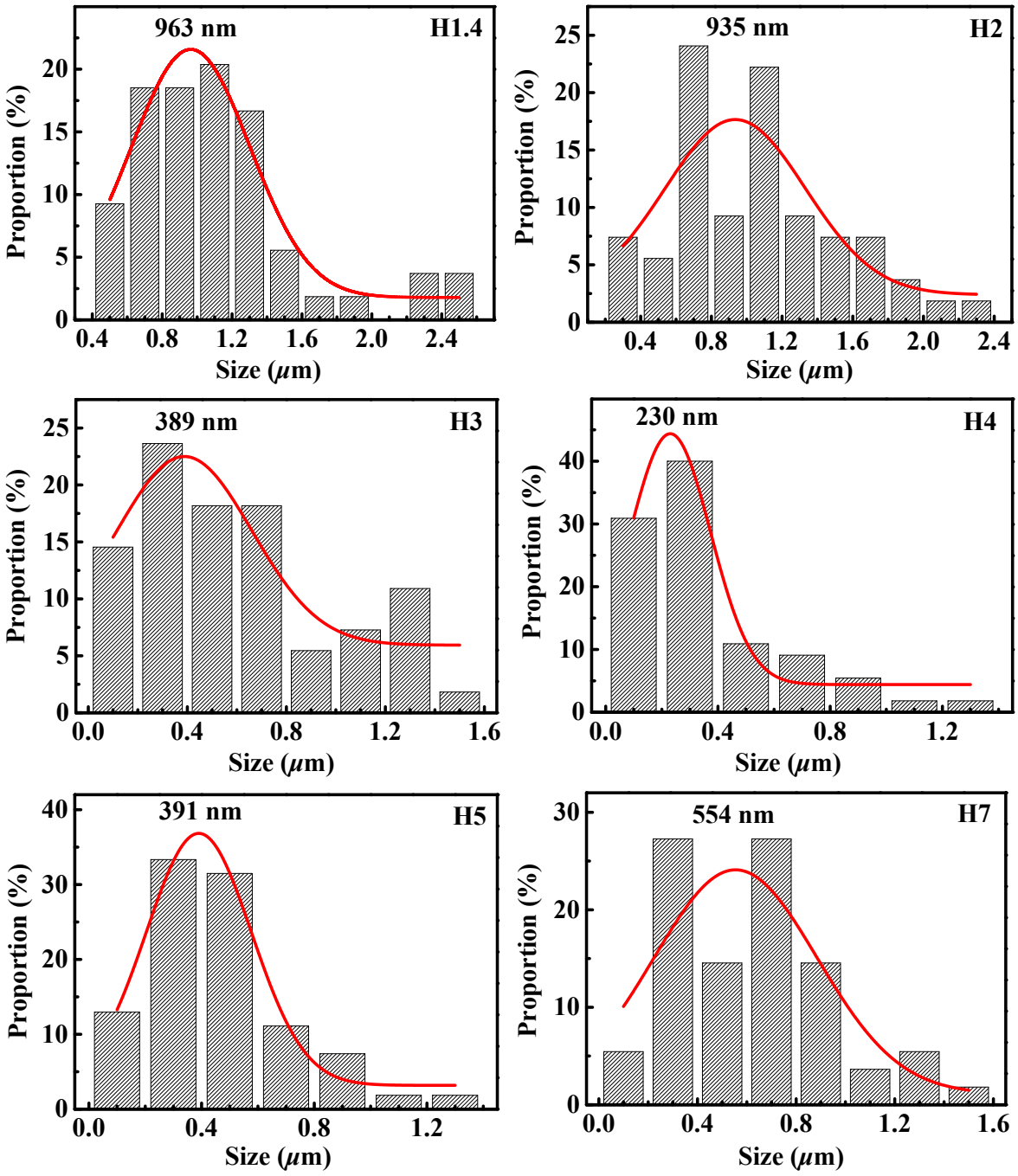

Fig. S1 Lamella size distribution of the six BiOBr samples by measuring the size of fifty five lamellas, respectively. The solid lines are fitting results by a Gaussian distribution function.

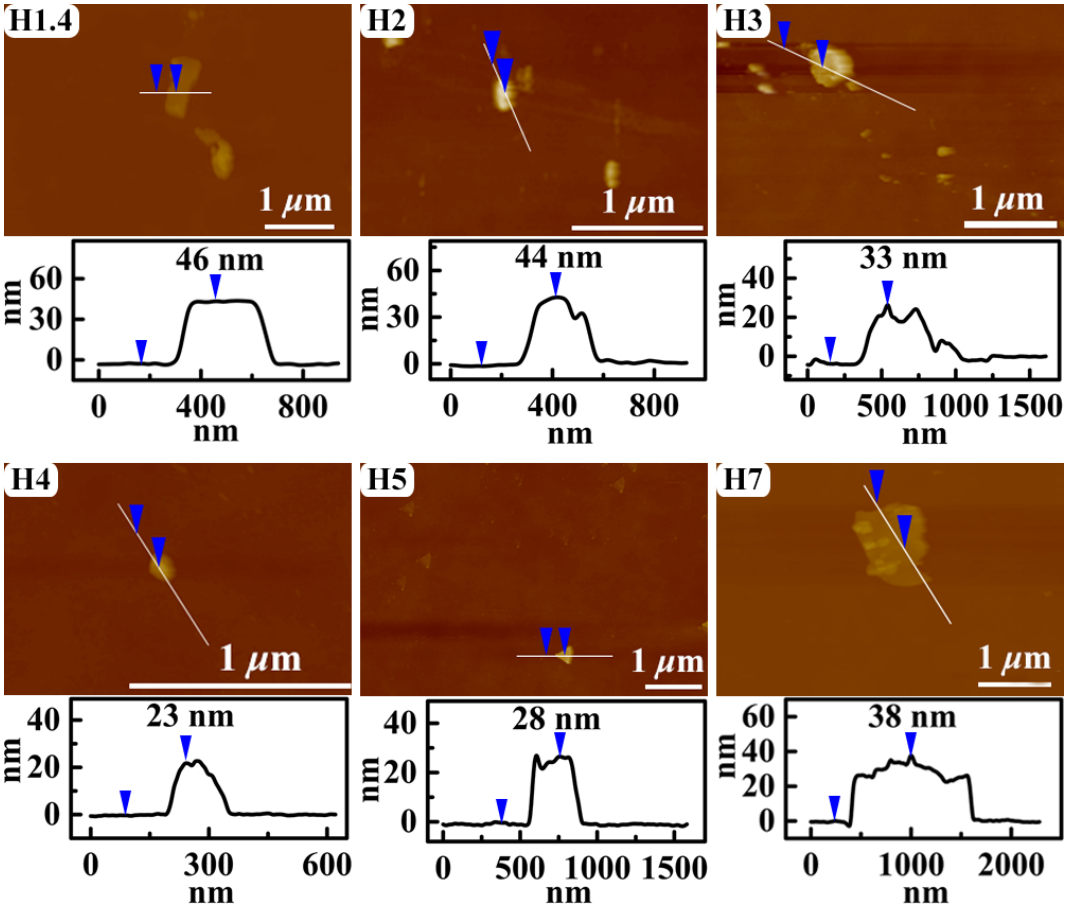

Fig. S2 AFM images of as-prepared BiOBr samples.

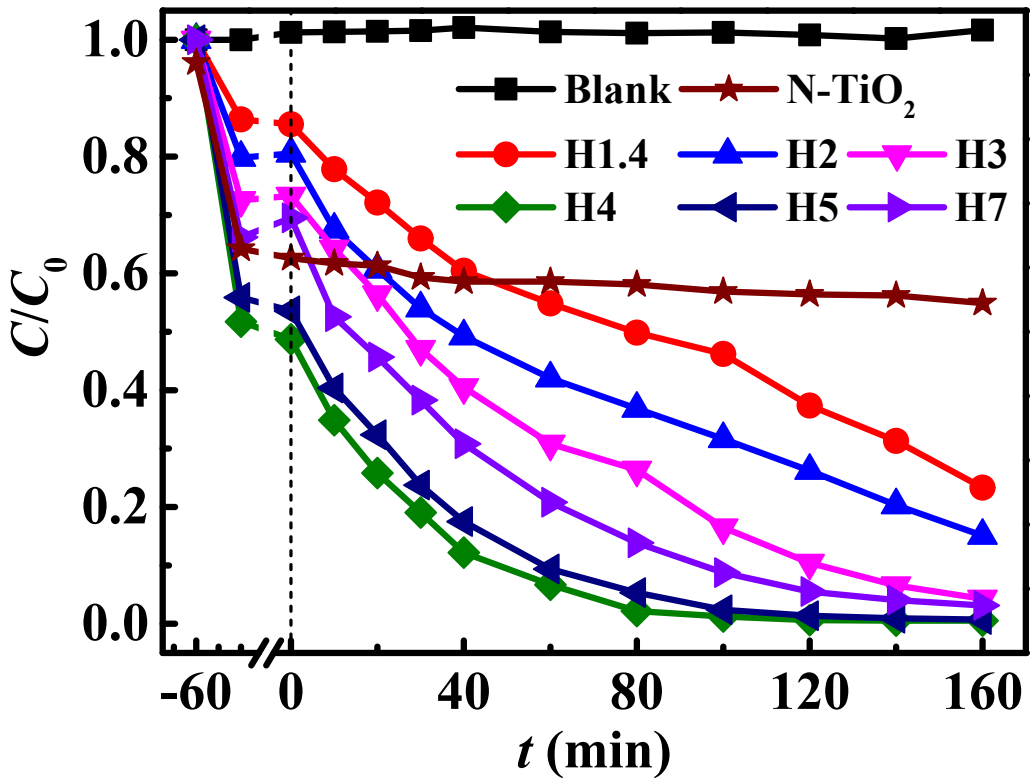

Fig. S3 Photodegradation of RhB over various BiOBr samples in different reaction time.

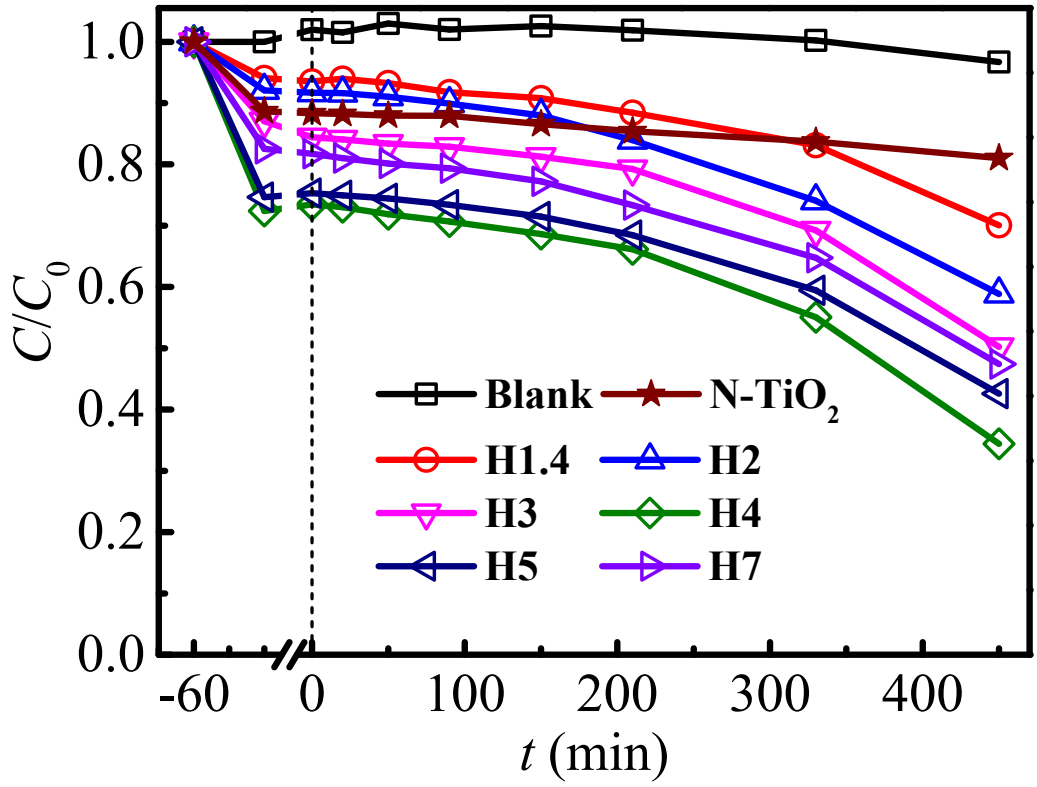

Fig. S4 Photodegradation of MB over various BiOBr samples in different reaction time.

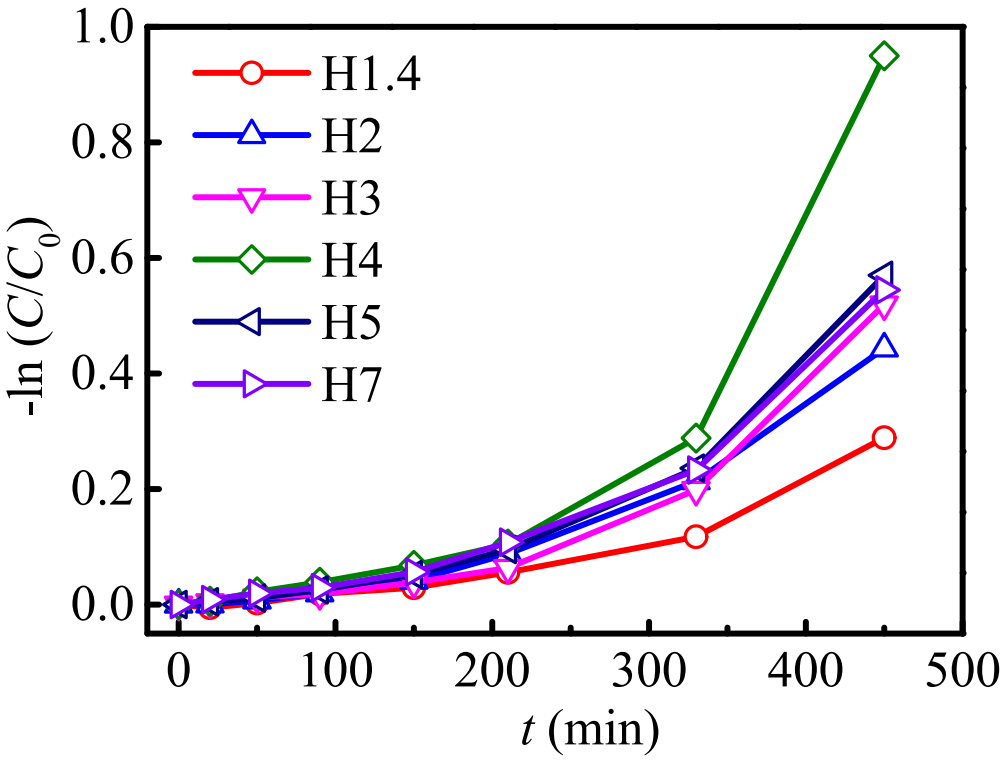

Fig. S5 Photocatalytic degradation of MB over BiOBr samples in different reaction time.

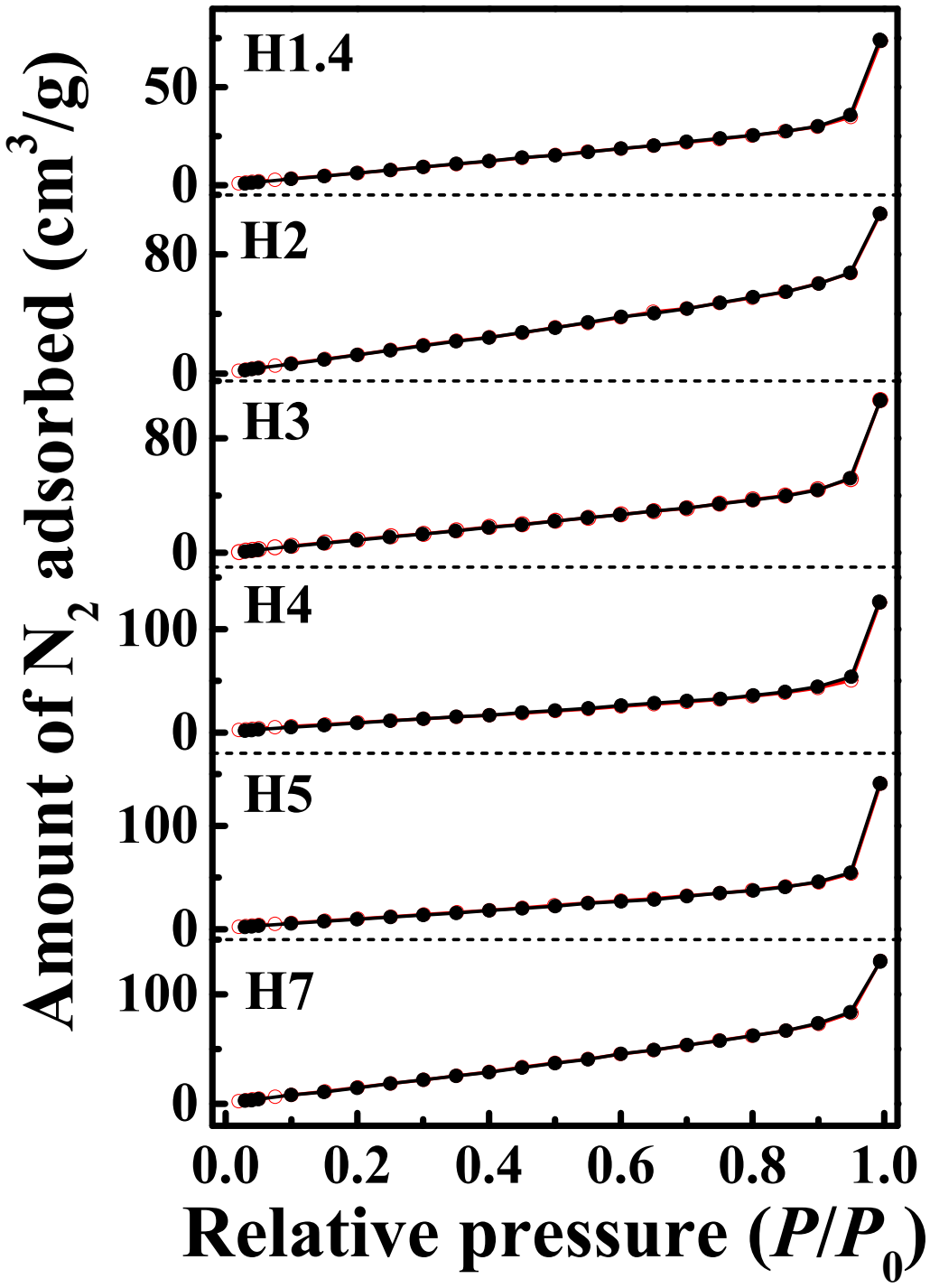

Fig. S6 N_2 adsorption-desorption isotherms for BiOBr samples.

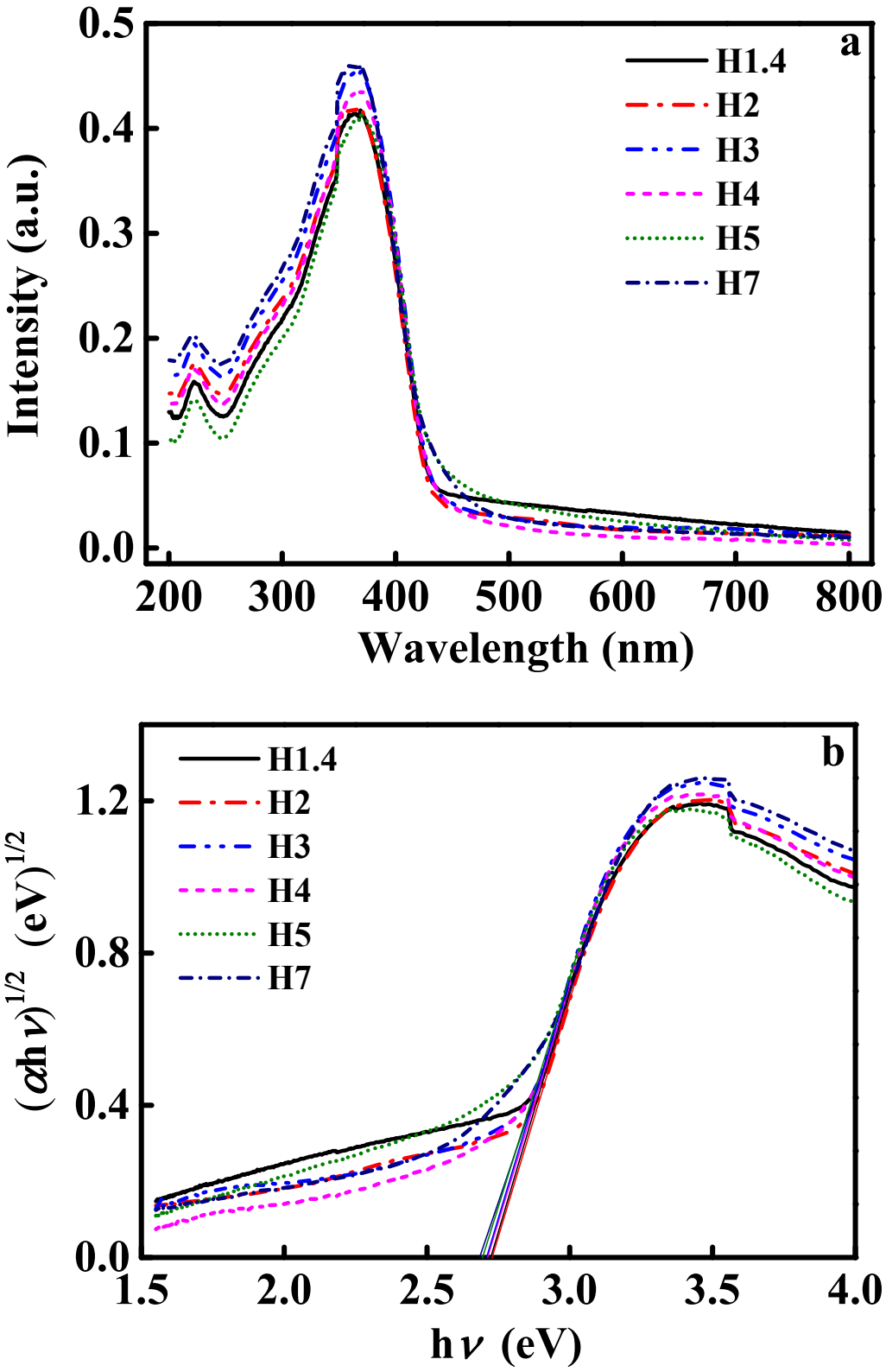

Fig. S7 (a) UV-vis DRS and (b) band gaps of BiOBr samples.

The optical band gaps of the samples can be calculated using equation (1):

$$\alpha h\nu = A(h\nu - E_g)^{n/2} \qquad (1)$$

where α, ν, A and E_g are the absorption coefficient, light frequency, proportionality constant and optical band gap, respectively. The value of n depends upon the characteristics of transition in the semiconductor (n = 1 and 4 for directly and indirectly allowed transitions, respectively). For the current BiOBr samples, n = 4 is obtained by Parida's method[1]. E_g values of samples are determined to be 2.70 ± 0.02 eV.

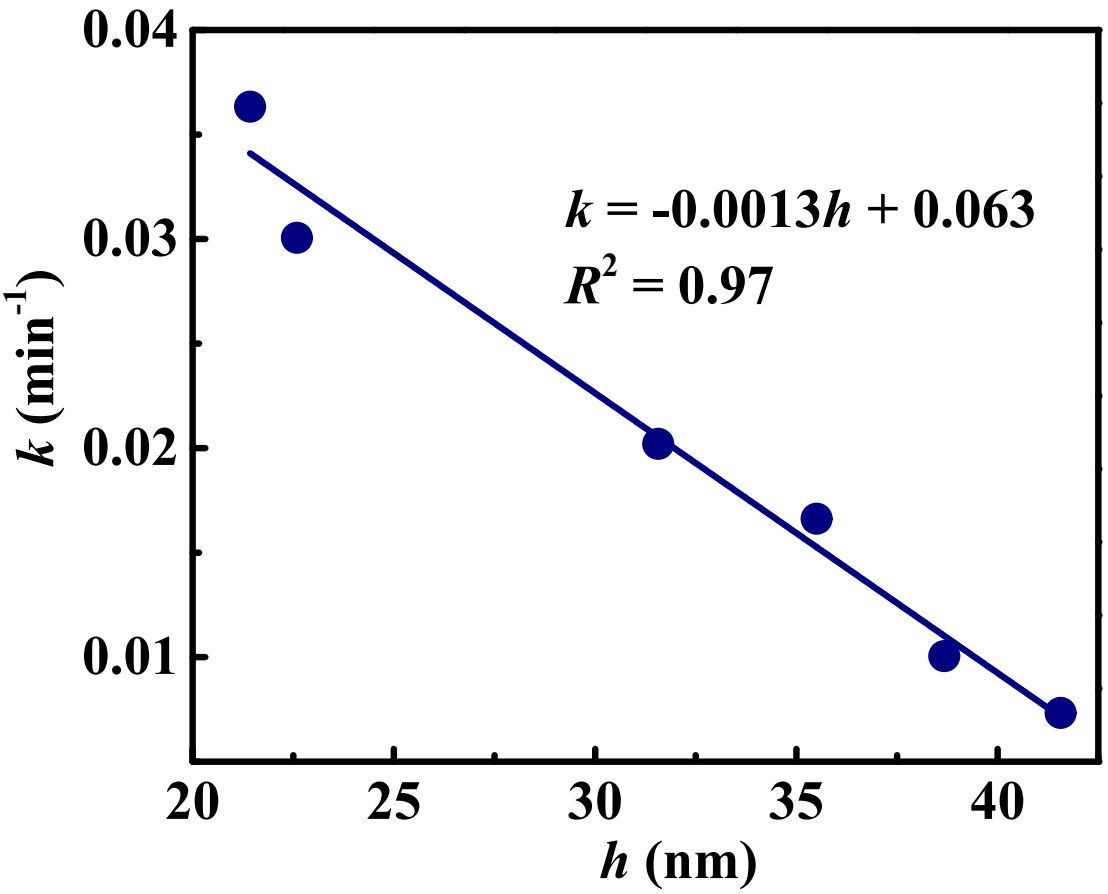

Fig. S8 Dependence of pseudo-first-order rate constant (k) on crystallite size (h) calculated from peak (001) of as-prepared BiOBr samples.

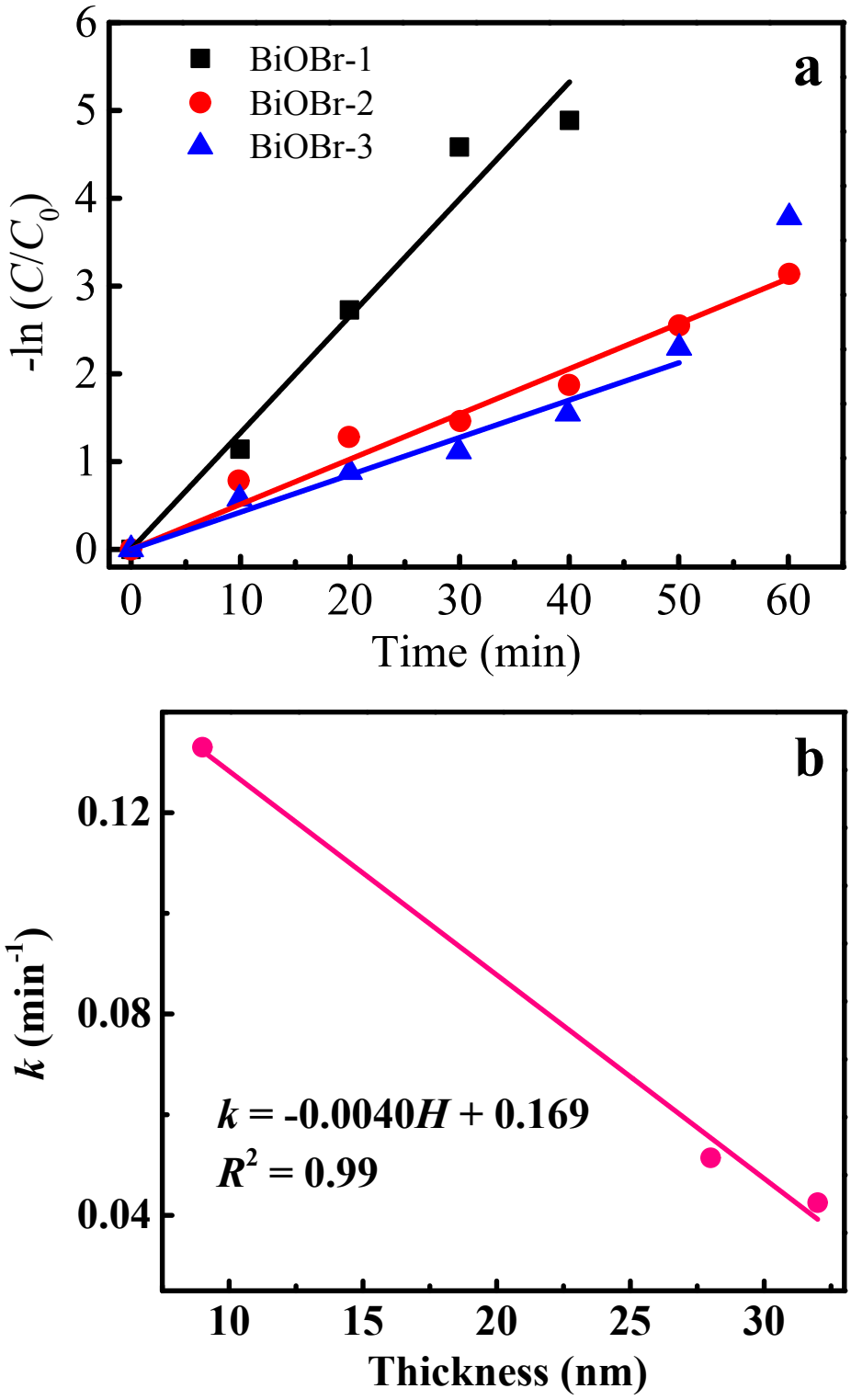

Fig. S9 (a) Photodegradation of RhB over reported BiOBr samples[2] with the pseudo-first-order model fitting result and (b) dependence of rate constant (k) on lamella thickness of BiOBr samples.

Table S1 Normalized pseudo-first order rate constant (k) values of BiOBr samples by specific surface area [1]

Samples	H1.4	H2	H3	H4	H5	H7
$10^4 \times$ normalized k (g min^{-1} m^{-2})	1.68	1.08	2.64	7.03	5.36	1.93

Reference

1. L. Mohapatra, K. Parida and M. Satpathy, *J Phys Chem C*, 2012, **116**, 13063-13070.

2. D. Zhang, J. Li, Q. Wang and Q. Wu, *J Mater Chem A*, 2013, **1**, 8622-8629.