Supporting Information:

Size-Dependent Magnetic, Photoabsorbing and Photocatalytic Properties of Single-Crystalline Bi$_2$Fe$_4$O$_9$ Semiconductor Nanocrystals

Qiang Zhang, Wenjie Gong, Jiaheng Wang, Xinkun Ning, Zhenhua Wang, Xinguo Zhao, Wenjun Ren, and Zhidong Zhang*

Shenyang National Laboratory for Material Science, Institute of Metal Research, and International Centre for Material Physics, Chinese Academy of Sciences, 72 Wenhua Road, Shenyang 110016, People’s Republic of China

*Corresponding author. E-mail: zdzhang@imr.ac.cn, Tel: +86-24-2397-1859. Fax: +86-24-2389-1320.
Caption: **Figure S1.** Schematic illustration of a Bi$_2$Fe$_4$O$_9$ unit cell. The edge-sharing FeO$_6$ octahedral is also shown.
Figure S2. TEM images of the as-prepared Bi$_3$Fe$_4$O$_9$ NCs prepared at 700 °C for 60 min(A) and (B). (C) Size distribution of the above sample.
Caption: **Figure S3.** The UV-vis diffuse reflectance spectra of our samples S1-S7.