

Supporting Information

Solar Light Photocatalysis with Bi₂O₃/Bi₂SiO₅ Nanoheterostructure in situ Formed in Mesoporous SiO₂ Microspheres

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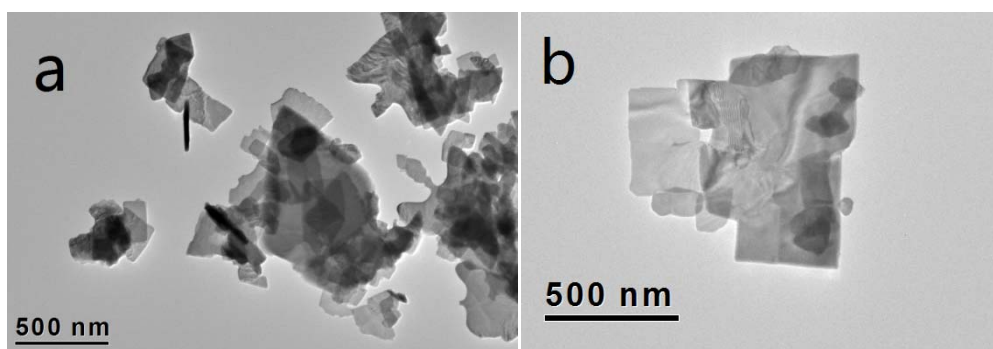


Figure S1. TEM images of as-prepared HR-BB sample.

Detection of active oxidative species in Bi₂O₃/Bi₂SiO₅ photocatalysis :

(a) The formation of the hydroxyl radical on the surface of the M-BBS photocatalysts under UV-visible light irradiation was monitored by the photoluminescence (PL) technique with terephthalic acid (TA) as a probe molecule, which can readily react with $\cdot\text{OH}$ to produce highly fluorescent product, 2-hydroxyterephthalic acid. The experimental procedure was similar with the photocatalytic process, except that the BPA solution was replaced by the 5×10^{-4} M terephthalic acid solution in 2×10^{-3} M NaOH. The fluorescence spectra of the formed 2-hydroxyterephthalic acid were measured by a spectrophotometer (Hitachi F-4500) excited at 315 nm. Fig. S2a shows that the increase of the fluorescence intensity at *ca.* 425 nm after illumination the solution, indicating the $\cdot\text{OH}$ radical was indeed formed.

(b) The nitroblue tetrazolium (NBT), exhibiting an absorption maximum at 259 nm, was used to determine the amount of $\cdot\text{O}^{2-}$ generating from M-BBS photocatalytic system. Photocatalytic reactions were carried out in beakers containing 1 g L^{-1} M-BBS aqueous suspensions and $5 \times 10^{-5} \text{ mol L}^{-1}$ NBT solution. Before the reactions, the suspensions were stirred for 1 h in dark. The production of $\cdot\text{O}^{2-}$ in M-BBS suspensions was quantitatively analyzed by detecting the concentration of NBT in the M-BBS suspensions with UV-vis spectrophotometer. After 1 h, the NBT was not degrade under simulate solar light irradiation as shown in Fig. S2b. It indicated there was no $\cdot\text{O}^{2-}$ generated in the solution under simulate solar light irradiation.

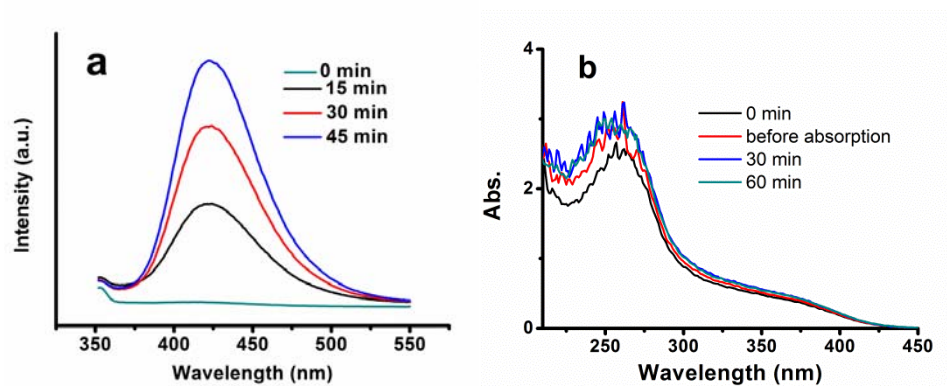


Figure S2. (a) Fluorescence spectral of terephthalic acid in NaOH solution with M-BBS aqueous suspensions; (b) UV-visible absorption spectra of NBT during photodegradation irradiated by simulate solar light.

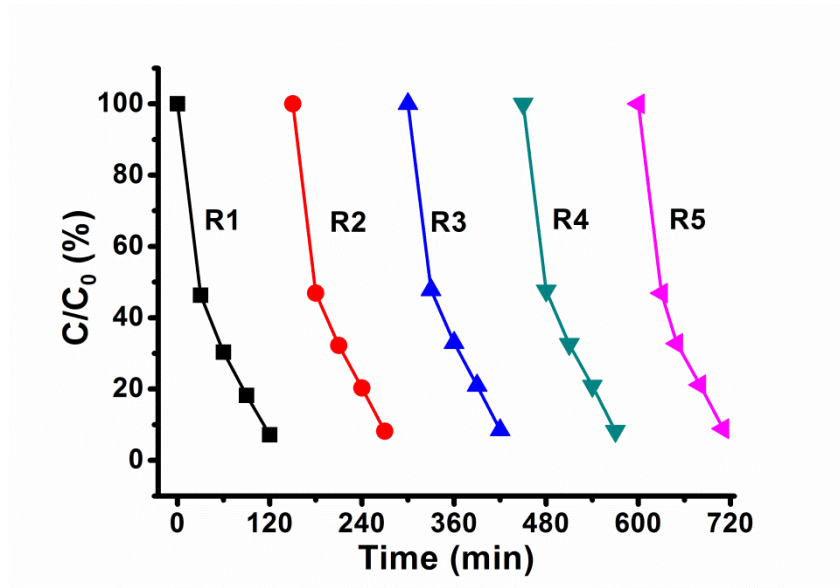


Figure S3. Recycle experiments of degrading BPA on the M-BBS under simulate solar light.