Electronic Supplementary Material (ESI) for Journal of Materials Chemistry

Electronic Supporting Information

Facile Growth of Vertically Aligned BiOCl Nanosheet Arrays on Conductive Glass Substrate with High Photocatalytic Properties

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1. Growth of rutile TiO_2 nanorod arrays on FTO substrate

15.0 mL of ultrapure (UP) water (18.2 MΩ) was mixed with an equal volume of concentrated (36~38 wt%) hydrochloric acid. Under stirring condition, 0.5 mL of tetrabutyl titanate (98%) was added dropwise to the mixture to obtain a clear transparent solution. Separately, the rinsed FTO substrate was placed at an angle against the wall of an 80 mL Teflon liner containing the precursor solution. Specially, the FTO substrate was placed in the Teflon liner with the conducting side facing down. The Teflon liner was loaded in an autoclave and kept at 150 °C for 8 h. After synthesis, the FTO substrate was taken out, rinsed extensively with ultrapure water and allowed to dry in ambient air.

2. Fabrication of P25 film on FTO substrate

0.50 g ethyl cellulose was dissolved in 10.0 mL ethanol, and 1.0 g P25 (Degussa, Germany) powder was dispersed in the solution by ultrasonication for 10 min. Then, 5.0 mL terpineol was added into the above mixture to obtain a homogeneious suspension. Vacuum distillation was used to evaporate the ethanol in the suspension using a rotary evaporator at 45 °C. The obtained glutinous liquid was used for fabricating P25 film on rinsed FTO substrate through doctor blading. After dried on a hot plate at 80 °C, the film was annealled at 450 °C for 15 min with a heating rate of 2 °C min^{-1} in a muffle furnace. The resulted P25 film was used in photocatalytic experiments for comparison with BiOCl nanosheet arrays.

The TiO_2 nanorod arrays and P25 film were characterized by a field emission scanning electronic microscopy (FESEM, S-4800, Hitachi, Japan) and an X-ray

diffraction technique (XRD, D/max 2550 V, Rigaku, Japan). The P25 film was further analyzed by an optical profilometer (Wyko NT9100, Veeco, USA).

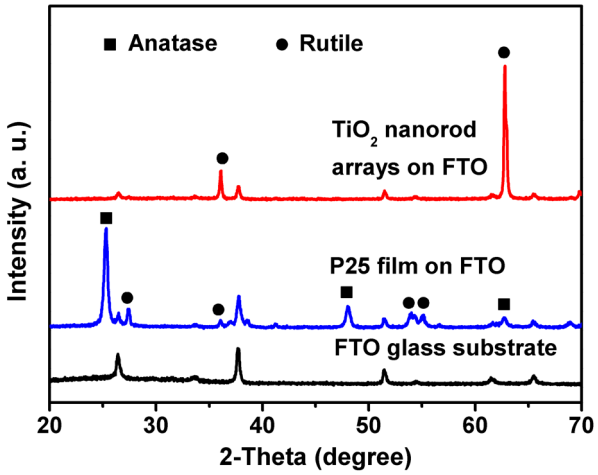

Figure S1. XRD patterns of the FTO substrate, P25 film and TiO_2 nanorod arrays.

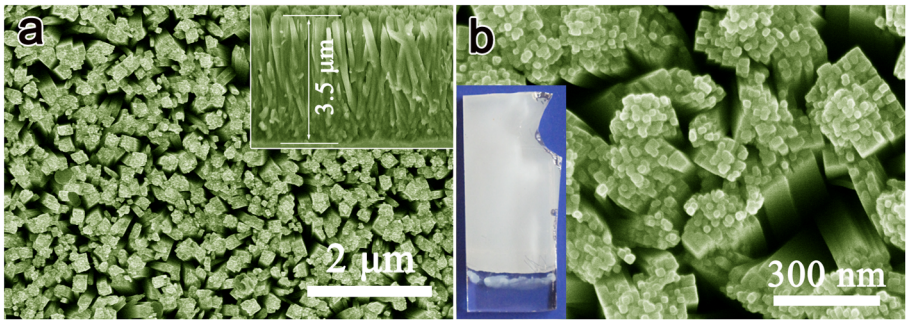

Figure S2. FESEM images of TiO_2 nanorod arrays (top view) grown on FTO substrate; insets are sectional view and the photographic image.

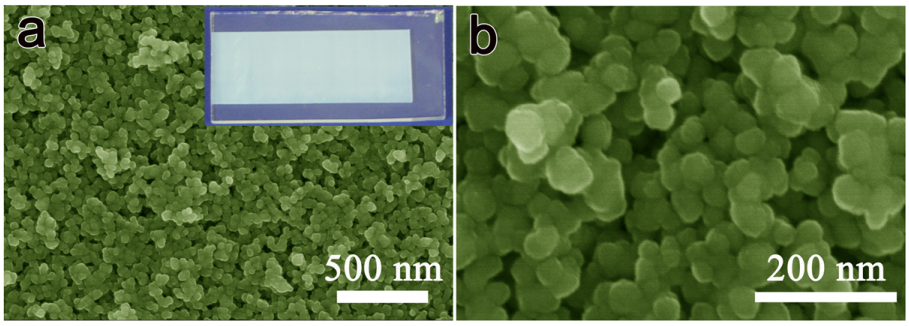

Figure S3. FESEM images of P25 film (top view) fabricated on FTO substrate; inset is the photographic image of P25 film fabricated by doctor blading.

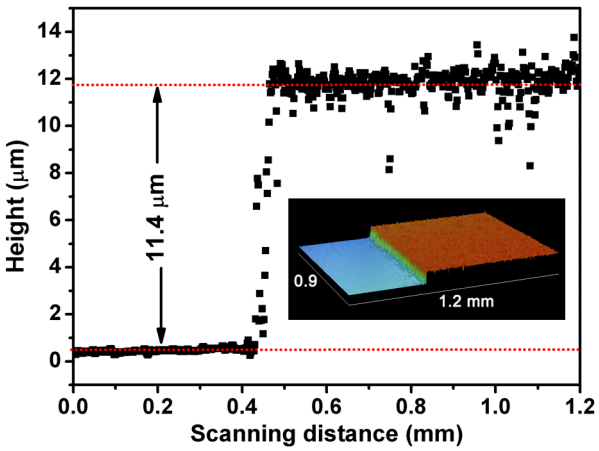

Figure S4. Optical profiler analysis of P25 film; inset is the corresponding 3D image of the scanning area.

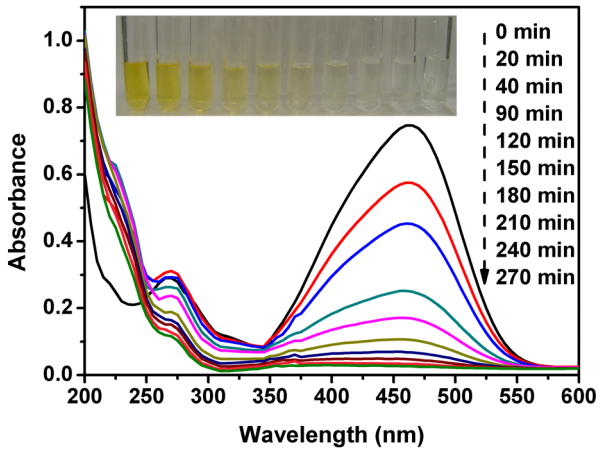

Figure S5. Adsorption spectral changes of MO solution with illumination time during photocatalytic process by P25 film; inset is the photographic image of the corresponding MO solutions at a given time interval.

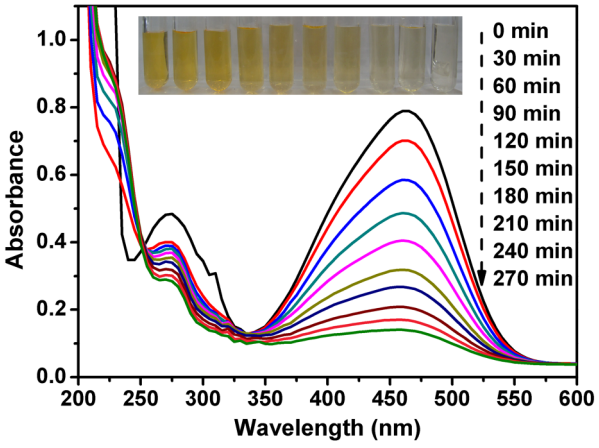

Figure S6. Adsorption spectral changes of MO solution with illumination time during

photocatalytic process by rutile TiO_2 nanorod arrays; inset is the photographic image of the corresponding MO solutions at a given time interval.

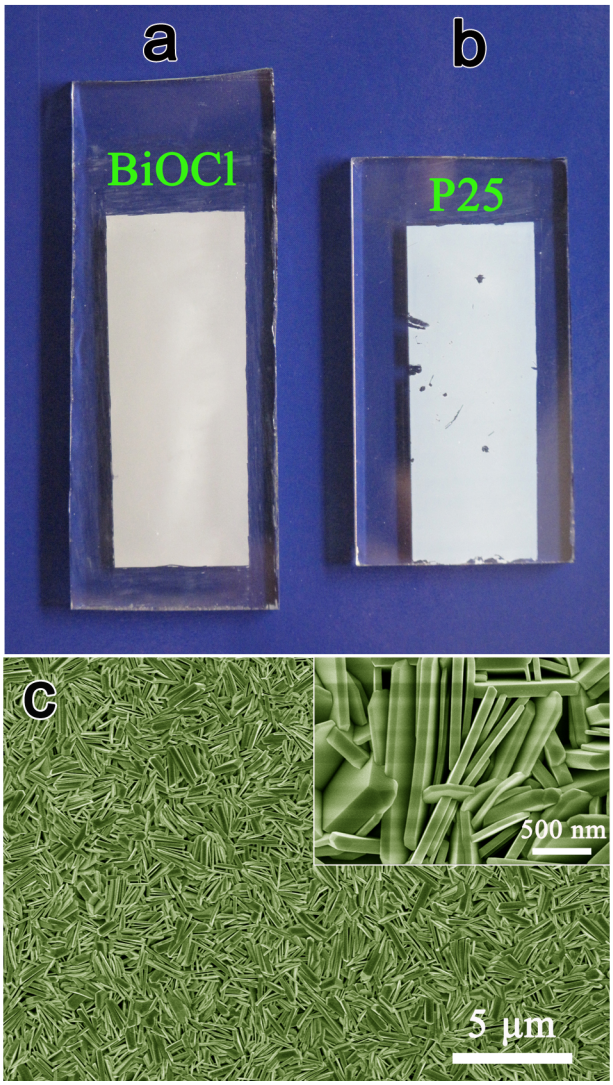

Figure S7. Photographic (a) and FESEM (c) images of the BiOCl nanosheet arrays and P25 film (b) covered FTO substrates after photocatalytic reaction.

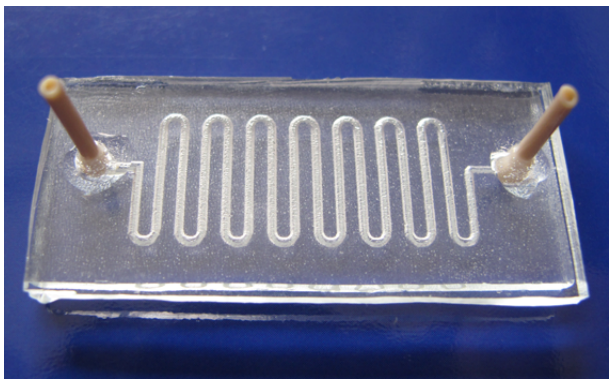

Figure S8. Photographic image of the photocatalytic microreactor.