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ARTICLE TYPE

In Situ Gold-Loaded Titania Photonic Crystals with Enhanced Photocatalytic Activity

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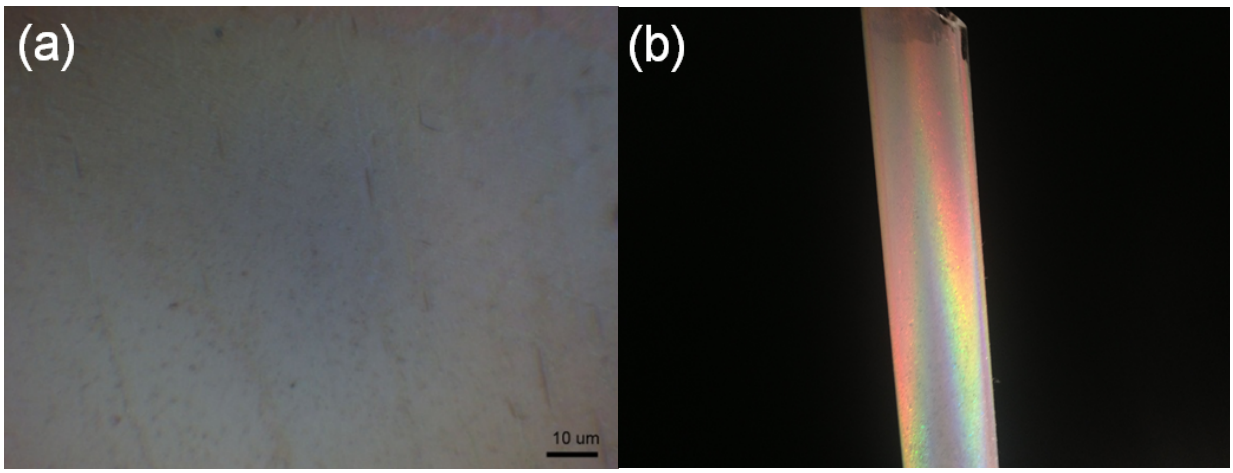

Fig. S1 (a) The optical microscopy image of i-Au-TiO_2-o samples; (b) Digital photograph of i-Au-TiO_2-o coated onto a glass tube with a diameter of ~ϕ2.8 cm × 12 cm

Fig. S1a demonstrates that high-quality i-Au-TiO_2-o film can be fabricated in relatively large area. Fig.S1b shows a digital photograph of i-Au-TiO_2-o coated onto a glass tube with a diameter of ~ϕ2.8 cm × 12 cm

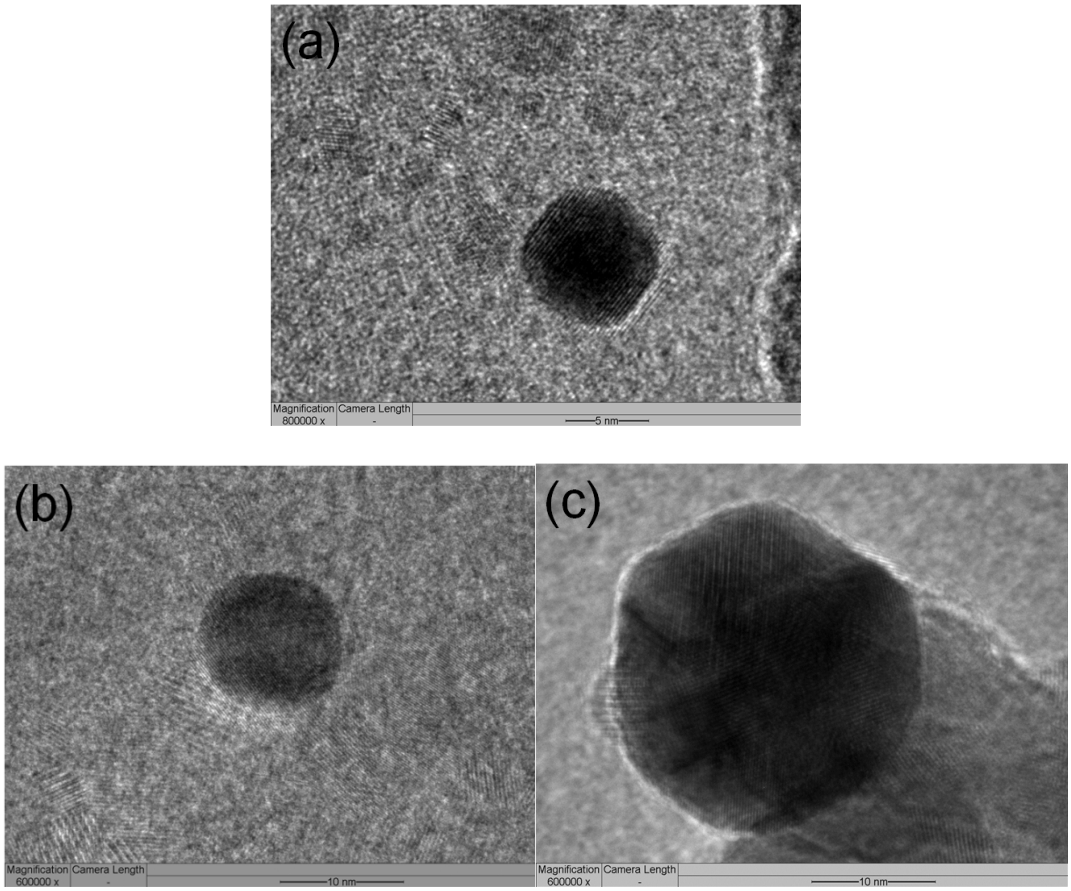

Fig. S2 HRTEM images of Au nanoparticles in the i-Au-TiO_2-o films fabricated at different calcination temperatures. (a) 200°C; (b) 240°C; (c) 280°C.

The gold nanoparticle size can be tuned via calcination temperature. As can be seen in Fig. S2, the Au nanoparticle size can be tuned from ~6 nm to ~28 nm by increasing the temperature from 200 to 280 °C.

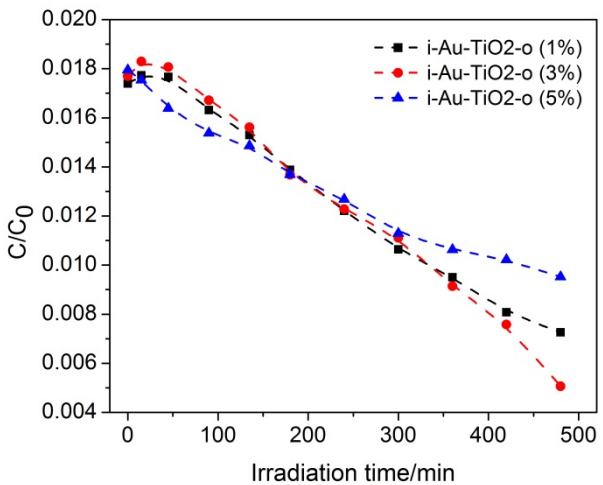

Fig. S3 Photodegradation of benzoic acid (BA) using i-Au-TiO_2-o films with different amount of Au loadings as a function of time.

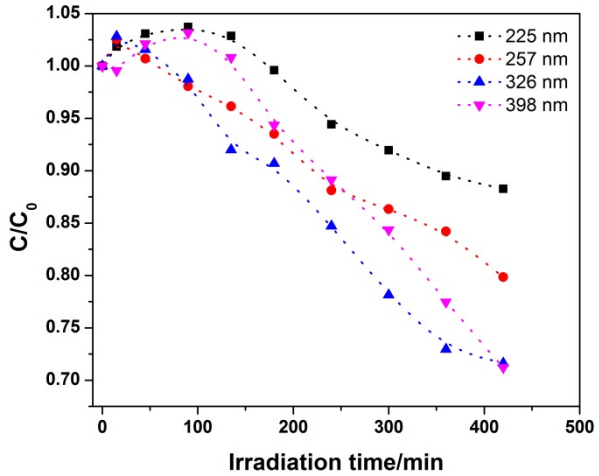

Fig. S4 Photodegradation of benzoic acid (BA) using i-TiO_2-o with different pore sizes as a function of time.

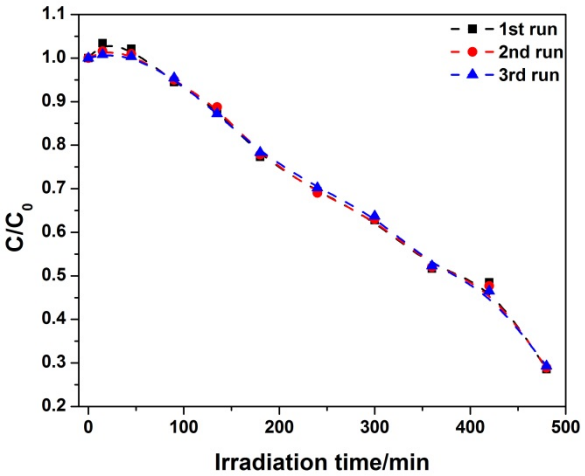

Fig. S5 Photocatalytic degradation of BA over i-Au-TiO_2-o under UV irradiation for 3 recyclings.

Fig. S5 shows that the photocatalytic efficiency remains unchanged upon 3 recyclings.

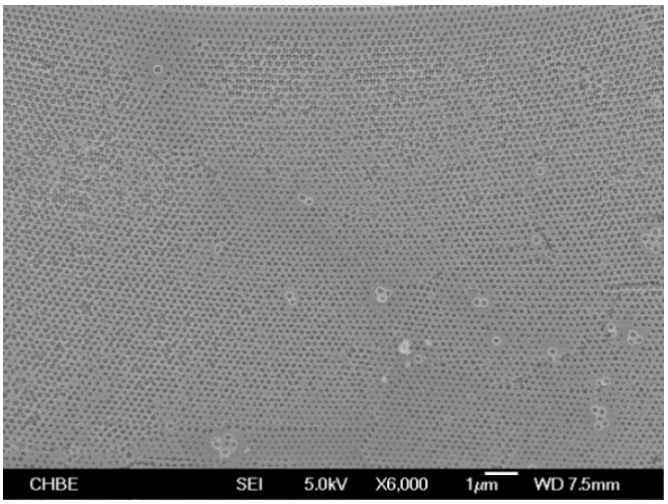

Fig. S6 Top view of i-Au-TiO_2-o fabricated with PS colloidal particles with a diameter of 170 nm after photodegradation.

As shown in Fig. S6, relatively large area of i-Au-TiO_2-o can be fabricated via this co-self-assembly method. In addition, the i-Au-TiO_2-o film remains long-range well-ordered structure in three dimensions even after 3 cycles of photodegradation.