Supporting Information

Effects of Deposited Ions on the Photocatalytic Activity of TiO_2-Au Nanospheres

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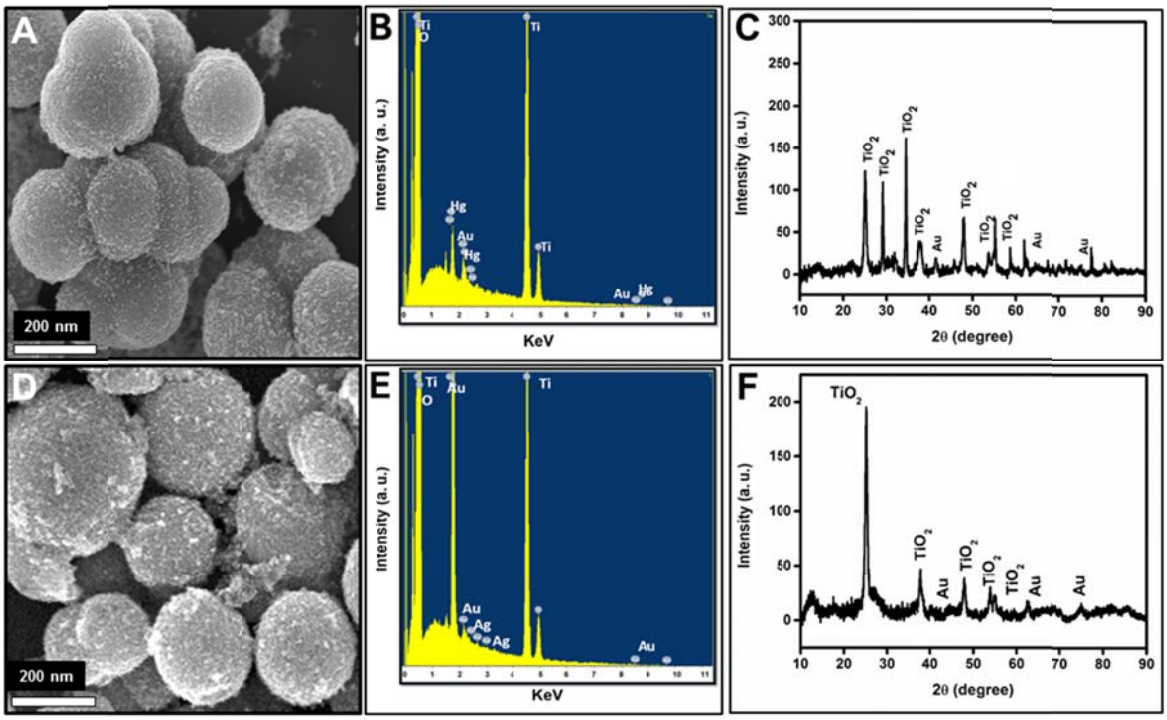

Figure S1. (A) SEM image (B) EDX and (C) XRD pattern of TiO_2-Au/Hg NSs; (D) SEM image, (E) EDX and (F) XRD pattern of TiO_2-Au/Ag NSs.

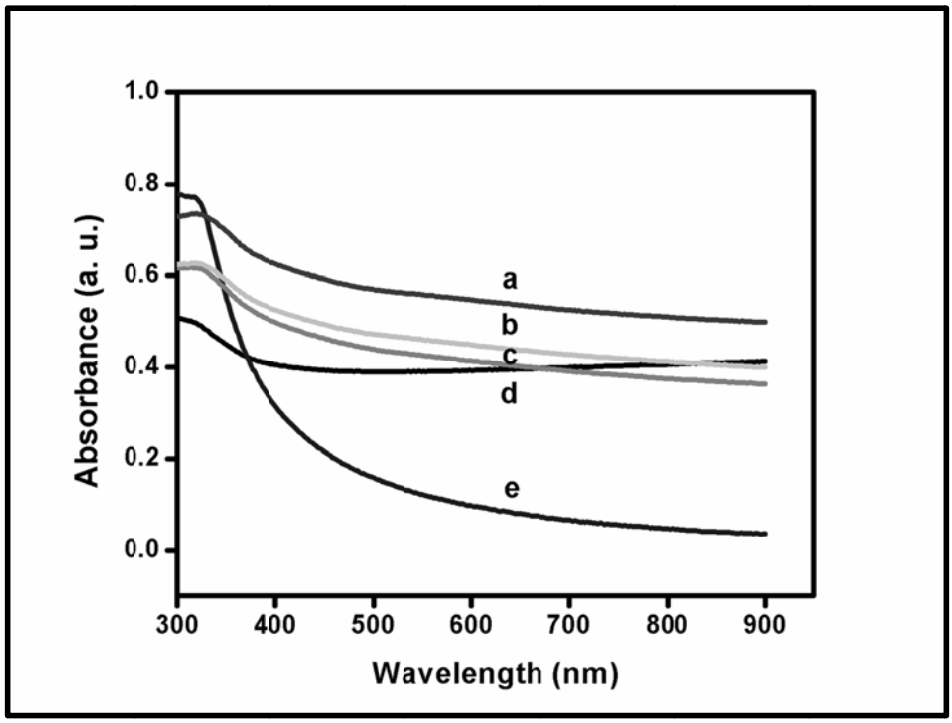

Figure S2. UV-Vis absorption spectra of (a) TiO_2- Au NSs, (b) TiO_2-Au/Ag NSs, (c) TiO_2-Au/Hg NSs, (d) TiO_2 NSs and (e) P25.

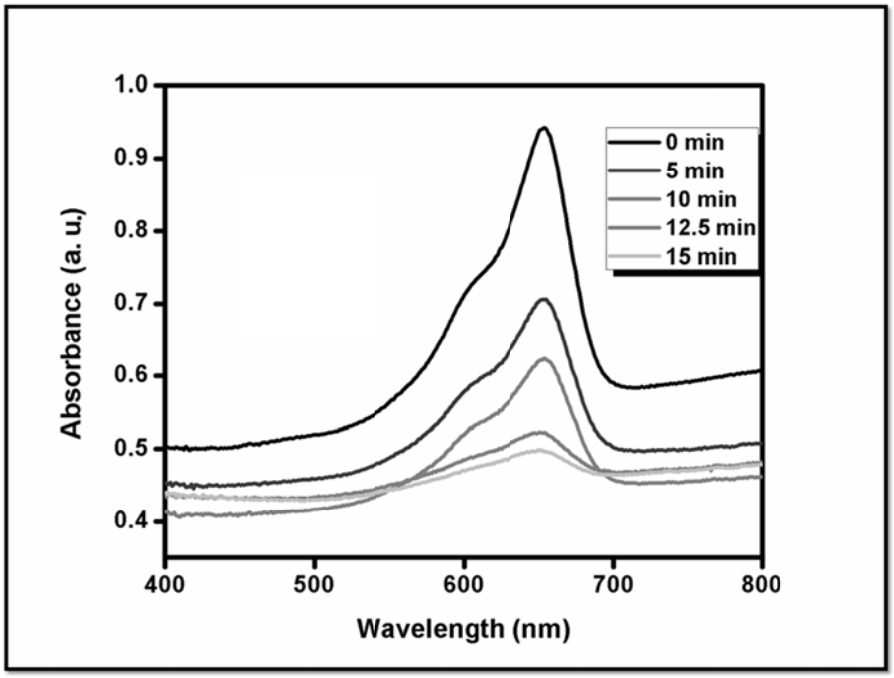

Figure S3. UV-Vis absorption spectra of MB (10 μM) that had been subjected to photocatalytic degradation for various times using TiO_2-Au NSs (final concentration: 10 mg mL^{-1}).

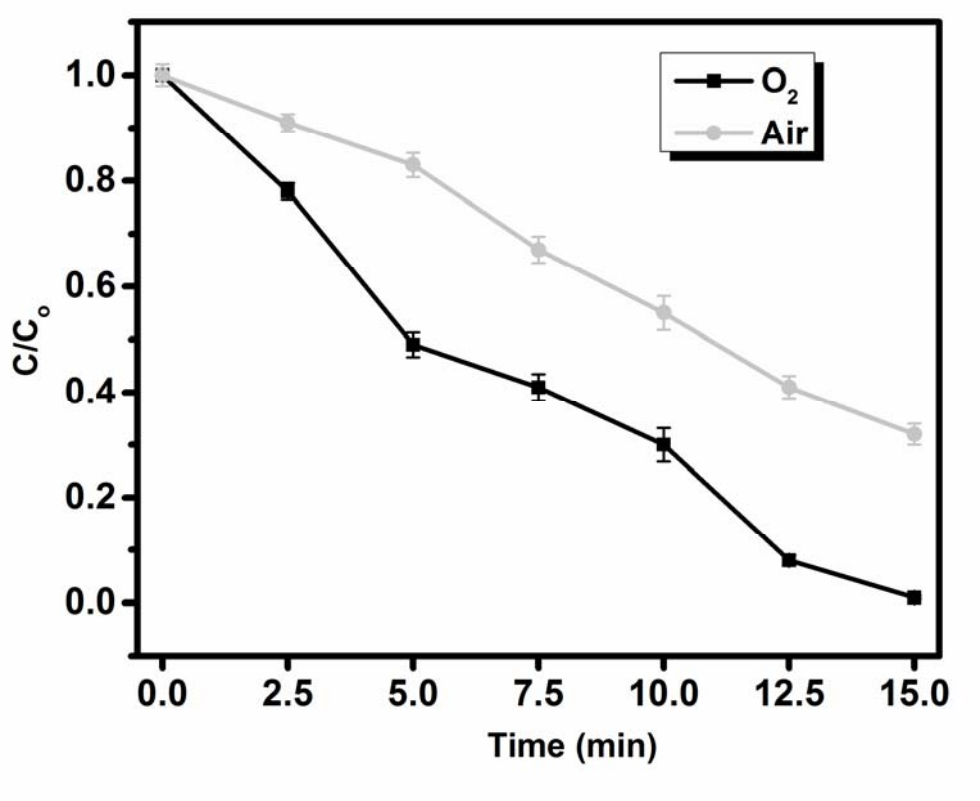

Figure S4. Effect of oxygen on the photocatalytic degradation of MB (10 μM) using TiO_2-Au NSs (final concentration: 10 mg mL^{-1}). Other conditions are the same as that in Figure 3.

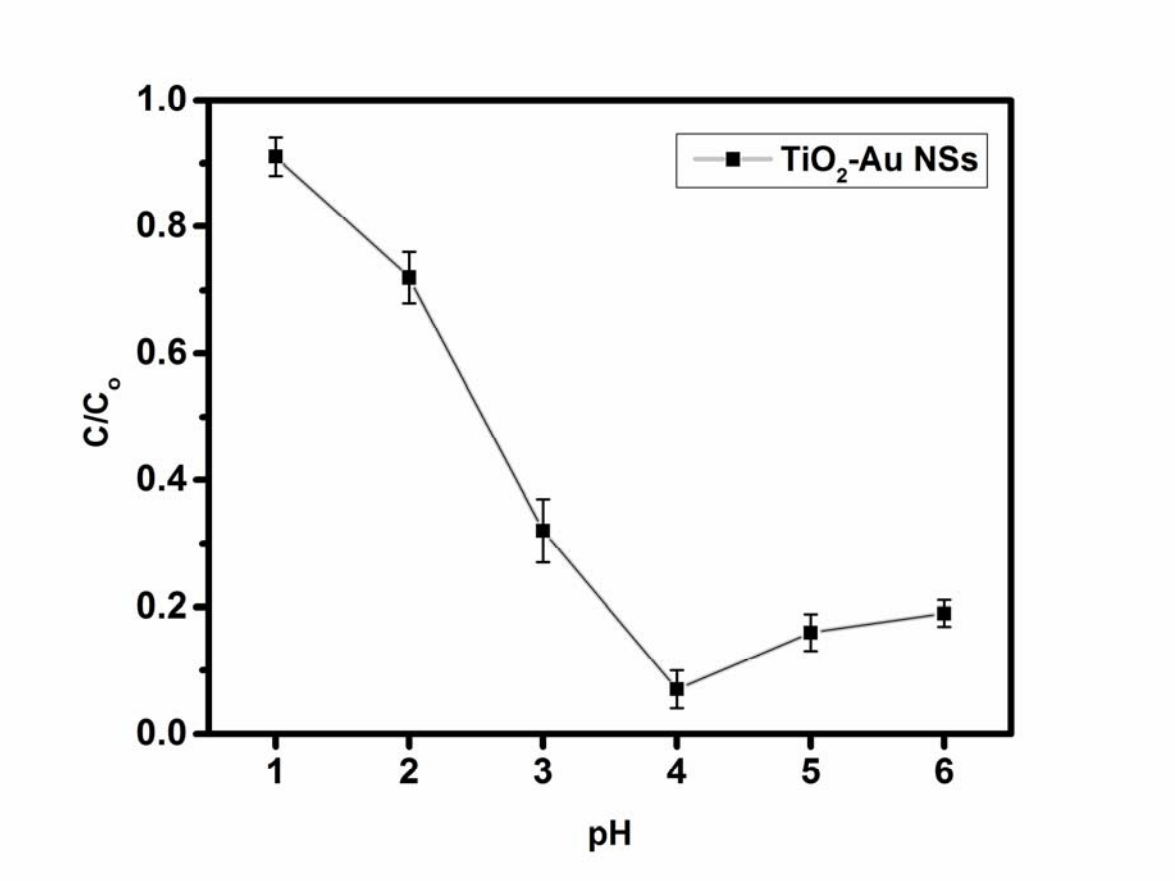

Figure S5. Effect of pH on the reduction of Cr^{6+} (34 μM) by TiO_2-Au NSs (final concentration: 10 mg mL^{-1}). Buffer: 10 mM acetate solution. Other conditions are the same as that in Figure 4.

Table 1: Usability of TiO_2-Au, TiO_2-Au/Hg and TiO_2-Au/Ag NSs as photocatalysts

	MB			Cr^{6+}
Cycles	**TiO_2-Au NSs (%)**	**TiO_2-Au NSs/Hg (%)**	**TiO_2-Au NSs/Ag (%)**	**TiO_2-Au NSs (%)**
1	100	100	100	100
2	99	97	97	99
3	97	96	96	99
4	96	94	94	98
5	92	93	93	97

The efficiency in each case is set at 100% for the first cycle.