Supporting Information

For

Enhanced Sonocatalytic Degradation of Azo Dyes by Au/TiO_2

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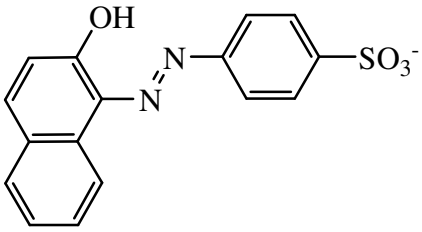
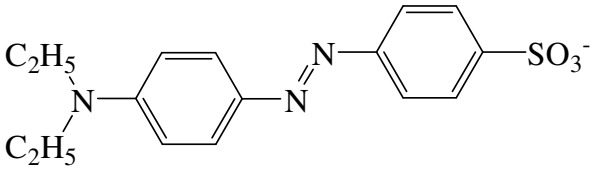
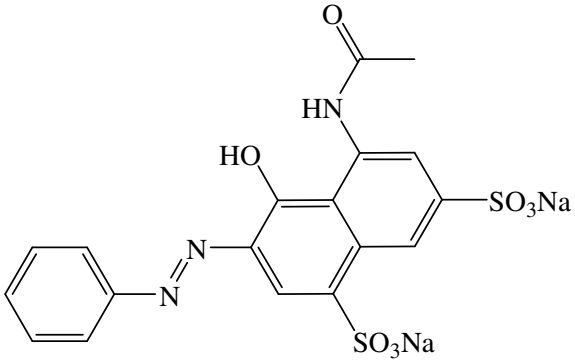


Orange II



Ethyl orange



Acid red G

Figure S1. Structures of the dyes used in this article.

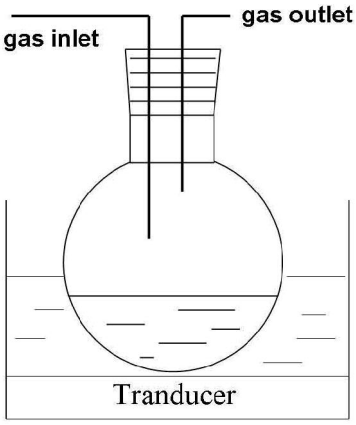


Figure S2. Schematic description of the ultrasonic setup.

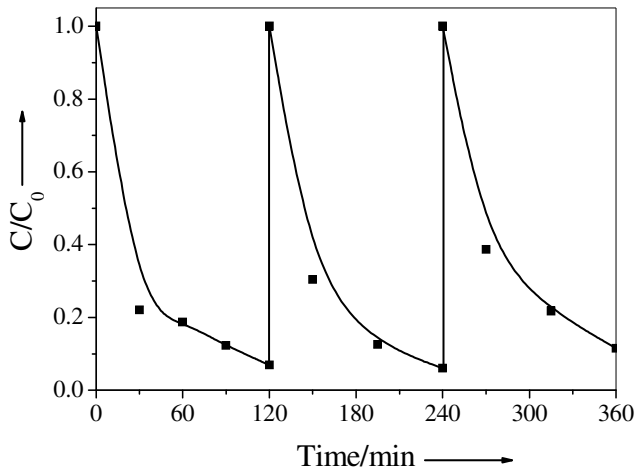


Figure S3. Repeated experiments of sonocatalytic degradation of Org II (100ml, 5.0×10^{-5} M, pH = 3.5) with Au/TiO_2 (1 g/L) under Ar atmosphere. Org II (1 ml, 5.0×10^{-3} M) was added after each run. The Au/TiO_2 catalyst remained the high sonocatalytic activity and the high stability in sonocatalytic degradation of Org II. That the degradation rates reduced slightly was probably due to incomplete mineralization of the dye during the last run.

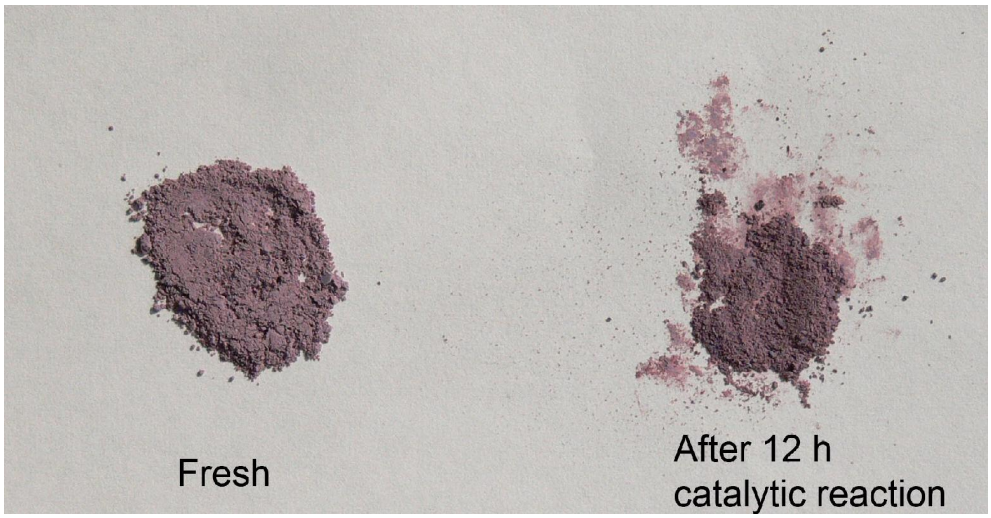


Figure S4. Photographs of the Au/TiO_2 catalyst before and after 12 hours of use.

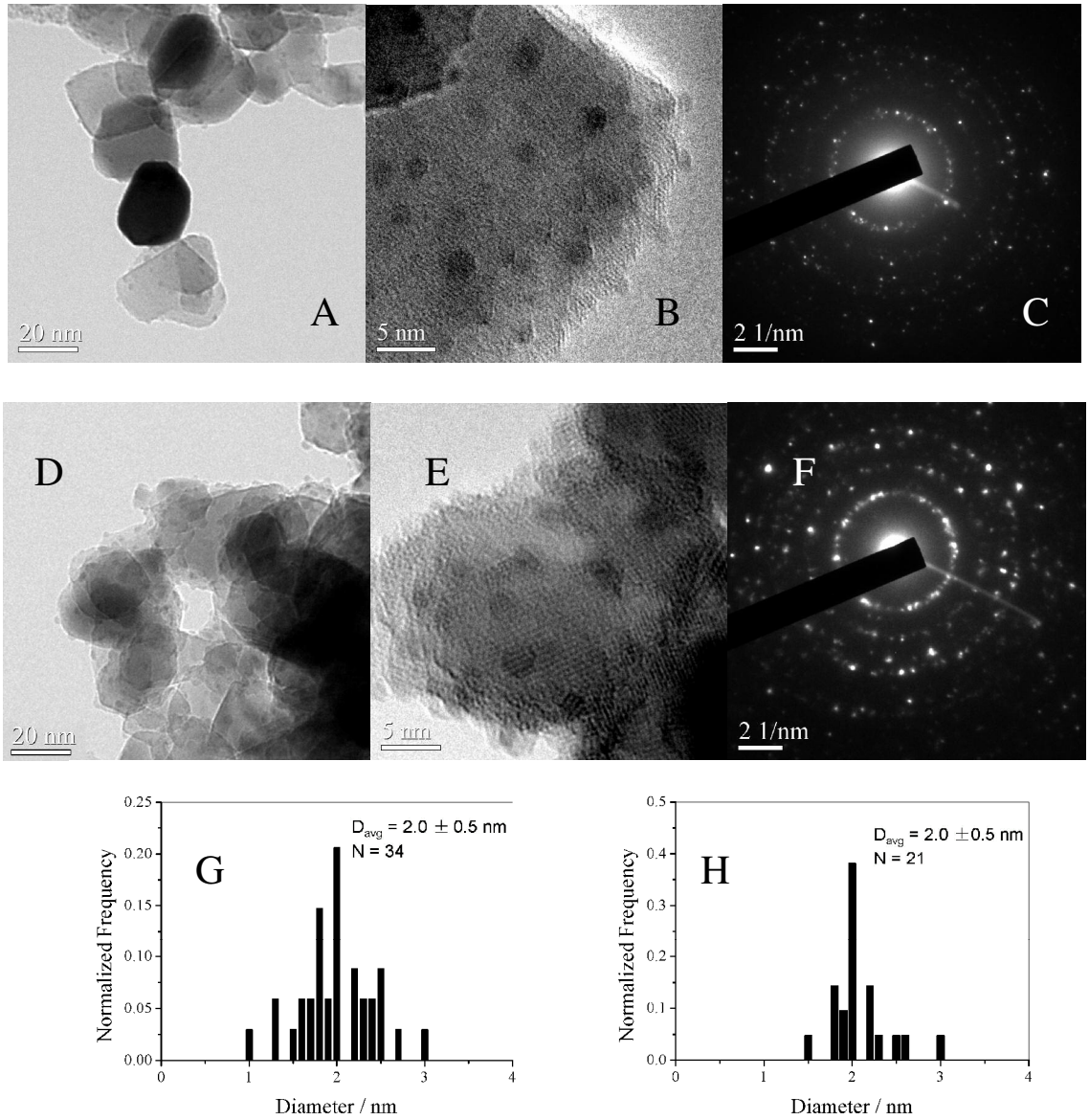


Figure S5. TEM characterization of the Au/TiO_2 catalyst (A-C, G) before and (D-F, H) after 12 hours of use. (A) and (D) TEM image, (B) and (E) HRTEM images, (C) and (F) electron diffraction patterns, (G) and (H) diameter distribution of Au nanoparticles. No apparent change in crystallization of TiO_2 or in size distribution of Au nanoparticles was observed after 12 hours of use. No release of Au nanoparticles from Au/TiO_2 was observed. The results indicated a high stability of Au/TiO_2 under current usage conditions.

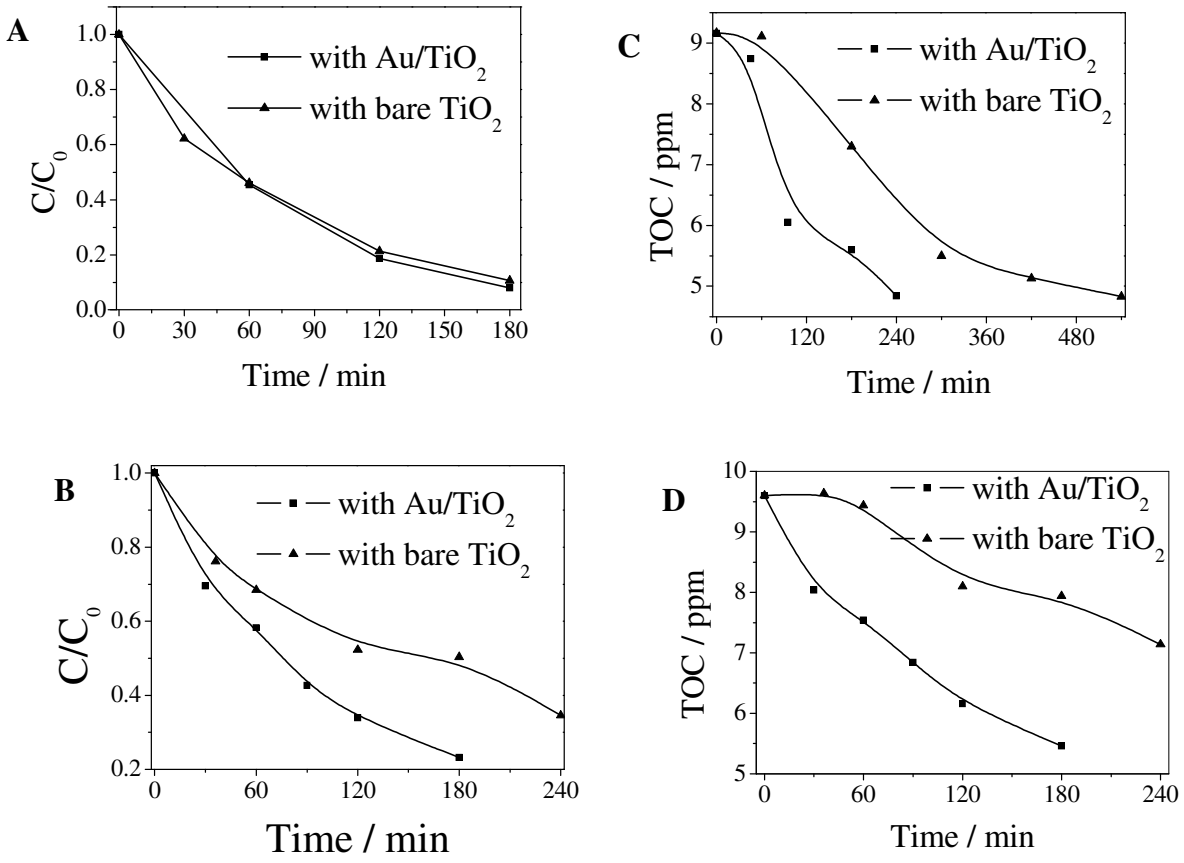


Figure S6. Sonocatalytic degradation of EO (5.0×10^{-5} M, pH = 3.5) under (A) Ar and (B) air atmospheres; (C) and (D) TOC removal corresponding to (A) and (B), respectively. Catalyst = 1 g/L.

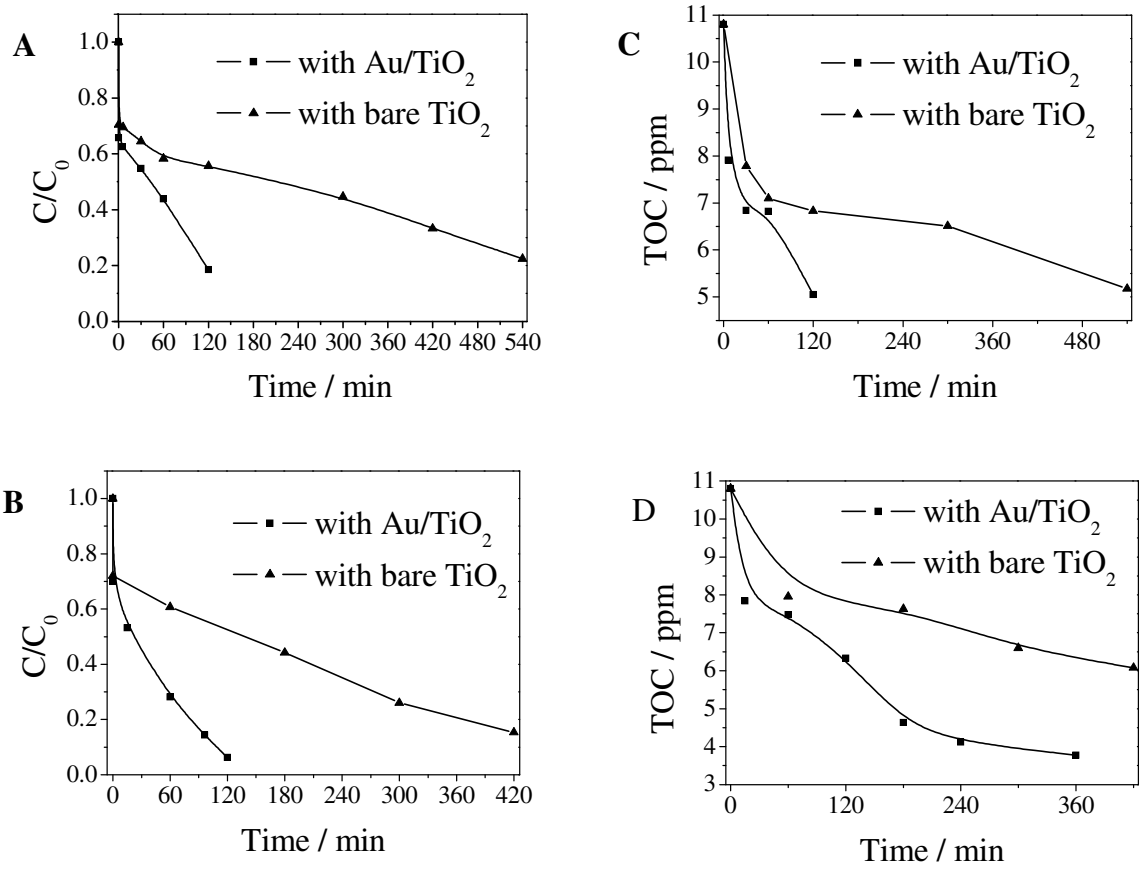


Figure S7. Sonocatalytic degradation of ARG (5.0×10^{-5} M, pH = 3.5) under (A) Ar and (B) air atmospheres; (C) and (D) TOC removal corresponding to (A) and (B), respectively. Catalyst = 1 g/L.

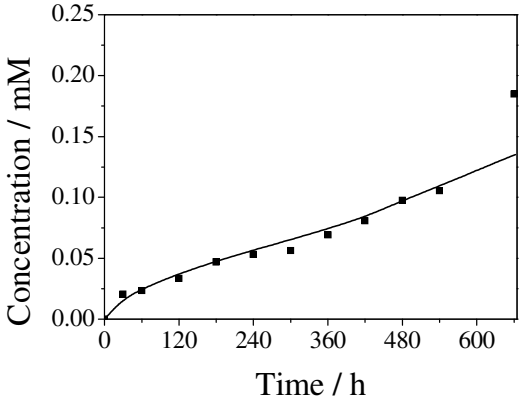


Figure S8. SO_4^{2-} evolution during the sonocatalytic degradation of Org II (2.5×10^{-4} M, pH = 3.5) in the presence of Au/TiO_2 (1 g/L) under air atmosphere.

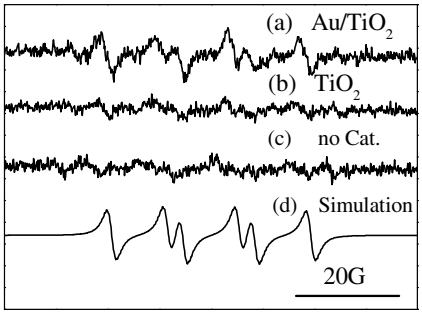


Figure S9. EPR spectra of DMPO-OOH obtained by sonolysis of 62% methanol in water (v/v) for 10 minutes under air atmosphere (a) with Au/TiO_2, (b) with TiO_2, (c) without catalyst, and (d) simulation of (a). [DMPO]= 4 mM, pH = 3.5, catalyst = 1 g/L.

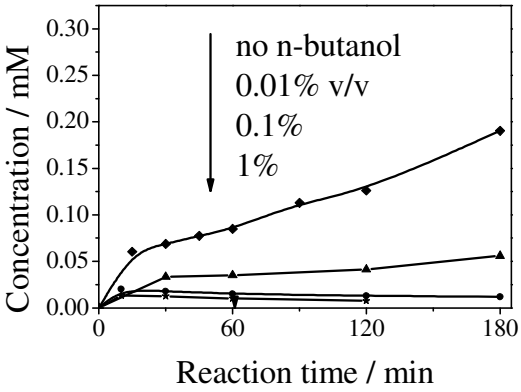


Figure S10. [H_2O_2] profiles during sonocatalytic degradation of Org II (5.0×10^{-5} M, pH = 3.5) over Au/TiO_2 (1 g/L) in the absence and presence of n-butanol under Ar atmosphere.

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