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Efficiently Enhancing Photocatalytic activity of Faceted TiO₂ Nanocrystals by Selectively Loading α -Fe₂O₃ and Pt dual co-catalysts

Chang Liu, Ruifeng Tong, Zhenkai Xu, Qin Kuang,* Zhaoxiong Xie, and Lansun Zheng

State Key Laboratory for Physical Chemistry of Solid Surfaces & Department of Chemistry,
College of Chemistry and Chemical Engineering, Xiamen University, Xiamen, China

To whom correspondence should be addressed. Email: qkuang@xmu.edu.cn

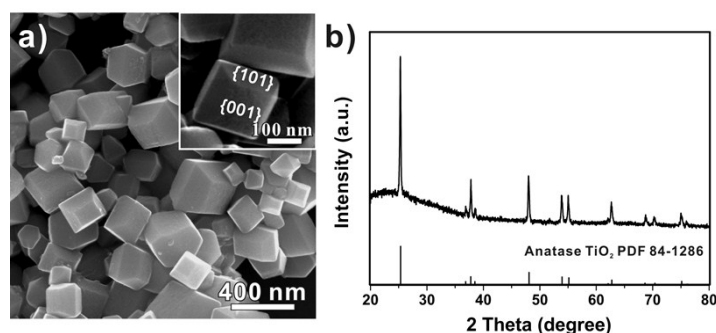


Fig. S1 (a) SEM image and (b) XRD pattern of the naked TiO₂ NCs.

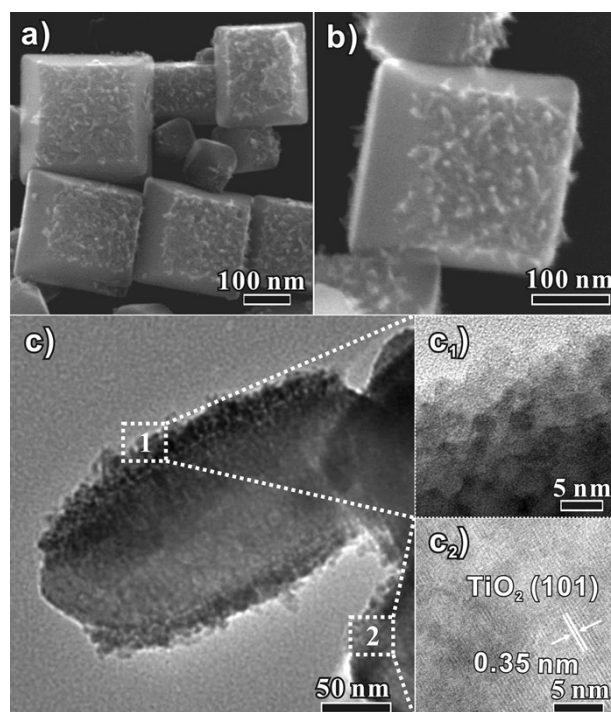


Fig. S2 (a,b) SEM and (c) TEM images of FeO_x(OH)_{3-2x}-TiO₂ obtained after the photo-activated oxidation step. Insets in (c) are high resolution TEM images recorded from the zones marked with “1” and “2”.

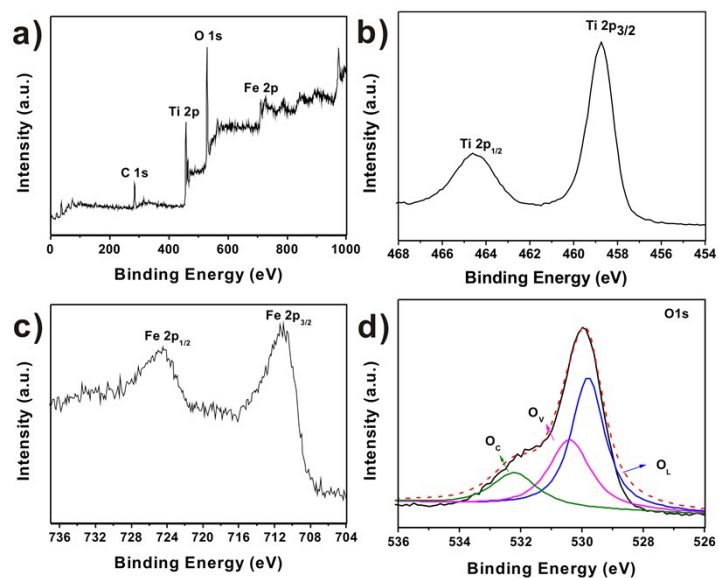


Fig. S3 XPS spectra of $\text{FeO}_x(\text{OH})_{3-2x}\text{-TiO}_2$ (a) and high resolution XPS spectra of (b) Ti 2p, (c) Fe 2p and (d) O 1s from $\text{FeO}_x(\text{OH})_{3-2x}\text{-TiO}_2$.

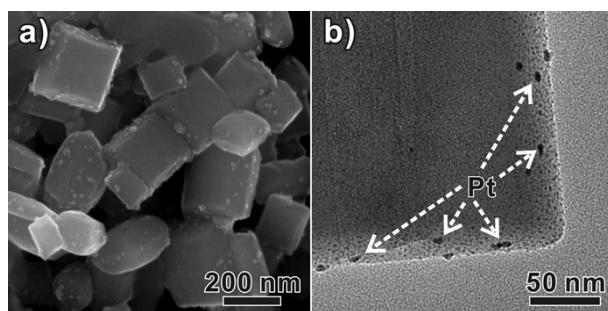


Fig. S4 (a) SEM and (b) TEM images of $\text{TiO}_2\text{-Pt}$ NCs that were synthesized by a photoreduction deposition process using K_2PtCl_6 as the precursor.

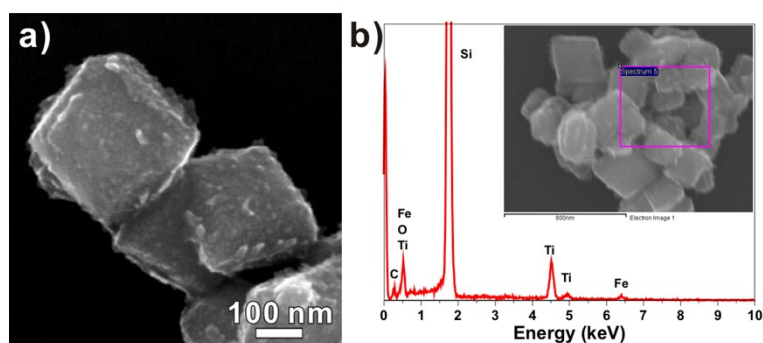


Fig. S5 (a) SEM images and (b) EDX analysis of $\text{n-Fe}_2\text{O}_3\text{-TiO}_2$ NCs that were synthesized by a traditional impregnation-calcination method.

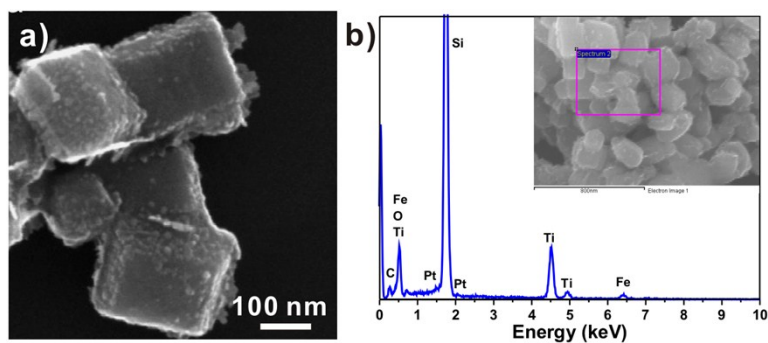


Fig. S6 (a) SEM image and (b) EDX analysis of n-Fe₂O₃-TiO₂-Pt NCs.

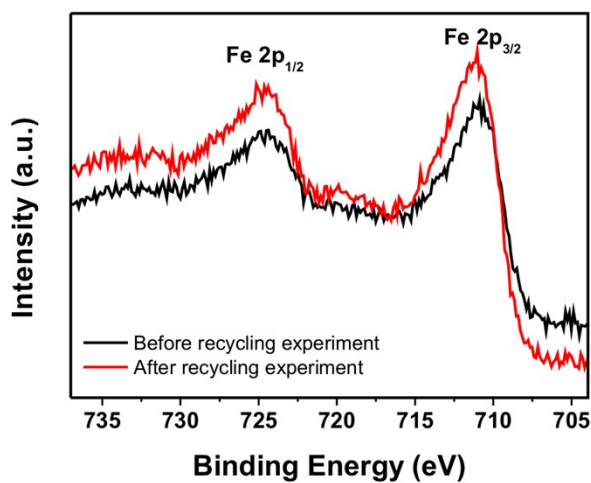


Fig. S7 High resolution XPS spectra of Fe 2p from Fe₂O₃-TiO₂-Pt before and after photocatalytic recycling H₂ production.

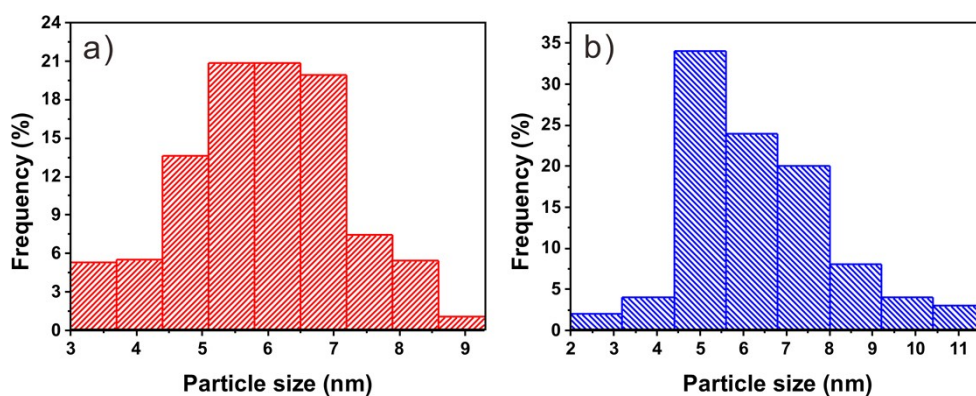


Fig. S8 The size distributions of (a) Fe₂O₃ nanoparticles selectively deposited on the surface of TiO₂ NCs and (b) Fe₂O₃ nanoparticles randomly deposited on the surface of TiO₂ NCs.