Electronic Supplementary Information

Influences of acid type and concentration on the synthesis of nanostructured titanium dioxide photocatalysts from titanium-bearing electric arc furnace molten slag

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1. XPS analysis

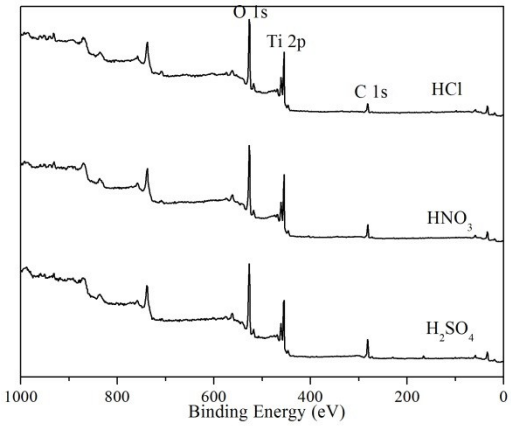

Fig. S1 The wide survery XPS spectra of the samples synthesized from different acids

2. The control experiments

2.1 The control experiment without light irradiation

The adsorption-desorption between catalyst and rhodamine B experiment without light irradiation was carried out in a quartz glass reactor equipped with a magnetic stirrer. 0.05g TiO_2 and 200 mL rhodamine B aqueous solution (5 $mg \cdot L^{-1}$) were placed into the reaction vessel. O_2 was continuously bubbled into the solution throughout the reaction. The samples of 5 ml were withdrawn from the solution and the catalyst was separated from the solution by filtration at the given intervals. The quantitative determination of rhodamine B solution was performed by measuring its absorption with a UV-Vis spectrophotometer. The absorption spectra change for rhodamine B solution as a function of time was shown in Fig. S1a.

2.2 The control experiment without photocatalysts

The photodegradation of rhodamine B under the visible light irradiation without catalyst was carried out in a quartz glass reactor equipped with a magnetic stirrer and a collimated light source. 200 mL rhodamine B aqueous solution (5 $mg \cdot L^{-1}$) were placed into the reaction vessel with O_2 was continuously bubbled into the solution. Collimated light irradiated throughout the reaction. At the given intervals of parallel light irradiation, the samples of 5 ml were withdrawn from the solution and measured its absorption with a UV-

Vis spectrophotometer. The absorption spectra change for rhodamine B solution as a function of time was shown in Fig. S1b.

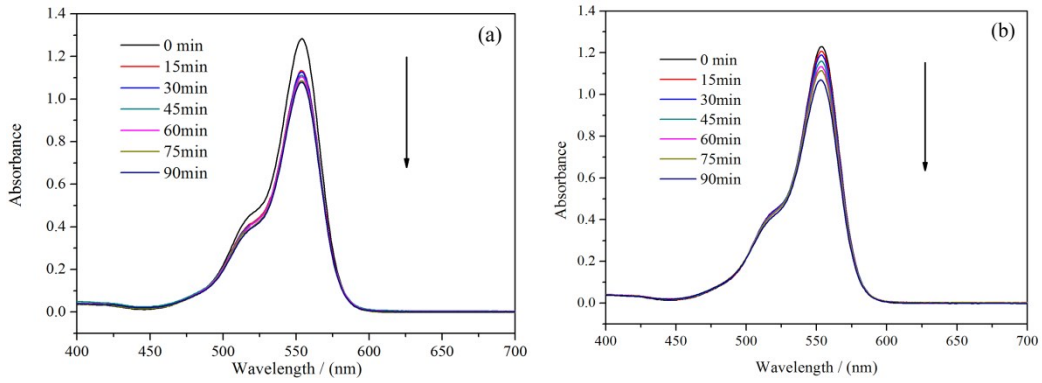

Fig. S2 The absorption spectra change for rhodamine B solution as a function of time (a) 0.05g catalyst, without light irradiation; (b) light irradiation, without catalyst