

Supporting Information

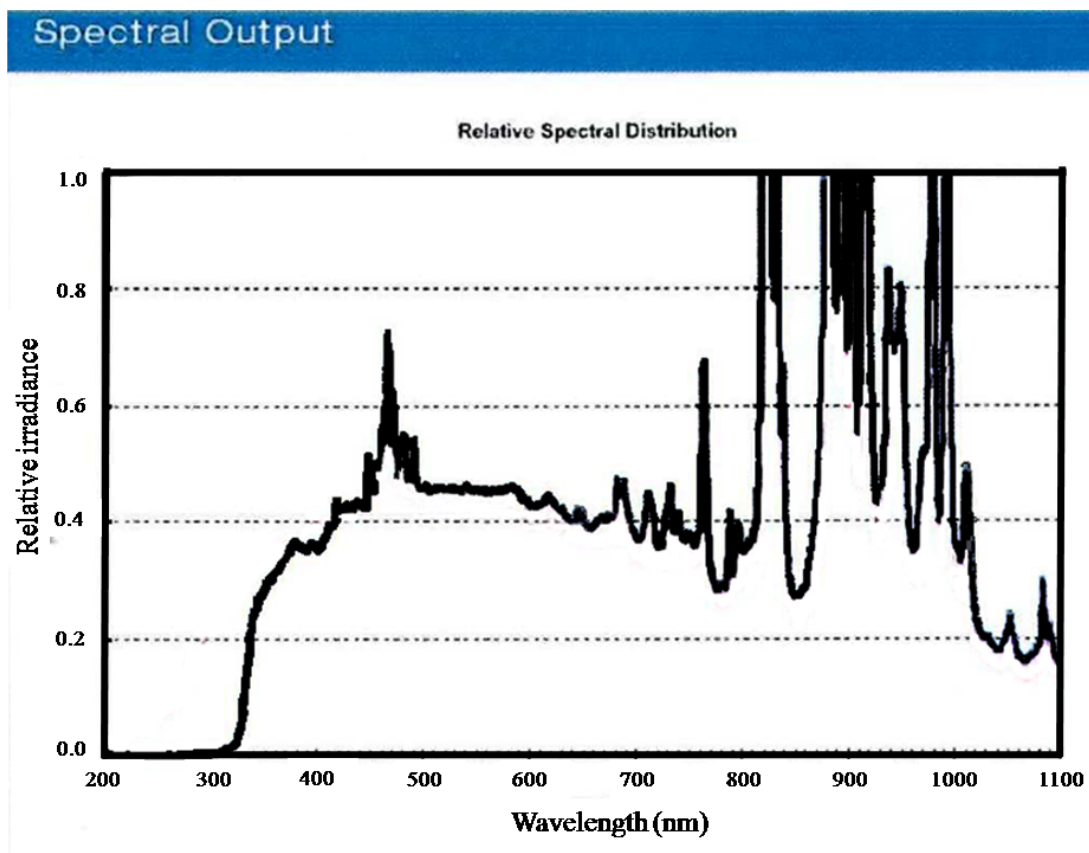


Fig. S1 Xenon lamp spectral line (wavelength-relative light radiant energy)

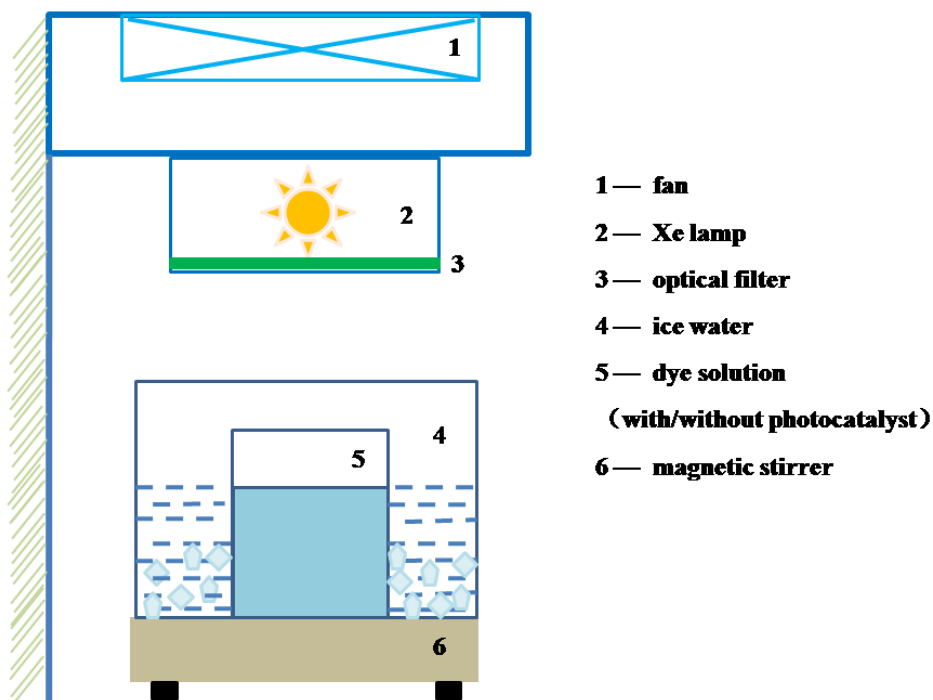


Fig. S2 The schematic drawing for photocatalytic reaction apparatus

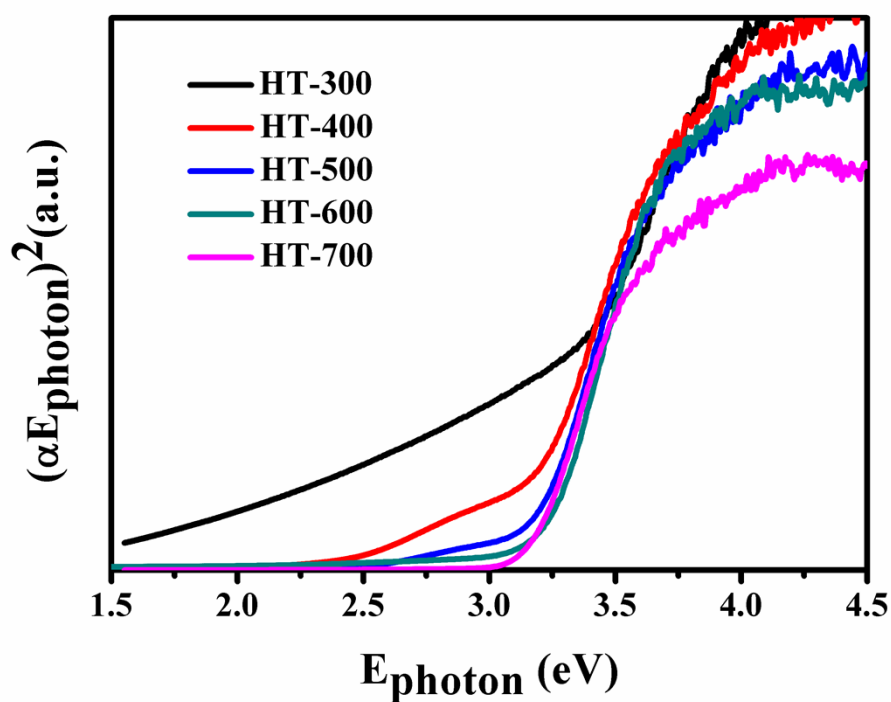


Fig. S3 The energy gap calculated from reflectance spectra

As titania is an indirect semiconductor, the plots of $(\alpha E_{\text{photon}})^2$ versus the energy of the absorbed light give the band gap of the HT samples. The band gap calculated from the reflectance spectra was concluded in Fig. S3. The HT-300 (N-TiO₂/C) contains carbon and is less crystalline, therefore, the calculated E_g is more suitable to apply to other HT samples. The band gaps of HT-400, HT-500, HT-600 and HT-700 are estimated to be 2.37eV, 2.51eV, 3.17eV and 3.18eV, respectively. With the increase in thermal treatment temperature, the energy gap of HT sample increases accordingly.

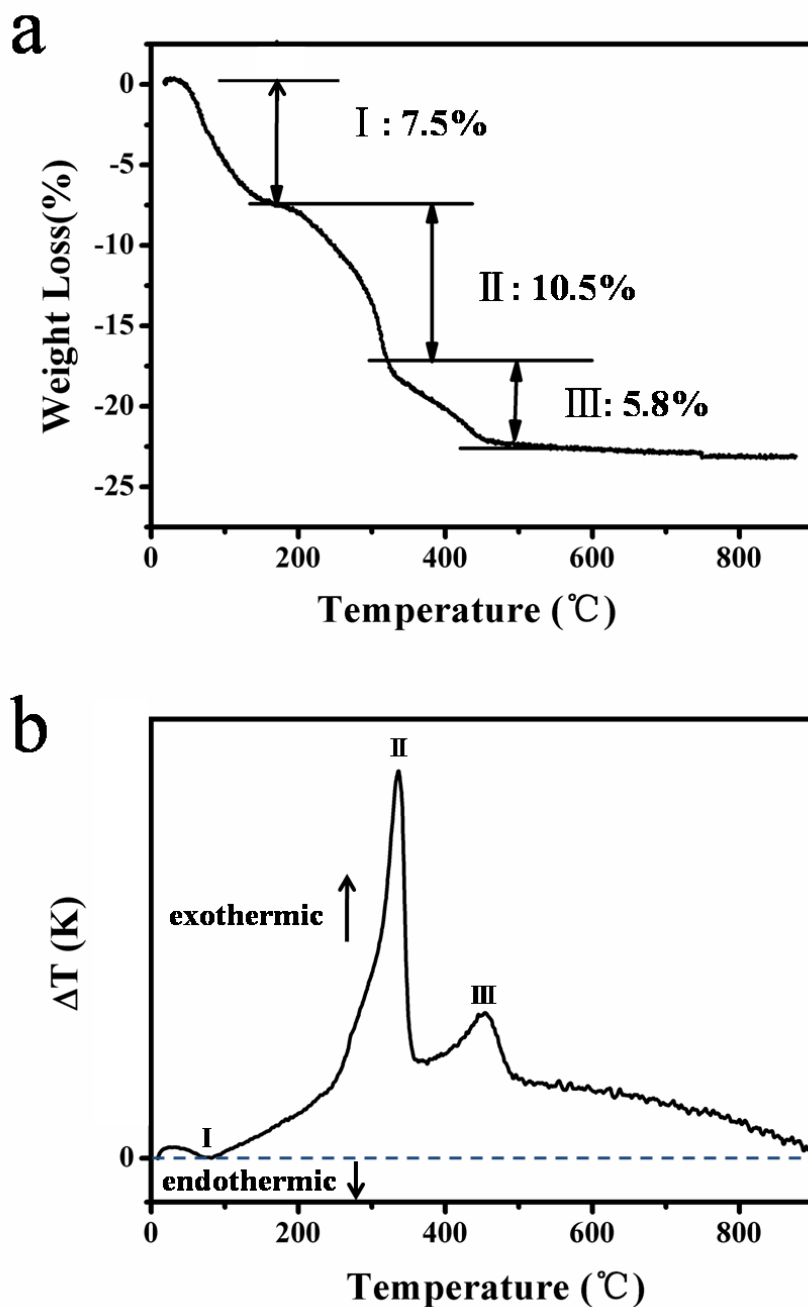


Fig. S4 Thermo-gravimetric analysis (TGA) and differential thermal analysis (DTA) pattern of N-TiO₂/C nanocomposites under a stream of air

The TGA curve exhibits a total mass loss of 23.8% for the sample. The curve can be divided into three stages. Below 200°C, a mass loss of up to 7.5% is observed, which is caused by dehydration from the powders. And the DTA curve shows that this is an endothermic process. The second stage is from 200 to 300°C, where the mass loss is about 10.5 %. This can be assigned to the carbonization of residual reactant, TMAOH, which leads to the formation of carbon species and doped nitrogen in the N-TiO₂/C. The third stage is from 300 to 500°C. During this stage, the weight loss is about 5.8%, which can be assigned to combustion of carbon species in the N-TiO₂/C. Therefore, N-TiO₂ was obtained at 500°C. The last two stage are exothermic, as can be concluded from the DTA curve.

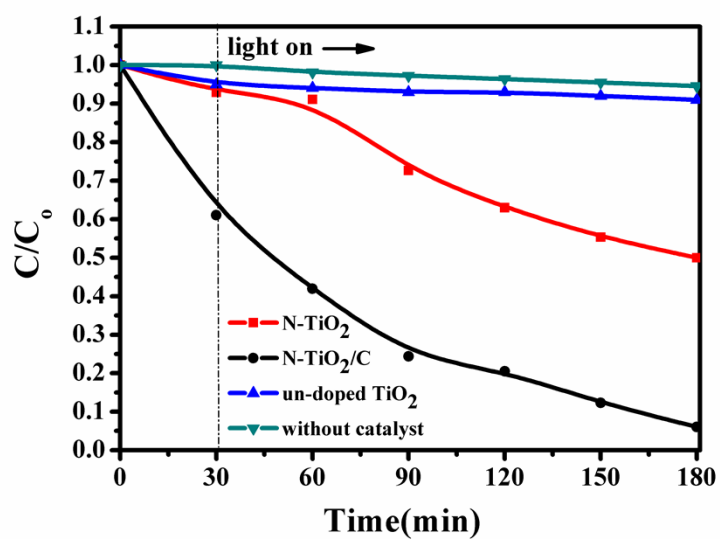


Fig. S5 The photodegradation of acid fuchsin with N-TiO₂/C, N-TiO₂ and un-doped TiO₂ under visible light

Besides MB, acid fuchsin was also applied as the pollutant to testify the photocatalytic activity of N-TiO₂/C and N-TiO₂ under visible light. The photodegradation of acid fuchsin was the same with the photodegradation of MB. 20mg photocatalyst were added to 100mL 10mg/L dye solution. Fig. S5 displays the result.