

**Supplementary material**

**Zwitterionic buffer-induced visible light excitation of TiO<sub>2</sub> for efficient pollutant photodegradation**

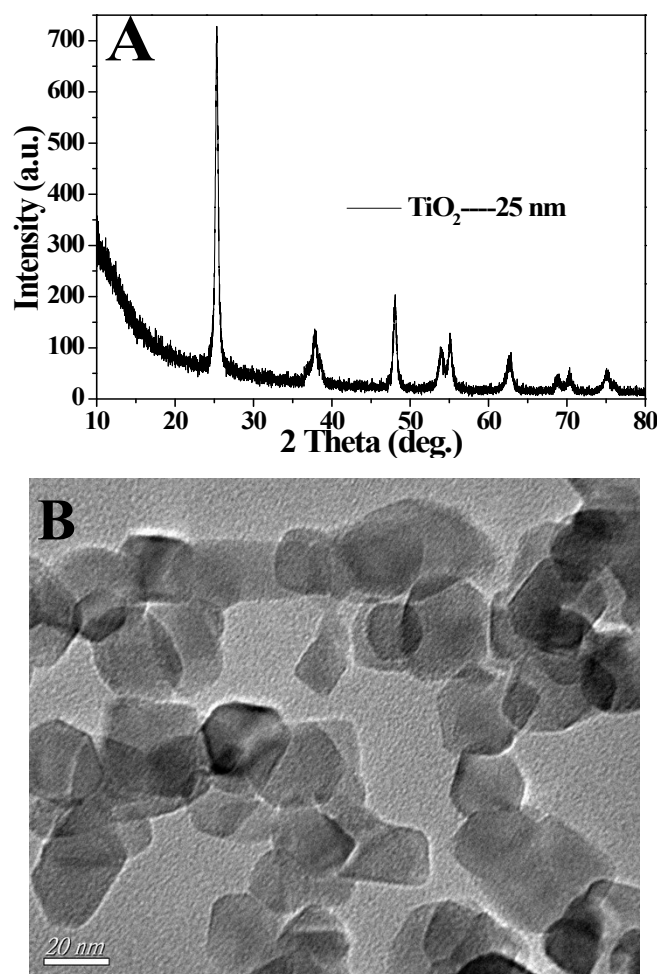
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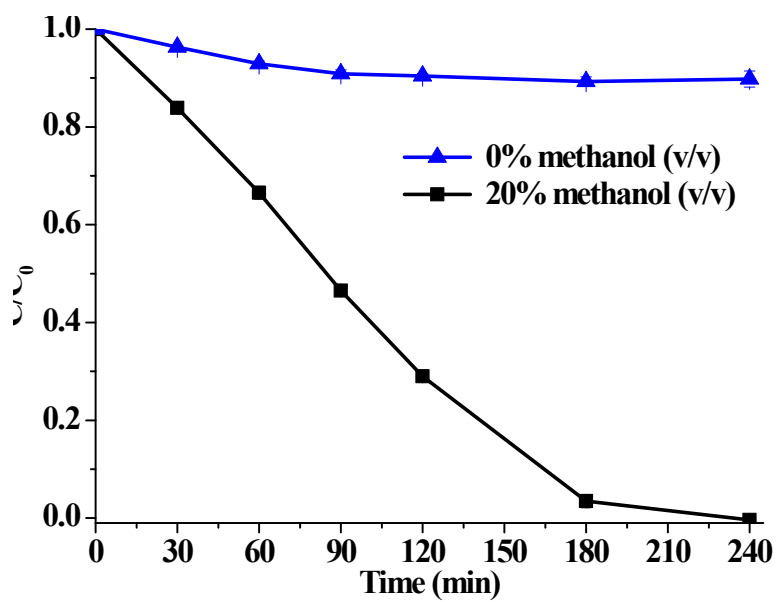
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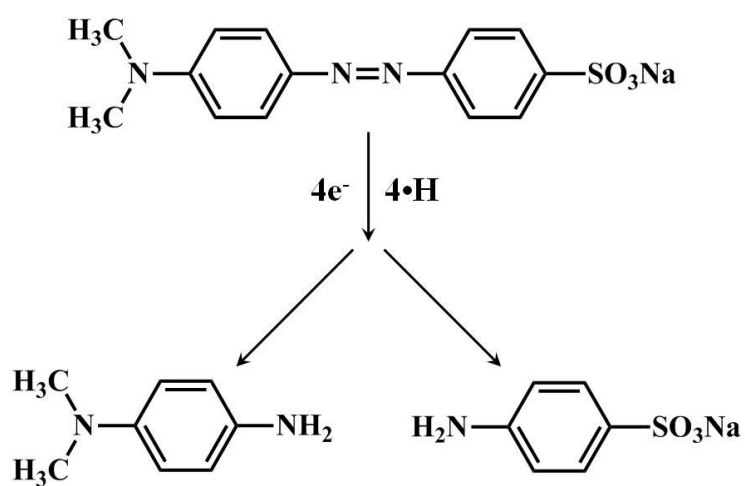
Dr. Wen-Wei Li, Fax: +86-551-63607453; E-mail: [wwli@ustc.edu.cn](mailto:wwli@ustc.edu.cn);



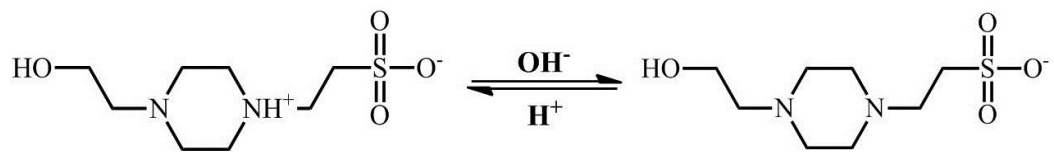
**Fig. S1** XRD patterns (A) and TEM micrograph (B) of TiO<sub>2</sub> used in this study. The crystal phase of the TiO<sub>2</sub> nanoparticles was characterized by X-ray diffraction (XRD) patterns using a D8 instrument (Rigaku Co., Japan) with Cu K radiation ( $\lambda=1.54718$  Å) in the  $2\theta$  range from 10° to 80°. All of the diffraction peaks can be indexed to the cubic phase of anatase (Fig. S1a). The morphology was also observed by using high resolution transmission electron microscopy (HRTEM, JEM-2100, Jeol Co., Japan). The particle size was uniform, about 25-nm in average (Fig. S1b).



**Fig. S2** Effect of methanol on MO photodegradation via LMCT excitation of TiO<sub>2</sub>



**Fig. S3** Pathway of MO reductive photodegradation by TiO<sub>2</sub>-HEPES complex



**Fig. S4** Structure of HEPES in response to changing pH.