Supplementary material

Zwitterionic buffer-induced visible light excitation of TiO$_2$ for efficient pollutant photodegradation

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Fig. S1 XRD patterns (A) and TEM micrograph (B) of TiO$_2$ used in this study. The crystal phase of the TiO$_2$ 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 20 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$_2$
Fig. S3 Pathway of MO reductive photodegradation by TiO$_2$-HEPES complex
**Fig. S4** Structure of HEPES in response to changing pH.