

Supplementary Information

Phosphate Modification of Nano Titania and Its Effect on the Photodegradation of EDTA

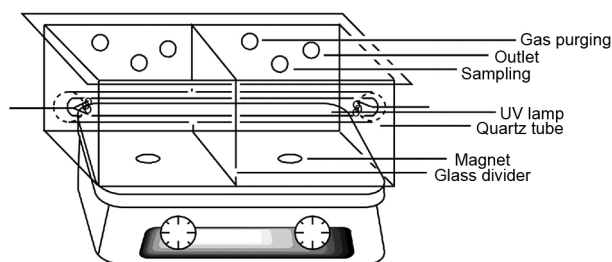
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Table S1. Experiments performed to study the photocatalytic degradation of EDTA in the presence of P-TiO₂

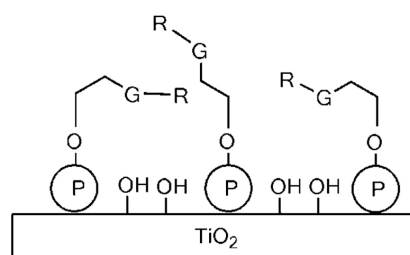
Effect of	No. of the experiment	UV	TiO ₂ / (g L ⁻¹)	P-TiO ₂ / (g L ⁻¹)	EDTA / (mg L ⁻¹)
Photocatalyst: under normal conditions	1	■	–	–	1000
	2	■	0.77	–	1000
	3	■	–	0.77	1000
The trend of pH change	4	■	–	0.77	1000
pH: 4, 5, 6, 7, 8, 9	5-10	■	–	0.77	1000
P-TiO ₂ dosage / (g L ⁻¹): 0.19, 0.38, 0.54, 0.77, 1.15 pH: 4	11-15	■	–	variable	1000
EDTA concentration / (mg L ⁻¹): 250, 500, 750, 1000 pH: 4	16-19	■	–	0.77	variable

EDTA: ethylenediaminetetraacetic acid.

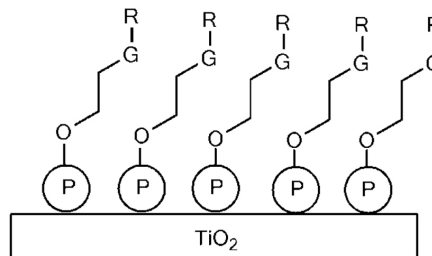


G = Gas purging, S = Sampling, O = Outlet

Figure S1. Schematic diagram of the photoreactor equipped with UV lamp.



(a) G = (CH₂)_n, n < 8



(b) G = (CH₂)_n, n > 8, reference 1

(P) = Phosphate end of organophosphate modifier

Figure S2. The influence of alkyl chain length on the phosphate modification of TiO₂ surface.

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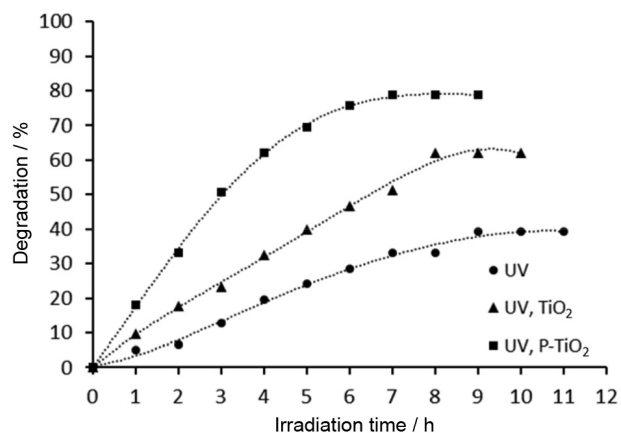


Figure S3. The effect of surface modification on EDTA degradation. Concentration decay curves are plotted for the experiments performed under UV irradiation, with (TiO₂, P-TiO₂) and without photocatalyst.

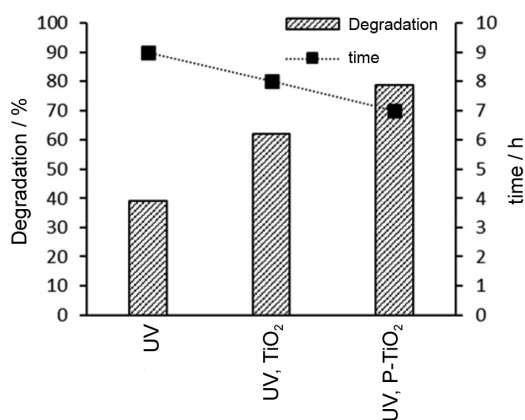


Figure S4. The needed times for maximum amounts of the EDTA degradation under different conditions.

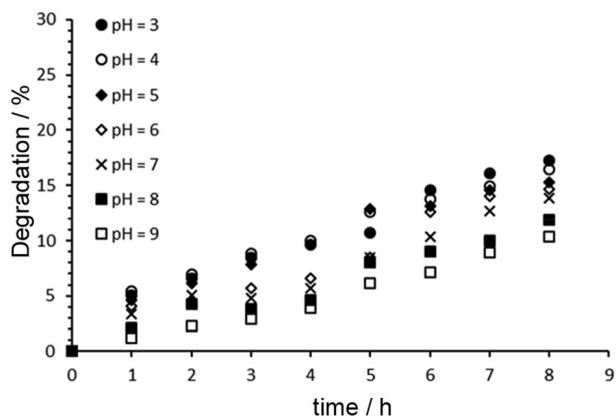


Figure S5. Dependence of EDTA adsorption percentage by P-TiO₂ on the initial pH.

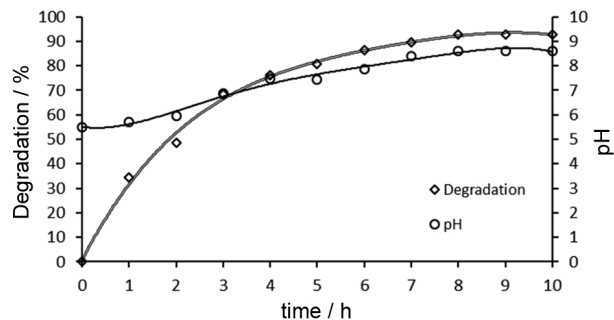


Figure S6. Degradation percentage and pH change during photocatalytic degradation of EDTA using P-TiO₂ without pH adjusting.

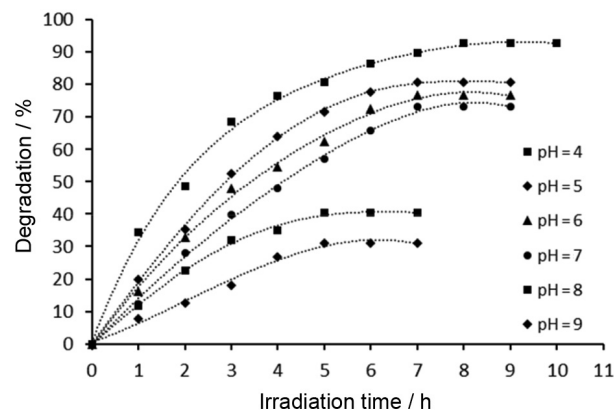


Figure S7. The effect of initial pH on EDTA degradation.

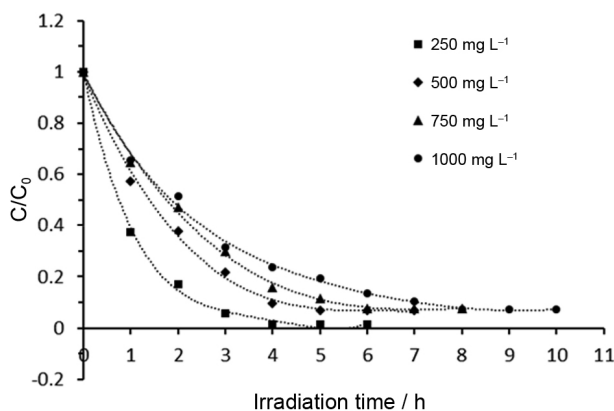


Figure S8. The effect of initial concentration on EDTA degradation.

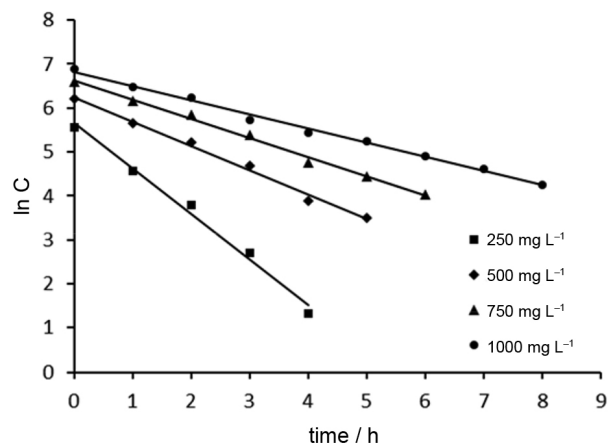


Figure S9. Linear variation of EDTA concentration *versus* time for EDTA degradation at different initial concentrations.

Reference

1. Pori, D. M.; Venkataraman, N. V.; Tosatti, S. G. P.; Durmaz, F.; Spencer, N. D.; Zuercher, S.; *Langmuir* **2007**, *23*, 8053.