

Supplementary Information

Title: Photolysis and photocatalytic decomposition of sulfamethazine antibiotics in an aqueous solution with TiO₂.

Authors: Tai-Wei Tzeng^a, Shan-Li Wang^b, Chiing-Chang Chen^c, Chen-Chung Tan^a, Yu-Ting Liu^a, Tsan-Yao Chen^d, Yu-Min Tzou^{a*}

* Corresponding author's information:

Yu-Min Tzou

Department of Soil and Environmental Sciences,

250 Kuo-Kuang Rd., Taichung, 40227 Taiwan, R.O.C.

Tel: 886-4-22840373 Ext. 4206

Fax: 886-4-22855167

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Affiliation:

^a Department of Soil and Environmental Sciences, National Chung Hsing University, Taichung, Taiwan.

^b Department of Agricultural Chemistry, National Taiwan University, Taipei, Taiwan.

^c Department of Science Education and Application, National Taichung University of Education, Taichung, Taiwan.

^d Department of Engineering and System Science, National Tsing Hua University, Hsinchu, Taiwan.

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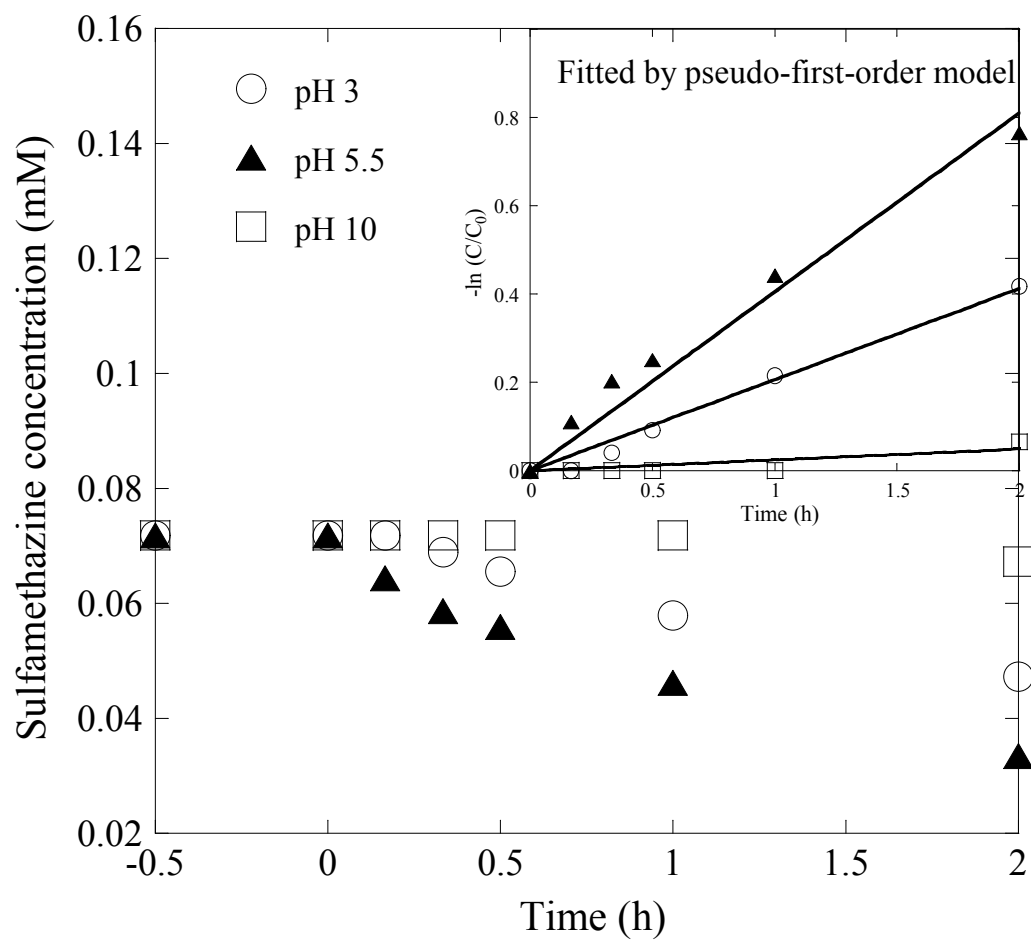


Fig. S1 The kinetics of photo-catalytic decomposition of 0.072 mM SMT (PCDS) on TiO_2 at pH 3, 5.5, and 10. The insert was the simulation of PCDS using the PFO model.

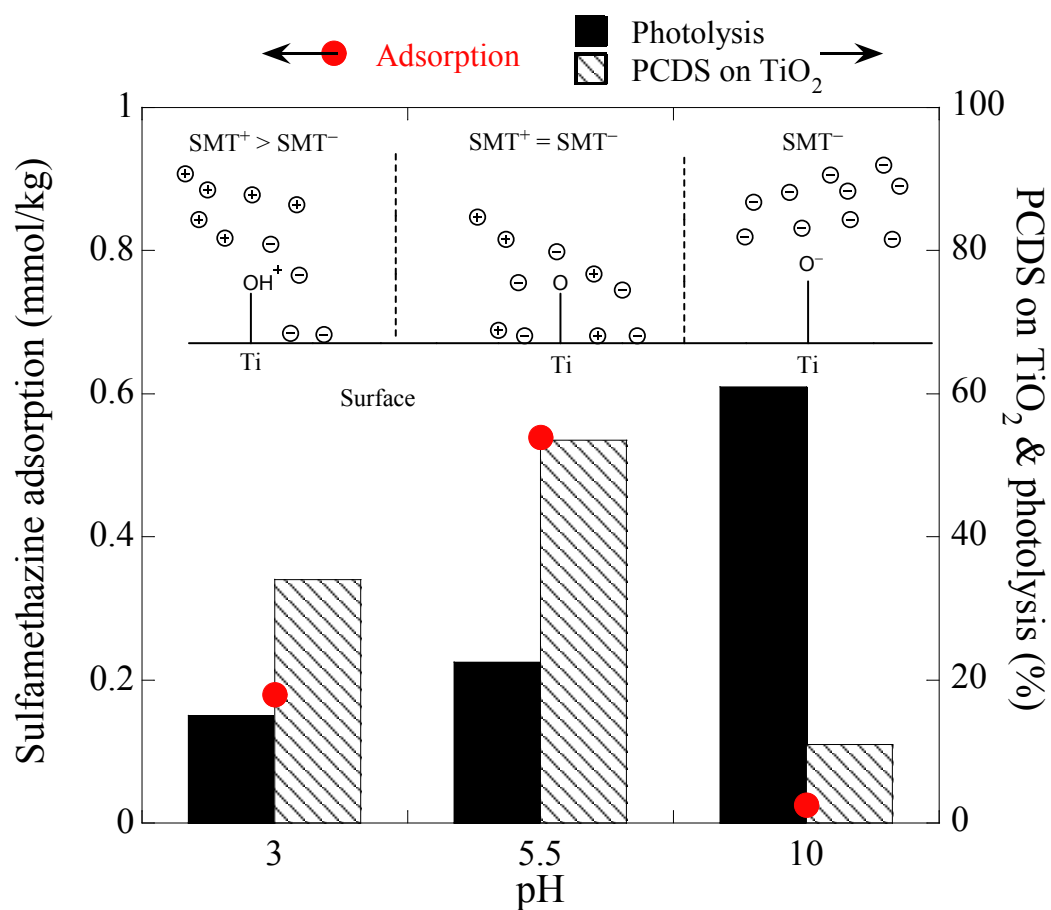


Fig. S2 Adsorption of 0.072 mM sulfamethazine (SMT) on 0.5 g/L TiO₂, and the contributions of self-photolysis and the photo-catalytic decomposition of SMT (PCDS) to the overall SMT photo-decomposition at pH 3, 5.5, and 10.

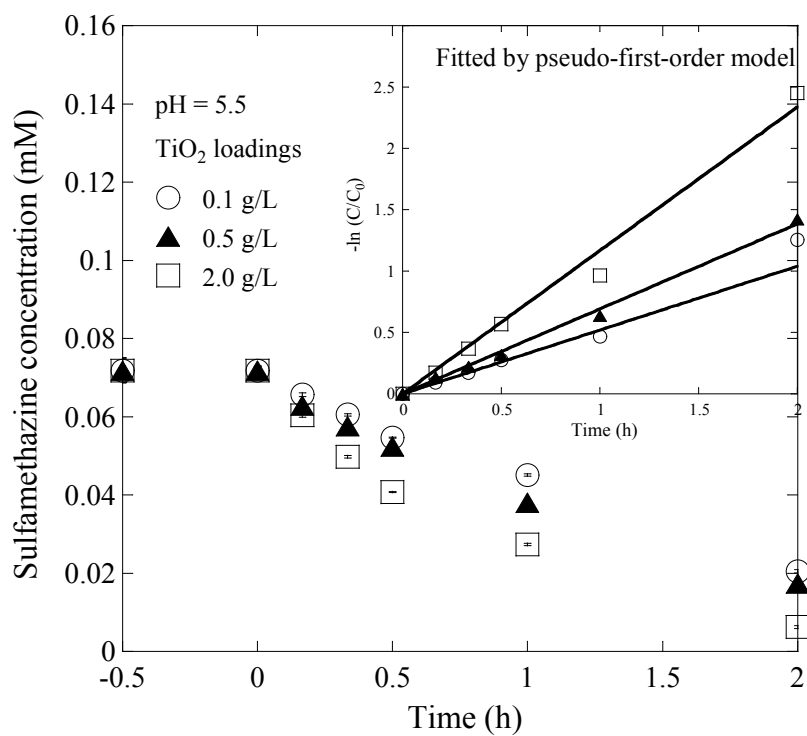


Fig. S3 The influences of the TiO₂ loadings on 0.072 mM sulfamethazine photo-decomposition. The inset was the simulation results of SMT photo-decomposition using the PFO model.

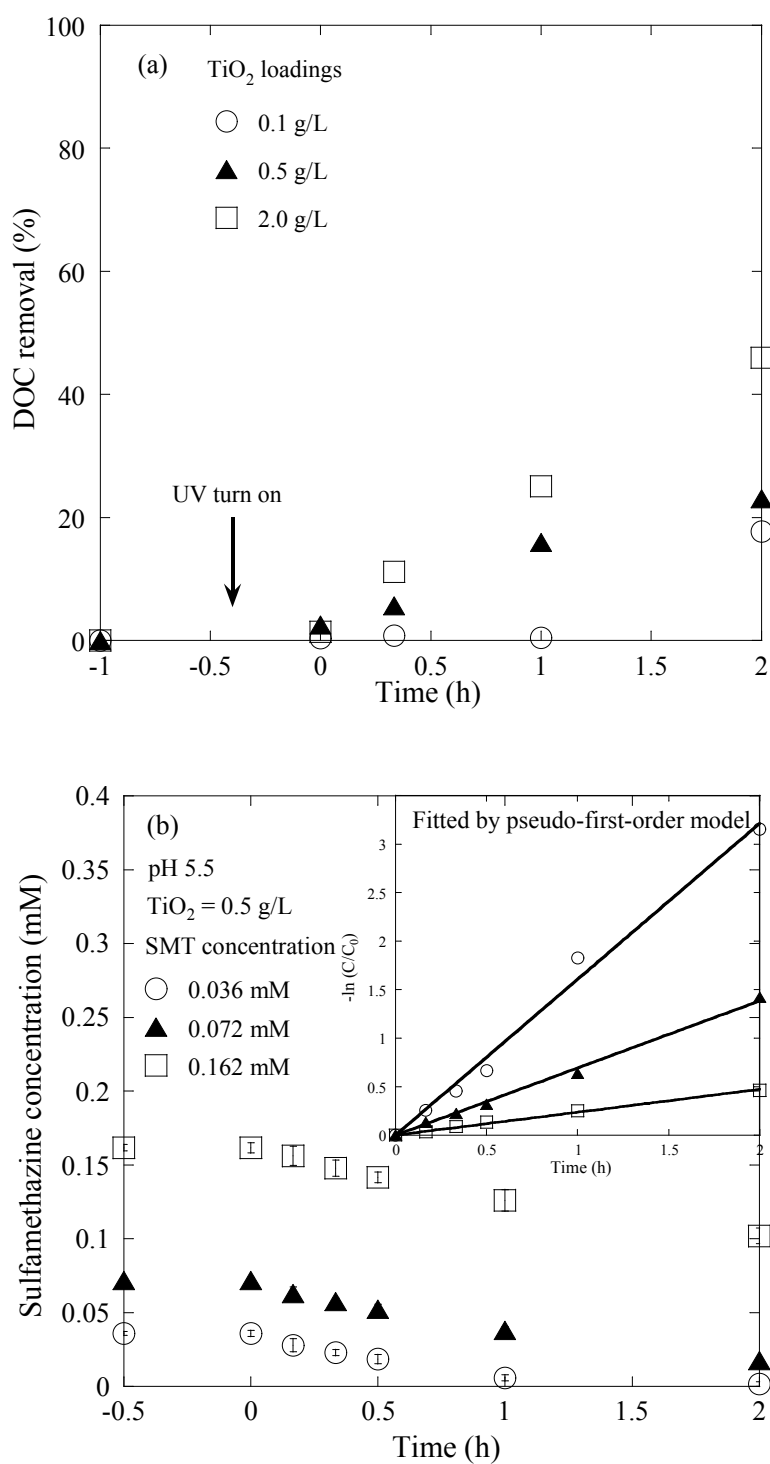


Fig. S4 Effects of (a) TiO_2 loading on dissolved organic carbon (DOC) contents, and (b) SMT initial concentration on sulfamethazine (SMT) photo-decomposition. The inset in (b) was the simulation results of SMT photo-decomposition using the PFO model.

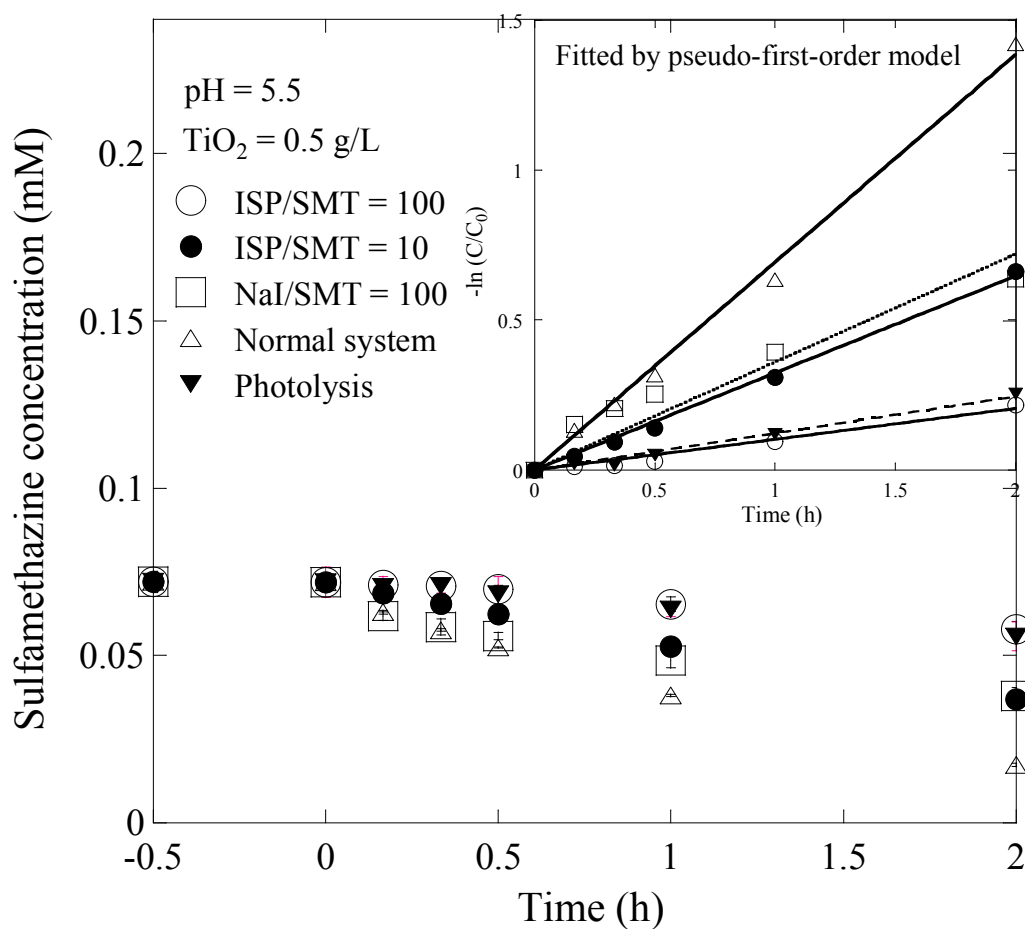


Fig. S5 Effects of sodium iodide (NaI) and isopropanol (ISP) on 0.072 mM sulfamethazine (SMT) photo-decomposition in the presence of 0.5 g/L TiO₂ at pH 5.5. The inset was the simulation results of SMT photo-decomposition with NaI and ISP using the PFO model. The “normal system” represented the system without the addition of any radical scavengers.

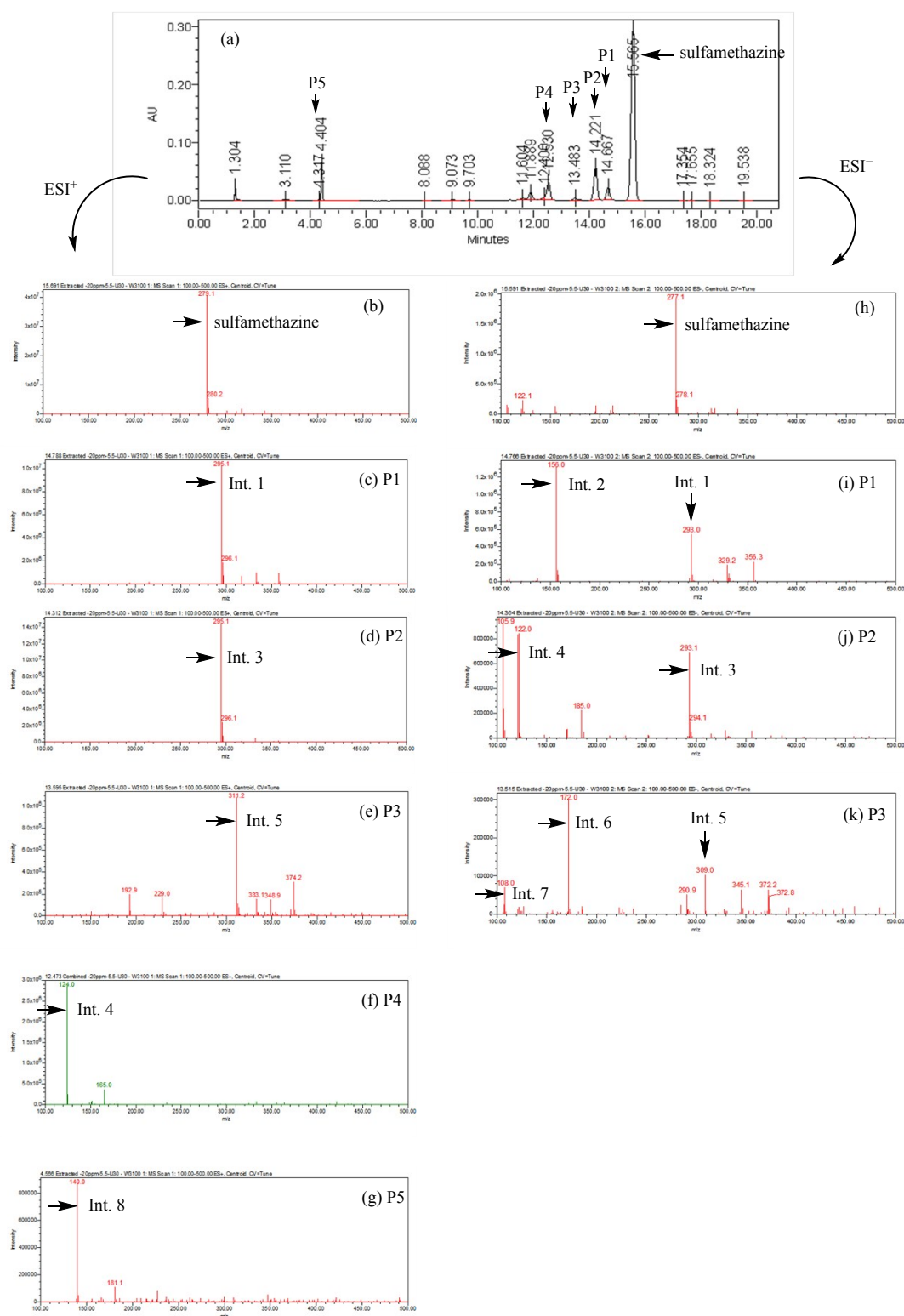


Fig. S6 HPLC spectra of the photo-decomposition of sulfamethazine (SMT) and the major intermediates. Sample was extracted after photo-decomposition of 0.072 mM SMT in a system with 0.5 g/L TiO₂ at pH 5.5.

Table S1 HPLC analyses of 0.072 mM sulfamethazine (SMT) and its major photo-decomposition products.

Compounds	Retention time (min)	ESI ⁺ (m/z)	ESI ⁻ (m/z)
SMT	15.565	279	277
^a Int. 1	14.667	295	293
Int. 2		^b n.d.	156
Int. 3	14.221	295	293
Int. 4			122
	12.400	124	
Int. 5		311	309
Int. 6	13.483	n.d.	172
Int. 7		n.d.	108
Int. 8	4.317	140	n.d.

^a Int. indicated the intermediates of sulfamethazine photo-decomposition

^b n.d. indicated the not detected