

國立屏東科技大學環境工程與科學系

綠色材料與環境復育實驗室

Green Materials and Environmental Remediation Lab

主持老師：林雅婷 (Ya-Ting Lin) 助理教授

學歷

國立中興大學環境工程學系 博士

經歷

富立業工程顧問股份有限公司 資深副理
台境企業股份有限公司 研發部副理
中原大學 環境工程學系 助理教授

專長

土壤及地下水復育(物化處理)、微量污染物質譜分析、
綠色材料製備與應用、土壤及地下水污染調查

Tel: 08-7703202#7078; Fax: 08-7740256

E-mail: yatinglin@mail.npust.edu.tw



SCI發表成果

1. **Lin, Y.-T.**, Chiu, Y.-T., Ciou, C., Liang, C. 2019. Natural organic activator quercetin for persulfate oxidative degradation of halogenated hydrocarbons. *Environmental Science: Water Research & Technology* 5:1064-1071.
2. **Lin, Y.-T.**, Liang, C., Yu, C.-W. 2016. Trichloroethylene degradation by various forms of irons activated persulfate oxidation with or without assistance of ascorbic acid. *Industrial & Engineering Chemistry Research*.
3. Liang, C., **Lin, Y.-T.**, Shiu, J.-W. 2016. Reduction of nitrobenzene with alkaline ascorbic acid: kinetics and pathways. *Journal of Hazardous Materials* 302: 137-143.
4. **Lin, Y.-T.**, Liang, C. 2015. Reductive Dechlorination of Carbon Tetrachloride Using Buffered Alkaline Ascorbic Acid. *Chemosphere* 136: 27-31.



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Persulfate regeneration of trichloroethylene spent activated carbon

Chenju Liang*, Ya-Ting Lin, Wu-Hang Shin

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Trichloroethylene Degradation by Various Forms of Iron Activated Persulfate Oxidation with or without the Assistance of Ascorbic Acid

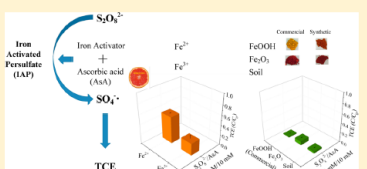
Ya-Ting Lin,[†] Chenju Liang^{*‡} and Chun-Wei Yu[‡]

[†]Department of Environmental Engineering, Chung Yuan Christian University, 200 Chung Pei Road, Chung Li District, Taoyuan City 320, Taiwan

[‡]Department of Environmental Engineering, National Chung Hsing University 250 Kuo-kuang Road, Taichung 402, Taiwan

Supporting Information

ABSTRACT: The oxidation of trichloroethylene (TCE), by Fe^{2+} activated persulfate (PS) to generate the sulfate radical ($\text{SO}_4^{\bullet-}$) is limited due to the scavenging of $\text{SO}_4^{\bullet-}$ by excess Fe^{2+} . This study focused on evaluating the potential for TCE oxidative degradation by iron activated persulfate (IAP) (including soluble iron and solid iron minerals), with the assistance of ascorbic acid (AsA). AsA, a water-soluble two-proton donor, may act as a reductant and a chelator, which may reduce iron oxides or complex soluble iron for PS activation. The results indicated that PS oxidation and various



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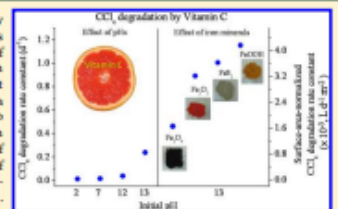
Carbon Tetrachloride Degradation by Alkaline Ascorbic Acid Solution

Ya-Ting Lin and Chenju Liang*

Department of Environmental Engineering, National Chung Hsing University, 250 Kuo-kuang Road, Taichung 402, Taiwan

Supporting Information

ABSTRACT: Ascorbic acid (AA) mediated electron transfer may induce reductive dechlorination of carbon tetrachloride (CCl_4). This study investigated the role of AA in conjunction with the presence of iron minerals over a wide pH range for the reduction of CCl_4 in aqueous systems. The results indicate that CCl_4 was reduced by AA at a pH of 13 ($\text{p}K_{\text{a1,AA}}$ of 11.79) and chloroform (CHCl_3) was a transformation byproduct of CCl_4 . When CCl_4 levels were reduced to near complete disappearance, the decrease of CHCl_3 was then observed. The degradation rate of CCl_4 and also the formation rate of CHCl_3 increased with increased AA concentrations. Analysis of reaction kinetics between CCl_4 and AA revealed an overall second-order reaction with a rate constant of $0.253 \pm 0.018 \text{ M}^{-1} \text{ s}^{-1}$. Furthermore, the reduction rate of CCl_4 by AA at pH of 13 could be enhanced with the presence of iron minerals (Fe_2O_3 , Fe_3O_4 , FeOOH , and FeS_2). In the absence or presence of iron minerals, the fraction of CCl_4 transformed to CHCl_3 was less than 1, indicating simultaneous one- and two-electron transfer processes. The end-products of AA at a pH of 13 included threonic acid and oxalic acid. This study highlights the potential of an alkaline AA solution for remediating chlorinated solvents.



5. **Lin, Y.-T.**, Liang, C. 2013. Carbon tetrachloride degradation by alkaline ascorbic acid solution. *Environmental Science & Technology* 47:3299-3307.
6. **Lin, Y.-T.**, Chien, Y.-C., Liang, C. 2012. A laboratory treatability study for pilot-scale soil washing of Cr, Cu, Ni, and Zn contaminated soils. *Environmental Progress & Sustainable Energy* 31:351-360.
7. **Lin, Y.-T.**, Liang, C., Chen, J.-H. 2011. Feasibility study of ultraviolet activated persulfate oxidation of phenol. *Chemosphere* 82:1168-1172.
8. Liang, C., **Lin, Y.-T.**, Shih, W.-H. 2009. Treatment of trichloroethylene by adsorption and persulfate oxidation in batch studies. *Industrial & Engineering Chemistry Research* 48, 8373-8380.
9. Liang, C., **Lin, Y.-T.**, Shin, W.-H. 2009. Persulfate regeneration of trichloroethylene spent activated carbon. *Journal of Hazardous Materials* 168:187-192.



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