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The photocatalytic degradation of monuron in the N-doped TiO₂/Oxone/visible LED process: Mineralization and quantification of reaction intermediates**Amal Abdelhaleem and Wei Chu**

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The hybrid N-doped TiO₂/Oxone/Visible LED process was proven to be efficient for mineralization of monuron and its intermediates. About 63-80% TOC reduction was achieved depending on the oxone dosage. The generated intermediates were investigated and five compounds are reported for the first time in this study. The monuron decay was found to follow four major routes as: (1) The direct hydroxylation of the aromatic ring, (2) radicals' attack on the N-terminal, (3) dechlorination-hydroxylation and (4) dimerization. Based on the reaction intermediates, a novel mathematical model was built up to quantify and predict the generation of intermediates in the process. Generally, the reactions were described successfully by the established model except for the monuron dimer, where its predicted decay was a little bit off. The deployment of an energy efficient LED lamp and a nonmetal dopant for oxone activation renders this process attractive for the remediation and mineralization of organic pollutants in wastewater.

Biography

Amal has been working at Ministry of State of Environmental Affairs, Egypt. Her responsibilities have included assessment of water and wastewater quality and management of solid and hazardous wastes. She is also about to complete her Ph.D. degree from Civil and Environmental Engineering department, The Hong Kong Polytechnic University, Hong Kong.

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