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催化、动力学与反应器

# 2，4-D臭氧化降解中间产物动力学

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摘要

采用臭氧化高级氧化技术对2，4-D（2,4-二氯苯氧乙酸）污染物进行降解，2，4-D降解过程中会产生含氯芳香中间产物、无氯芳香中间产物和有机酸类中间产物，其中部分中间产物具有较高毒性，因此研究2，4-D臭氧化过程中间产物的动力学变化趋势是非常重要的。提出了3种降解路径：一是简单的链式路径，二是平行式路径，三是复杂的交叉式路径。对反应过程中主要中间产物类的浓度变化趋势分别采用三种路径进行推导，得到3种不同的中间产物降解动力学模型，由模型计算数据和实验数据的拟合分析结果可知交叉式路径模型数据和实验数据的吻合度最好，交叉式路径所描述的主要中间产物模型数据和实验数据的相关系数都大于0.94。

关键词

臭氧化 2,4-D 中间产物 动力学

分类号



# Kinetics of degradation intermediates during ozonization of 2,4-dichlorophenoxyacetic acid

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**Abstract**

2,4-Dichlorophenoxyacetic acid (2,4-D), a widely used herbicide, was treated by the ozonization technology in the laboratory.During the 2,4-D ozonization, the main categories of intermediates included chloric aromatics, dechlorinated aromatics and organic acids.Some of these intermediates have relatively high toxicity.Therefore, it is crucial to study the kinetics trend of intermediates diversion.Three possible degradation pathways were proposed in this paper.Path Ⅰ was a simple chain pathway.Path Ⅱ was a parallel pathway.Path Ⅲ was a cross pathway, the most complicated pathway.The concentration variations of main intermediates during reaction were analyzed by using these pathways.In addition, three kinetic models of intermediates were derived based on the proposed pathways.The fitting result showed that cross pathway was the best fitted pathway to explain the experimental data of intermediates concentration trend.It was shown that the correlation coefficients of main categories of intermediates were greater than 0.94 in the cross pathway.

**Key words**

ozonization 2 4-D intermediate kinetics

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