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Effects of process variables and kinetics on the degradation of 2,4-dichlorophenol using Advanced Reduction Processes (ARP)

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Abstract

This study aims at investigating the efficiency and kinetics of 2,4-DCP degradation via advanced reduction processes (ARP). Using UV light as activation method, the highest degradation efficiency of 2,4-DCP was obtained when using sulphite as a reducing agent. The highest degradation efficiency was observed under alkaline conditions (pH=10.0), for high sulphite dosage and UV intensity, and low 2,4-DCP concentration. For all process conditions, first-order reaction rate kinetics were applicable. A quadratic polynomial equation fitted by a Box-Behnken Design was used as a statistical model and proved to be precise and reliable in describing the significance of the different process variables. The analysis of variance demonstrated

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