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A sulfate radical-predominant oxidation process

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Degradation of organic contaminants through activating bisulfite by cerium(IV):**A sulfate radical-predominant oxidation process**

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Abstract

In this study, the activation of bisulfite by cerium(IV) (Ce(IV)/HSO₃⁻ process) is proposed for the first time to degrade organic contaminants. Experiments show that carbamazepine (CBZ), a representative recalcitrant contaminant of emerging concern, is oxidized by Ce(IV)/HSO₃⁻ treatment at pH_{ini} 3.0-7.0 when O_{2(aq)} is present to promote HSO₃⁻ autoxidation. SO₄^{•-}, HO[•], and SO₅^{•-} were identified as active oxidants of CBZ based on the ESR spectra and the results of alcohol quenching experiments. Quantitative analysis indicates that SO₄^{•-} plays a major role, while HO[•] and other

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