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OZONATION OF OXYTETRACYCLINE IN THE PRESENCE OF ACTIVATED CARBON SUPPORTED CERIUM OXIDE

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Abstract

Ozonation of oxytetracycline in aqueous solution with an activated carbon (AC)-supported cerium oxide (CeO_2/AC) catalyst was conducted. The activity and stability of CeO_2/AC , and the effects of ozone dosage, catalyst dosage, reaction temperature, initial oxytetracycline concentration, and initial pH on the catalytic activity of CeO_2/AC for the removal efficiency of total organic carbon (TOC) were investigated. It was found that CeO_2/AC catalyst was efficient in TOC removal during ozonation of oxytetracycline, and the activity of the CeO_2/AC catalyst was almost unchanged during repeated use. Increasing ozone and catalyst dosage and reaction temperature had positive effects on TOC removal, while increasing initial oxytetracycline concentration led to a decrease in TOC removal. The removal efficiency of TOC increased with the increase of initial pH when the initial pH varied from 5.0 to 10.0.

Key words: activated carbon, cerium oxide, oxytetracycline, ozonation

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