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Study on degradation behavior of *N,N*-dimethylacetamide by photocatalytic oxidation in aqueous TiO_2 suspensions

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ABSTRACT

The degradation of *N,N*-dimethylacetamide (DMAC) on the condition of photocatalytic oxidation with the energy/volume ratio of 10 W/0.5 l has been investigated in aqueous solutions containing TiO_2 suspensions as photocatalysts. Focusing on the behavior of photocatalytic degradation of DMAC, the optimal separated conditions of the intermediate products were investigated with the high performance liquid chromatography (HPLC) using mixed eluent (0.4% CH_3COOH:CH_3OH = 92:8 by volume). Meanwhile, the main intermediate products were identified with the liquid chromatography mass-spectrometry (LC/MS). Therefore, the route and inter-relationships among the intermediates in photocatalytic degradation process of DMAC were first proposed. Furthermore, the mineralization degradation of DMAC was illustrated and identified as the final existence of the morphology of N (turning into NO_3^-) in the strong ion exchange column by the multi-dimensional chromatography.

Keywords: DMAC; Photocatalysis; Titanium dioxide; Liquid chromatography; Degradation; Intermediate

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