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## Abstract

Degradation and mineralization of ibuprofen (IBU) were investigated using Ultraviolet (UV) Light Emitting Diodes (LEDs) in $TiO_2$ photocatalysis. Samples of ultrapure water (UP) and a secondary treated effluent of a municipal wastewater treatment plant (WWTP), both spiked with IBU, as well as a highly concentrated IBU (230 mg $L^{-1}$) pharmaceutical industry wastewater (PIWW), were tested in the $TiO_2$/UV-LED system. Three operating parameters, namely, pH, catalyst load and number of LEDs were optimized. The process efficiency was evaluated in terms of IBU removal using high performance liquid chromatography (HPLC) and ultra-high performance liquid chromatography coupled to tandem mass spectrometry (UHPLC-MS/MS). Additionally, the mineralization was investigated by determining the dissolved organic carbon (DOC) content. The chemical structures of transformation products were