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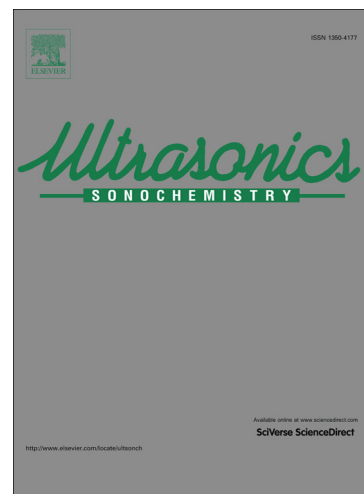
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# Water treatment: Mn-TiO<sub>2</sub> synthesized by ultrasound with increased aromatics adsorption

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## Abstract

Pharma-products are mostly single or multiple cyclic compounds. They pollute surface water and are persistent in the aquatic ecosystem. When irradiated by UV light, TiO<sub>2</sub> catalysts cleave or degrade organic contaminants in water. Removal of organics by photocatalysis results from a synergistic effect of adsorption and photocatalysis. Synthesis of catalysts by ultrasound (US) produces high surface area and porous solids. Here, we synthesized Mn-doped TiO<sub>2</sub> with a US-assisted sol-gel method. Compared to the classical synthesis, US increased the BET surface area from 83 m<sup>2</sup> g<sup>-1</sup> to 90 m<sup>2</sup> g<sup>-1</sup> in the Mn-TiO<sub>2</sub> sample and from 9.0 m<sup>2</sup> g<sup>-1</sup> to 53 m<sup>2</sup> g<sup>-1</sup> in the control TiO<sub>2</sub>. Accordingly, acetaminophen and amoxicillin adsorption increased from 44 % to 52 %, and from 34 % to 94 % for the Mn-TiO<sub>2</sub> obtained in absence and presence of US, respectively. When in a mixture, the two drugs strongly compete for adsorption on TiO<sub>2</sub>.

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