

Short Communication

Preparation of N-doped TiO₂/Biochar Composite Catalysts and its Application for Photoelectrochemical Degradation of Cephalosporin Antibiotics

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Many researchers are interested in using TiO₂ semiconductor photocatalysts to combat pollution and solve energy shortages. This study proposes a composite of TiO₂ and biochar because TiO₂ can only use 43 percent of the visible light from sunlight. Meanwhile, nitrogen doping has been used to improve the N-doped TiO₂/biochar composite. The N-doped TiO₂/biochar can improve the photocatalyst's spectral responsiveness and narrow the forbidden band width. This increases the photocatalyst's ability to absorb visible light. This study compared three different modalities of cephalosporin antibiotic removal with N-doped TiO₂/biochar: electrocatalysis, photocatalysis, and photo-electro-chemical catalysis. Photo-electro-chemical catalysis was found to be far superior to single electrocatalysis and photocatalysis.

Keywords: Photoelectrocatalysis; Cephalosporin; Degradation; Biochar; TiO₂

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