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Ferrocene-catalyzed heterogeneous Fenton-like degradation mechanisms and pathways of antibiotics under simulated sunlight: A case study of sulfamethoxazole

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Highlights

- A heterogeneous photo-Fenton system based on ferrocene (Fc) was developed.
- Removal of sulfamethoxazole was effective in the Fc-catalyzed photo-Fenton system.
- Photoinduced electron transfer from Fc to H_2O_2 leads to the formation of ·OH.
- Aniline moiety was the preferable reaction site of sulfonamides with ·OH.
- An effective degradation efficiency was observed even in a complex water matrices.

Abstract

Readily-available and efficient catalyst is essential for activating oxidants to produce reactive species for deeply remediating water bodies contaminated by antibiotics. In this study, Ferrocene (Fc) was introduced to establish a heterogeneous photo-Fenton system for the