

Accepted Manuscript

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PII: S1383-5866(18)30164-3
DOI: <https://doi.org/10.1016/j.seppur.2018.03.048>
Reference: SEPPUR 14468

To appear in: *Separation and Purification Technology*

Received Date: 15 January 2018
Revised Date: 21 March 2018
Accepted Date: 22 March 2018

Please cite this article as: J. Deng, H. Dong, C. Zhang, Z. Jiang, Y. Cheng, K. Hou, L. Zhang, C. Fan, Nanoscale zero-valent iron/biochar composite as an activator for Fenton-like removal of sulfamethazine, *Separation and Purification Technology* (2018), doi: <https://doi.org/10.1016/j.seppur.2018.03.048>

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Nanoscale zero-valent iron/biochar composite as an activator for Fenton-like removal of sulfamethazine

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Abstract

In this work, biochar-supported nanoscale zero-valent iron (nZVI/BC) was synthesized and used as an activator for Fenton-like removal of sulfamethazine (SMT). The possible removal mechanisms in the reaction system were proposed. nZVI was mainly responsible for H₂O₂ decomposing to generate •OH for the degradation of SMT, while BC played multiple roles, i.e., preventing nZVI aggregation, adsorbing SMT, activating H₂O₂, and alleviating nZVI passivation. The effects of various factors (i.e., the mass ratio of nZVI to BC, solution pH, H₂O₂ concentration and nZVI/BC dosage) on SMT removal were evaluated. The highest removal efficiency (74.04%) of SMT (10 mg/L) was achieved at the optimal

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