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Removal of Tetracycline by Fe/Ni bimetallic nanoparticles in aqueous solution**Haoran Dong^{1,2,*}, Zhao Jiang^{1,2}, Cong Zhang^{1,2}, Junmin Deng^{1,2}, Kunjie Hou^{1,2}, Yujun****Cheng^{1,2}, Lihua Zhang^{1,2}, Guangming Zeng^{1,2}**

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Abstract

This study investigated the degradation of tetracycline (TC) by Fe/Ni bimetallic nanoparticles (Fe/Ni BNPs) and nanoscale zero-valent iron (NZVI) in aqueous solution. Results revealed that Fe/Ni BNPs showed much better performance than NZVI. The effects of pH (5, 7 and 9), initial TC concentration and competitive anions (NO_3^- , H_2PO_4^- , SO_4^{2-} and HCO_3^-) on the removal of TC by Fe/Ni BNPs were investigated. The results indicated that the removal of TC was higher under acidic conditions and the reaction reached equilibrium more quickly at lower initial TC concentrations. The presence of NO_3^- greatly hindered the removal of TC, while the other anions (i.e., H_2PO_4^- , SO_4^{2-} and HCO_3^-) exhibited less inhibition. The significant impact of NO_3^- was due to the fact that Fe/Ni BNPs could be consumed via redox

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