

Environmental Remediation of Paracetamol from Aqueous Solution by Zero-valent Iron Nanoparticles via Advanced Oxidation Process

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Abstract: *The present work is intended to study the environmental remediation of paracetamol; as an example of pharmaceutical pollutants of the non-steroidal anti-inflammatory drugs (NSAIDs) from polluted water using zero-valent iron nanoparticles (ZVINPs) via advanced oxidation process (AOP). ZVINPs was prepared, then characterized using different chemical and physical characterization techniques such as XRD, TEM, SEM, Surface area analysis. The effect of different operational factors that may affect the remediation process was explored and optimized. Also, the removal process will be studied kinetically and thermodynamically to understand the mechanism of removal and spontaneity in order to enhance the efficiency of the removal process. Finally, the proposed remediation method will be used to remediate real polluted water samples collected from different origins*

Keywords: *Paracetamol, Zero-valent iron nanoparticles, Water remediation; Kinetics; Thermodynamics*