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Box-Behnken Design for the Biosorption of Cationic Dye from Aqueous Solution Using a Zero-Valent Iron Nano Algal Composite

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Abstract : The advancement of adsorption is the development of nano-biocomposite for the sorption dyes and heavy metal ions. In fact, Nanoscale zerovalent iron (NZVI) is cost-effective reducing agent and a most reliable biosorbent for the dye biosorption. In this study, nano zero valent iron Sargassum swartzii (nZVI-SS) biocomposite, a novel marine algal based biosorbent, was used for the removal of simulated crystal violet (CV) in batch mode of operation. The Box-Behnen design (BBD) experimental results revealed the biosoprtion was maximum at pH 7.5, biosorbent dosage 0.1 g/L and initial CV concentration of 100 mg/L. Therefore, the result implies that nZVI-SS biocomposite is a cheap and most promising biosorbent for the removal of CV from wastewater.

Keywords : algae, biosorption, zero-valent, dye, waste water
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