Fast and Efficient Removal of Iron from Industrial Wastewater Using Electrochemical Deposition

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Among the proposed methodologies for heavy metal removal from industrial wastewaters, electrochemical treatment has drawn attention due to its simplicity and high performance. In this study, experiments were carried out using a bench-scale electrochemical cell incorporating a flow-by porous graphite electrode for iron removal. The influence of the initial iron concentration, feed flow rate, and current density on the removal efficiency and current efficiency were studied. The maximum removal efficiency (99.7%) was obtained after 10 min of operation at a flow rate of 0.278 ml/s, a current density of 0.98 mA/cm² and a pH of 4, and a maximum current efficiency of 95.5% was obtained at a flow rate of 0.833 ml/s for an initial iron concentration of 200 ppm.

Keywords: iron removal; electrochemical cell; flow-by electrode

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