

Electrochemical desorption of high-iron manganese ore

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Received 7 November 2017; Accepted 4 February 2018

ABSTRACT

In this thesis, the high-iron manganese ore is used to remove the chromium. After the adsorption is saturated, a certain magnetic field will be introduced, and the high-iron manganese ore will resume performance by the electrochemical desorption method. This thesis studies the reaction process and mechanism and investigates the influence rules of coexisting ions and electrochemical control conditions (electrode distance, electrolysis voltage, and desorption time) on the desorption effect. Chloride ions do not participate in the deposition process, but they affect the formation process of the passivation layer. The sulfate ions participate in the deposition process and affect the formation process of the passivation layer. The bicarbonate ions, calcium ions, and magnesium ions are involved in the deposition process and can promote the passivation of the high-iron manganese ore. After the electrochemical desorption, the regeneration time is about 109.53% and 120.96% of the initial use time under the condition that calcium ions and magnesium ions are mixed with bicarbonate ions at 1 mM/1 mM. At the same time, the service life of high-iron manganese ore also improves with the increase in electrolysis voltage and the extension of desorption time, and it increases first and then decreases with the increase in electrode distance. The optimal electrode distance is 9.0 cm, the optimal desorption time is 20 min, and the optimal electrolysis voltage is 100.0 V.

Keywords: High-iron manganese ore; Electrochemistry; Desorption

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