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Removal of toxic metal Cr(VI) from aqueous solutions by electrocoagulation using aluminum electrodes

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ABSTRACT

The aim of the present study is to find the effectiveness of electrocoagulation process for removal of chromium (VI) and to evaluate the influence of various operating parameters on the chromium removal process. Initially, the experiments were conducted using synthetic samples of varying chromium (VI) concentrations (5, 50, 200, 300, 500 mg/L). Furthermore, the experiments were conducted using industrial waste obtained from the Domestic Apparatuses Complex, Tizi Ouzou. The operating parameters investigated for the study were current density, salinity, initial pH of the solution, the concentration of the solution, interelectrode distance and number of electrodes. The results obtained show that the Cr(VI) concentration was well within the permissible value and chemical oxygen demand abatement of 80% was achieved. The recovered flocs were visualized using electronics sweeping microscope and analyzed by X-ray diffraction.

Keywords: Aluminum electrode; Chromium removal; Electrocoagulation; Industrial waste

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