

## Treatment and Characterization of Cadmium Metal From Textile Factory Wastewater by Electrochemical Process Using Aluminum Plate Electrode

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**Abstract :** Electrochemical treatment technology is a technique used for wastewater treatment due to its ability to eliminate impurities that are not easily removed by chemical processes. The objective of the study is the treatment and characterization of textile wastewater by an electrochemical process. The results obtained at various operational parameters indicated that at 20 minutes of electrochemical process at ( pH =7), initial concentration 10 mg/L, current density 37.5 mA/cm<sup>2</sup>, voltage 9 v and temperature 25°C the highest removal efficiency was achieved. The kinetics of removal of selected metal by electrochemical treatment has been successfully described by the first-order rate equation. The results of microscopic techniques using SEM for the scarified electrode before treatment were uniform and smooth, but after the electrochemical process, the morphology was completely changed. This is due to the detection of the adsorbed aluminum hydroxide coming from adsorption of the conducting electrolyte, chemicals used in the experiments, alloying and the scrap impurities of the anode and cathode. The FTIR spectroscopic analysis broad bands at 3450 cm<sup>-1</sup> representing O-H functional groups, while the presence of H-O-H and Al-H groups are indicated by the bands at 2850-2750 cm<sup>-1</sup> and 1099 representing C-H functional groups.

**Keywords :** electrochemical, treatment, textile wastewater, kinetics, removal efficiency

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