

Comparison of Chemical Coagulation and Electrocoagulation for Boron Removal from Synthetic Wastewater Using Aluminium

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Abstract : Various techniques including conventional and advanced have been employed for the boron treatment from water and wastewater. The electrocoagulation involves an electrolytic reactor for coagulation/flotation with aluminium as anode and cathode. There is aluminium as coagulant to be used for removal which may induce secondary pollution in chemical coagulation. The purpose of this study is to investigate and compare the performance between electrocoagulation and chemical coagulation on boron removal from synthetic wastewater. The effect of different parameters, such as pH reaction, coagulant dosage, and initial boron concentration were examined. The results show that the boron removal using chemical coagulation was lower. At the optimum condition (e.g. pH 8 and 0.8 mol coagulant dosage), boron removal efficiencies for chemical coagulation and electrocoagulation were 61% and 91%, respectively. In addition, the electrocoagulation needs no chemical reagents and makes the boron treatment easy for application.

Keywords : boron removal, chemical coagulation, aluminum, electro-coagulation

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