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BR29 DYE REMOVAL FROM MODEL SOLUTION BY ALUMINUM ELECTROCOAGULATION

Abstract:

It is unknown how much synthetic organic dyes produced in the world, although financial reports estimate their continuous increase in the worldwide market up to about US\$11 billion in 2008 with a production of dyestuffs over 7×10^5 tons [1]. These dyes are used in industrial companies, such as dyestuffs, textile, paper and plastics, in order to color their products and also they consume substantial volumes of water and consequently they generate a considerable amount of colored wastewater [2]. Electrocoagulation is an efficient and cost-effective method for removing organic and inorganic pollutants which has some advantages such as [3-4]: (i) more effective and rapid organic matter separation than in coagulation, (ii) pH control is not necessary, except for extreme values, (iii) the amount of chemicals required is small, (iv) the amount of sludge produced is smaller when compared with coagulation.

In this study electrocoagulation of Basic Red 29 (BR29) dye using aluminum electrodes in parallel plate mode was fulfilled. With this aim, parametric studies were held to investigate the effects of current density, initial pH, supporting electrolyte concentration and initial dye concentration on dye removal. At the best experimental conditions obtained, chemical oxygen demand (COD) was examined and time course variation of model wastewater were also be investigated. During the studies, samples were withdrawn from the reactor at predetermined time intervals to analyze the BR29 concentrations followed by centrifugation at 7000 rpm.

Keywords:

Electrocoagulation, Aluminum Electrode, BR29 Dye