Removal of lignin, COD, and color from pulp and paper wastewater using electrocoagulation

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ABSTRACT

Electrocoagulation is an effective, fast, and economic method for treatment of industrial wastewaters. In this study, effects of different parameters including electrolysis time, voltage, and pH on the reduction of chemical oxygen demand (COD), lignin, and color in pulp and paper wastewaters were studied. Iron and aluminum were used as anode and cathode electrodes, respectively. Under the optimal conditions (pH 5, 60 min, 10 V), this treatment method led to 85% removal of COD and 78.5% removal of lignin. Furthermore, clear treated water with complete color removal was generated that suggests the application of electrocoagulation for industrial wastewater treatment, especially in pulp and paper industries.

Keywords: Pulp and paper; Wastewater treatment; Electrocoagulation; COD removal; Lignin removal; Color removal