THE DYNAMIC ANALYSIS OF WASTEWATER TREATMENT WITH ELECTROCOAGULATION METHOD IN PULP AND PAPER MAKING INDUSTRY

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In the pulp and paper making industry, the high water usage results in large amounts of wastewater generation. Its water consumption ranks third in the world, after the primary metals and the chemical industries. The characteristics of the wastewater depends on the types of raw material, process technology applied, management practice, internal recirculation of the effluent recovery, the amount of water to be used in the particular process. A large amount of pollutants in this wastewater are characterized by biochemical oxygen demand (BOD), chemical oxygen demand (COD), suspended solids (SS), toxicity and colorants. In the discharged water, COD, BOD and TSS are main concerns. The turbidity is also a problem for water recirculation into the process. Thus, wastewater treatment is necessary for either reuse or discharge.

The pulp and paper effluent is treated by physical adsorption, chemical oxidation and biochemical methods. The low biodegradability index of pulp and paper effluent indicates that this kind of effluent cannot be treated effectively through biochemical method. On the other hand, the chemical methods generate considerable amount of sludge which itself necessitates further treatment. There is a need for a solution. Electrocoagulation (EC) is efficient in the treatment of different types of wastewater that contain suspended solids or colloids. Electrocoagulation is a complex and interdependent process where the generation of coagulants takes place in situ by dissolving sacrificial anode. From the literature [1, 2] it is found that most of the researchers successfully used electrocoagulation method for the treatment of wastewater from pulp and paper industries. In the electrochemical processes, the electrode material is essential. Iron and aluminum electrodes are used in electrocoagulation because they are cheap and their production is very simple.

In the present work, the influence of operating parameters such as electrolysis time, current density, pH, electrolyte concentration, agitation speed on color are investigated.

References