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Coir Fibre Ret Liquor Treatment by Fenton Oxidation and Coagulation**Siriwardhane U. *, Cooray A.***Department of Chemistry, University of Sri Jayewardenepura, Nugegoda, Sri Lanka***upesha.siriwardhane@gmail.com***Abstract**

Coir fibre is extracted from the mesocarp of the coconut fruit through a process called retting, in which the coconut husks are immersed in water to loosen the fibres. In the retting process, a considerable amount of organic matter is leached out to the surrounding water. The resulted water is called "coir fibre ret liquor", which creates adverse effects on the environment. The main objective of this study was to reduce the Chemical Oxygen Demand (COD) value of the ret liquor using the Fenton process and to optimise the reaction parameters used. A laboratory prepared ret liquor sample was used in the experiments and the COD values were measured using the open reflux method. The sample had an average COD value of 1,934 ppm. The Fenton process was employed to treat the sample and the parameters used in the Fenton process, Fe(II) concentration and H₂O₂ concentration were optimised. The obtained results indicate that when 1.00 mL of 10% of H₂O₂ and 1.00 mL of 0.1 M Fe(II) solutions which have initial weight ratio of, H₂O₂/Fe(II) 10.8 were used to treat 100 mL of ret liquor sample at pH=3, about 94% of total COD removal could be obtained, and the final COD of the sample was 64 ppm at the end of five hours. Within the first hour of the treatment colour removal, more than 80% of COD removal, and a large amount of Fe(II) consumption were observed. It was identified that the COD reduction of the sample mainly occurred through ferrous coagulation and by Fenton reactions. In the sample that was treated with optimised amount of Fenton reagent 53% of COD was removed through ferrous coagulation. The results obtained for Fe(II) control samples suggested that the COD of ret liquor also can be reduced using ferrous salt. When samples were treated with 10.00 mL of 0.1 M Fe(II) solution 93% COD reduction was obtained.

Keywords: Fenton, Coagulation