**CHARACTERIZATION AND APPLICATION OF RICE HUSK FOR THE REMOVAL OF HEAVY METALS FROM THE LABORATORY PREPARED WASTE WATER**

**ABSTRACT**

In this thesis work, adsorption technique has been applied for the removal of heavy metals such as Cu, Zn and Pb from water is rice husk. Rice husk is preferred to any other materials because of its abundant availability in India since rice production in India is very high and it’s cost is quite lower than other materials. It is a highly efficient adsorption material that show nearly 95- 100% removal of heavy metals from water. Rice husk is prepared into two types of adsorbents in this study, the first one is obtained by grounding the rice husk into small particles of size less than 355Dm and the second one is prepared by burning the clean rice husk in muffle furnace and treating it with citric acid. The waste water is prepared synthetically in the laboratory by taking 1ppm to 20 ppm concentrations of metal solutions. The prepared water is treated against two adsorbents with controlled temperature, pH, and initial concentration of metals.

One gram of adsorbent material is taken for each 100ml of prepared water; the solution is then stirred continuously for 24 hours at a speed of 250 rpm at 40 degree temperature. The results obtained from the experiment are recorded and graphs are plotted to study the behavior of the adsorbent material in removing heavy metals from the water. The results obtained as the removal efficiency of grounded rice husk for Zn, Pb and Cu are 99.09%, 97.52% and 93.36 %, respectively. The removal efficiency of carbonized rice husk for Pb, Cu and Zn are found to be 96.45%, 96.31% and 96.64%, respectively. With the increase in duration of stirring action, the removal efficiency of the adsorbent material increases. From the performed experiments, removal of Zn from 5ppm solution of Zn for 0.5,1,2,3,5,18 hours are 82.37%, 88.32%, 90.51%, 92.48%, 93.98% and 97.19%, respectively.