



## A comparative study of surface modification in carbonized rice husk by acid treatment

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### ABSTRACT

Water pollution by heavy metals is a major environmental problem because of their toxicity and its removal is highly essential. In this present investigation, two types of adsorbents were prepared viz. activated carbon from acid treated rice husk (ACARH) and activated carbon from rice husk followed by acid treatment (ACRHA). Characterization of the adsorbents was performed by BET analyzer, Fourier transform infrared spectroscopy (FTIR), scanning electron microscopy (SEM) and EDAX analysis to determine their surface area and morphological behavior. Adsorption studies were conducted to optimize the process variables such as initial metal ion concentration, adsorbent dosage, pH of the solution and temperature on the percentage removal of hexavalent Cr ions from aqueous solution. It is found that ACARH adsorbent is highly effective for the removal of metal ions than ACRHA. Various kinetic and isotherm models were fitted with the experimental data obtained from ACARH adsorbent to evaluate the solute interaction behavior.

*Keywords:* Rice husk; Acid treatment; Activated carbon; Cr (VI) ions; Adsorption; Isotherms; Kinetics

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