

CHARACTERIZATION AND APPLICATIONS OF ACTIVATED CARBON PREPARED FROM CORN COBS

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CHAPTER 1- SYNOPSIS

Activated carbon is excellent adsorbent and thus is used to purify, decolorize, deodorize, de-toxicate, filter or remove the salts. They are used as catalyst or catalyst supports. The adsorbent properties of activated carbon are essentially attributed to their large surface area, a high degree of surface reactivity, universal adsorption effect and favourable pore size. The adsorption process is one of the efficient methods and has an advantage over the other methods due to the excellent adsorption efficiency of activated carbon (powdered or granular) for organic compounds, but commercially available activated carbon is very expensive. These unique characteristics are dependent on the type of raw material employed and method of activation. Basically, there are two different processes for the preparation of activated carbon: physical and chemical activation. Corn Cobs is suitable for preparing micro porous activated carbon due to its excellent natural structure and low ash content. In the present work a novel two-step procedure was used to preparation of micro porous activated carbon from raw corn cobs. In this process, the raw corn cobs was (1) made into small pieces and mixed with zinc chloride for activation. Slurry was subjected to vacuum drying, and (2) heated again in inert environment for activation at temperature of 800°C to produce an activated carbon. Heating is carried out in a tubular reactor for about three hours in presence of nitrogen flowing continuously at a constant rate. Characterization of the prepared activated carbon was done using various tests. Prepared activated carbon can be used for removal of dyes from industrial wastes.