

SYNTHESIS OF ACTIVATED CARBON FROM ARECA HUSK FOR INDUSTRIAL WASTE WATER TREATMENT

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Introduction:

Wastewater affects the drinking water and other water resources directly and indirectly. For this reason, water scarcity may happen soon. For treating wastewater, different methods are available such as coagulation, flocculation, sedimentation, membrane filtration, sand filters, oxidation process etc., But all of these methods are very costly, complex, slow and need skilled peoples to operate. Sometimes, these methods are not able to separate the pollutants completely. On the other hand, adsorption is an effectively. Adsorption is an effective method for treating wastewater. Because it can remove organic and inorganic substances without the forming of hazardous materials and easy maintenance. Globally activated carbon used as adsorbents for its excellent adsorption quality. But commercially it is very costly and complicated to manufacture. After considering the efficiency of dye removal. The adsorption study was carried out systematically involving various parameters such as contact time, initial dye concentration, adsorbent dosage, particle size, pH and temperature. The cost of this activated carbon is estimated and which is very less than that of commercially available activated carbons [1-3]. Tumkur district is famous for the products of areca. One can observe areca husk in the road side has a waste item in many villages. We are planned to make use of this waste areca husk to convert activated carbon for the treatment of industrial wastewater. Hence we have taken the titled "SYNTHESIS OF ACTIVATED CARBON FROM ARECA HUSK FOR INDUSTRIAL WASTE WATER TREATMENT" as a project.

Objectives:

1. To prepare activated carbon from waste areca husk.
2. To characterize of activated carbon from XRD, UV, SEM
3. To collect various types of industrial waste water.
4. To studies of absorption capacity of activated carbon prepared from areca husk

Methodology:

1. Materials: The materials required to carry out this project were purchased from various companies: Methylene blue [$C_{16}H_{18}ClN_xH_2O$ ($X = 2, 3$)] from Thomas Baker, Calcium Chloride ($CaCl_2$) Raw areca husk, Distilled water for the further preparation.

2. Synthesis : preparation of raw carbon from areca husk

The waste areca husk was collected from Honnashettihalli, Gubbi taluk, it was washed and dried with distilled water to remove dust particles. The clean small air tight pot containing areca husk was kept in muffle furnace at 200-400 °C for 3hrs to get raw carbon.

3. Synthesis of activated carbon from raw carbon.

The activated carbon was prepared in two methods using $CaCl_2$ and lemon. In the first method, 50g of $CaCl_2$ was ground into a fine powder and transferred into the beaker containing 100ml of distilled water, to that 1g of raw carbon was added and stirred for 20 min at the rate of 600 rpm, the final activated carbon was filtered out and dried for 24 hrs. Similarly, 40ml of fresh lemon juice was used instead of 50g of $CaCl_2$ and 100ml of distilled water to prepare activated carbon in the second method.

Conclusion:

We are waiting for PXRD, UV- Vis, SEM, FTIR

Scope for future work:

We are waiting for PXRD, UV- Vis, SEM, FTIR

Reference:

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