

WASTE BIOMASS MATERIALS INTO ACTIVATED CARBON FOR SUPERCAPACITOR

A Minor Project Report

In Partial Fulfilment of the Requirement for Award of Degree of
Bachelor of Technology of the 2nd Year in Chemical Engineering

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CERTIFICATE

Certified that the Major Project Report entitled "*Waste Biomass Materials into Activated Carbon for Supercapacitor*" submitted by **Bhavna** of B.Tech. 4th Semester, in partial fulfillment of the requirements for the award of degree in Bachelor of Technology (B. Tech) in Chemical Engineering, is according to the students their own investigation carried out by them in the Department of Chemical Engineering, School of Studies of Engineering & Technology, GGV, during the session 2024-25.

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Abstract

This project focuses on converting five commonly available waste biomass materials - banana peel, rice husk, coconut shell, coconut husk, and sugarcane bagasse - into activated carbon for use in energy storage, specifically in supercapacitors. These materials, usually discarded as agricultural waste, hold immense potential as low-cost, sustainable carbon sources due to their high lignocellulosic content. The study involves carbonization and chemical activation processes followed by material characterization to evaluate their suitability for supercapacitor applications. This approach contributes to waste valorization, environmental sustainability, and the advancement of green energy technologies. Converting these biowastes into porous, high-surface-area carbons not only addresses environmental concerns but also yields materials with excellent electrochemical performance.

