

### TITLE:

# PREPARATION OF ACTIVATED ABSORBENT FROM CRAB SHELL USING CHEMICAL IMPREGNATION METHOD

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### **AUTHOR'S DECLARATION**

" I hereby declare that this report is the resof my own work except for quotations and summaries which have been duly acknowledged."

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#### ABSTRACT

The growing need for sustainable materials has led to research on the use of waste biomaterials for environmental applications. Crab shell, a common seafood waste contains calcium carbonate and organic compounds making them suitable for producing activated absorbent. This study focuses on the preparation of activated absorbent from crab shell using sodium hydroxide, NaOH and high temperature calcination to improve the adsorption properties. This process involves pre-treating the crab shell, chemical activation and calcination at 600C and 700C. absorbents were analysed using proximate analysis, elemental analysis (EA), X-Ray Diffraction (XRD) and imaging microscope. the results show that NaOH activation increase the porosity and surface area, increasing the adsorption efficiency. XRD confirmed the transformation of calcium carbonate to calcium oxide, while SEM revealed a well-developed porous structure. Proximate and elemental analyses indicate the suitability of the material for adsorption, particularly for pollutant removal and hydrogen storage. This study highlights the potential of crab shell-based activated adsorbents as a sustainable alternative to conventional adsorbents. These findings contribute to research on biomass utilization and environmental remediation, offering insights into optimizing activation conditions for better performance.

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