UNIVERSITI TEKNOLOGI MARA
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TITLE:

THE CORRELATION OF THERMAL DECOMPOSITION BEHAVIOUR WITH THE FUNCTIONAL GROUP COMPOSITION OF SODIUM SUPPORTED BY ACTIVATED CARBON (NA/AC) CATALYST

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AUTHOR'S DECLARATION

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

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ABSTRACT

Sodium-supported activated carbon (Na/AC) catalysts, which are made from activated carbon obtained from palm kernel shells, are essential for a number of catalytic applications because of their surface functional groups and temperature stability. The study examines the relationship between the composition of functional groups and the behavior of thermal decomposition in Na/AC catalysts with varying Na:AC mass ratios (1:3 and 1:4). The methods of carbonization, sodium impregnation, and calcination were used to create the catalysts. Weight loss patterns at various temperatures have been observed using Thermogravimetric Analysis (TGA) to assess thermal stability, and functional groups including hydroxyl (-OH), carbonyl (-C=O), and carboxyl (-COOH) were identified using Fourier Transform Infrared Spectroscopy (FTIR). This study provides insight on how sodium loading affects catalyst performance and stability, which is crucial for maximizing biomass-derived catalysts for use in chemical synthesis, gas purification, and biodiesel production.

TABLE OF CONTENTS