UNIVERSITI TEKNOLOGI MARA
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TITLE:

EXTRACTION OF LIGNIN FROM RICE HUSK AND STUDY ITS THERMAL STABILITY

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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

Lignin represents a very complex organic polymer that is important in the structure of the plant cell walls, which imparts strength and resistance to degradation. Lignin is considered the second most abundant renewable carbon source on earth and hence attracts much interest in a variety of applications, especially in the development of sustainable materials. Traditional methods for lignin extraction usually lead to low yield and variable quality, hindering its effective use and valorization in high-added-value products. This work is, therefore, designed to overcome the challenges of lignin extraction through the optimization of the extraction methods for maximum yield and purity while minimizing the thermal degradation of the material in the process. The extracted lignin will be characterized for thermal stability using advanced analytical techniques like thermogravimetric analysis (TGA). The thermal stability of lignin is of utmost importance concerning its value-added application in various industries. The research on the subject will be of paramount importance in the pulp and paper industry, where lignin is produced as a by-product during the pulping process. The objectives of this work are to improve the extraction techniques and investigate the thermal properties to enhance lignin's economical feasibility as a renewable resource and further develop its use not only as an attractive low-cost fuel but also as a promising sustainable alternative for adhesives, coatings, and other value-added products. Eventually, this will help in more efficient and greener practices of pulp and paper production, aligning with sustainability objectives while fully realizing the potential of lignin as a versatile biomaterial.

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