

**THE EFFECTS OF DIFFERENT CHEMICAL
TREATMENTS ON THE PROPERTIES OF
KENAF/POLYPROPYLENE COMPOSITE**

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This Final Year Project Report entitled “**The Effects of Different Chemical Treatments on the Properties of Kenaf/Polypropylene Composite**” was submitted by Siti Nur Atikah binti Amauddin in partial fulfillment of the requirements for the Degree of Bachelor Sciences (Hons.) Biology, in the Faculty of Applied Sciences, was approved by

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ABSTRACT

THE EFFECTS OF DIFFERENT CHEMICAL TREATMENTS ON THE PROPERTIES OF KENAF/POLYPROPYLENE COMPOSITE

In recent years, the use of natural fibers in polymer composites has expanding tremendously due to its environmentally friendly substitute for the synthetic fibers. Previous studies have proved that chemical treatment such as alkaline and silane treatment improve adhesion of the constituent materials that lead to increase in mechanical properties of kenaf fiber reinforced plastic. The primary aim of this research is to study the effects of different chemical treatments on the properties of kenaf/polypropylene composite. The fibers were treated with 6% sodium hydroxide (NaOH) and 0.5% 3-aminopropyltriethoxysilane (3-APE) coupling agent for 24 h. Kenaf and polypropylene were mixed by using melt mixing techniques and fabricated by compression molding for sample preparation and the fiber content in the composite is kept fixed at 30 php. From this study, NaOH treatment increases the tensile strength by 18.87% compared to untreated kenaf/PP composite, whereas silane treatment showed decrement in strength by 39.63% due to some void presence in the sample. Impact strength showed both treatments have greater impact strength compared to untreated composite with increment of 49.77% for NaOH treatment and 64.81% for 3-APE treatment. Water absorption of treated composite showed greater water uptake due to void presence in the samples and densities of the treated composites were slightly higher than untreated composite which indicates better adhesion between the treated fiber and polypropylene. The FTIR analysis proved the removal of hemicellulose and lignin in both NaOH and silane samples, hence, improves the mechanical properties of treated kenaf/PP composite.

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