

## **Mechanical properties of epoxy/coconut shell filler particle composites**

### **ABSTRACT**

This paper presents the tensile and flexural properties of composites made from coconut shell filler particles and epoxy resin. The tensile and flexural tests of composites based on coconut shell filler particles at three different filler contents viz. 5%, 10%, and 15%, were carried out using universal tensile testing machine according to ASTM D 3039/D 3039 M-95a and ASTM D790-90 respectively and their results were presented. Experimental results showed that tensile and flexural properties of the composites increased with the increase of the filler particle content. The composite materials demonstrate somewhat linear behavior and sharp fracture for tensile and slight non-linear behavior and sharp fracture for flexural testing. The relation between stress and percentage of filler for tensile and flexural tests were found to be linear with correlation factors of 0.9929 and 0.9973 respectively. Concerning the relation between the modulus and percentage of filler for tensile and flexural tests, it was found to be a quadratic relation with the same correlation factor approximated to 1. The same behavior was observed for the strain versus percentage of filler for tensile and flexural tests, with the same correlation factor.

**Keyword:** Filler particle composites; Epoxy resins; Tensile; Flexural properties