



## Mechanical properties of Unsaturated Venylester biocomposites reinforced by Coir fibers chemically treated with permanganate solution

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**Abstract** – Talking about lightweight composite materials reinforced with natural plant cellulosic fibers is a topic of the hour; this is due to the characteristics of these materials such as low cost, non-toxicity and most importantly, their mechanical performances. This is what prompted scientists to search for new materials and include them in various fields such as industry, medicine, and others.

In this research paper, a chemical treatment was carried out by pretreated the Coir fibers in a solution of Alkaline (NaOH) with a ratio of 3% for a period of 4 hours, then immersed in permanganate solution with a ratio of 0.066 % for 3 minutes. To use these fibers as a reinforcing material in the Unsaturated Venylester (UV) resin, to obtain a composite material, after that the samples are prepared to conduct mechanical tensile tests according to the ASTM D3322-01 Standard applied on 30 samples tests to obtain the average values of tensile properties (Tensile strength, young's modulus and strain at failure).

The results showed an improvement in the mechanical properties that would raise the efficiency and performance of the composite material, and this is due to the improvement of the properties of the Coir fibers after the chemical treatment with Permanganate. Which is largely consistent with the results of previous research.

**Keywords** – Coir fibers; Mechanical properties; Permanganate; Unsaturated Venylester (UV); Tensile strength.