# The investigation on mechanical, thermal conductivity and water absorption characteristics of coir fiber-reinforced vinyl ester biocomposites

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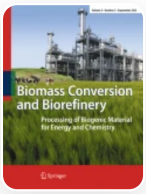


Biomass Conversion and Biorefinery

Aims and scope

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## Abstract

Industrial appliances exploiting biocomposites reinforced with natural fibers have considerably improved in current decades suitable to the advantages of natural fiber durability and environmental friendliness in addition to the advantages of desirable composite characteristics. The current effort uses composites that have up to 20 weight percent (wt%) of fabric derived from coir, a pretty well-known natural fiber from India. Two sets of bio-composites were fabricated using compression molding and two sets of coir fibers with equal lengths of 10 and 20 mm and varied wt% of vinyl ester resin via 0, 5, 10, 15, and 20%. According to experimental findings, bio-composites containing up to 15 wt% have greater tensile, flexural, and impact strength than plain vinyl ester. However, above 15 wt% fiber reinforcement, the mechanical strength has diminished. The biocomposite material with a 20-mm length and 20 wt% coir has a maximum thermal conductivity of 0.3164 W/m K; additionally, water absorption test carried out for all laminated composites.

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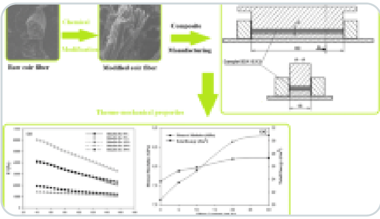

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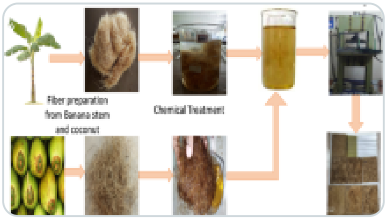


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P.Prabhu - conceptualization, methodology, data curation, writing - original draft.

V. Chokkalingam - supervision, review & editing, validation.

S. Arunkumar – investigation, formal analysis, visualization.

Prakash Perumal – project administration, demonstration.


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## Ethics declarations

### Conflict of interest

The authors declare no competing interests.

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