Thermal Analysis of Coir Fibers

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Abstract: The coconut tree (Cocos nucifera) is abundantly present in tropical countries (Louis et al.; Chan and Elevitch; Perera et al.). While most of its parts are used in various industries, coir, the fiber from coconut's husk remains plenty even after using the maximum of it. Coir fiber is very versatile and can be adaptive in any field of use, like construction, upholstery, sound insulation, and textiles (Ali et al.; Rajan and Abraham). This research begins with the study of literature on previous research on coir fibers, followed by specific physical tests to identify the fiber characteristics of two different classes of coconut trees, a member of the Arecaceae (Country coconut and Kavilipathiram), and a selected maturity stage (Dried coconut - Brown fiber). Based on the study, various modification tests are carried out to alter the physical, chemical and thermal characteristics of the fibers. The results are compared with the unmodified fibers to finalize their properties and compatibility with geopolymers. This research aims to provide insights into using coir fibers for sustainable and innovative material applications through systematic experimentation and analysis.

Keywords: *Coir fibers, physical tests, chemical and thermal modifications.*

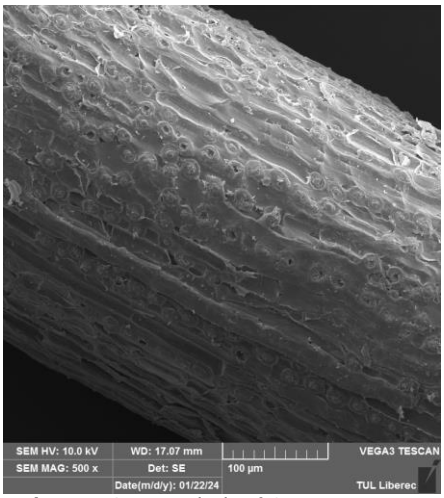

Figure 1 SEM analysis of Country coconut

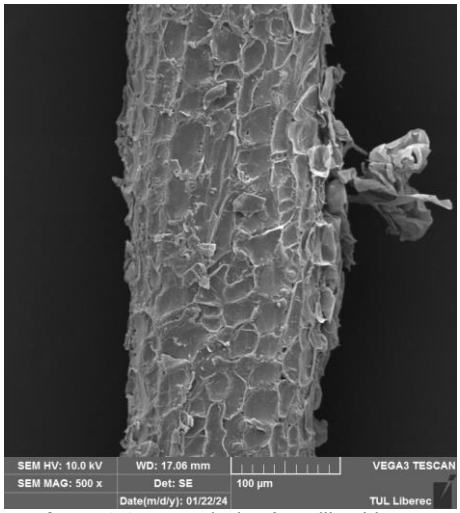

Figure 2 SEM analysis of Kavilipathiram

ACKNOWLEDGEMENT: *This work is supported by the project 'Advanced structures for thermal insulation in extreme conditions' (Reg. No. 21-32510M) granted by the Czech Science Foundation (GACR).*

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