

OPINION OF THE DISSERTATION SUPERVISOR

THESIS TITLE: Mechanical and Thermo-Acoustic Characterization of Barkcloth and Its Polymer Reinforced Composites

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The main specific goal of PhD candidate was realization of research and development on plant fibre biocomposites using natural sources available back in his home Uganda, where the research, hopefully, will lead to the development of a biobased structural composite material system meeting the goals of sustainability as well as the performance requirements for structural applications for the prospective automobile industry in Uganda.

The topic of presented dissertation is undoubtedly up-to-date and it respects innovative current and future trends, which prefer development and manufacturing of new products using biodegradable, environmental friendly materials. Thus presented study was focused on embedding of Sansevieria, Banana pseudostem (*Musa Sapientum*), Pineapple Leaf Fibres, (PALF, *Ananas Sativus*) and mainly Barkcloth (*Ficus natalensis*) fibers in fiber reinforced composite, and thorough experimental analysis of their properties.

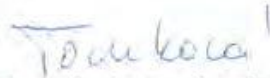
The thesis as such is a broad study on structure and properties of presumed reinforcing fibers and their biocomposites, describing the fibre producing plants, fibre extraction, processing and fibres readiness for biocomposites production. It is followed by a brief description of composite design and manufacturing, and presentation of prepared composite specimen. Final part of the thesis presents wide range of analyses made on prepared composite systems, further introduces some of used surface modifications, and compares the properties of designed biocomposites and their structures, both the chemical and mechanical, and thermo-acoustic. In the end there are briefly presented possible applications and outlined options of future work.

It is obvious that author tried to obtain the largest possible amount of information on designed composite structures. Unfortunately, it's at the expense of deeper analysis of observed phenomena. Author pays little attention to the relation between the structure and properties of designed composites, his description does not fit deeper theoretical fundamentals of the mechanics of composite materials nor predictive models of other material and physical properties of fiber reinforced structure.

On the other hand it must be said that the work as a whole fulfilled aims and objectives defined by PhD student in the very beginning of his research. Samson worked all the time very independently, during our consultations it was apparent that he had a clear idea what he wants to do and why. Consultations always took the form of expert discussion showing readiness of PhD student for independent scientific work. This is evident also from his publication activities in impacted and peer reviewed journals.

I therefore recommend the thesis for defence

5.9.2016


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