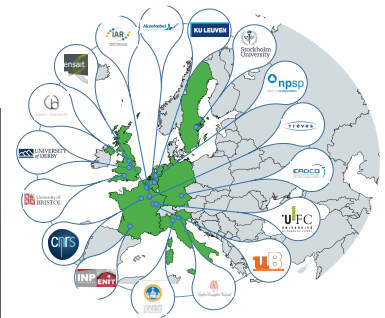
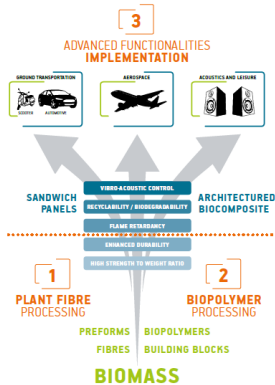


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BIOCOMPOSITES FOR HIGH-END AUDIO APPLICATIONS



The research team « Dynamics of Architected Structures and Materials for Vibro-acoustics » of the Department of Applied Mechanics at FEMTO-ST Institute, develops innovative techniques for the control of vibroacoustic damping. The team is involved in a large European Project untitled Ssuchy which aims at developing advanced bio-based composites. The project covers all industrial aspects, from lignocellulosic feedstock to bio-based composites with advanced functionalities for transportation and high value market niches. Among them, audio applications are focused on high-end loudspeakers developed by Wilson Benesch (UK), which is one of the world leaders on carbon fibers-based high end speakers. In the project, the company aims at designing a new version of the a.c.t. one^e model that would take advantage of the high damping capabilities of biocomposites, that will replace the current carbon-based composites in the structure. The main objective of the internship will be to estimate the structural dynamics properties of hifi components (a.c.t. one^e loudspeaker and a.c.t. 25 tonearm) that includes flax fibers-based components:

- development of a finite element model of component parts for structural dynamics analysis;
- modal analysis of the individual parts;
- model validation of the individual parts;
- development of the finite element model of the full system;
- modal analysis of the full system;
- model validation of the full system;
- bibliography analysis for the determination of damping & stiffness properties of biocomposites;
- estimation of the impact of the use of flax fibers-based components on the structural dynamics of the system.

The internship will take place in FEMTO-ST, Department of Applied Mechanics, in close collaboration with Wilson Benesch. Regular online meetings will be organized with the company and a physical meeting will take place at Wilson Benesch headquarters in Sheffield, UK.

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