



 News



Promoting sustainable development with advanced bio-based composites

An EU-funded project demonstrates the potential of sustainable bio-based composite applications in the aerospace, acoustics and automotive sectors.



SCIENTIFIC ADVANCES



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The drive towards a carbon-neutral economy has led customers and companies to seek out more environmentally friendly products. To develop such products, manufacturers have inevitably turned to natural and wood fibres and bio-based polymers. The bio-based composites resulting from the combination of these fibres and polymers are lightweight, durable and inexpensive. However, their main advantage is their sustainability stemming from their extremely small carbon footprint.

Contributing towards Europe's sustainable development goals, the EU-funded SSUCHY project is developing multifunctional recyclable and/or biodegradable bio-based composites from hemp and wood feedstock. The project aims to create and demonstrate a complete value chain – from field to end product – for applications in the automotive, aerospace, acoustics and electronics industries.

Advancements in bio-based polymers and hemp fibre reinforcements

Three years into the 4-year project, SSUCHY researchers have made important advancements in bio-based polymer technology. According to a [news item](#) posted on the 'Open Access Government' website, “[a]ppplied research on bio-based polymers consists of transforming under-exploited wood fractions (such as bark) into building blocks for thermoset & thermoplastic polymers. So far, the thermoset track is the most advanced and the project is currently working to find a solution to scale-up the production of some candidate monomers.” Other significant achievements include the development of novel curing methods resulting in a water-insensitive thermoset system that doesn't require the use of dry plant fibres. In the area of hemp fibre-woven reinforcement, the SSUCHY team has made significant progress in the cultivation and primary and secondary processing steps involved in the creation of quality fabrics for structural applications.

Bio-based composite applications

SSUCHY's work on bio-based composites has led to some of the developed materials being used in four industrial demonstrators. The prototypes have demonstrated how bio-based composites can replace their fossil-based counterparts in existing industrial applications. By the end of the project in August 2021, all the demonstration prototypes will be using hemp woven reinforcements.

The project's researchers have already completed their first prototypes of a green loudspeaker system and a cockpit panel. According to a recent [press release](#) posted on the SSUCHY website, the high-performance loudspeaker system belonging to project partner Wilson Benesch “is the first-of-its-kind biobased high-end audio speaker with tangible market possibilities.” The demonstrator is composed of an eco-friendly sandwich material made from woven hemp fabric mixed with recycled polyethylene terephthalate foam. The cockpit panel for electrical aircraft, designed by project partners Bristol Composites Institute (University of Bristol) and European Aerospace Design Consultants (EADCO), has a core made of an epoxy-flax composite combined with aerospace-grade foam. “To our knowledge, SSUCHY's demonstrator cockpit panel is currently the only biobased structural cockpit part to have reached performances compatible with EASA (European Union Aviation Safety Agency) regulations requirements and more specifically the very harsh aircraft specifications and certification rules,” the press release states. The other two demonstrators in progress are a bio-based monocoque

electric scooter frame and a load-bearing automotive trunk floor by project partners NPSP and Trèves (CERA), respectively. In its final year, SSUCHY (Sustainable structural and multifunctional biocomposites from hybrid natural fibres and bio-based polymers) will finish producing and testing its product demonstrators. It further aims to participate in other initiatives involving end-of-life bio-based composites. The project will also take part in a summer school programme to teach master's and doctoral students about recent advancements in natural fibre technologies.

For more information, please see:

[SSUCHY project website](#)

Keywords

SSUCHY, bio-based composite, polymer, hemp, fibre

Related projects

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