

MycelCycle - Integrated material, process and product development methodology for product life-cycle optimized mycelium-based packaging products as part of circular economy

Initiative: Zirkularität mit recycelten und biogenen Rohstoffen

Ausschreibung: Kooperationsprojekte

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Mycelium is the root network of fungi and can transform biomass into a high-performance fiber composite material that can be used for biodegradable packaging. The goal of this project is to develop an integrated material-process-product development methodology for mycelium fiber composites that addresses current product life cycle challenges related to material selection, material preparation, recycling and reuse. The goal are short transport distances of locally available organic materials. The organic waste and residues are sterilized in an energy-saving way, combined and processed with constant quality, and fed into a material cycle after use. As an example, insulated shipping coolers made of mycelium are investigated. In a material cycle a secondary use as shredded loose material for shipping packaging and at least as starting material for further mycelium cooling boxes is envisaged. The new methodology relies on the use of artificial intelligence both to identify starting material combinations and to optimize process control.

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