PROJECT FACTSHEET

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BIOMAC

BIOMAC aims to establish an Open Innovation Test Bed (OITB) Ecosystem capable of upscaling the market

Inspiration

While for the last two decades there have been many publications related to the use of biobased nanomaterials, such materials, commercialisation, and market adoption have been far more limited. Reasons include lack of investment and funding for further development / upscaling and the limited willingness of end users to adapt their processes to incorporate nanomaterials.
In addition, recent studies highlighted that the biobased sector is a key component of the European economy and emphasise the need for Circular Business Models targeting more resource use efficiency.
In order to meet this need, BIOMAC (Biobased Nanomaterials Community) will create a self-sustaining open innovation ecosystem for the upscaling of biobased nanomaterials processes across the supply and value chains. Work on biobased nanomaterials will be coupled with biotechnologies applied to biomass, converting renewable resources into high added-value polymeric materials.

Innovation

BIOMAC is a Horizon 2020 project which will establish an Open Innovation Test Bed (OITB), a collaborative ecosystem where technologies and solutions utilising biobased nanomaterials will be upscaled and prepared for market applications, providing open access to SMEs and larger companies via a single-entry point.
Initially, five applications will validate the proper operation of the OITB and will generate insights concerning its performance. These are: Automotive, agriculture, food packaging, construction, and printed electronics.
The BIOMAC ecosystem will function as a cluster of parallel activities taking the form of 17 Pilot Lines (PLs) covering the entire value chain, from biomass fractionation to biobased polymeric materials shaping and characterising them until they are ready to be used.
The ambition of BIOMAC is to boost and sustain innovation in industries serving the European bioeconomy by reducing the time-to-market of novel nanotechnologies, thus reducing cost and risk.
BIOMAC will establish an Open Innovation Test Bed (OITB) ecosystem providing open access to SMEs and larger companies via a single-entry point.
In the context of BIOMAC, LIST is responsible for two pilot lines: One pilot line is dedicated to the production of non-isocyanate polyurethanes (NIPUs) via reactive extrusion (REx). The equipment will allow online monitoring of reactions through the use of real-time near-infrared (NIR) spectroscopy.
The second pilot line is dedicated to the production of different qualities of nanofibrillated cellulose (CNF) by mechanical milling (using a Masuko Super Mass Colloider grinder). The equipment will enable continuous production with online control of viscosity .
BIOMAC brings together 33 partners from 12 different countries.

Impact

The OITB will offer services and tailor-made solutions for European companies for the development, production and integration of nanomaterials across the bio-based value chain and will offer services that cover the assessment of regulation and safety, sustainability, circularity, market potential among with modelling, process control, standardisation and characterisation.
The open call: After the validation of the five top technologies from the BIOMAC value chain, an open call will be launched on 2023/2024, with five additional test cases selected to assess the OITB. BIOMAC will function as an open innovative ecosystem via a one-stop shop accessible with fair conditions and costs through a single-entry point, represented by European Bioplastics. In doing so, innovation in the field of solutions using biosourced nanomaterials will be promoted and the related investment risks minimised.
The objective will be to transfer the technologies already developed at TRL4-5 up to a TRL 7.

Partners

Aristotle University of Thessaloniki (GR) , European Biomass Industry Association (BE) , Lulea University of Technology (SE) , Bio Base Europe Pilot Plant (BE) , RISE Processum AB (SE) , University of Edinburgh (UK) , Asociacion De Investigacion De Materiales Plasticos Y Conexas (ES) , Fraunhofer WKI (DE) , Creative Nano PC (GR) , Instituto Tecnologico del Embalaje, Transporte y Logistica (ES) , Asociacion De Investigacion Metalurgica Del Noroeste (ES) , Politecnico Di Milano (IT) , Danish Teknologisk Institut (DK) , Nanotypos EE (GR) , Idener Research & Development Agrupacion De Interes Economico (ES) , Axia Innovation UG (DE) , Universidad De Burgos (ES) , Abis Spolka Z Ograniczona Odpowiedzialnoscia Spk (PL) , Exelisis (GR) , European Bioplastics e.V (DE) , University of Padova (IT) , IRIS Technology Solutions SL (ES) , RDC Informatics (GR) , DIAD Group (IT) , Ohmatex A/S (DK) , Eversia Innova (ES) , Acciona Construccion (ES) , Novamont (IT) , Instituto De Soldadura E Qualidade (PT) , Stam S.r.l. (IT) , Miscanthus (HR) , IBB Netzwerk GmbH (DE)

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Contact

5, avenue des Hauts-Fourneaux
L-4362 Esch-sur-Alzette
phone: +352 275 888 - 1 | LIST.lu

Daniel SCHMIDT (daniel.schmidt@list.lu)

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