



## Co-operation profile details from Enterprise Europe SEIMED

### TODE20170824001 - Manufacturing of prototypes made of biopolymers and natural fibre composites Technology collaboration OFFER

#### Abstract

A research institute at a German university offers its knowhow and processing technology for the manufacturing of prototypes made of biopolymers and natural fibre composites for multiple applications. The service and the knowhow for the processing of bio-based parts are offered for less due to public funding. The request of further funding can be supported with expert knowledge and special experience. The institute seeks partners for a research cooperation agreement.

#### Description

The German research institute's work is focused on the development and investigation of integrative plastic processing technologies for the resource efficient manufacturing of lightweight structures and systems. The coupled structure and process simulation using with analytical and numerical methods provide important information for optimised structure and process parameters.

The primary materials are modified high-performance polymers and compounds, but also renewable primary products, novel thermoplastic prepregs and bionic textile preforms. In order to produce complex, highly integrative, competitive parts, a fusion of originally separated technologies in varying thermoplastic and thermoset based processes are merged together. Numerous inventions of highly loaded hybrid components, active lightweight structures and structural systems with natural fibres emphasise the competences of the institute.

#### Main fields of research:

- Green Technologies for sustainable environmentalism
- Computation and design of fibre-reinforced structures
- Integrative lightweight technologies for complex hybrid components
- Coupling of polymer based processes for energy-efficient production technologies
- Manufacturing cells, machines and processes for metal/plastic components
- Process chains for manufacturing parts with renewable primary products and recycled materials
- Continuous processes for unidirectional and bionic thermoplastic prepregs
- Active composites and lightweight structures in mass production

The institute is structured in the following research groups:

#### Bioplastics and Natural Fibre Composites

- Sustainable material concepts for extrusion and injection moulding
- Short, long and continuous fibre-reinforcement for biobased
- Lightweight structures
- Application-oriented modification of bioplastics and natural fibre reinforced materials
- Recycling concepts for biobased plastics

#### Endowed Chair Textile Plastic Composites

- Pressure resilient 3D knitted fabrics
- Load-adapted textiles and preforms
- Textile preforms for injection moulding processing
- High loaded textile reinforcement structures
- Analysis and modification of system components

#### Computation, Simulation and Design

- Draft and calculation of fibre-reinforced composite structures
- Stress adapted dimensioning, crash and impact simulation
- Coupled structure and process simulation
- Application of physically based failure criteria and degradation models

#### Polymer Technologies and Machine Design

- Reproducible steps of plastic processing for mass production
- Lightweight technologies for hybrid structural components
- Interfaces for coupling plastics technologies
- Fusion of plastic based processes
- Handling of limp semi-finished products

#### Active Materials and Composite Structures

- Lightweight-oriented construction for fibre-reinforced plastics
- Fatigue resistant composite spring elements for the automotive industry and mechanical engineering
- Integration of sensors, actuators and electronic devices in plastic parts

#### Lightweight Constructions in Civil Engineering

- Lightweight hybrid materials for civil engineering
- Bearing structures following paradigm of nature
- Load transmission and joining technologies
- Structure integrated systems for construction monitoring
- Multi-functional fibre-reinforced hybrid structures

#### Extrusion Technologies and Recycling

- Development of novel extrusion and machine concepts
- Alternate solutions for compounding biomaterials
- Substitution of multi-stage processes by direct extrusion



## Target partner expertise sought:

- Specific area of activity of the partner: The research institute is looking for industrial partners in the branch of plastic processing which are interested in the application of biobased materials and fibre composites. The partner should temporarily provide tools for the processing of prototypes.

## Key information:

Country of origin: GERMANY

Listed under: Manufactura Industrial \ Tecnologías de Materiales \ Industria

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