# Fraunhofer Institute for Microstructure of Materials and Systems IMWS

*Polymer Applications business division*

## About this organisation

### Machine translation

This organisation has been machine-translated based on data provided in German.

The Fraunhofer IMWS is a methodologically orientated Fraunhofer Institute in the specialist disciplines of materials science and materials engineering. The Polymer Applications business unit of the Fraunhofer IMWS is the material and process specialist for fibre-reinforced high-performance thermoplastics and innovative rubber composites for use in large-scale production.

The Polymer Applications business unit of the Fraunhofer IMWS deals with the characterisation and optimisation of composite materials, the development of testing and processing methods and the investigation of the application behaviour, design and prototype production of polymer-based components. The main focus of the work is the research and development of thermoplastic prepregs as an innovative semi-finished product for fibre composite structures suitable for large-scale production as well as component and technology development for highly resilient continuous fibre-reinforced, thermoplastic structural components. In addition, methods are being developed that allow microstructure-based in-/on- and at-line diagnostics for the integrative quality assessment of high-performance fibre composite structures.

Fraunhofer IMWS

**Organisation type**
Non-university research institution

**Sectors**

**Employees**
50 up to 249

**Turnover**
€10m - €50m

**Funding**

Walter-Hülse-Str. 1
06120 Halle (Saale)
Saxony-Anhalt
Germany
www.imws.fraunhofer.de/

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## About this organisation

| | |
|---|---|
| **Main areas covered** | UD tape and laminate production, Hybrid injection moulding, Load-path-compatible component design, Component testing and evaluation, Material characterisation |
| **Infrastructure** | UD tape system, Hybrid injection moulding system, IMC injection moulding system, Non-destructive testing methods (NDT), Mechanical testing and FEM |
| **Certifications** | ISO 9001 |
| **Keywords** | Thermoplastic fibre composites, UD tape, Effect of Defects, Hybrid injection moulding, Quality assessment |
| **Memberships** | |

## Overview of lightweighting expertise

### Machine translation

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| | Research | Development | Manufacturing & Supply |
|---|---|---|---|
| **Offer** | | | |
| **Products**<br>Parts and components, Semi-finished parts, Materials | ✓ | ✓ | ✓ |
| **Services & consulting**<br>Consulting, Testing and trials, Engineering, Validation, Simulation, Technology transfer | ✓ | ✓ | ✓ |

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## Overview of lightweighting expertise

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| | Research | Development | Manufacturing & Supply |
|---|---|---|---|
| **Field of technology** | | | |
| **Design & layout**<br>Lightweight manufacturing, Lightweight design, Hybrid structures, Lightweight construction concepts, Lightweight material construction | ✓ | ✓ | ✓ |
| **Functional integration**<br>Actuator technology, Sensor technology, Thermal activation, Material functionalisation | ✓ | ✓ | ✓ |
| **Measuring and testing technology**<br>Component and part analysis, Visual analysis (e.g. microscopy, metallography), System analysis, Environmental simulation, Materials analysis, Destructive analysis, Non-destructive analysis | ✓ | ✓ | ✓ |
| **Modelling and simulation**<br>Loads & stress, Optimisation, Processes, Structural mechanics, Materials, Reliability validation | ✓ | ✓ | ✓ |
| **Plant construction & automation**<br>Plant construction, Automation technology, Handling technology | ✓ | ✓ | |
| **Recycling technologies**<br>Downcycling, Recycling | ✓ | ✓ | ✓ |

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| | Research | Development | Manufacturing & Supply |
|---|---|---|---|
| **Manufacturing process** | | | |
| **Additive manufacturing**<br>3D printing | ✓ | ✓ | |
| **Coating (surface engineering)**<br>Painting, Plasma process, Sputtering | ✓ | ✓ | ✓ |
| **Fibre composite technology**<br>Pre-preg processing, Vacuum infusion | ✓ | ✓ | ✓ |
| **Forming**<br>Thermal converting | ✓ | ✓ | ✓ |
| **Joining**<br>Adhesive bonding | ✓ | ✓ | ✓ |
| **Material property alteration**<br>Mechanical treatment, Thermochemical treatment, Thermomechanical treatment, Heat treatment | ✓ | ✓ | |
| **Primary forming**<br>Extrusion, Injection moulding | ✓ | ✓ | ✓ |
| **Processing and separating**<br>Milling, Sawing, Cutting | | | ✓ |
| **Textile technology**<br>Textile surface treatment and finishing | ✓ | ✓ | |

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| | Research | Development | Manufacturing & Supply |
|---|---|---|---|
| **Material** | | | |
| **Biogenic materials**<br>Bioplastics, Biocomposites | ✓ | ✓ | ✓ |
| **Cellular materials (foam materials)**<br>Closed-pore, Open-pore | ✓ | ✓ | |
| **Composites**<br>Aramid fibre composites, Basalt fibre-reinforced plastic, Glass-fiber reinforced plastics (GFRP), Carbon-fiber reinforced plastics (CFRP), Nanocomposites, Natural fibre reinforced plastics (NFRP), Laminates, Particulate composites | ✓ | ✓ | ✓ |
| **Fibres**<br>Aramid fibres, Basalt fibres, Glass fibres, Carbon fibres, Natural fibres | ✓ | ✓ | |
| *Functional materials* | | | |
| **Metals**<br>Aluminium, Steel | ✓ | ✓ | |
| **Plastics**<br>Elastomers, Thermoplastics | ✓ | ✓ | ✓ |
| *Structural ceramics* | | | |
| **(Technical) textiles**<br>Yarns, rovings, Meshes, Laid webs, Woven fabrics, Nonwovens, mats | ✓ | ✓ | |

### Contacts

**Machine translation**

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### Contacts

This organisation has been machine-translated based on data provided in German.


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