

### About this organisation

#### Machine translation

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

The Composite Materials and Interface Layers department deals with joining processes and the property profile of joined components, with a particular focus on lightweight materials and construction methods at the Open Hybrid LabFactory (OHLF) in Wolfsburg.

Essentially, the connection of the different components in hybrid components is considered. This involves, for example, the form-fit and/or material-fit connection of the polymer components to the metallic structures, but also the adhesion between matrix and fibres in a fibre composite. The properties of boundary layers must be determined and evaluated in order to optimise the composite. In many cases, surface treatment is then required, which can be mechanical, physical or chemical in nature. In addition, processes are being researched and optimised, mainly with the aim of shortening process times and making processes more robust. New test methods are also being established in order to better describe material behaviour.

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Institut für Füge- und  
Schweißtechnik **ifs**

#### Organisation type

University or higher education institution

#### Sectors

No specific sector

#### Employees

50 up to 249

#### Turnover

n/a

#### Funding

#### Main areas covered

Joining different materials, Boundary layer characterisation, Boundary layer modification, Material composites, Hybrid lightweight construction

#### Infrastructure

Surface analytics, Polymer analytics, Mechanical testing technology, Joining technology centre (various processes)

#### Certifications

#### Keywords

Fügen, Lightweight construction, Boundary layer, Analytics, Sustainability

#### Memberships

DVS, OHLF

### Overview of lightweighting expertise

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	Research	Development	Manufacturing & Supply
<b>Offer</b>			
<b>Products</b> Parts and components, Semi-finished parts, Materials, Tools and moulds	✓	✓	
<b>Services &amp; consulting</b> Training, Consulting, Testing and trials, Standardisation, Validation, Simulation, Technology transfer	✓	✓	
<b>Field of technology</b>			
<b>Design &amp; layout</b> Lightweight manufacturing, Hybrid structures, Lightweight construction concepts, Lightweight material construction	✓	✓	
<b>Functional integration</b> Actuator technology, Media conductivity, Sensor technology, Thermal activation, Material functionalisation	✓		
<b>Measuring and testing technology</b> Component and part analysis, Visual analysis (e.g. microscopy, metallography), Materials analysis, Destructive analysis, Non-destructive analysis	✓	✓	
<b>Modelling and simulation</b> Crash behaviour, Loads & stress, Life-cycle analysis, Optimisation, Structural mechanics, Materials	✓	✓	
<i>Plant construction &amp; automation</i>			
<b>Recycling technologies</b> Material separation, Recycling	✓		

## Overview of lightweighting expertise

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	Research	Development	Manufacturing & Supply
<b>Manufacturing process</b>			
<b>Additive manufacturing</b> 3D printing, Deposition welding, Fused deposition modeling, Selective laser melting (SLM, LPBF, ...)	✓		
<b>Coating (surface engineering)</b> Plasma process, Sputtering	✓		
<b>Fibre composite technology</b> Manual lamination, Resin infusion process, Resin transfer moulding, Pre-preg processing, Vacuum infusion	✓	✓	
<b>Forming</b> Impact extrusion, Compression moulding, Thermal converting, Deep-drawing, Fluid active media based forming	✓	✓	
<b>Joining</b> Clinching, Hybrid joining, Adhesive bonding, Soldering, Riveting, Welding	✓	✓	
<b>Material property alteration</b> Mechanical treatment, Thermochemical treatment, Thermomechanical treatment	✓	✓	
<b>Primary forming</b> Extrusion, Casting, Injection moulding	✓	✓	
<b>Processing and separating</b> Cutting	✓		
<b>Textile technology</b> Textile surface treatment and finishing	✓		

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	Research	Development	Manufacturing & Supply
<b>Material</b>			
<b>Biogenic materials</b> Bioplastics, Biocomposites, Wood	✓	✓	
<b>Cellular materials (foam materials)</b> Closed-pore, Open-pore	✓		
<b>Composites</b> Aramid fibre composites, Glass-fiber reinforced plastics (GFRP), Carbon-fiber reinforced plastics (CFRP), Metal-fibre-polymer composite, Nanocomposites, Natural fibre reinforced plastics (NFRP), Laminates	✓		
<b>Fibres</b> Aramid fibres, Glass fibres, Carbon fibres, Metal fibres, Natural fibres	✓	✓	
<b>Functional materials</b> Electrostrictive / magnetostrictive materials, Shape memory materials	✓		
<b>Metals</b> Aluminium, Intermetallic alloys, Magnesium, Steel	✓	✓	
<b>Plastics</b> Thermoset plastics, Elastomers, Thermoplastics	✓	✓	
<i>Structural ceramics</i>			
<b>(Technical) textiles</b> Yarns, rovings, Meshes, Laid webs, Woven fabrics, Knitted fabrics, Nonwovens, mats	✓		

## TU Braunschweig

*Institute of Joining and Welding Technology - Material Composites & Interface Layers*

### Contacts

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