

TU Dresden, Institute of Lightweight Engineering and Polymer Technology

Specialist group for joining techniques

About this organisation

Machine translation

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

At the Institute of Lightweight Engineering and Polymer Technology at TU Dresden, nine specialist groups focus on different areas of lightweight construction. The Joining Technologies specialist group develops application-orientated joining solutions for lightweight structures in multi-material design. In doing so, it takes into account the continuous process chain from material to design, simulation, production and testing through to prototypes in an interdisciplinary manner.

In order to solve application-specific problems in the field of joining technology, the Joining Technology Group at the Institute of Lightweight Structures and Polymer Engineering at TU Dresden takes up established approaches and applies them in a targeted manner, as well as identifying fundamentally new solutions and working out their application potential. The scientists in the Joining Technology Group pursue a holistic, material-independent development approach, from the creation of design-technological fundamentals to the analysis and description of material-structural and material-mechanical phenomena in the joining zone to the modelling of the joining process and the stress conditions during operation.

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tu-dresden.de/ing/maschinenwesen/ilk/forschung/fachgruppe-verbundstechniken



Organisation type

University or higher education institution

Sectors



Employees

Up to 9

Turnover

n/a

Funding



[Projects in the funding catalogue](#)

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Main areas covered

Technology and process development, Material analysis and modelling, Process and structural simulation, Testing connections and components, Construction of prototype joining systems

Infrastructure

Non-destructive testing In-situ CT, Static and dynamic testing, Various joining systems and tools

Certifications

Keywords

Joining technology, mixed construction, Multi-material design, fibre composite, Hybrid structures, organic sheet, Thermoplastic fibre composites, Process-integrated joining

Memberships

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Overview of lightweighting expertise

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| | Research | Development | Manufacturing & Supply |
|--|----------|-------------|---------------------------|
| Offer | | | |
| Products Parts and components, Semi-finished parts, Machines and plants, Materials, Tools and moulds | ✓ | ✓ | |
| Services & consulting Training, Consulting, Testing and trials, Engineering, Prototyping, Validation, Simulation, Technology transfer | ✓ | ✓ | ✓ |
| Field of technology | | | |
| Design & layout Lightweight manufacturing, Hybrid structures, Lightweight construction concepts | ✓ | ✓ | |
| Functional integration Media conductivity, Sensor technology | ✓ | ✓ | |
| Measuring and testing technology Component and part analysis, Visual analysis (e.g. microscopy, metallography), System analysis, Materials analysis, Destructive analysis, Non-destructive analysis | ✓ | ✓ | ✓ |
| Modelling and simulation Loads & stress, Processes, Structural mechanics, Materials | ✓ | ✓ | |
| Plant construction & factory automation Handling technology | ✓ | ✓ | |
| <i>Recycling technologies</i> | | | |

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| | Research | Development | Manufacturing & Supply |
|---|----------|-------------|---------------------------|
| Manufacturing process | | | |
| <i>Additive manufacturing</i> | | | |
| Coating (surface engineering) Others: null | ✓ | ✓ | |
| Fibre composite technology Filament winding, Manual lamination, Resin infusion process, Resin transfer moulding, Pre-preg processing, Vacuum infusion | ✓ | ✓ | |
| Forming Thermal converting | ✓ | ✓ | |
| Joining Hybrid joining, Adhesive bonding, Riveting, Screwing, Others: null | ✓ | ✓ | ✓ |
| <i>Material property alteration</i> | | | |
| Primary forming Injection moulding | ✓ | ✓ | |
| Processing and separating Others: null | ✓ | ✓ | ✓ |
| Textile technology Braiding, Preforming | ✓ | ✓ | |

Overview of lightweighting expertise

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| | Research | Development | Manufacturing & Supply |
|--|----------|-------------|---------------------------|
| Material | | | |
| <i>Biogenic materials</i> | | | |
| Cellular materials (foam materials) Closed-pore, Open-pore | ✓ | ✓ | |
| Composites Aramid fibre composites, Basalt fibre-reinforced plastic, Glass-fiber reinforced plastics (GFRP), Carbon-fiber reinforced plastics (CFRP), Natural fibre reinforced plastics (NFRP), Laminates, Textile-reinforced concrete | ✓ | ✓ | |
| Fibres Aramid fibres, Basalt fibres, Glass fibres, Ceramic fibres, Carbon fibres, Natural fibres | ✓ | ✓ | |
| <i>Functional materials</i> | | | |
| Metals Aluminium, Magnesium, Steel | ✓ | ✓ | |
| Plastics Thermoset plastics, Thermoplastics | ✓ | ✓ | |
| <i>Structural ceramics</i> | | | |
| (Technical) textiles Meshes, Laid webs, Crocheted fabrics, Woven fabrics, Knitted fabrics, Nonwovens, mats | ✓ | ✓ | |

Contacts

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