Technical University of Munich
Chair of Carbon Composites

About this organisation

The Chair of Carbon Composites was founded in May 2009, with a focus on carbon-fiber composite materials and their applications. The appointment of Professor Drechsler was made possible by the foundation of a Chair by the SGL Group and a TUM investment with funding from the German Excellence Initiative.

The LCC takes an interdisciplinary approach to research, extending from the raw materials through implementation of manufacturing technologies to complete composite components. With specially developed simulation methods, the composite manufacturing process chain can be represented virtually. The staff at the Chair of Carbon Composites is working in four research groups in the areas:
- Process technology for fibers, textiles and matrix systems
- Simulation - Material properties and testing Involved in various national and international research projects in close collaboration with industrial partners and other research institutions, the chair covers composite materials with thermoplastic and thermoset matrix composites. For innovative manufacturing process, such as the fiber patch preforming, thermoforming or braiding processes, modern facilities are used to optimize the component and to improve the efficiency of the entire process.

Organisation type
University or higher education institution

Sectors
No specific sector

Employees
10 up to 49

Turnover
n/a

Funding
n/a

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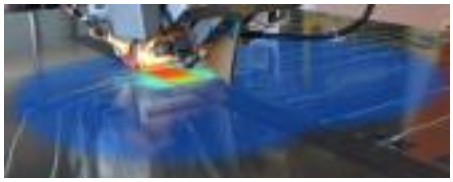
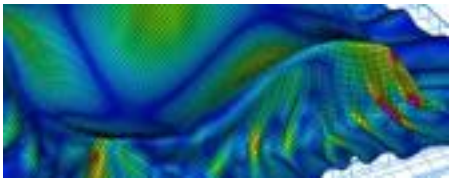




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Main areas covered	Fiber reinforced materials, 3D-Printing and Fiber Placement, Process and structural simulation, Braiding technology, Thermoforming
Infrastructure	Mechanical/thermal testing lab, Manufacturing machines, Composite materials laboratory, Manufaturing/Process technology lab, Simulation platform for composites
Certifications	
Keywords	Charakterization of composites, Fiber reinforced materials, CFRP/GFRP, Additive manufaturing, Process simulation
Memberships	Carbon Composites e.V., Spitzencluster MAI Carbon

Overview of lightweighting expertise

	Research	Development	Manufacturing & Supply
Offer			
Products Parts and components, Semi-finished parts, Machines and plants, Software & databases, Materials, Tools and moulds	✓	✓	
Services & consulting Consulting, Testing and trials, Engineering, Prototyping, Validation, Simulation, Technology transfer	✓	✓	

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Overview of lightweighting expertise

	Research	Development	Manufacturing & Supply
Field of technology			
Design & layout Lightweight manufacturing, Lightweight design, Hybrid structures, Lightweight construction concepts, Lightweight material construction	✓	✓	
Functional integration Sensor technology, Material functionalisation	✓	✓	
Measuring and testing technology Component and part analysis, Visual analysis (e.g. microscopy, metallography), System analysis, Materials analysis, Destructive analysis	✓	✓	✓
Modelling and simulation Crash behaviour, Loads & stress, Life-cycle analysis, Multiphysics simulation, Optimisation, Processes, Structural mechanics, Materials	✓	✓	✓
Plant construction & automation Automation technology, Handling technology, Robotics	✓	✓	
Recycling technologies Upcycling	✓	✓	

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Overview of lightweighting expertise

	Research	Development	Manufacturing & Supply
Manufacturing process			
Additive manufacturing 3D printing	✓	✓	
Coating (surface engineering)			
Fibre composite technology Fibre spraying, Filament winding, Manual lamination, Resin infusion process, Resin transfer moulding, Pre-preg processing, Vacuum infusion, Others (Fiber Placement Technologiern (AFP,AFP-TP), Thermoformen, Fiber Patch Placement, Sheet Moulding Compound (SMC))	✓	✓	
Forming Thermal converting	✓	✓	
Joining Hybrid joining, Adhesive bonding, Riveting	✓	✓	
Material property alteration			
Primary forming			
Processing and separating			
Textile technology Braiding, Preforming	✓	✓	

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Overview of lightweighting expertise

	Research	Development	Manufacturing & Supply
Material			
Biogenic materials			
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	✓	✓	
Fibres Aramid fibres, Basalt fibres, Glass fibres, Carbon fibres, Natural fibres	✓	✓	
Functional materials			
Metals			
Plastics Thermoset plastics, Elastomers, Thermoplastics	✓	✓	
Structural ceramics			
(Technical) textiles Yarns, rovings, Meshes, Laid webs, Woven fabrics, Knitted fabrics, Nonwovens, mats	✓	✓	

Contacts

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