

German Aerospace Centre (DLR)

Institute for Materials Research

About this organisation

Machine translation

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

The research focus of the Institute of Materials Research is on the development of new material solutions and their process technologies for applications in the aerospace, energy and automotive sectors. In co-operation with other DLR institutes and national and international partners, the Institute of Materials Research works on basic and applied research.

The research portfolio covers the areas of metallic structures, hybrid systems and intermetallics, structural and functional ceramics, aerogels and aerogel composites, thermoelectric systems and high-temperature and functional coatings. The development of numerical methods for the simulation of material behaviour completes these competences with the aim of supporting the transfer of materials into industrial applications. In the field of monolithic and hybrid high-performance structures based on fibre-reinforced ceramics and plastics, light metal alloys and hybrid material systems, the Institute of Materials Research in Cologne and the Institute of Structures and Design complement each other to form a systematic research portfolio that covers the entire engineering chain from material to prototype.

Linder Höhe
51147 Köln
North Rhine-Westphalia
Germany
www.DLR.de/WF



Organisation type

Non-university research institution

Sectors



Employees

50 up to 249

Turnover

€10m - €50m

Funding

n/a

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About this organisation

Main areas covered Research and development

Infrastructure

Certifications

Keywords

Memberships

Overview of lightweighting expertise

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	Research	Development	Manufacturing & Supply
Offer			
<i>Products</i>			
Services & consulting Training, Consulting, Testing and trials, Engineering, Standardisation, Prototyping, Validation, Simulation, Technology transfer	✓	✓	

Overview of lightweighting expertise

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	Research	Development	Manufacturing & Supply
Field of technology			
Design & layout Lightweight manufacturing, Hybrid structures, Lightweight construction concepts	✓	✓	
<i>Functional integration</i>			
Measuring and testing technology Component and part analysis, Visual analysis (e.g. microscopy, metallography), System analysis, Environmental simulation, Materials analysis, Destructive analysis, Non-destructive analysis	✓	✓	
Modelling and simulation Crash behaviour, Loads & stress, Life-cycle analysis, Multiphysics simulation, Optimisation, Processes, Structural mechanics, Materials, Reliability validation	✓	✓	
Plant construction & automation Plant construction	✓	✓	
<i>Recycling technologies</i>			

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Overview of lightweighting expertise

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	Research	Development	Manufacturing & Supply
Manufacturing process			
Additive manufacturing 3D printing, Selective laser melting (SLM, LPBF, ...)	✓	✓	
Coating (surface engineering) Plasma process, Powder coating, Sputtering	✓	✓	
<i>Fibre composite technology</i>			
<i>Forming</i>			
Joining Adhesive bonding, Soldering, Riveting, Welding, Others (Friction stir welding)	✓	✓	
Material property alteration Mechanical treatment, Thermochemical treatment, Thermomechanical treatment, Heat treatment	✓	✓	
<i>Primary forming</i>			
<i>Processing and separating</i>			
<i>Textile technology</i>			

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	Research	Development	Manufacturing & Supply
Material			
<i>Biogenic materials</i>			
<i>Cellular materials (foam materials)</i>			
Composites Ceramic matrix composite (CMC), Carbon-fiber reinforced plastics (CFRP), Metal-fibre-polymer composite, Metal-ceramic composite, Metal matrix composite, Laminates, Others (Aerogel composites)	✓	✓	
Fibres Glass fibres, Ceramic fibres, Carbon fibres	✓	✓	
Functional materials Others (Thermoelectric functional materials)	✓	✓	
Metals Aluminium, Intermetallic alloys, Steel, Titanium	✓	✓	
<i>Plastics</i>			
Structural ceramics Monolithic ceramics, Non-oxidic ceramics, Oxidic ceramics	✓	✓	
<i>(Technical) textiles</i>			

Contacts

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Contacts

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