Karlsruhe Institute of Technology

Institute for Applied Materials - Materials Science

About this organisation

Machine translation

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

The Institute of Applied Materials - Materials Science (IAM-WK) specialises in research, teaching and innovation in construction and functional materials, primarily for mechanical engineering applications. This involves deriving process-structure-property relationships. Our research in the seven departments of the institute can be categorised into the areas of "Condition and Properties", "Materials Development" and "Process Technology".

Components made of light metals or topologically optimised lightweight structures as well as composite materials and material composites have proven themselves in automotive engineering, aerospace and medical technology. These materials are particularly suitable for components subject to high mechanical loads and can significantly reduce the weight of structural components. At the IAM-WK, manufacturing processes, material conditions and material and component properties are investigated in order to optimise their process parameters, validate models and identify areas of application.

IAM
Institut für Angewandte Materialien

Organisation type
University or higher education institution

Sectors

Employees
50 up to 249

Turnover
€2m - €10m

Funding

Engelbert-Arnold-Straße 4
76131 Karlsruhe
Baden-Württemberg
Germany
www.iam.kit.edu/wk/index.php

Main areas covered	Additive manufacturing, Heat treatment, mech. surface treatment, Mechanical material testing, Non-destructive testing
Infrastructure	Micro-computed tomography, Laser Powder Bed Fusion system, Electron Beam Melting plant, Fatigue test laboratory, Materialography
Certifications	
Keywords	
Memberships	DGM, AWT, Carbon Composite e. V., SAMPE

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Overview of lightweighting expertise

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	Research	Development	Manufacturing & Supply
Offer			
Products Materials	✓	✓	
Services & consulting			
Field of technology			
Design & layout			
Functional integration			
Measuring and testing technology Component and part analysis, Visual analysis (e.g. microscopy, metallography), Materials analysis, Destructive analysis, Non-destructive analysis	✓	✓	
Modelling and simulation Loads & stress, Life-cycle analysis, Multiphysics simulation, Optimisation, Processes, Structural mechanics, Materials, Reliability validation	✓	✓	
Plant construction & automation			
Recycling technologies			

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Overview of lightweighting expertise

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	Research	Development	Manufacturing & Supply
Manufacturing process			
Additive manufacturing 3D printing, Electron beam melting, Fused deposition modeling, Selective laser melting (SLM, LPBF, ...)	✓	✓	
Coating (surface engineering)			
Fibre composite technology Manual lamination, Resin infusion process, Pre-preg processing, Vacuum infusion	✓	✓	
Forming			
Joining			
Material property alteration Mechanical treatment, Thermomechanical treatment, Heat treatment	✓	✓	
Primary forming			
Processing and separating			
Textile technology			

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Overview of lightweighting expertise

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	Research	Development	Manufacturing & Supply
Material			
Biogenic materials			
Cellular materials (foam materials)			
Composites Glass-fiber reinforced plastics (GFRP), Carbon-fiber reinforced plastics (CFRP), Natural fibre reinforced plastics (NFRP), Others (Metal-FVK hybrids)	✓	✓	
Fibres			
Functional materials			
Metals Aluminium, Intermetallic alloys, Magnesium, Steel, Titanium	✓	✓	
Plastics Thermoset plastics, Elastomers, Thermoplastics	✓	✓	
Structural ceramics			
(Technical) textiles			

Contacts

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Contacts

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