Fraunhofer Institute for Industrial Mathematics ITWM

About this organisation

Machine translation

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

The Fraunhofer ITWM with its approx. 200 employees is active in the field of industrial mathematics. The departments cover topics ranging from material characterisation/testing and image processing to flow and material simulation. Focal points: Testing, characterisation, modelling, simulation and optimisation of composite materials and lightweight components; simulation-supported material/product design.

The basis for simulation-supported material modelling is usually 3D image data from micro-computed tomography. These are used to determine geometric parameters, for which the MAVI product family has been continuously developed in the Image Processing department for over 10 years. The geometric microstructure models represent the interface to the Flow and Material Simulation department. The simulation technology at the Fraunhofer ITWM is able to simulate and optimise real complex 3D structures and properties of microstructures. Various competences such as microstructure characterisation, microstructure generation, solving potential and flow problems and upscaling techniques are combined here. In material testing, the technologies used range from optical coherence tomography and systems in the terahertz frequency range to electronic testing systems in the millimetre wave range.

Fraunhofer ITWM

Organisation type
Non-university research institution

Sectors
Others: Die verwendeten Methoden sind branchennübergreifend einsetzbar.

Employees
50 up to 249

Turnover
€10m - €50m

Funding

Fraunhofer-Platz 1
67663 Kaiserslautern
Rhineland-Palatinate
Germany
www.itwm.fraunhofer.de



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About this organisation

Main areas covered	Microstructure characterisation, Microstructure simulation, Image analysis, Material characterisation/testing, Terahertz, millimetre waves
Infrastructure	Computer tomograph, DMTA device, (mobile) terahertz imaging, (mobile) microwave imaging, Short coherence measuring system
Certifications	
Keywords	
Memberships	

Overview of lightweighting expertise

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	Research	Development	Manufacturing & Supply
Offer			
Products Software & databases	✓	✓	✓
Services & consulting Consulting, Validation, Simulation	✓	✓	✓

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Overview of lightweighting expertise

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	Research	Development	Manufacturing & Supply
Field of technology			
Design & layout Lightweight manufacturing, Lightweight design, Hybrid structures, Lightweight construction concepts, Lightweight material construction	✓		
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 Crash behaviour, 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			
Coating (surface engineering)			
Fibre composite technology			
Forming			
Joining			
Material property alteration			
Primary forming			
Processing and separating			
Textile technology			
Material			
Biogenic materials			
Cellular materials (foam materials)			
Composites			
Fibres			
Functional materials			
Metals			
Plastics			
Structural ceramics			
(Technical) textiles			

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Contacts

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