

## 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.

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### Organisation type

Non-university research institution

### Sectors



Others: Die verwendeten Methoden sind branchennübergreifend einsetzbar.

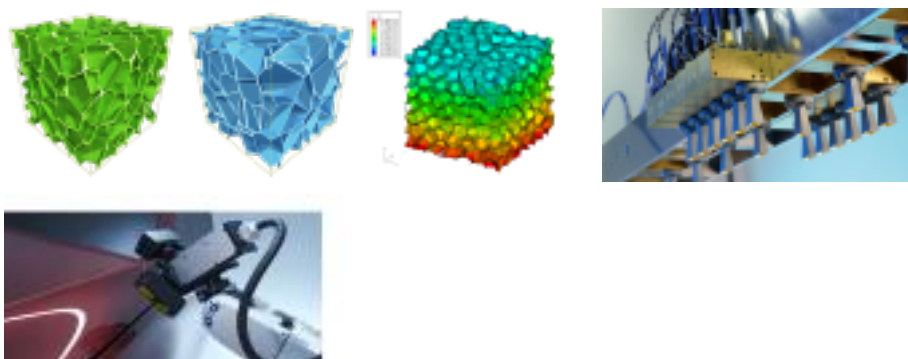
### Employees

50 up to 249

### Turnover

€10m - €50m

### Funding



# Fraunhofer Institute for Industrial Mathematics ITWM

## 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

### Machine translation

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	Research	Development	Manufacturing & Supply
<b>Offer</b>			
<b>Products</b> Software & databases	✓	✓	✓
<b>Services &amp; consulting</b> Consulting, Validation, Simulation	✓	✓	✓

## Overview of lightweighting expertise

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

## 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*

## Contacts

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

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