Karlsruhe Institute of Technology KIT

Institute of Engineering Mechanics, Institute of Continuum Mechanics ITM-KM

About this organisation

Machine translation

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

Safe dimensioning of components is one of the most important tasks for the sustainable realisation of lightweight construction concepts. Efficient linear and non-linear continuum mechanical models are developed and identified through experiments. Material models are formulated in particular for the following material classes: - Metals, e.g. aluminium, dual-phase steels and press-hardenable steels - fibre-plastic composites (LFT, SMC)

FE-based multi-scale methods; homogenisation of material properties; mathematical description of microstructures; characterisation of material properties: temperature- and frequency-dependent using DMA, biaxial testing of samples and components; development of mean-field approaches for LFT/SFRP or SMC/BMC; development of material models for: Metals (dual-phase steels, press-hardenable steels, aluminium), polymer-based fibre composites FE-based multi-scale methods; homogenisation of material properties; mathematical description of microstructures; characterisation of material properties: temperature and frequency-dependent using DMA, biaxial testing of samples and components; development of mean-field approaches for LFT/SFRP or SMC/BMC; development of material models for: Metals (dual-phase steels, press-hardenable steels, aluminium), polymer-based fibre composites

Kaiserstr. 12
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Baden-Württemberg
Germany
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Organisation type
University or higher education institution

Sectors

Employees
10 up to 49

Turnover
n/a

Funding
n/a

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About this organisation

Main areas covered	Methods, Simulation, Component design, Materials, Material characterisation
Infrastructure	
Certifications	
Keywords	Mechanics, Simulation, Hybrid lightweight construction
Memberships	

Overview of lightweighting expertise

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	Research	Development	Manufacturing & Supply
Offer			
Products Parts and components, Materials	✓		
Services & consulting Simulation	✓		

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Overview of lightweighting expertise

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	Research	Development	Manufacturing & Supply
Field of technology			
Design & layout Hybrid structures	✓		
Functional integration			
Measuring and testing technology Component and part analysis, Materials analysis	✓		
Modelling and simulation Structural mechanics, Materials	✓		
Plant construction & automation			
Recycling technologies			
Manufacturing process			
Additive manufacturing			
Coating (surface engineering)			
Fibre composite technology			
Forming			
Joining			
Material property alteration			
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)	✓		
Fibres Glass fibres, Carbon fibres	✓		
Functional materials			
Metals Steel	✓		
Plastics Thermoset plastics, Thermoplastics	✓		
Structural ceramics			
(Technical) textiles			

Contacts

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Contacts

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