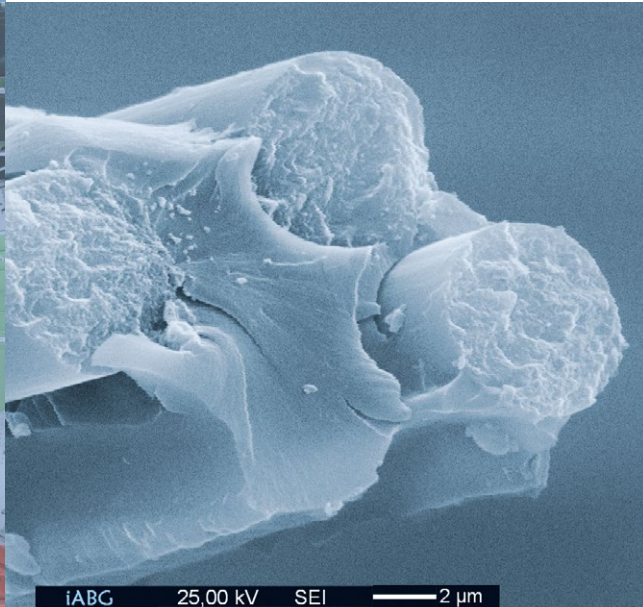
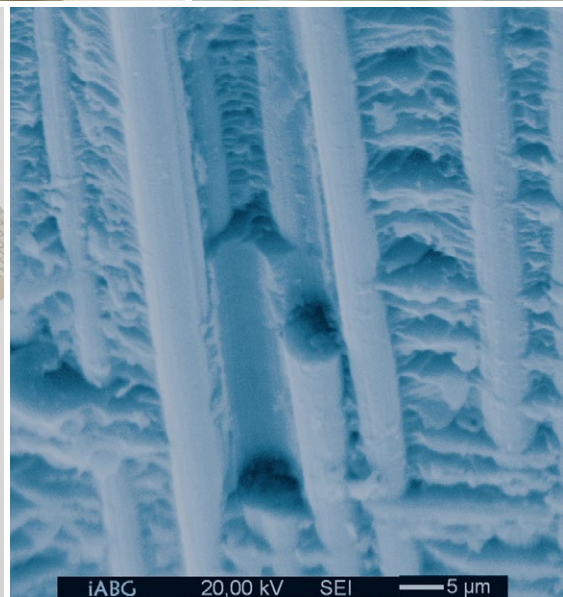
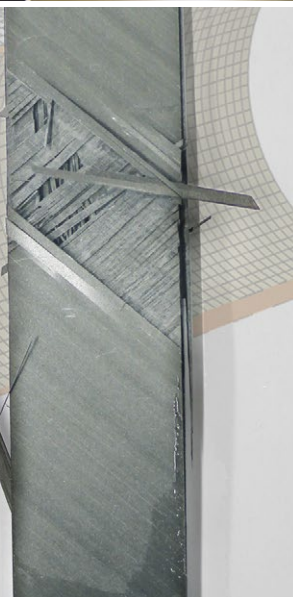
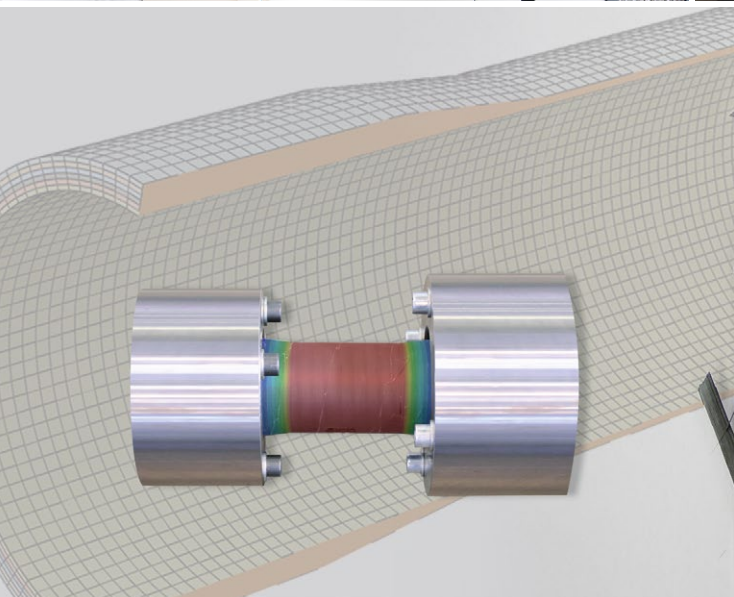
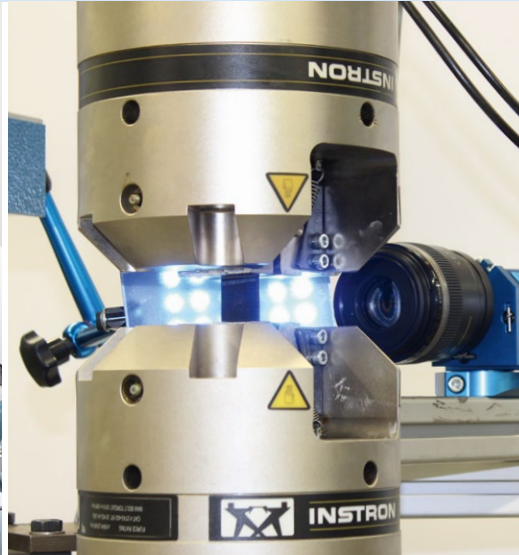


**IABG. The Future.**



## **Fibre-Reinforced Plastics**

Experimental determination  
of material parameters  
and computational fatigue  
strength analysis



## Fibre-Reinforced Plastics

### Experimental determination of material parameters – Computational fatigue strength analysis

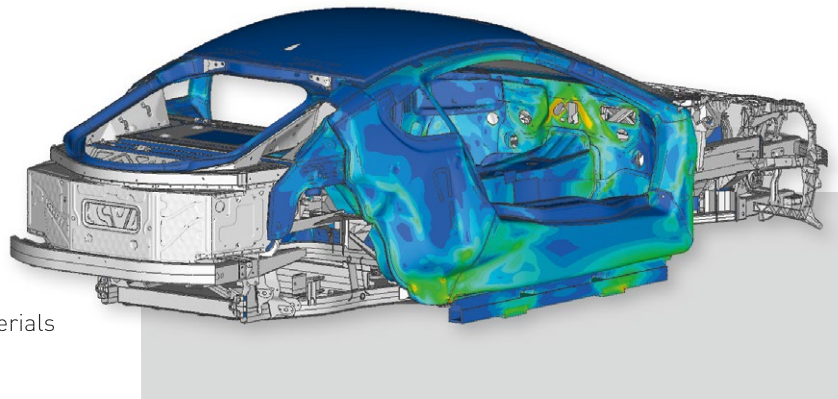
When developing new components and entire structures using fibre-reinforced plastics, it is necessary to verify their safety and functionality. Knowledge of material parameters and the properties of the subsequent multi-layer composite is both fundamental and crucial for selecting suitable material and damage models as well as calculation methods.

The determination of the mechanical parameters of fibre-reinforced plastics can be particularly challenging to those in charge of test engineering, execution and evaluation. It is essential that the test program, the specimens, testing and measuring methods are selected based on the customer's individual requirements.

Our accredited laboratories for fatigue strength tests and material analyses offer standardised test solutions. By combining these standard tests with our know-how of analytics and simulation, we can provide custom solutions for complex problems.

### Services

- Definition of materials testing programs
- Design of suitable specimens and concepts
- Accredited fatigue strength test laboratory:
  - Determination of the mechanical parameters of fibre-reinforced plastics under static and cyclical loading conditions
  - Tests under single- and multi-axial loads
  - Examination of environmental influences on materials (temperature, impact etc.)
  - Optical deformation measurements
- Statistical planning and evaluation of test programs
- Development and execution of custom tests
- Calculation of fatigue strength using analytical and numerical calculation methods
- Development of methods to evaluate the fatigue strength of fibre-reinforced plastics
- Determination of physical parameters (glass transition, expansion etc.)
- Determination of the fibre volume ratio and the fibre orientations by means of thermogravimetric analysis
- Damage characterisation by means of X-ray computed tomography and scanning electron microscopy



### Customer Benefits

- Independent, neutral and accredited test laboratory
- Solution of complex problems using a combination of computational, experimental and analytical methods
- Short reaction times and fast implementation thanks to a wide range of resources
- Cross-discipline know-how



#### AUTOMOTIVE



#### INFOCOM



#### MOBILITY, ENERGY & ENVIRONMENT



#### AERONAUTICS



#### SPACE



#### DEFENCE & SECURITY

## About IABG

IABG offers integrated, ground-breaking solutions in the sectors Automotive • InfoCom • Mobility, Energy & Environment • Aeronautics • Space • Defence & Security. We provide independent and competent consulting. We implement with future viability and target orientation. We operate reliably and sustainably. Our success is based on an understanding of market trends and requirements, on our staff's technological excellence and a fair relationship with our customers and business partners.

In our role as development partner we take on the tasks of technical qualification and solve problems arising from the fields of functional efficiency, quality, design and materials. We offer a broad spectrum of products and services, ranging from numerical analysis and experimental testing to the realisation of turnkey, customised test systems that we operate for the customer.

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