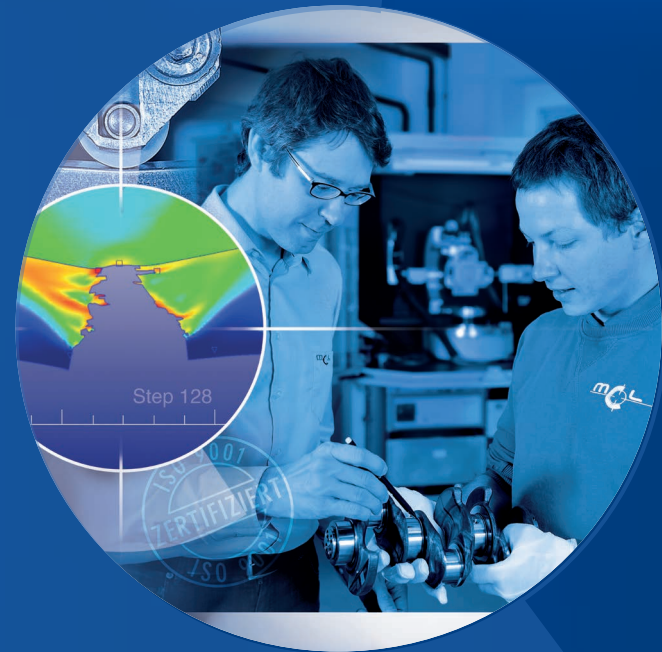


We innovate Materials

- material- and component testing
- testing of microelectronic components
- material- process and component simulation
- damage analysis and fractography
- consulting material/process/product
- seminars and workshops

# MCL Services



COMPETENCE & RELIABILITY

ZUKUNFTSDIALOG

# Materials Center Leoben Forschung GmbH

Materials Center Leoben Forschung GmbH is an internationally positioned research company specializing in materials, manufacturing and processing technologies and innovative materials applications. The materials focus is on metallic and ceramic materials and their composites.

MCL is part of a network of scientific partners and corporate partners from industries with materials-based innovations, whose competences extend along the entire value chain.

The range of services offered by the MCL includes research and development projects with partners from international industry within the framework of cooperative research and development projects as well as a comprehensive range of services (MCL Services).

At the MCL, around 170 highly educated and trained employees work together with corporate partners and scientific partners on innovative developments and the necessary foundations within the framework of cooperative research and development projects.

IZ + WERKSTOFFE



*„our expertise is  
your profit“*

## MCL Services

*At MCL Services, with our approximately 40 employees, we act with our theoretical and practical expertise and our outstanding facilities, as a flexible, practice-oriented partner to research, development and application in the fields of materials technology, process technology, quality assurance and component design with a high level of understanding for your tasks.*

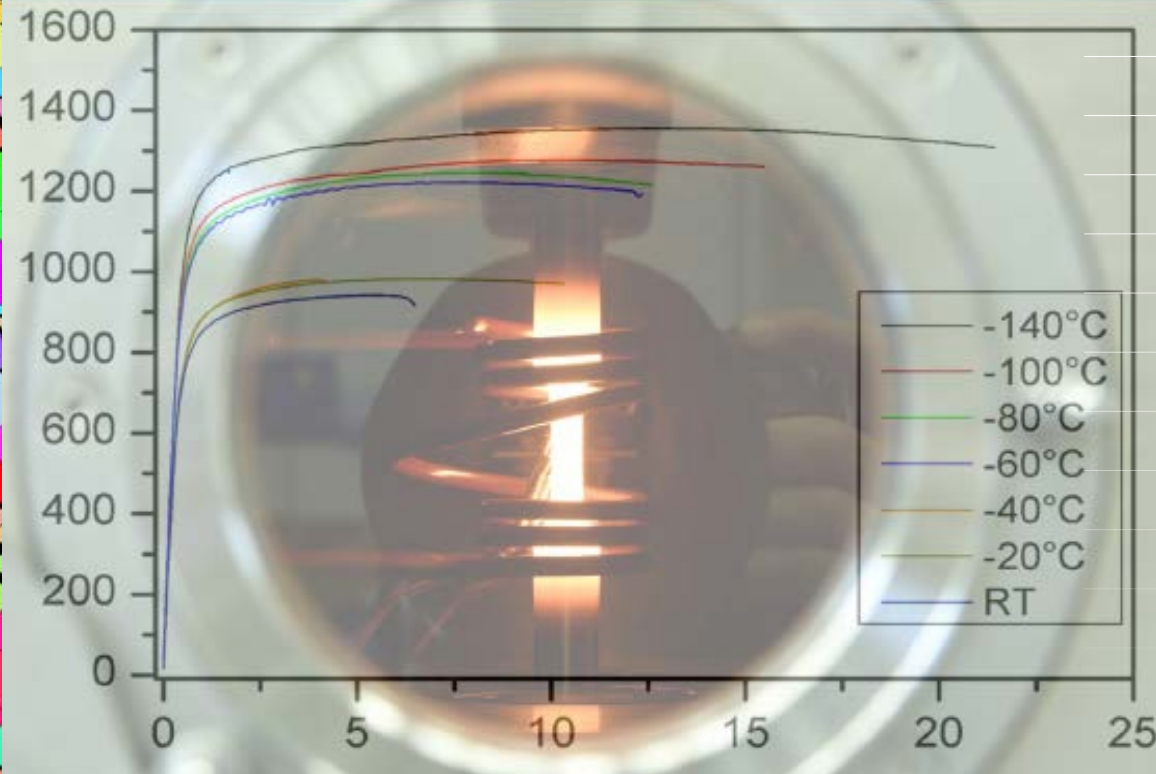
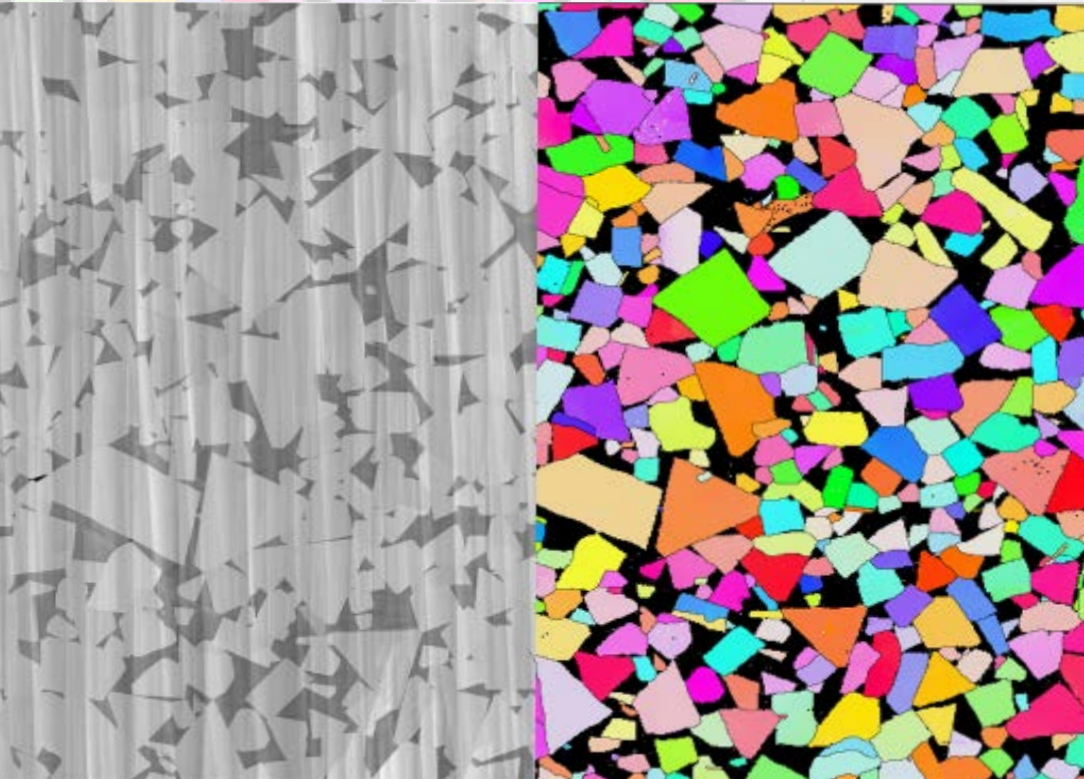
*Our particular advantages is the combination of experimental investigations in the laboratory with calculations and simulations, supported by the high-tech equipment and our wide-ranging specialist knowledge of a wide variety of materials.*

*With our high quality awareness we are a flexible and reliable partner and carry out investigations quickly, confidentially, customer-specific and with the highest possible quality.*

*Dr. Stefan Marsoner, Head of Department Services*



# material- and component testing



microstructural analysis, determination of chemical, structural and mechanical properties of various metallic and ceramic materials and composites

[link to the folder](#)

## contact



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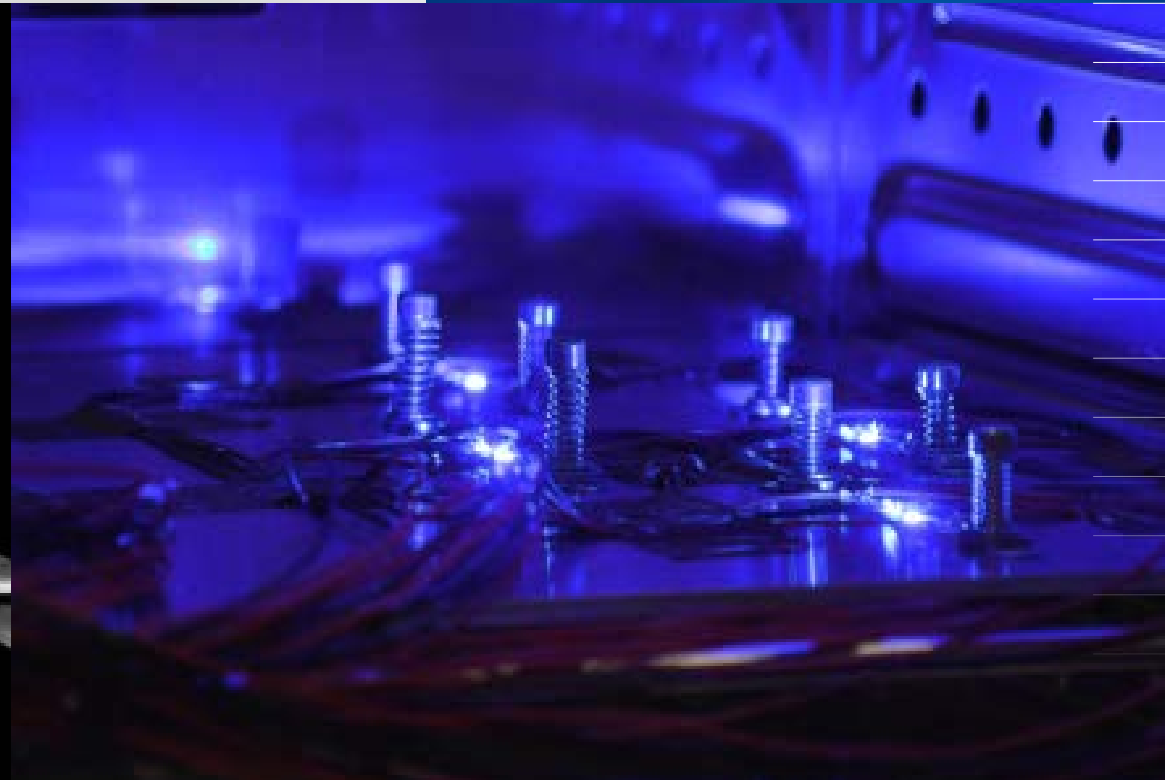
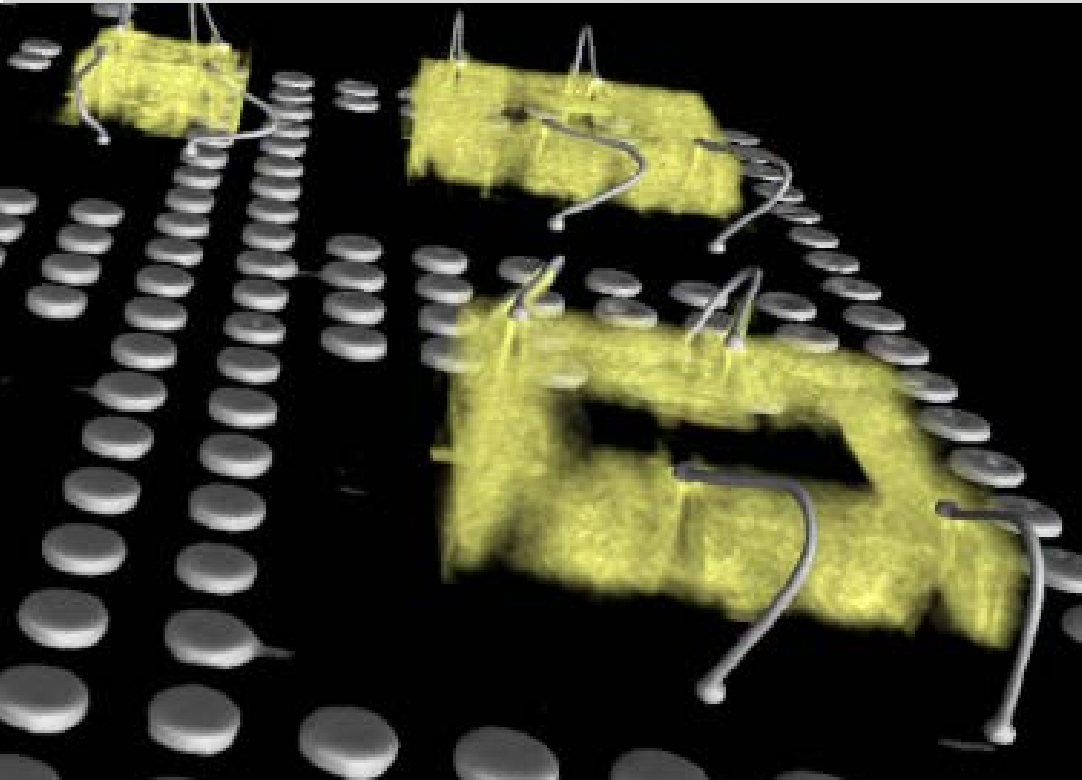


## our focus / competences

- documentation of (micro-)structure from millimeter to nanometer
- determination of the (local) chemical composition
- analysis of structure and phase fractions, retained austenite, residual stresses
- accredited testing laboratory
  - mechanical properties (hardness, strengths, fatigue, fracture mechanics)
  - X-Ray determination of residual stresses and retained austenite
- heat treatment of small batches, process analysis and advice

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# testing of microelectronic components



destructive and non-destructive testing of physical and thermal properties of microelectronic components

[link to the folder](#)

contact



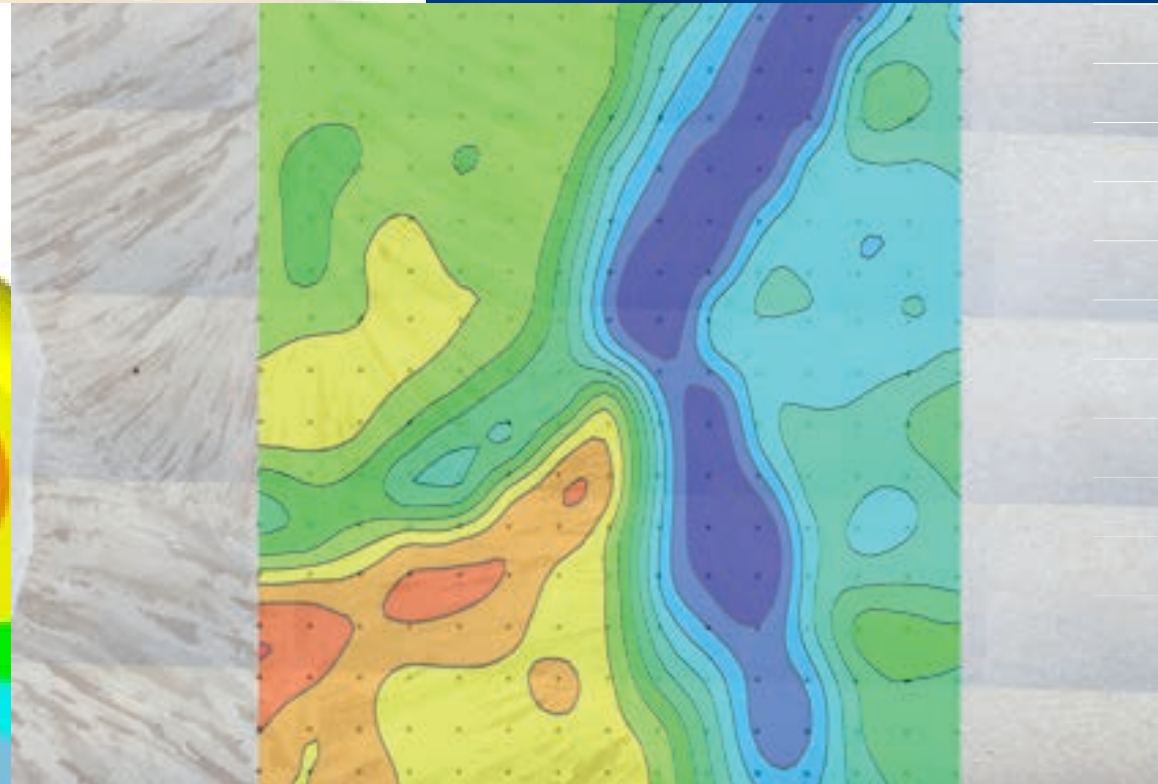
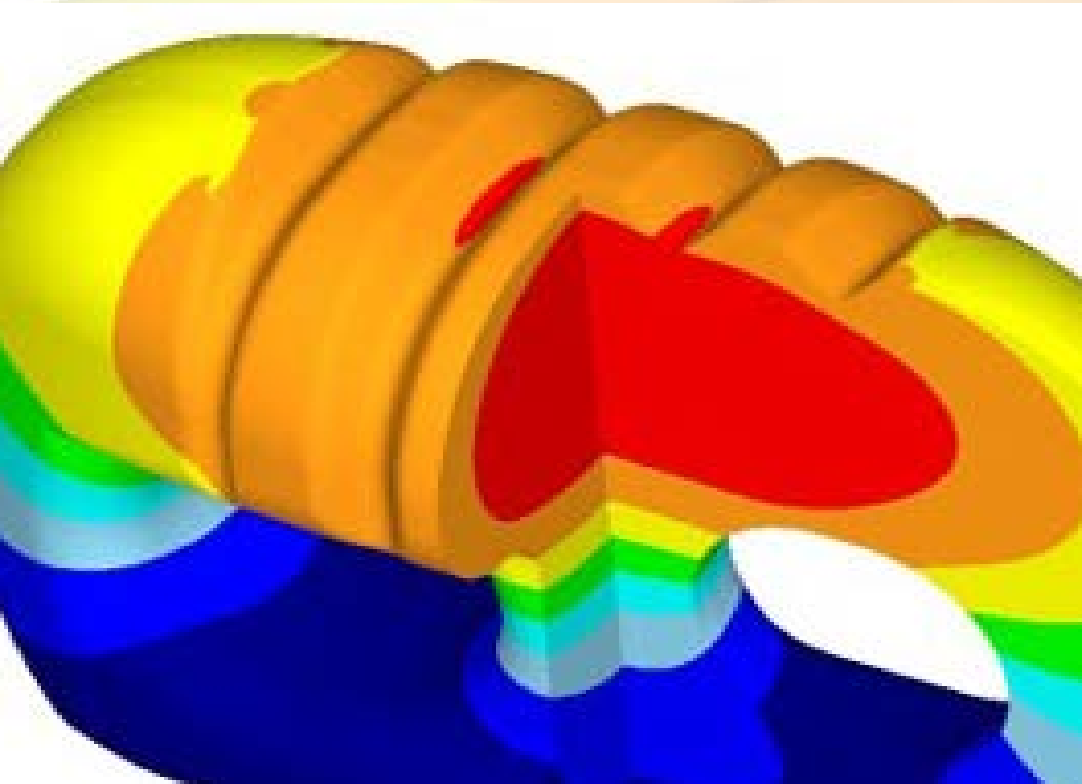
Dr. Julien Magnien  
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## our focus / competences

- destructive and non-destructive quality assurance and failure analysis
- reliability of packaging and interconnect technologies
- thermal analysis from wafer to system
- active and passive thermal reliability testing (environmental simulation testing)
- thin film analysis

# material- process and component simulation



combination of high-quality modeling and simulation with many years of experience regarding material behavior and damage analysis

[link to the folder](#)

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**contact**



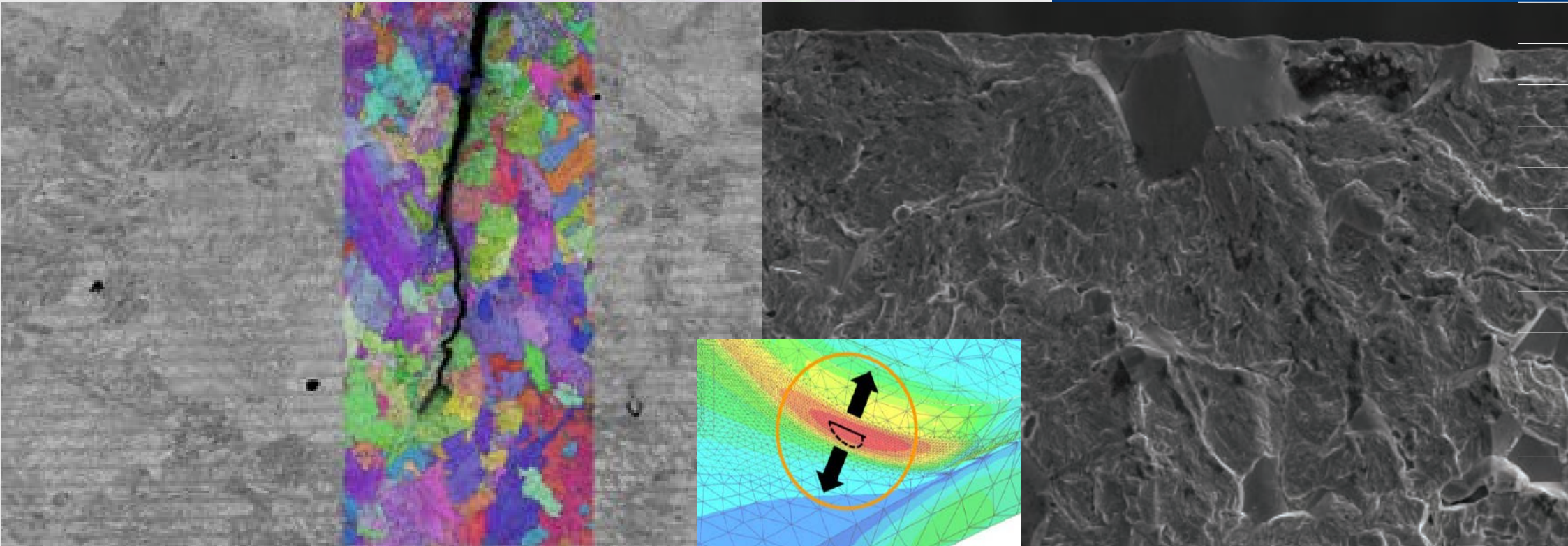
Dr. Werner Ecker  
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## our focus / competences

- calculation service for development and construction
  - structure mechanics
  - fracture mechanics
  - fluid mechanics
- simulation of manufacturing processes and process chains
- multiscale material and microstructure modeling
- material models and subroutines for FE-simulation
- evaluation of hydrogen embrittlement



# damage analysis and fractography



damage assessment and experimental and simulative damage analytics with interpretation of the cause of damage and recommendations for damage prevention

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## our focus / competences

- damage assessment on-site at the customer or in the laboratory
- consultation and sampling at the relevant examination sites
- fracture surface analysis by stereo and scanning electron microscopy incl. local chemical analysis
- determination of crack initiation and crack progression
- investigation of microstructure and structure
- determination of mechanical properties
- component simulation to determine critical, highly stressed areas

**consulting material /process /product**



consulting in the field of material selection, process chain analysis, service life and reliability

**our focus / competences**

- Material consulting and selection of metallic materials
- Process chain analysis of the production of metallic materials, semi-finished products and products
- Computer-aided process and load analyses
- FE simulation of products to identify critical positions and to estimate service life and reliability.

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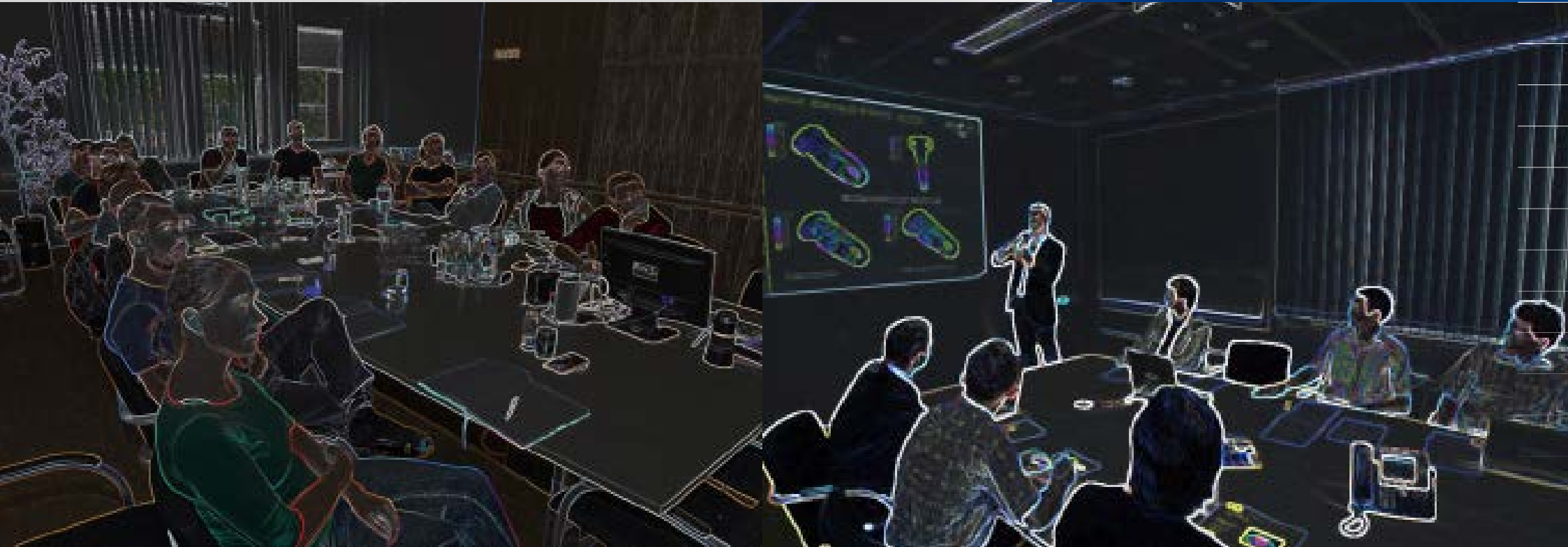


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## seminars und workshops



seminars and workshops from different areas of materials science and testing

browse our [seminar catalog](#)

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### **our focus / competences**

- materials science and metallography
- scanning electron microscopy and new methods of microstructural analysis
- static and dynamic materials testing
- fracture mechanics
- fracture and damage analysis
- wear in tool applications
- microelectronic analysis chains
- methods of thermal analysis of micro-electronic components



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