MATERIALS CENTER LEOBEN
FORSCHUNG GMBH

We innovate Materials

sample preparation

lightoptical microscopy - structure characterization

hardness testing

surface structures and topography

preparation, metallography & lightoptical microscopy

COMPETENCE & RELIABILITY

ISO 9001 CERTIFIED ISO 9001

Akkreditierung Austria A 0421 ISO/IEC 17025 T

Accredited testing laboratory acc. to EN ISO 17025

sample preparation

coarse cutting, fine cutting, mechanical specimen preparation
and preparation of metallographic sections

our focus / competences

- preparation of metallic materials, ceramics, composite materials, special materials, microelectronic components
- coarse cutting of components
- fine cutting of specimen material
- mechanical production of specimens (milling, turning, grinding, eroding (*))
- production of microsections in the size range from <0.1 mm to >1 dm for microscopic documentation

(*) in cooperation with our long-term partners/suppliers

contact

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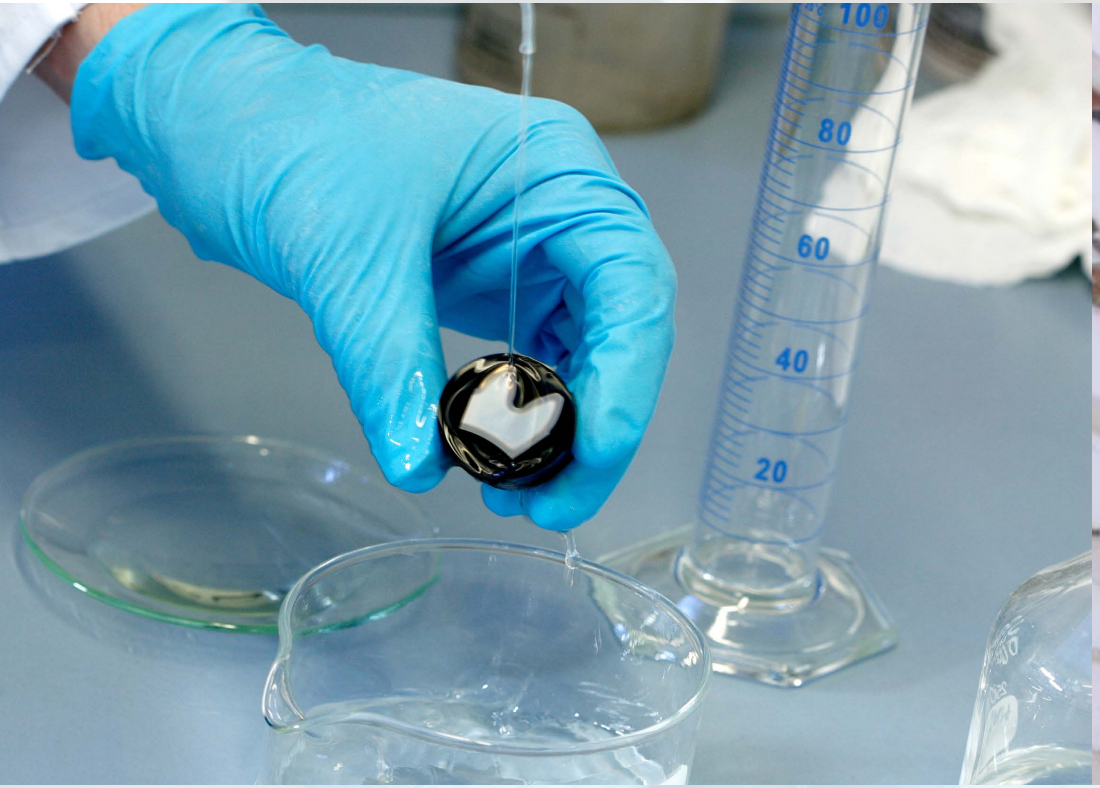
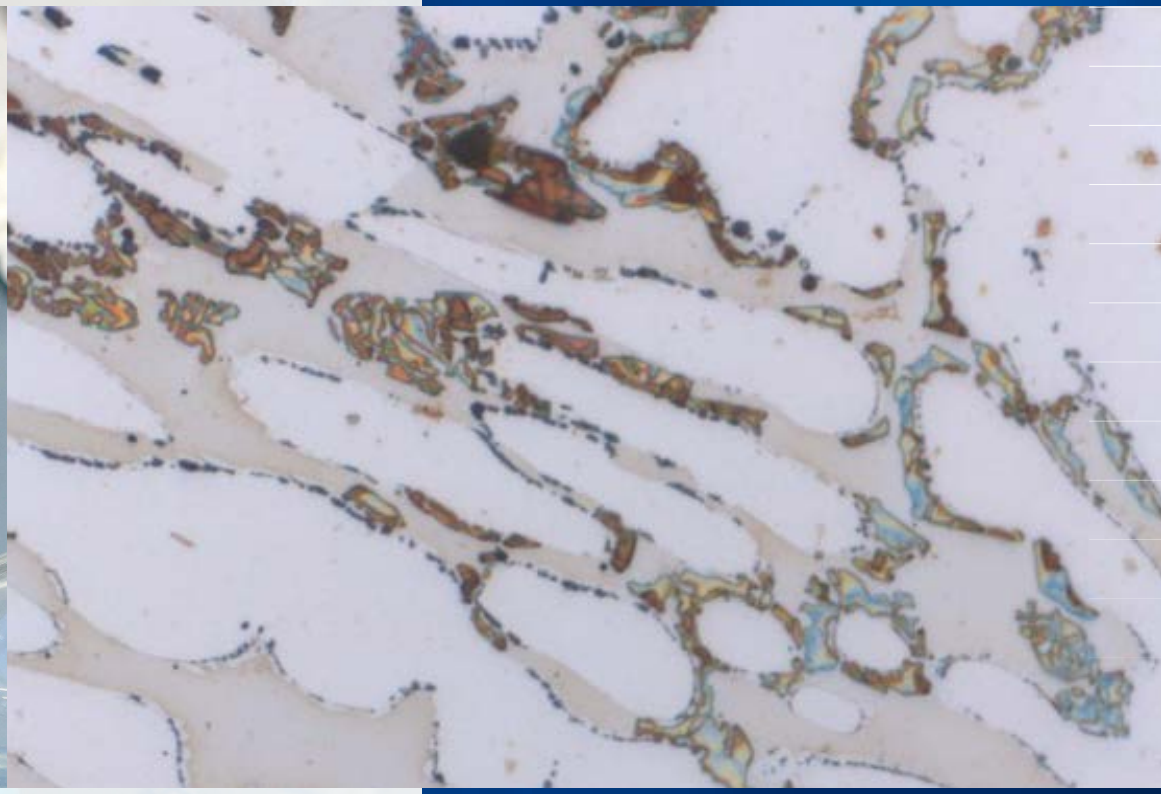
lightoptical microscopy - structure characterization





Characterization of the microstructure of structural parts and functional components

our focus / competences

- microstructure documentation and analysis
- comprehensive range of etching methods (chemical and electrochemical) for steels, non-ferrous metals, hard metals, ...
- assessment according to various standards
  - content of non-metallic inclusions acc. to DIN 50602, ASTM E45, DIN EN 10247, ISO4967
  - carbide structure in steels acc. to SEP 1520
  - apparent grain size acc. to DIN EN ISO 643 und ASTM E112
  - depth of decarburisation acc. to DIN EN ISO 3887

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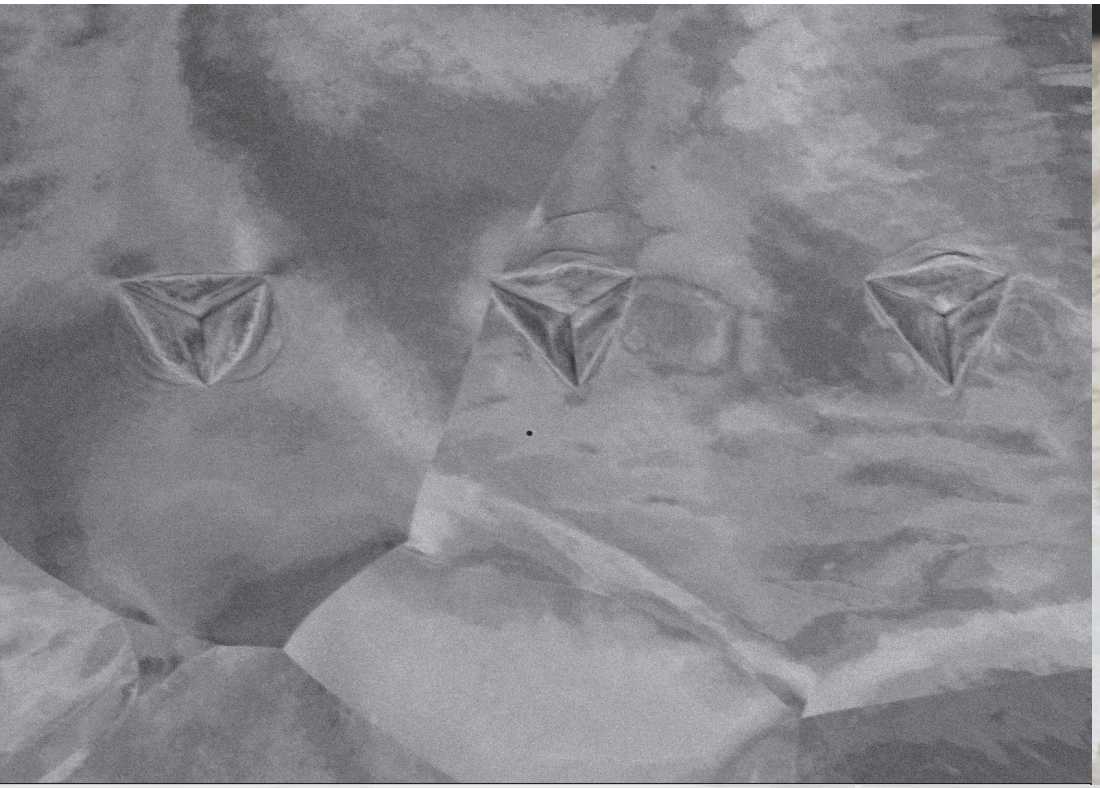
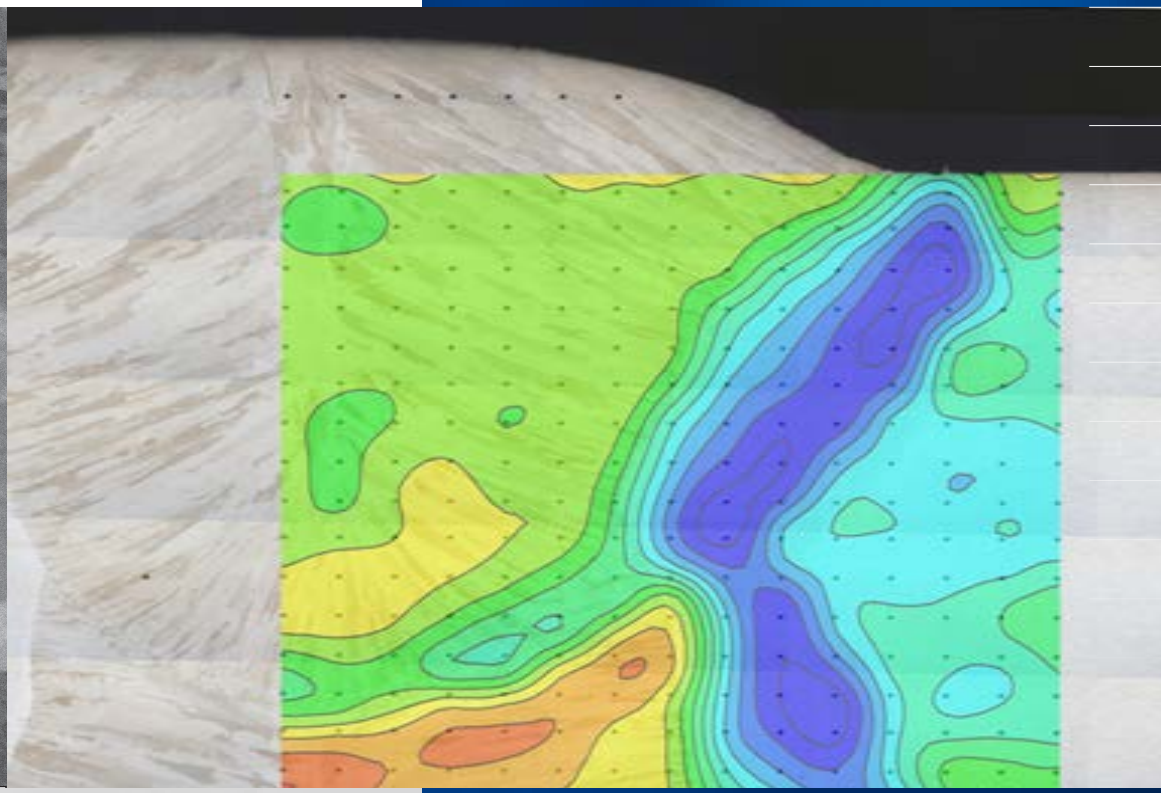
hardness testing





Performance of hardness tests from instrumented nano hardness testing to macro hardness testing *(partly within the scope of accreditation according to EN ISO 17025).*

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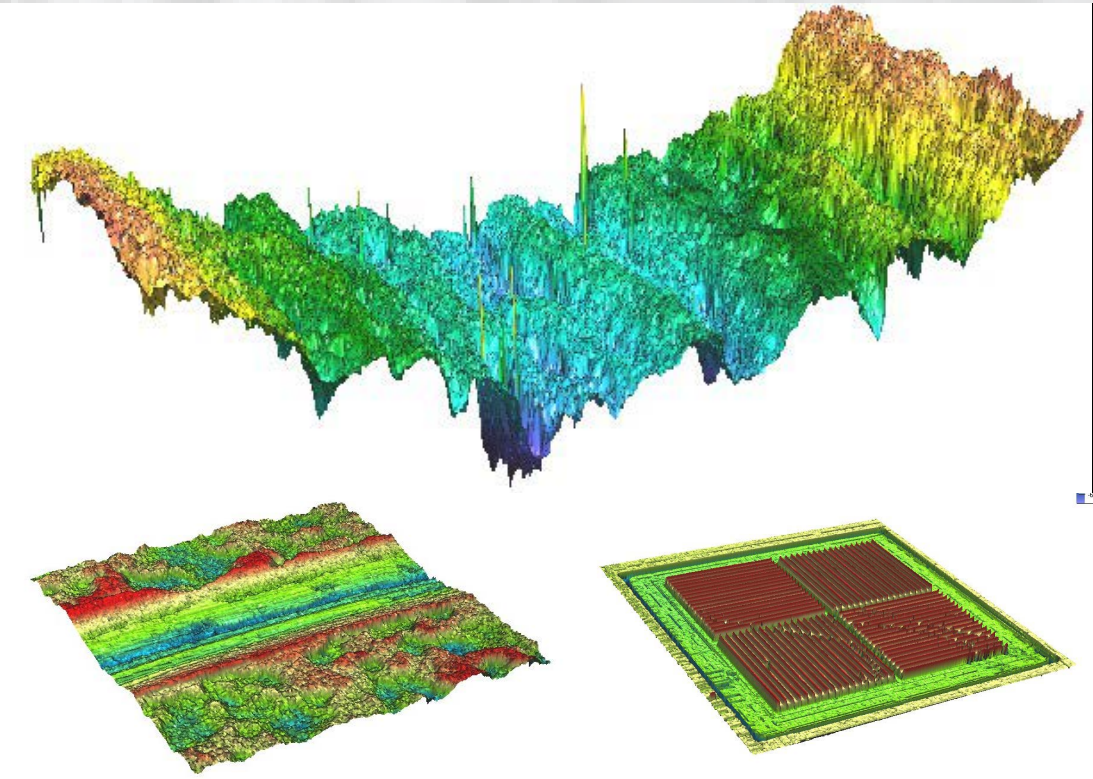
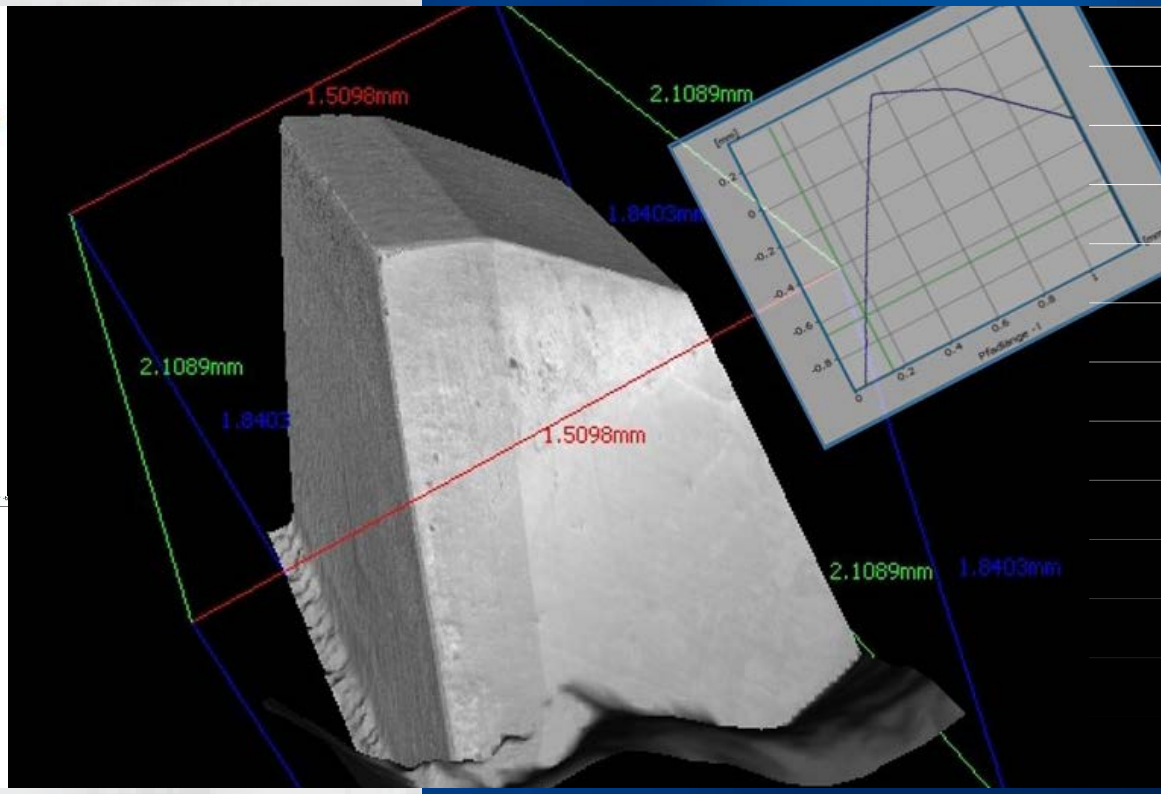
our focus / competences

- determination of the core hardness HV, HRC, HB in the accredited testing lab acc. to EN ISO 6506-1 (HB), EN ISO 6507-1 (HV), EN ISO 6508-1 (HRC)
- measurement of hardness profiles and hardness mappings
- instrumented small load hardness measurement
- instrumented nanoindentation (*)
- insitu nanoindentation in SEM

(*) in cooperation with the Department Materials Science of the University of Leoben

surface structures and topography





2D and 3D - imaging of contours and surfaces from several millimeters to a few nanometers.

our focus / competences

- imaging of surfaces, contours or components by means of stereomicroscopy, profilometry and scanning electron microscopy
- Roughness measurements (Ra, Rt, Rz)
- Wear characterization on samples, components and tools
- 3D topography of contours, damage, etc. incl. measurement in the mm to sub-µm range in SEM.
- Analysis of local deposits, ablations incl. local chemical analysis (EDX).

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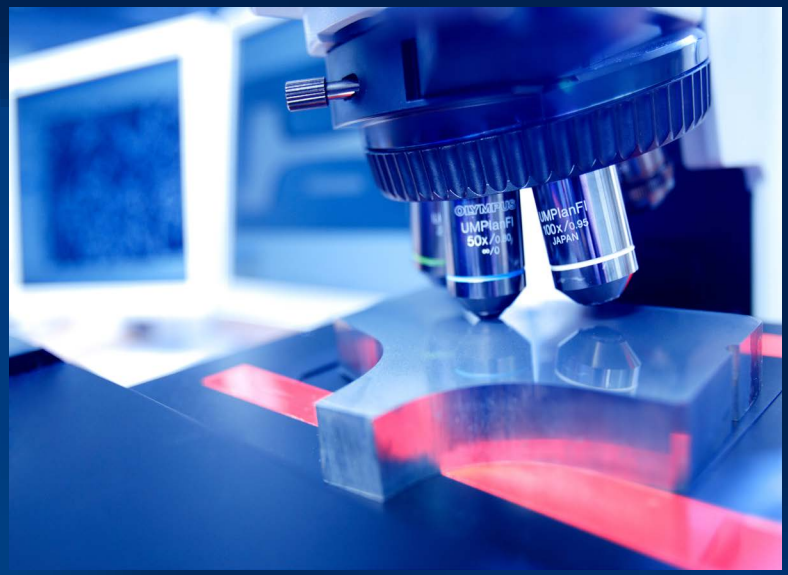

COMPETENCE & RELIABILITY

Service offer

- coarse/fine cutting,mechanical production of specimen material
- preparation of metallographic sections (metallic materials, metal-ceramic composite, electronic components)
- light microscopic examinations (microstructure documentation, microstructure assessment)
  - content of non-metallic inclusions acc. to DIN 50602, ASTM E45, DIN EN 10247, ISO4967
  - carbide structure in steels acc. to SEP 1520
  - apparent grain size acc. to DIN EN ISO 643 and ASTM E112
  - depth of decarburisation acc. to DIN EN ISO 3887
- stereomicroscopic examinations (surface and fractography)
- roughness measurement (Ra, Rt, Rz) by confocal microscopy
- creation of topography images, qualitative and quantitative evaluation in 2D or 3D, also on small to medium-sized components, cutting edges, friction marks, wear surfaces, etc.
- ambulant metallography (on-site-testing)
- one to several days on-site-trainings in the field of metallographic preparation and microstructure evaluation

equipment

- coarse and fine cutting machines for sample preparation
- CNC milling and turning machines for sample production
- equipment for hot and cold embedding of microsections
- automated and manual grinding and polishing equipment
- lightoptical microscopy incl. digital image recording and automatic x-y table for analysis of large microsection surfaces
- stereomicroscopy with 3D recording technology
- quantitative image analysis system
- nanofocus µsurf confocal microscope (profilometer) with automatic x-y stage (analysis of large areas)
- various scanning electron microscopes (see SEM folder)

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