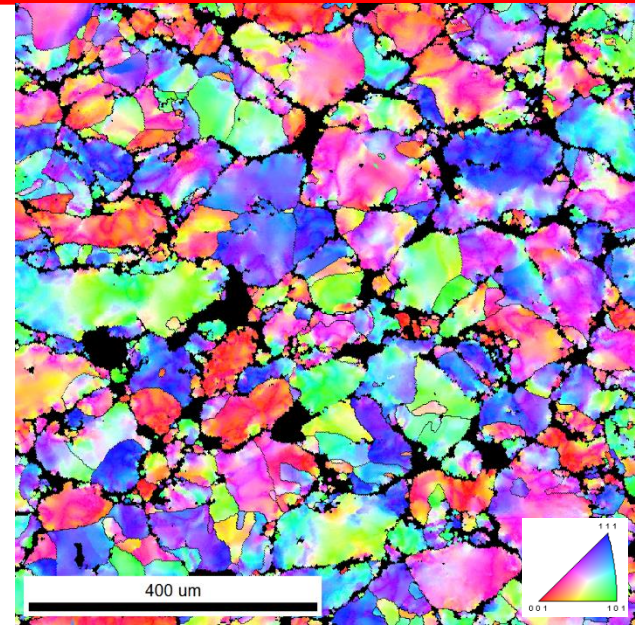


# Soft-magnetic materials

## Microstructural analysis

- materialographic preparation
- qualitative and quantitative microstructural analysis
- determination of homogeneity, phase composition, grain size, texture etc.
- visualisation of magnetic domains
- assessment of punching quality and other production-related properties



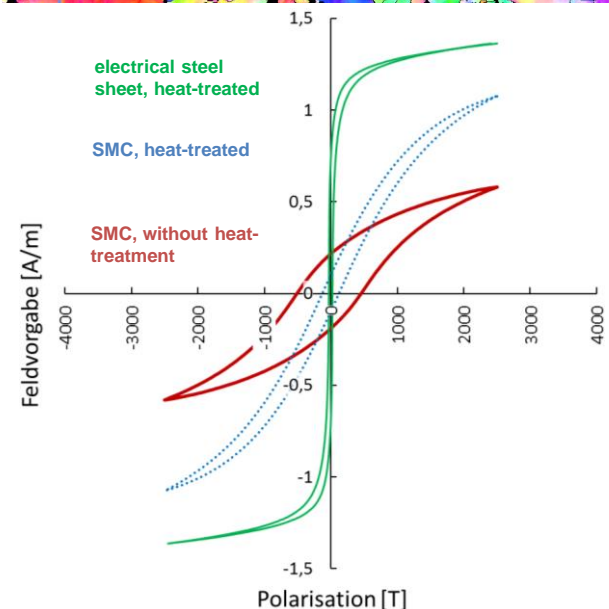
## Physical und chemical analysis

### Physical magnetometry

- measurement and evaluation of magnetic properties in accordance with technical application requirements
- determination of characteristic soft-magnetic AC- and DC-properties according to IEC 60404-ff, variation of thermal conditions possible

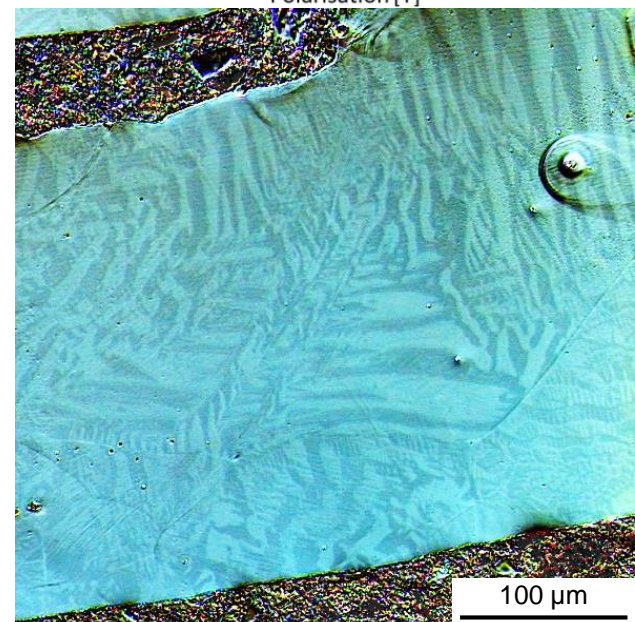
### Chemical analysis

- analysis of chemical composition local phase composition
- evaluation of manufacturer information regarding alloy composition and trace elements
- analysis of material prototypes



## Additional technical services

- scientific, technological studies and projects on hard-magnetic materials with respect to the value chain (research work, market analysis)
- technological consulting service regarding manufacturing and post-production-processing of soft-magnetic materials
- correlation of corrosion behaviour with chemical composition and microstructural features



# Technical equipment

## Materialography / Microscopy

### Materialographic laboratory

- devices for grinding and polishing
- ion-polishing machine

### Microscopy

- high-end optical microscopy
- polarised light microscopy
- standard- and high-resolution electron microscopes with energy-dispersive X-ray spectroscopy and electron backscatter diffraction
- quantification of microstructural composition using visual analysis algorithms

## Physical magnetometry

- testing stand for soft-magnetic materials
- impedance analyser
- magnetometer with in-situ microscopy unit

## Chemical analysis

- atom emission spectroscopy, atom absorption spectroscopy, mass spectrometry with induction-coupled plasma
- carrier gas hot-extraction

## Further analytic methods

- processing technology of sintered materials (ceramics, composite materials, sintered magnets)
- battery testing
- X-ray diffractometer for phase analysis, stress measurement and in-situ high temperature measurement
- destructive material testing
- 3D-X-ray-computed tomography with micro- and nano-focus tube

In collaboration with Aalen University, Materials Research Institute

