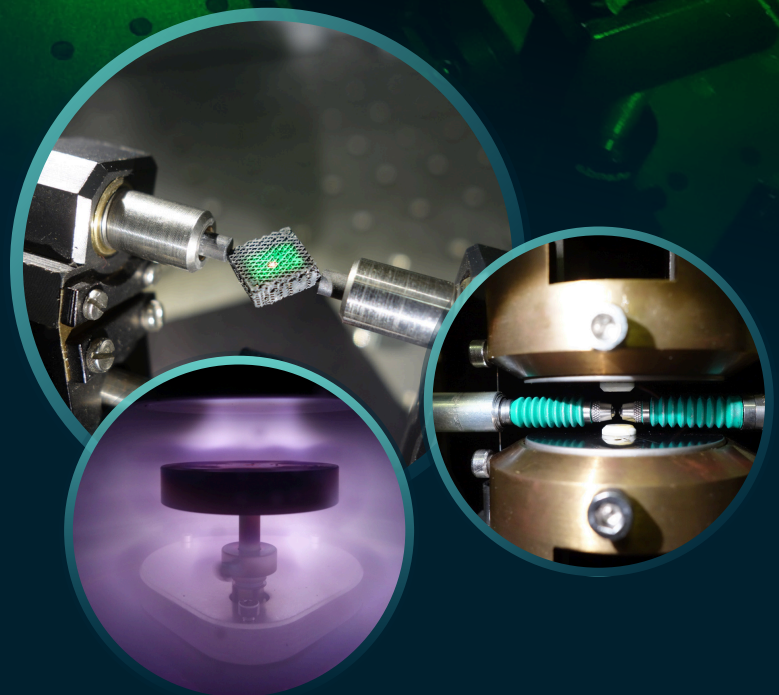


Laser-ultrasonics for materials characterization

What we do

We focus on materials characterisation at both experimental and theoretical levels. We are able to utilise measurements on metals, intermetallics, ceramics, composites and functional materials (ferroics). In order to fully understand the governing processes at all scales and to exploit the knowledge from experimental measurements, we develop theoretical models, ranging from continuum mechanics to molecular dynamics.



Transient Grating Spectroscopy

TGS is a contactless method for measuring the thermoacoustics response of a sample. We are able to measure local elastic properties and thermal conductivity. The method allows us to determine elastic properties of thin layers.

Resonant Ultrasound Spectroscopy

Laser-based RUS is a method for measuring the average elastic properties of small anisotropic samples. We are able to measure changes in a material under thermal loading and reveal the relations between the microstructure and the macroscopic elastodynamic properties.

Martensitic Transformation

We develop theoretical models and numerical simulations of martensitic transitions in advanced alloys, including both magnetic and non-magnetic shape memory alloys, and biomedical titanium alloys. The models cover a broad range of scales, from macroscopic constitutive behaviors to atomistic-scale simulations of lattice defects.