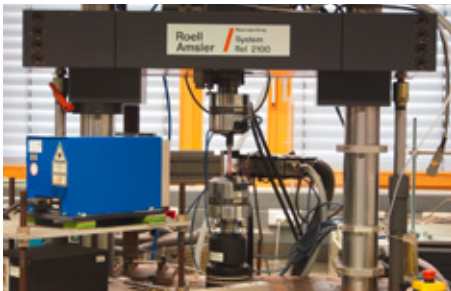


INSTRUMENT DATABASE

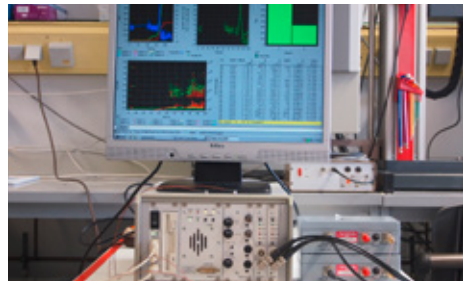
Advanced mechanical testing of materials

II HIGH-TEMPERATURE MECHANICAL TESTING OF MATERIALS



Servo-hydraulic testing machine for cyclic tests on materials up to 100Hz.

The Advanced Ceramics group has extensive experience in mechanical testing of engineering materials. Here, our main expertise lies in highly specialized mechanical tests at extreme temperature conditions along with standardized experiments. We are equipped with several universal testing machines with setups to perform most of the mechanical tests described by DIN standards such as tensile, compression, bending, shear, torsion, and multi-axial tests. Mechanical tests can be performed at temperatures ranging from 25°C to 1.700°C in different environmental conditions and under quasi-static, static and cyclic loading. To this end, we use tailor-made equipment such as laser extensometers for recording longitudinal deformation, induction and infrared ovens and vacuum chambers. Acoustic monitoring of damage during mechanical testing and non-destructive measurements of elastic characteristics of materials based on the Impulse Excitation Technique emission acquisition system are also possible.



Acoustic emission acquisition system for the monitoring of damage during mechanical testing.

01 II General Information

Keywords: Mechanical testing, mechanical properties, elastic constants, high temperature tests, fatigue, creep, micro-indenter tests, fiber tests

Categories: Material properties

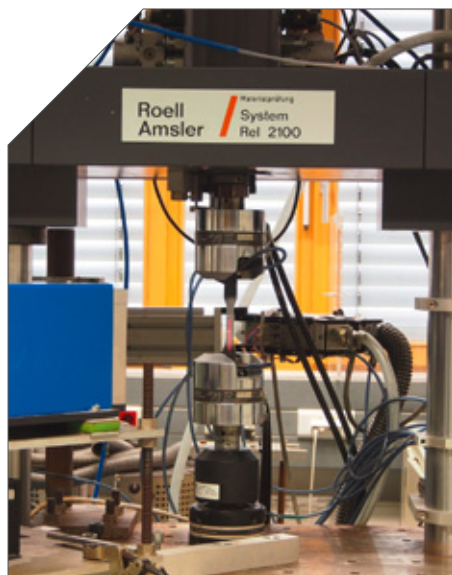
Main Application: Mechanical characterisation of structural and functional materials

Measured Quantities: Strength, toughness, elastic constants, stress-strain behaviour, creep rate, durability

02 II Specifications

- **Universal testing machines** up to 50 kN for **quasi-static** and **creep tests** on materials, equipped with induction oven, vacuum chamber, laser extensometer and pyrometer. Testing temperatures: 25 – 1.600°C.

- **Servo-hydraulic testing machine** for cyclic tests on materials up to 100Hz. Strain measurement via strain gauge or laser extensometer.
- **Testing machines** for **quasi-static and creep tests on fiber filaments** at temperatures up to 1700°C in air or inert atmosphere.
- **Acoustic emission acquisition system** for the monitoring of damage during mechanical testing. The system is equipped with two VS 600-Z2 piezoelectric AE sensors. The system provides a possibility to quantify and localize failure events.
- Non-destructive measurements of materials characteristic **elastic properties** based on Impulse Excitation Technique. Extremely rapid and simple measurements of E- and G-modulus and Poisson's ratio.



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◀ *Universal testing machine for quasi-static and creep tests.*