



- Technological platforms -

## MATERIAL CHARACTERIZATION

Shared tools and expertise



## SERVICES OFFERING

With several characterization platforms spread over 300 m<sup>2</sup> Axel'One provides a wide range of tools and services for mechanical and physical-chemical characterization:

- Bench testing development and tool adaptation
- Characterization materials properties
- All kind of materials can be characterized in a wide range on conditions (high and low temperature, controlled hygrometry) and speed (dynamic or static)
- Open access for SMEs and public or private entities to the characterization test bed covering shared tools and services

## EXPERTISE

Axel'One service offering is based on the expertise and skills from several key players on the platform:

- MECANIUM, partner and operator for mechanical characterization tests. Tools are located in Axel'One PMI and at INSA Lyon
- SCIENCE ET SURFACE, specialist in surface analysis and characterization

### Mechanical characterization

- Tensile/compression: machines from 10 N to 750 kN
- Torsion: machines up to 2 kN.m
- Combined solicitation: biaxial machine up to 50 kN
- Bending/shearing: specific sets of test depending on coupon size
- Impact testing: Hopkinson bar system

Wide range of experimental conditions:

- Thermal chambers: -70°C to +600 °C
- Induction heating up to 1200 °C (10 °C/s)
- Joule effect heating up to 1600 °C (1000 °C/s)
- Cryostats for testing down to -196 °C
- Testing systems in controlled hygrometry and/or controlled atmosphere

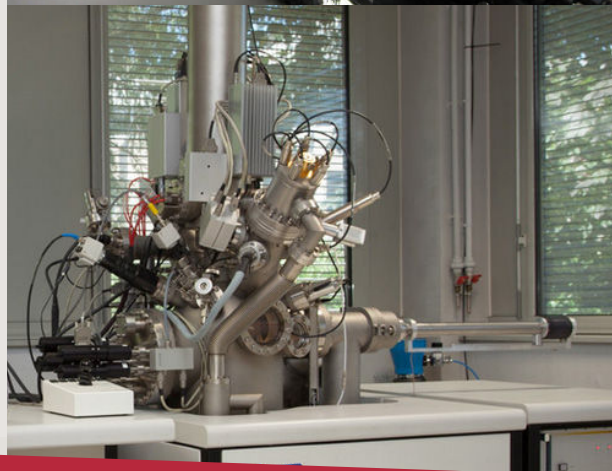
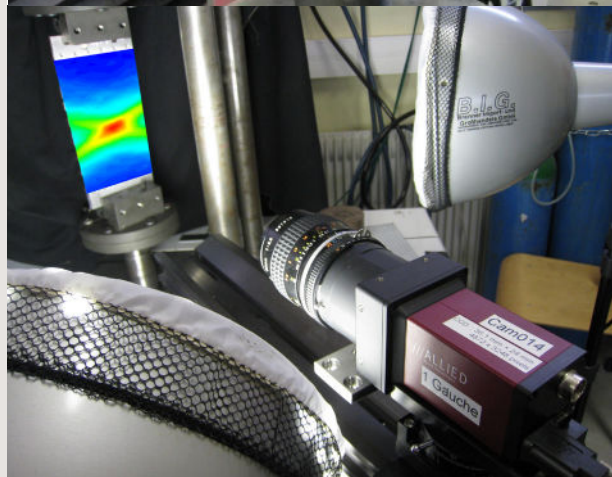
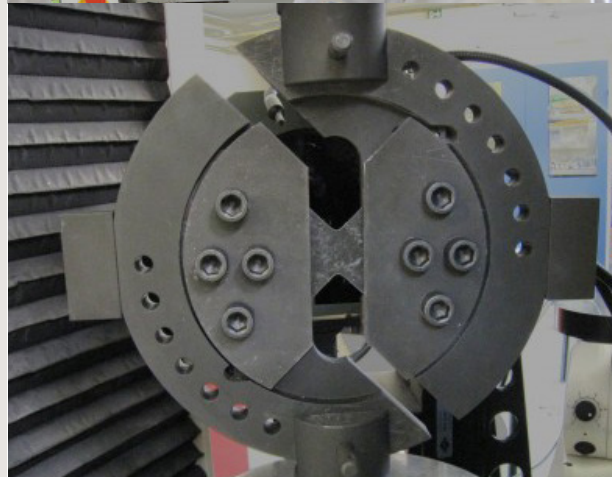
### Measurement of material characteristics

- Displacement sensors
- Extensometer
- Strain gauge
- Video extensometer
- Digital image correlation
- Speckle interferometer

### Surface analysis (partnership with Science et Surface)

At nanometric scale:

- Scanning Electron Microscopy (SEM)
- X-Ray Photoelectron Spectroscopy (XPS)
- Dynamic-Secondary Ion Mass Spectrometry (D-SIMS)
- Time of Flight-SIMS Spectrometry (ToF-SIMS)
- Surface Infrared Spectroscopy



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