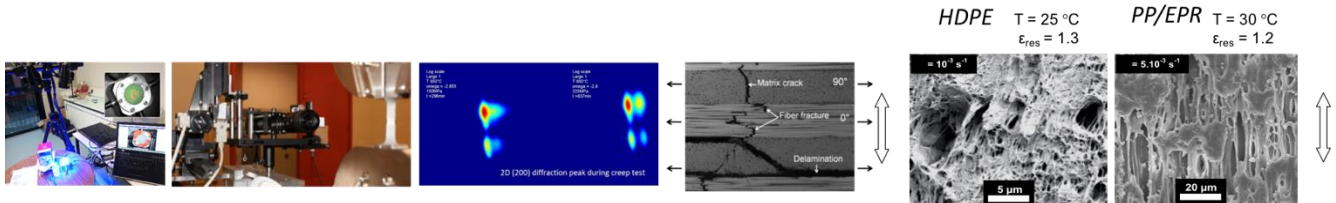


## Our skills

Physical properties: metals, polymers and composites  
Elementary microstructures and mechanisms of deformation and damage



### YOUR NEEDS

- Characterization of the behavior and mechanical and physical properties (plasticity, damage, aging, durability, recycling) of metallic materials, polymers, composites and biomaterials
- Innovative materials multi-scale characterization (mechanical and structural)
- In situ coupling in X-ray synchrotron radiation, Raman spectroscopy and VideoTraction™ of polymers to understand damage mechanisms in polymers at different scales.
- High temperature in situ experiment with synchrotron radiation. New high throughput measurement techniques and modeling

### OUR SOLUTIONS

- Study of multimaterials mechanical properties (metals, polymers and composites) through deformation mechanisms
- In-situ and in-operando studies of the microstructure and mechanical behavior under load of metals and alloys
- Determination of the link between the defects and the mechanical properties of composites (three approaches: experimental, numerical and theoretical)
- Study of multilayer composite materials damage
- Raman spectroscopy / VideoTraction™ in situ coupling for the study of the deformation of polymers and composites
- Study and understanding of the macroscopic mechanical properties of polymer materials (Videotraction™ and 3D stereocorrelation)
- Metals and alloys microstructural characterization
- Study of the elementary deformation mechanisms in situ at the synchrotron during the creep of high strength / high temperature alloys
- Modeling diffraction peaks with the Fast Fourier Transformation (FFT) method
- Study of different physicochemical and mechanical factors contributing to the damage of polymeric coronary restorative materials used in dentistry

### RELATED SKILLS

- Optic characterization of metals, polymers and composites
- Structural and microstructural characterization of metals, polymers and composites
- Mechanical properties of metals, polymers and composites

### OUR REFERENCES



### KEYWORDS

Polymer, composite, biomaterials, metallic materials, matrix, filler, plasticity, damage, multi-scale morphology, mechanical behaviour law, ageing, durability, characterization and couplings *in situ*, mechanical properties, physical properties, microstructures, crystalline defects, microstructure-property relationships

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