

VISIT #3: Centrale Lille - Lille Mechanics Laboratory - LML

Schedule : 09h00 - 11h30

Location : 20 minutes from Lille Grand Palais by metro (Station "4 Cantons")

Cité Scientifique
59651 VILLENEUVE D'ASCQ CEDEX

Quantity : 30 visitors maximum

Mandatory : a scanned copy of your valid ID is to be sent before August 1st to the organizers at erf2016@aaaf.asso.fr

The Lille Mechanics Laboratory. was founded in 1985. LML is formed with researcher in mechanics from University of Lille, Centrale Lille" and "Centre Arts et Métiers ParisTech de Lille". L.M.L. is associated with the "Centre National de la Recherche Scientifique" (C.N.R.S.) since 1991.

Theoretical and applied scientific activities are organized into five teams of research with a strong implication at regional, national and international levels. LML is gathering almost 170 people including 67 Professors and Lecturers, 3 CNRS Researchers, 18 Engineers and Technicians and about 82 PhD students and Post-Docs.

The activities of LML are focused on Fluid Mechanics, Mechanical Reliability of Materials and Structures and Civil Engineering

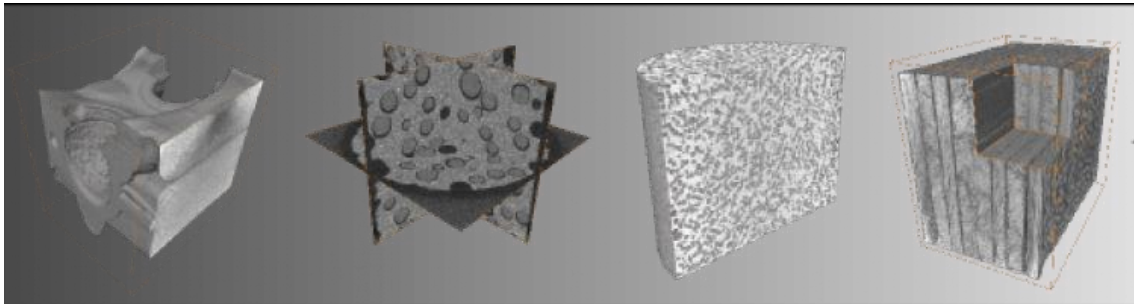
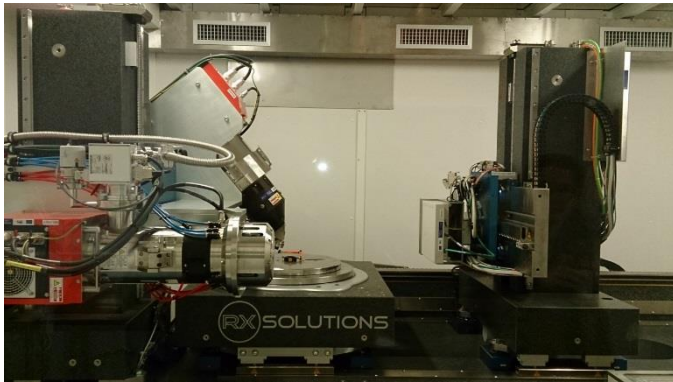
The visit of LML will be focused on its main facilities: Wind tunnel for the study of turbulence, micro tomographic scanning (ISIS4D), multi-modal testing and observation of materials.

Wind Tunnel for the study of turbulence



Main objective: study of the boundary layer at high Reynolds numbers, flow control on 2D geometries
Dimensions: 1m x 2m, 20m length
Flow velocity from 0 to 10 m/s

In Situ Innovative Set-ups under X-ray microtomography (ISIS 4D)

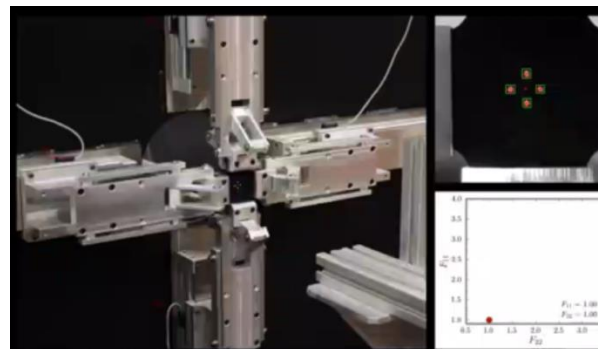


- Nanofocal X-ray tube – 160 kV – Spot size down to 0.25 μm
- High power X-ray tube – 230 kV
- Flat panel detector – 1920*1496 px – 127 $\mu\text{m}/\text{px}$ – 0.2 to 60 frame/s
- CCD camera – 4000*2624 px – 11.8 $\mu\text{m}/\text{px}$ – Up to 3.4 frame/s
- Linear detector – 2560 px – 200 $\mu\text{m}/\text{px}$ – 0.2 to 60 frame/s
- Image intensifier
- Rotative stage – Sample maximal weight 100 kg

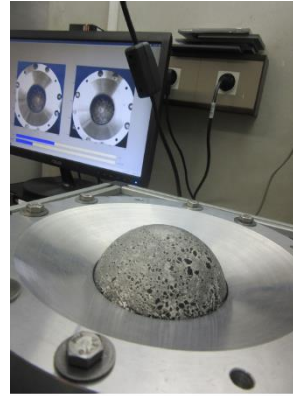
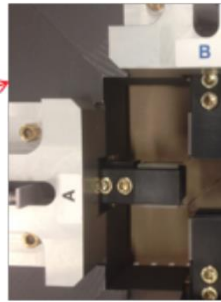
Multi-modal testing and observation of materials



Tension-Torque- internal pressure 100kN/100 Nm / 100 bar



**In-plane Biaxial tension for large strain, low loads
1kN/1000% of strain**



In-plane biaxial tension (large load, small strain)

Out-plane bi-axial tension

10kN/10%

All those experiments are coupled with multi-modal observation at very low scales (DIC, thermography...)