



Mini-Workshop MAT-PULSE – LCP-A2MC / CRM2 (26-27 june 2025)  
 High-pressure X-ray diffraction & high-pressure Raman scattering  
 Application to complex/disordered media



**Day 1** : 26th june 2025 – CRM2 (Nancy)

**Lattice relaxation** – (High-pressure) X-ray diffraction (HP-XRD)

Morning – Basics

**9:00** Basics – 1 : CRM2

- X-ray diffraction at ambient pressure (S. Pillet, ~30 min)
- X-ray diffraction under pressure in the lab → differences with ambient conditions (M. Deutsch, 30-45min)
- **In-house (HP)-DRX setup / Visit (15-30 min)**

**10:30-45** Break

**11:00** Basics – 2: S. Gallego-Para (ID15B – synchrotron ESRF)

Single crystal X-ray diffraction under extreme conditions

- Basics
- Experiments at ID15B & ID27 beamlines (synchrotron ESRF)
- Few relevant cases

**12:30 – 13:30** Lunch time

Afternoon – Practicals

**13:30** Part – 1 : Parallel sessions HP data treatment

**Session 1**

(M. Deutsch)  
 APEX (Bruker)

**Session 2**

(S. Gallego-Para)  
 Crysalis Pro (Rigaku)

**15:00** Break

**15:30** Part – 2: Single session

**Session 3**

(S. Gallego-Para)  
 Olex2 – EoSFit7

**17:00** End of day 1

**Day 2** : 27th june 2025 – LCP-A2MC (Metz)

**Lattice dynamics** – (High-pressure) Raman scattering (HP-RS)

Morning – Basics

**9:30** Basics – 1 : Raman scattering (RS) at ambient pressure (O. Pagès, LCP-A2MC)

- Pristine crystals : phonons & phonon-polaritons
- Mixed crystals : basic models

**10:15** Break

**10:30** Basics – 2 : *Ab initio* calculations – lattice dynamics of disordered media

A. Postnikov (LCP-A2MC)

- Disordered supercells
- Phonon dispersion

**11:15** Break

**11:30** **In-house (HP)-RS / Demo**

- **M. Mina (LCP-A2MC) : RS on phonons & phonon-polaritons of  $Zn_{0.5}Be_{0.5}Se$**
- **A. Polian (Institut de Minéralogie, de Physique des Matériaux et de Cosmochimie – IMPMC, Sorbonne Univ., Paris) – HP-RS on phonons of  $Zn_{0.5}Be_{0.5}Se$**

**12:45 – 14h00** Lunch time

Afternoon – Round Table

**14:00** Highlights in HP-Physics (A. Polian, IMPMC, Sorbonne University, Paris)

**15:15** Break

**15:30** Round Table – Complementary HP-XRD/RS insights into disordered media at various length scales ?

**16:30** End of day 2

Audience: Master students, PhD students, Post-docs, Researchers

Disciplines: Physics & Chemistry