



Institut de Minéralogie et de Physique des Milieux Condensés
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SÉMINAIRE

Lundi 17 octobre, 10h30

*Salle de Conférence, 4ème étage, Tour 22-23, Salle 1
IMPMC, Université P. et M. Curie, 4, Place Jussieu, 75005 Paris*

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HIGH-PRESSURE VIBRATIONAL SPECTROSCOPY WHAT CAN IT DO FOR YOU?

High-pressure diamond-anvil cells (DACs) are readily available commercially and it is possible to examine the vibrational and other molecular spectra of solid materials up to pressures approaching 7.0 GPa (70 kbar or ~70,000 atm) using modern infrared and Raman microprobe spectrometers. In addition, X-ray powder diffraction and synchrotron measurements can be performed at high pressures. Increasing pressure leads to compression of the unit cells of solid materials and, often, to phase transitions and changes in intramolecular bond lengths and angles (e.g., π -backbonding effects in organometallic complexes) and in intermolecular interactions (e.g., H-bonding effects). Using hydrothermal DACs, both the temperature and pressure can be varied and this approach has proved useful for studies of biomass (e.g., pinewood and winery wastes) conversion into hydrogen and bio-oil – potential alternative energy sources. Examples of some of our recent high-pressure molecular spectroscopic studies of various materials will be presented.