SEMINAIRE DE LA MATIERE CONDENSEE

# Laboratoire Léon Brillouin

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## Structural and dynamical studies of materials by XAS, infrared and Raman spectroscopies

**Mardi 29 Avril 2014 à 14h30**

Salle de conférence 15 – Bâtiment 563

In this seminar I will present recent activity on experimental and theoretical study of 3d metal tungsten oxides (AWO4, A=Zn, Ni, Cu, Co, Mn), their solid solutions and tin tungsten oxide (SnWO4) at low temperatures and high pressures.

The synchrotron-based X-ray absorption spectroscopy (XAS) has been used to probe the local static and dynamic structure of the materials. The method is element specific, being well adapted for complex compounds, and is not limited by the state of the sample, so gases, liquids and solids can be studied equally well. XAS complement information on the thermal atomic motion, obtained from diffraction experiments and described by the the mean-square displacement (MSD) parameter, with the vibration correlation effects. To complement dynamics properties, the vibrational frequencies are determined using infrared and Raman spectroscopies.

Additionally to the experimental techniques, ab-initio quantum chemistry calculations are used for understanding electronic, structural, vibrational and magnetic properties of materials.

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