

Habilitation à Diriger des Recherches***High-Resolution Inner-Shell
Photoionization, Photoelectron and
Coincidence Spectroscopies of Dilute Species*****Catalin MIRON**

(SOLEIL, l'Orme des Merisiers, Saint-Aubin, Gif-sur-Yvette)

**Mercredi 16 décembre 2009 à 14h00
Grand Amphi Soleil**

The presentation will emphasize the importance of high-resolution soft X-ray spectroscopies to probe the decay dynamics of inner-shell excited dilute species.

Indeed, the lifetime of the core-excited states in compounds made of low-Z elements is long enough (femtosecond range) to allow for considerable nuclear motion to occur before their electronic relaxation. Consequently, the spectral signature of this nuclear motion can be detected when using ultrahigh resolution measurements of such decay in the so-called sub-lifetime, or Auger Resonant Raman (ARR) regime. Moreover, in many complex situations where several electronic and nuclear decay channels compete on the same time scale, the combination of high-resolution Resonant Auger Scattering (RAS) with coincidence measurements between Auger electrons and ions, with energy and angle resolution, is an extremely efficient tool to accurately disentangle and characterize these processes.

Selected examples will be described where nuclear motion in core-excited states has been shown to induce strong anisotropy of RAS in the case of dissociative (Auger-Doppler effects) or bound (Vibrational Scattering Anisotropy) core-excited states.

Finally, the recent possibilities offered in terms of spectral resolution, flux and variable polarization by the ultrahigh resolution soft X-ray PLEIADES beamline at SOLEIL will be briefly summarized. These unprecedented performances permit extension of the present studies to more and more complex systems like isolated clusters and nanoparticles, allowing to address general scientific goals such as the study of the structure, dynamics and chemical reactivity of nano-objects, which represent essential links in the chain connecting isolated atoms to the condensed phase.

**Vous êtes cordialement invités au pot qui suivra**

Formalités d'entrée : accès libre dans l'amphi du Pavillon d'Accueil. Si la manifestation a lieu dans le Grand Amphi Soleil du Bâtiment Central, merci de vous munir d'une pièce d'identité (à échanger à l'accueil contre un badge d'accès).

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