Réunions scientifiques

Séminaires

Séminaire SOLEIL

"High-Resolution Electron Spectroscopy of Small Molecules"

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Invité par Catalin MIRON

Vendredi 10 Juillet 2009 à 14h00
Grand Amphi SOLEIL

During the last 10 years, the availability of third-generation synchrotron light sources together with high-resolution electron spectrometers and advanced techniques in molecular structure theory have combined to provide new opportunities in photoelectron spectroscopy. These new capabilities have been particularly important for investigations of carbon 1s ionization energies in molecules with several chemically inequivalent carbon atoms. In these molecules significant chemical differences may be reflected in only small shifts in the ionization energies. The modern techniques have made it possible to analyze complex photoelectron spectra in such a way as to provide unambiguous assignments of ionization energies to all of the inequivalent carbon atoms in a number of chemically interesting molecules. From these investigations it has been possible to obtain new insights into the role played various substituents in determining the chemical properties of a molecule. Some examples of these results will be presented.

The availability of these high-resolution techniques has allowed us to show that inner-shell ionization energies and the shapes of inner-shell photoelectron spectra can depend not only on the composition of the molecule but also on its conformation. Thus, inner-shell photoelectron spectroscopy provides a potential method for investigating the relative abundances of different conformers of a molecule at equilibrium.

Recently we have been concerned with the recoil-induced internal excitation of molecules during photo-ionization. Although this phenomenon was predicted 30 years ago, only recently have the techniques been available to verify its existence. Results will be presented on the recoil-induced vibrational excitation of CF_4 upon carbon 1s ionization and of recoil-induced rotational excitation in N_2 and CO upon valence excitation.

Prospects for further investigations of these phenomena using SOLEIL and the Pléiades beamline will be discussed…

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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