



**10<sup>th</sup> September 2014 - 10:00 h**  
**CFEL – Building 99, seminar room III (ground floor)**

**Maurice Tia**

Paris-Sud University, Paris, France

**Valence-shell Photoelectron Circular Dichroism (PECD)  
On Isolated Chiral Systems**

Photoelectron Circular Dichroism (PECD) is observed as a forward/backward asymmetry, with respect to the photon axis, of the photoelectron angular distributions resulting from the circularly polarized light (CPL) - induced photoionization of a gas phase pure enantiomer of a chiral specie. This spectacular orbital-dependent chiroptical effect with intensities reaching up to the few tens of %, shows a rich photon energy dependence, and appears as a very sensitive probe of molecular conformation and of the chemical environment. Experiments were conducted on the DESIRS beamline using the new electron/ion double imaging coincidence spectrometer DELICIOUS 3, which records Angle-Resolved photoelectron images on mass-selected and kinetic-energy-filtered samples to extract the PECD.

In the first part, I will present the first PECD measurements on a biomolecule: the simplest chiral amino-acids alanine, whose production in the gas phase is challenging. By comparison with recent continuum multiple scattering (CMS- $X\alpha$ ) calculations, such results will allow in particular a conformational analysis. In addition, this study may shed light on a still open central issue in astrobiology: the origin of life's homochirality and therefore of life itself.

In the second part, I will present the PECD measurements obtained on glycidol clusters. Indeed, PECD appears to be a very sensitive, long-range probe of the whole molecular system and some specific features will be revealed.

**Host: Daniel Horke / CFEL Molecular Physics Seminar**