Post-Doc Position:  
2D Femtosecond Electronic Spectroscopy

Jointly run by the Strasbourgh University and the French Research Center CNRS, IPCMS is an interdisciplinary institute dedicated to research in physics and chemistry for (nano)material science (http://www.ipcms.unistra.fr). One of its internationally renowned fields of expertise is ultrafast spectroscopy, applied to magnetic, semiconducting or organic materials and biomolecules. More specifically, the post-doc fellow will work in the “biodyn” team (J. Brazard, S. Haacke, J. Léonard) which focuses the ultrafast photoreactivity of functional organic compounds in condensed phase.

The functions of complex molecular systems result from the interactions between electronic, vibrational, and environmental (e.g. solvent, film or protein) degrees of freedom. In particular, photoreactions (i.e. excited-state reactivity) of organic molecules mostly occur via so-called “conical” intersections between electronic potential energy surfaces, in a non-Born-Oppenheimer regime (i.e. nuclear motion govern electronic transitions). As a model system for ultrafast photoreactivity in condensed phase, we have been investigating the ultrafast C=C photoisomerization of photomolecular switches characterized by a vibrationally coherent nuclear reactive motion. This is a rare mechanism (observed e.g. in the rhodopsin protein, the sensor for vision) which provides efficient photomechanical energy conversion at the molecular scale. For these investigations, we have been developing vibrational coherence spectroscopy, which uses sub-10-fs laser pulses to excite and probe, in the time domain, coherent vibrational dynamics in molecules. [1] We aim at upgrading this set-up into 2-dimensional electronic coherence spectroscopy (2DES).

We seek a candidate who holds a doctorate in Physics or Chemical Physics and who has completed the degree within the three years prior to his application. Experience and a good knowledge in the following areas is required:

- Ultrafast (femtosecond) lasers,
- Development of control and data acquisition software in LabView or similar environments,
- Organic photochemistry, in particular at the sub-nanosecond time scale,
- Data analysis using MATLAB or similar environments,
- Writing scientific papers in English,

We expect a candidate with good team working skills, as the project involves two permanent scientists and a PhD student. Monthly salary is ~2200 €.

For further information please contact:
Dr Jérémie Léonard
leonard@ipcms.unistra.fr
+33 (0)3 88 10 72 43