

SOLVATAXION: Complementary studies on the microSOLVATation of biomolecul systems by interaction with X-rays and multiply charged IONs

The aim of the present PhD is to understand at the molecular level the role of the environment on the radiation damage of biomolecular systems. The originality of the proposed PhD work relies on the complementarity between the different planned studies:

- different excitation/ionization sources will be used and the complementarity between X-rays and ions will allow to investigate the fragmentation dynamics over a large excitation range giving a rather complete map of the decay mechanisms;
- moreover different spectroscopies (photoelectron XPS, absorption NEXAFS) will give information on the structure of the molecular systems studied.

This work is in collaboration between Synchrotron SOLEIL and the CIMAP laboratory located in Caen. Therefore it benefits from the knowledge and know-hows of both teams. In addition to experiments performed on existing devices in both laboratories, the candidate will participate in the development of new sources of microsolvated systems with enhanced performances.

This PhD thesis will be co-supervised by Aleksandar Milosavljevic (Synchrotron SOLEIL) and Patrick Rousseau (CIMAP) and will take place in the exciting and demanding environment of large-scale facilities (SOLEIL, GANIL). The PhD is co-funded by Synchrotron SOLEIL and the Normandie region. It is performed in the framework of an international associated laboratory (LIA DYNAMO, CIMAP/Stockholm University/Universidad Autonoma de Madrid) and of an international collaboration program (PICS BIFACE, CIMAP/CNR-ISM in Rome), both projects are funded by CNRS.