

## SEMINAIRE LIDYL

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**le jeudi 21 Avril 2022 à 11h00**  
**Orme des Merisiers, Bât.701, Pièce 17 (Salle de séminaires)**

### **Molecular photodynamics and dissociation induced by x-rays, how spectroscopy helps to follow its course and explain the outcome**

X-ray ionization of organic and biomolecules is a process that is both of fundamental interest and of practical relevance, for example in cancer treatment. The molecule is usually destroyed after x-ray absorption, but the mechanisms and factors that determine the eventual outcome of the dissociation – the fragment patterns and energies – are far from fully understood. Advanced spectroscopic techniques such as momentum imaging ion mass spectroscopy and various coincidence measurements, performed at synchrotrons and free electron lasers, have greatly advanced our knowledge in this area.

These two types of light sources each offer unique opportunities and advantages. Examples on photoinduced molecular dynamics studies at the SACLA free electron laser and at the MAX IV synchrotron are given and illustrate how we can get insights not only into the eventual outcome of the photofragmentation but also into the crucial early femtoseconds of the molecular dynamics. Although these studies are largely fundamental, some examples illustrate also their relevance in finding better radiosensitizer molecules that are more efficient in destroying cancerous cells in radiotherapy.