

NEW TOOLS FOR CHEMISTRY: HIGH -ORDER HARMONIC GENERATION FOR DYNAMIC STUDIES OF BIOLOGICALLY RELEVANT MOLECULES

Raluca Cireasa

Institut des Sciences Moléculaires d'Orsay,

CNRS, Université Paris Sud, Orsay, France

High harmonic generation (HHG) has emerged as a new light source and has put forward new spectroscopic techniques providing structural and dynamical information with unparalleled temporal resolution. I will present an examples in which we took advantage of the unique capabilities of HHG to investigate molecular properties and dynamics of more complex systems of interest for chemistry and biology.

We have employed HH radiation to study the fragmentation and dynamics of radiosensitisers (5-Halouracils), i.e. molecules that enhance the effect of radiotherapies. The spectral and temporal characteristics of the XUV radiation enabled us to measure the ultrafast dynamics (10 -100 fs) underlying the photo-stability and the photo-damage processes occurring upon excitation in the valence region. In particular, ultrafast proton migration dynamics was associated with damage induced through tautomerisation and isomerisation processes. ^{1,2}

1. P. Çarçabal *et al.*, Faraday Discuss. 194, 407 (2016)
2. C.J. Milne *et al.*, Faraday Discuss. 194, 427 (2016)