

17th January 2013 – 10:00 a.m.
CFEL-bldg. 99, seminar rooms I and II

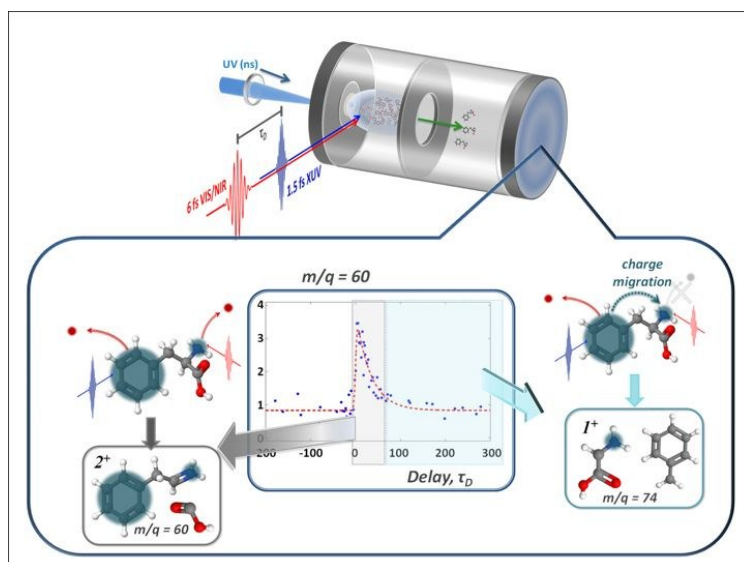
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Ultrafast dynamics in gas phase complex molecules

The advent of ultrashort pulse light sources based on laser or accelerator technology has opened up the study of ultrafast molecular processes. While this pioneering work has mainly been performed with the simplest molecule H_2^+ and its isotopic variants [1-4], as they are easiest to handle experimentally and theoretically, it is in more complex molecules involved in chemical and biological processes that such studies could be very influential.

To enable non-volatile, labile molecules to be produced in the gas phase, we have developed a Laser Induced Acoustic Desorption (LIAD) technique which generates a clean, neutral plume of the sample compound [4]. In this seminar, I will present the principles and characteristics of LIAD and show recent results from a XUV pump (1.5 fs) – IR probe (6 fs) experiment performed in collaboration with Politecnico Milano. In this work we observed ultrafast intra-molecular charge migration in the amino acid phenylalanine, and I will discuss the potential for observing coherent electron wavepacket motion in this type of molecule in the near future.



- [1] G. Sansone et al., Nature, 465, 763 (2010)
- [2] M.F. Kling et al., Science, 312, 246 (2006)
- [3] C.R. Calvert et al., J. Phys. B, 43, 011001 (2010)
- [4] C.R. Calvert et al., PCCP, 14, 6289 (2012)