The 904th IMS colloquium

Mapping chemical interactions and dynamics with femtosecond x-ray pulses

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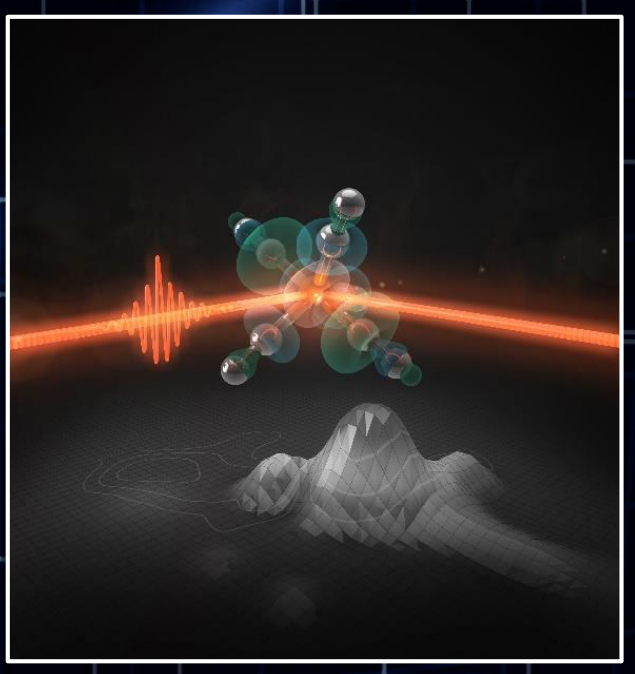
Date & Time: 2017/6/2 (Fri.) 16:00-
Place: IMS Research Building Room 201

I will present in my talk examples from recently published [1-4] and from unpublished investigations for how we study chemical interactions and their ultrafast dynamics with soft x-ray spectroscopy. A special emphasize will be given to the investigation of molecules in solution and biomolecular systems under physiological conditions. We use time-resolved and steady-state soft x-ray spectroscopy at synchrotron radiation sources, at x-ray free-electron lasers and in the laboratory. The importance of applying short x-ray pulses to the systems under investigation will be highlighted. I will discuss how we extract information on chemical properties based on the experimental observables, emphasize the importance of effective and efficient theoretical approaches for this and highlight the importance of choosing suitable sample preparation techniques and experimental procedures in general for avoiding x-ray beam damage of the samples.

1. Ph. Wernet, et al.,
   Nature 520, 78-81 (2015).
2. K. Kunnus, et al.,
   J. Phys. Chem. B 120, 7182-7194 (2016).
3. K. Kunnus, et al.,
   Structural Dynamics 3, 043204 (2016).
4. S. Schreck, Ph. Wernet,
   J. Chem. Phys. 145, 104502 (2016).



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Takeshi Yanai & Takao Fuji (IMS colloquium FY2017 committee)