

エクストリームフォトンクスセミナー  
*Extreme Photonics Seminar*

*Language: English*

*Date :* Aug.31(Fri), 2012, 11:00 ~ 12:00

*Location :* Cooperation Center, 5F Meeting Room, W524  
(研究交流棟 5 階会議室 W524)

*Title :* Probing valence-shell electron dynamics in molecules  
using high-harmonic spectroscopy

*Speaker :* Prof. Hans Jakob Wörner  
(Laboratory for physical chemistry, ETH Zürich)

We describe the application of high-harmonic generation (HHG) to the study of electronic structure and dynamics of small molecules. Building on recent progress in field-free orientation of molecules, we have studied high-harmonic generation from oriented OCS molecules which gives rise to the emission of both even and odd harmonics. Combined with ab initio quantum scattering calculations, these measurements enable the characterization of the electronic structure of OCS. We extended these measurements to small polyatomic molecules with the goal of observing charge migration on the attosecond time scale. We also report the observation and characterization of an electronic wave packet in the neutral NO molecule, generated by a femtosecond pump pulse and probed through polarization-sensitive measurements of the emitted high harmonics. Finally, we show how HHG can be applied to study photochemical reactions.