CFEL SCIENCE

SEMINAR

17th November 2016 - 10:00

Building 99, Seminar Room IV (OG1)

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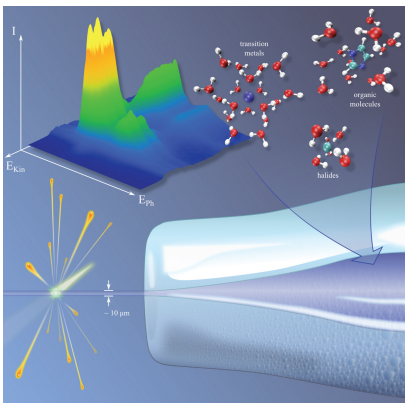
Electronic structure of aqueous solutions from liquid-jet soft-X-ray photoelectron and autoionization spectroscopy

Soft-X-ray photoelectron spectroscopy from liquid microjets has considerably contributed to an understanding of the electronic structure of aqueous solutions. Quantities that can be obtained include valence and core-level electron binding energies of both water solvent and atomic as well as molecular solutes. Of particular interest are changes of core-level energies with regard to changes of atomic chemical environment, such as pH and concentration. Also lowest vertical and adiabatic ionization energies are important for understanding chemical reactivity in solution, at the solution interface and in bulk aqueous solution. In addition to ground-state (photoelectron) spectroscopy details on electronic-structure interactions, hydration configuration, ion pairing, charge and energy transfers can be obtained from the various local and non-local relaxation channels available upon core-level excitation / ionization. In aqueous solution electronic relaxation (autoionization) can be strongly coupled with ultrafast nuclear dynamics, providing yet additional structure information, including hydrogen-bond strengths. Several aqueous molecular systems will be discussed, and the different aspects of photoemission spectroscopy will be addressed.



Host: Melanie Schnell - CFEL Molecular Physics seminar