



IRTG-Seminar

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“X-ray spectroscopy of gaseous ions in cryogenic ion traps and strong magnetic fields: Electronic properties, high-spin states and unusual oxidation numbers of transition elements in inorganic and organometallic clusters”

The combination of cryogenic radio frequency ion traps with synchrotron radiation and magnetic fields has created new opportunities in x-ray absorption and x-ray magnetic circular dichroism (XMCD) spectroscopy of cold gaseous ions for the study of electronic and magnetic properties of transition metal centers in mass-selected clusters, molecules, and complexes. Our interest ranges from magnetic properties of metals in the few-atom limit to changes of the electronic structure that are linked to a transition from coordinative unsaturation to saturation when building up solvated ions or metal complexes ligand by ligand. One of our goals is to identify and understand unusual electronic states, spin states, and oxidation numbers. This talk will give an introduction to the experimental technique and will discuss several recent examples of how cryogenic ion traps for x-ray spectroscopy can contribute to our understanding of the electronic structure of transition metals in clusters and complexes. An outlook will be given at state-selective or isomer-selective x-ray spectroscopy of cold ions that we are aiming for in the future.

**Tuesday, April 17, 2018; 1:00 p.m., HSII
Physics high rise, Hermann-Herder-Str. 3**