UniSysCat Colloquium

Prof. Dr. Birgit Kanngießer

Start Time: Wednesday, January 30, 2019 05:15 pm

End Time: Wednesday, January 30, 2019 06:45 pm

Chemistry Building, C264
Technische Universität Berlin, Straße des 17. Juni 115, 10623 Berlin

Current and Future Possibilities of XAFS in the Laboratory

Birgit Kanngießer, Christopher Schlesiger, Sebastian Praetz, Wolfgang Malzer

Technische Universität Berlin, Institute for Optics and Atomic Physics

X-ray Absorption Fine Structure Spectroscopy is a well-established method at synchrotron facilities where it is being used routinely in various kinds of research fields. In order to enlarge its availability on a day-to day basis we developed XAFS spectrometers for the laboratory. XAFS investigations are facilitated with polychromatic radiation in transmission mode in contrast to most of the XAFS spectroscopy at synchrotron sources.
The first type of XAFS spectrometer is dedicated to the hard X-ray regime for investigation of 3d transition metals' K absorption edges. Due to the use of Highly Annealed Pyrolithic Graphite as the wavelength dispersive element reasonable measurement times with sufficient spectral resolving power for XANES as well as for EXAFS have become possible [1]. The second type of XAFS spectrometer is operating in the soft X-ray regime. With this setup NEXAFS K edge spectroscopy of the main constituents of biological samples such as C, O and N is feasible. But also the L edges of all transition metals are accessible [2]. Moreover, by using the pulsed structure of its source dynamic XAFS investigations become possible. We already carried out single shot (1 ns) NEXAFS spectroscopy at the C K- edge of Cu Chlorophyllin. This paved the way for first pump-probe experiments.
The talk will present an overview of current possibilities for lab XAFS investigations as well as perspectives for the future.

[1] C. Schlesiger, L. Anklamm, H. Stiel, W. Malzer, B. Kanngießer, J. Anal. At. Spectrom. (30), 2015, 1080-1085.
[2] I. Mantouvalou, K. Witte, W. Martyanov, A. Jonas, D. Grötzsch, C. Streeck, H. Löchel, I. Rudolph, A. Erko, H. Stiel, B. Kanngießer, Appl. Phys. Lett. 108, 201106 (2016).

Prof. Dr. Thomas

Organizer