Third German-Swedish workshop

Opportunities and challenges
of in situ methods for materials science
with neutron and synchrotron radiation

18-19 March 2013

FLASH seminar room
Building 28c
DESY, Hamburg

organized by
U. Lienert, M. Kreuzeder (DESY) / A. Holzheid (Uni Kiel)

Monday, 18th March 2013

11:00 – 13:00 Registration

13:00 – 13:30 *Introduction and welcome*
Edgar Weckert (DESY)
Ulrich Lienert (DESY) / Astrid Holzheid (Universität Kiel)
Lutz Kipp (RAC steering committee)

13:30 – 15:00 *Updates from synchrotron and neutron facilities*
PETRA: Wolfgang Drube
MAX-IV: Yngve Cerenius
XFEL: Anders Madsen
FLASH: Bart Faatz
BESSY, BER: Christian Schüssler-Langeheine

15:00 – 15:15 Coffee break

15:15 – 18:30 *Opportunities and challenges of in situ methods for materials science with neutron and synchrotron radiation*

Simone Techert (DESY)
New possibilities of sample delivery devices for investigations with high flux sources

Emad Aziz (FU Berlin & HZB)
EUV and Soft X-ray Photons Meet Micro-Jet: Method Development for Investigating Biochemical Systems in Solution

Edlira Suljoti (FU Berlin & HZB)
Probing the electronic structure of functional materials in solution with RIXS

Kaan Atak (FU Berlin & HZB)
Probing the chemical bond and electronic structure of solvents with RIXS

Werner Kuhs (Universität Göttingen)
Time-resolved neutron powder diffraction: Diffusion constants from shrinking-core modelling

Roland Mainz (HZB)
Recent developments of EDXRD/XRF for real-time thin film formation studies at BESSY II

Norimasa Nishiyama (DESY)
The Large Volume Press Beamline at the extension of PETRA III
Norbert Schell (HZG)
In-situ processing environments for high-energy x-rays at HEMS
Jorgi Biendicho (ISIS & Stockholm University)
New in-situ neutron diffraction cell for electrode materials

19:00 - Workshop Dinner (DESY Bistro)

Tuesday, 19th March 2013

9:00 – 10:30 *Opportunities and challenges of in situ methods for materials science with neutron and synchrotron radiation*
Johan Gustafson (Lund University)
High energy surface X-ray diffraction for in situ surface structure determination - A new view of reciprocal space
Matthias Kalläne (Universität Kiel)
ARPES @ the soft X-ray Beamline P04 of PETRA III
Ivan Kaban (TU Dresden & IFW Dresden)
In situ high-energy XRD studies of phase transitions and structural changes in crystalline, amorphous and liquid alloys at elevated temperatures
Miha Stoica (IFW Dresden)
Mechanical behavior of bulk metallic glasses: insights from in-situ high energy x-ray diffraction

10:30 – 11:00 Coffee break and posters

11:00 – 12:30 *Opportunities and challenges of in situ methods for materials science with neutron and synchrotron radiation*
Kristina Edström (Uppsala University)
In situ studies of Li-ion batteries using synchrotron XRD
Florian Pyczak (HZG)
In-situ high temperature deformation of TiAl alloys in the FlexiTherm specimen environment
Torbjörn Gustafsson (Uppsala University)
In-Situ neutron diffraction studies of electrode materials

Galina Gurieva (HZB)

Temperature dependent structural phase transitions in chalcogenide compound semiconductors: in situ studies using neutrons and synchrotron X-rays

12:30 – 13:15 Buffet-Lunch and posters

13:15 – 14:30 *Opportunities and challenges of in situ methods for materials science with neutron and synchrotron radiation*

Xiaodong Zou (Stockholm University)

In situ study of formation and structural dynamics of inorganic and hybrid open-framework materials

Jonas Ångström (Uppsala University)

Hydrogen storage properties of the pseudo binary Laves phase (Sc1-xZrx)(Co1-yNiy)$_2$ system

Bernd Leiss (Universität Göttingen)

Quantification of rock fabrics by a combined study of conventional X-ray, synchrotron and neutron tomography and optical microscope methods

Concluding discussion

...future workshops, schools, meetings...

14:30 – Guided tour of PETRA III and FLASH

Poster:

W. Bensch, N. Pienack, M. Wiebcke (Universität Kiel)
In situ investigations of the formation of crystalline materials by combining a multiprobe reactor with synchrotron radiation methods

J. Birch, J. Schroeder, M. Magnusson, L. Hultman (Thin film physics, IFM, Linköping university, 581 83 Linköping, Sweden), L. Rogström, N. Ghafoor, M. Odén (Nanostructured materials, IFM, Linköping university, 581 83 Linköping, Sweden), N. Schell, D. Ostach, A. Schreyer (HZG, Germany), M. Johansson, R. M'Saoubi (SECO Tools AB, Fagersta, Sweden)
Material science of coatings for cutting tools by use of in-situ high energy x-ray scattering - 'X-Cut'

A.-C. Dippel, J. T. Delitz, Y. Bican, P. Walter, M. Hinterstein, H.-P. Liermann (DESY)
The High Resolution Powder Diffraction Beamline P02.1 at PETRA III'

B. Escher, S. Pauly, I. Kaban, U. Kühn, J. Eckert (IFW Dresden)
Mechanical behaviour of CuZr-based bulk metallic glasses upon compressive stress

M. Herklotz, F. Scheiba, M. Hinterstein, K. Nikolowski, M. Knapp, A.-C. Dippel, L. Giebeler, J. Eckert, H. Ehrenberg (IFW Dresden)
Advances in in situ powder diffraction of battery materials – a case study of the new PETRA III beamline P02.1

U. Lienert, S. Gutschmidt, M. v. Zimmermann, R. Nowak (DESY)
The Swedish High-Energy Materials Science Beamline at the PETRA III Extension

H.-P. Liermann, Z. Konopkova, W. Morgenroth (DESY)
Current Status and Future Plans for the Extreme Conditions Beamline (ECB), P02.2, PETRA III, DESY

U. Ruett, O. Gutowski and M. v. Zimmermann (DESY)
Physics Hutch at HEMS beamline P07

D.C.F. Wieland, T. Zander, C. Krywka, P.M. Claesson, A. Dėdinaitė, M. Bergström, V. Haramus, R. Willumeit (HZG)
Interaction of macromolecular complexes in the synovial fluid