

The virtual poster session will be accompanied by a thrilling poster slam. The poster slam offers a unique opportunity to present latest findings in a concise and entertaining way. A fast-paced poster slam allows each presenter one slide and 150 seconds to advertise their poster and tell the audience why the work is outstanding, important, and/or novel.

In the order of appearance:

1 *PTB Laboratory at BESSY II / Life Science & Health*

Quantitative and qualitative characterisation of trace elements in pancreatic and pancreatic carcinoma sections of mice by reference-free X-ray fluorescence analysis

Katja Frenzel (Physikalisch-Technische Bundesanstalt, Germany)

Reference-free X-ray fluorescence (XRF) analysis is a non-destructive method with a high sensitivity for a wide range of elements. The objective is to determine how the elemental mass distribution in benign pancreatic tissue differs compared to malignant pancreatic tissue. Quantifiable differences in mass deposition distribution in differently treated carcinoma sections are also investigated.

2 *UE46_MAXYMUS / Matter & Material*

History dependent skyrmion and domain formation in van der Waals magnet Fe_3GeTe_2

Max Birch (Max Plank Institute for Intelligent Systems, Germany)

Recently, observations of skyrmions in the 2D magnet Fe_3GeTe_2 have been reported, opening application possibilities. Control of the magnetic state requires knowledge of the sample's history-dependence, which remains unexplored in 2D magnets. We utilise real-space imaging to map phase diagrams of an exfoliated FGT flake, revealing the complex, history-dependent emergence of the skyrmion states.

3 *U41-TXM / Matter & Material*

Study of metal-carboxylate complex derived from Pinus elliotti resin applied as antibacterial and antifungal pigment in home paints

Carla Bittencourt (University of Mons, Belgium)

Besides the antibacterial and/or antiviral properties of pigments, colour and stability are important characteristics often associated to the oxidation state of the doping metal atom. We investigated pigments of metal complex with carboxylate binder (Zn, Mn, Fe, Co, Ni or Cu), derived from Pinus elliotti var. elliotti. NEXAFS edges, anti-bacterial and anti-viral activities will be presented.

4 *U49-2_PGM-1 / Matter & Material*

Expanding Liquid-Jet Photoelectron Spectroscopy to Free-Flowing Planar Surfaces

Dominik Stemer (Fritz-Haber-Institut, Germany)

Here, we enter our design for the generation of a liquid flat jet. Additionally, we demonstrate flat-jet photoelectron spectroscopy (FJ-PES), a new subset of liquid-jet PES, confirm that turbulent mixing within the first jet leaf is negligible in the near-surface region, and finally, report the generation of an unexpectedly large electric potential gradient of 100 kV/m across the liquid flat jet.

POSTER SLAM

5 *Information Technology*

FAIR and open data for national photon and neutron facilities in Europe

Sophie Servan (Deutsches Elektronen-Synchrotron, Germany)

To make photon and neutron data FAIR, the H2020 ExPaNDS project provides a framework for EU PaN facilities to work together to produce data that can be easily shared and re-used. Our work on metadata, persistent identifiers, standardised interfaces to data catalogues and portable analysis workflows make for better reproducibility and interoperability in science, across borders and disciplines.

6 *UE48_EMIL / Matter & Material*

Unravelling the Effect of superficial Rh depletion on shallow d-states of Gallium-Rhodium Liquid Metal Alloys

Tzung-En Hsieh (Helmholtz-Zentrum Berlin, Germany)

The chemical and electronic structure of supported GaRh alloys has been studied to reveal the active phase in supported catalytically active liquid metal solutions (SCALMS). XPS and UPS of in-system prepared GaRh alloys with Rh concentrations from 1% to 80% on silicon oxide substrate show narrowing of Rh 4d derived valence states for alloys with Rh concentration <5%.

7 *UE49_PGM SMART / Matter & Material*

The relation of structure sensitivity and doping of ceria [(111) vs (100)] for CO₂ hydrogenation

Emilia Pozarowska (BTU Cottbus-Senftenberg)

Alloying CeOx with samarium reduces the near-surface region of (100)-oriented CeOx islands, whereas their bulk and (111)-oriented islands retain their Ce⁴⁺ original state. This behavior highlights the structure sensitivity for this process and constitutes a promising result with a high impact on heterogeneous catalysis.

8 *HE-SGM*

Spectroscopic studies of on-surface synthesis of chiral graphene nanoribbons on Au(788)

Igor Chudin (Trinity College Dublin, Ireland)

We investigate graphene nanoribbons on-surface synthesis explicitly including temperature-dependent growth on vicinal Au(788) studied by STM, synchrotron based core level XPS of the C1s and Br3d core levels and NEXAFS studies at the C1s edge. Comparison is made between the simulated and observed high-resolution spectra. NEXAFS data presented reveals the orientation of GNRs and correlates with STM images.

9 *MX Beamline / Life Science & Health*

Hundreds of starting points to develop protein-protein interaction modulators

Tatjana Barthel (Helmholtz-Zentrum Berlin, Germany)

Crystallographic fragment screening facilitates the identification of weak but efficient small molecules (fragments) while elucidating their binding mode and position. This enables structure-guided optimization of bound fragments into potent modulators. Here, the ~1000-fragment large F2X-Universal Library was screened against a spliceosomal protein-protein complex and resulted in hundreds of hits.

10 *KMC-1 / Matter & Material*

Induced reduction by H₂ exposure at room temperature of ceria ultrathin films grown by atomic layer deposition

Carlos Morales (BTU Cottbus-Senftenberg, Germany)

Ceria ultrathin films grown by ALD show an initial Ce³⁺/Ce⁴⁺ mixture that almost entirely re-oxidizes after exposure to ambient conditions. These initial defects allow a weakly reduction at room temperature under 1 mbar of H₂, reversible after exposure to ambient conditions. These preliminary results are promising for decreasing the operating temperature of multiple sensing and catalytic devices.

11 *UE52_PGM Nano cluster trap / Matter & Material*

XAS study of electronic structure and oxidation states of manganese atoms in cold gas-phase Mn₂O_x(H₂O)ⁿ⁺ clusters.

Olesya Abyasova (Helmholtz-Zentrum Berlin, Germany)

Photosystem II, with its active center a CaMn₄O₅ cluster coordinated by H₂O molecules, is essential for O₂ production in nature. Due to the challenging sample production of such complex, the composite Mn₂O_x clusters were chosen as an investigation object. We initiated an X-ray absorption spectroscopy study of these clusters with attached H₂O to investigate the structure changes and Mn oxidation state.

12 *Life Science & Health*

Decoding how cell fate reprogramming transcription factors activate epigenetically silenced chromatin

Daisylyn Senna Tan (The University of Hong Kong)

Pioneer transcription factors (PTFs) have an ability to bind silenced DNA that is methylated or compacted in chromatin. Pioneer factors are often involved in cell fate reprogramming used in regenerative medicine. However, biochemical evidence of how these TFs directly binds silenced DNA is sparse. Here, we study the binding of OCT4, a key PTF, and BRN2 towards methylated DNA and nucleosome core particles.

13 *BAMline / Information Technology*

X-ray prism illumination optics

Arndt Last (Karlsruhe Institute of Technology, Germany)

X-ray prism lenses (XPL) with prism edge lengths of 20 μm and physical apertures of up to 1.8 mm x 1.8 mm are developed at KIT/IMT and manufactured by X-ray deep lithography at the KIT Synchrotron radiation source. They serve as highly transparent illumination optics for sample illumination and in full-field X-ray microscopy. We present results of the optical characterisation of such XPLs.

14 *KMC-1 / Energy Conversion*

Impact of the IZO sputter deposition on the underlying C60/metal halide perovskite top cell interface as revealed by direct and inverse photoemission

Elif Hüsam (Helmholtz-Zentrum Berlin, Germany)

Wide-bandgap metal halide perovskites (HaP) can form top-cells in tandem photovoltaic devices, which contain several layers and interfaces which crucially influence the power conversion efficiency (PCE). We present analysis of the C60/HaP stack – focusing on changes induced by rf-sputter deposition of IZO – using ultraviolet (UPS), x-ray (XPS), and inverse (IPES) photoelectron spectroscopy.

POSTER SLAM

15 *UE46_MAXYMUS / Matter & Material*

Demonstrating optical-pump-x-ray probe experiments at 50 MHz repetition rate on a solid-state sample

Kathinka Gerlinger (Max-Born-Institute, Germany)

We present a pump-probe experiment carried out with the infrared pump laser newly installed at the MAXYMUS x-ray microscope at BESSY II. We were able to record time-resolved images of ferrimagnetic thin films at 50 MHz repetition rate at a fluence of 3.2 mJ/cm² without sample damages, which to our knowledge is the highest repetition rate achieved in an ultrafast demagnetization experiment, so far.

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LEAPS IDEA – Inclusion, Diversity, Equity, and Anti-discrimination

Antje Vollmer (Helmholtz-Zentrum Berlin, Germany)

17 *BAMline / Energy Storage*

3D visualization of the phase transformation of $\mu\text{m-CuS}$ in SSBs

Zhenggang Zhang (Humboldt Universität zu Berlin, Germany)

Understanding the bulk structural evolution of materials during electrochemical reactions and its effect on solid-state batteries (SSBs) is critical, but has been rarely studied due to problems with traditional technologies being able to detect bulk information in SSBs. In this study, CuS was taken as a model material for its high capacity, high conductivity, and large volume variation.

18 *PTB Laboratory at BESSY II / Matter & Material*

Investigation of halide perovskite precursor solutions with small-angle X-ray scattering (SAXS)

Ana Palacios Saura (Helmholtz-Zentrum Berlin, Germany)

Precursor solutions of the photovoltaic absorber materials (MA,FA)Pb(I,Br)₃ in different GBL:DMF solvent ratios were investigated using SAXS to understand the influence of the solvent in the crystallization path. We show first results demonstrating that changing the solvent ratio affects the agglomerates in solution, indicating a strong solvent influence at the onset of the crystallization state.

19 *MX Beamline / Life Science & Health*

Fragment based design of mycobacterial thioredoxin reductase inhibitors: from a fragment screening to novel inhibitors.

Friederike Theresa Füsser (Westfälische Wilhelms-Universität Münster, Germany)

For the identification of new starting points for the development of antituberculous drugs, a crystallographic fragment screening was performed. The diffraction data were collected at BESSY II and analysed by the automated software pipelines at HZB including hit identification via PanDDA. 40 fragments and four promising binding sites were found and will be used for further investigations.