

PETRA IV Workshop - Earth, Environment, and Materials for Nanoscience and Information Technology

 Nov 2, 2020, 8:00 AM → Nov 4, 2020, 7:05 PM Europe/Berlin
 Online

Description Recently, DESY has opened a call for PETRA IV scientific instrumentation, where researchers from all fields of science were asked to submit proposals for experiments (see [indico page](#)).

The workshop "Earth, Environment, and Materials for Nanoscience and Information Technology" is one out of four PETRA IV workshops dedicated to science and instrumentation and organized within the process of developing the PETRA IV scientific instrumentation proposals.

The workshops are aiming to strengthen the scientific exchange among different user communities. Here the emphasis will be on bringing together current and future users working in the field of Earth, Environment, Nanoscience, or Information Technology to exchange creative and interdisciplinary ideas and trends as well as identifying beamline parameters required to enable potential experiments at PETRA IV.


This workshop has a scientific focus with mostly scientifically-driven presentations. It is encouraged to include ideas for PETRA IV instrumentation into the scientific talks in order to identify synergies for an optimal PETRA IV beamline portfolio.

This workshop will be an online workshop.

- Click [here](#) to download the **full timetable**.
- Click [here](#) for more information on the **poster session** and **Zoom links**.

Organization Committee: F. Trinter, O. Wendt, F. Lehmkuhler, M. Hoesch, G. Falkenberg, C. Schlueter, F. Westermeier, M. Sprung, S. Roth, S. Haas, F. Bertram, G. Grübel, E. Welter, R. Farla, H.-P. Liermann, K. Glazyrin, S. Francoual, H. Gretarsson, L. Bocklage, S. Techert, V. Vonk, I. Sergeev, M. Etter, M. Müller, C. Krywka, P. Staron, A. Stierle, D. Novikov, M. v. Zimmermann, K. Rossnagel, M. Beye, T. Jahnke, M. Schnell, J. Küpper, M. Martins, K. Bagschik, S. Klumpp, O. Seeck, H. C. Wille, M. Kreuzeder



 PIV_Workshop_tim...

Registration

 You are registered for this event.

Support  p4-workshop-support@desy.de

MONDAY, 2 NOVEMBER

9:00 AM → 9:20 AM **Opening Session: -- Red Zoom Room --, Chair: Kai Bagschik**

9:00 AM | **Welcome** ⌚ 15m
Speaker: Christian Schroer (DESY)

9:15 AM | **Zoom Session Netiquette** ⌚ 5m
Speaker: Kai Bagschik (DESY)

9:20 AM → 10:00 AM **Enabling Technologies (Techniques): -- Red Zoom Room --, Chair: Kai Bagschik**

9:20 AM | **Bragg Coherent Diffraction Imaging from PETRA III to PETRA IV** ⌚ 20m
Speaker: Ivan Vartaniants (DESY)

9:40 AM | **Coherent Magnetic Imaging** ⌚ 20m
Speaker: Bastian Pfau (Max-Born-Institut)

10:00 AM → 10:15 AM **Coffee Break** ⌚ 15m

10:15 AM → 12:30 PM **Quantum Materials: Magnetic, Spin, and Correlated Systems I.: -- Red Zoom Room --, Chair: Kai Rossnagel, Moritz Hoesch**

10:15 AM | **Perspectives of Soft X-ray Coherent Imaging at PETRA-IV** ⌚ 20m
Speaker: Felix Büttner (HZB Berlin)

10:35 AM | **Diffraction and phase transitions of 3D charge-density-wave compounds** ⌚ 20m
Speaker: Sander van Smaalen (Bayreuth)

10:55 AM | **IRIXS -- Resonant inelastic scattering with tender x-rays** ⌚ 20m
Speaker: Bernhard Keimer (MPI Stuttgart)

11:15 AM | **Coffee Break** ⌚ 15m

11:30 AM

Uniaxial strain and high magnetic field nuclear forward scattering and synchrotron Mössbauer spectroscopy – Probing quantum materials under explicit symmetry breaking ⌚ 20m

Speaker: Hans-Henning Klauss (TU Dresden)

11:50 AM

Inelastic x-ray scattering beyond the dipole limit: a new and powerful experimental method ⌚ 20m

Speaker: Hao Tjeng (MPI Dresden)

12:10 PM

poster flash presentations ⌚ 20m

Speaker: poster presenters

12:30 PM

→ 1:30 PM

Lunch Break ⌚ 1h

1:30 PM

→ 3:45 PM

Thin Films and Nanostructures for Functional Devices - in situ Growth, Coating, and operando Characterization: -- Red Zoom Room --, Chair: Christoph Schlueter, Florian Bertram

1:30 PM

Operando studies of ferroelectric devices ⌚ 20m

Speaker: Beatriz Noheda (University of Groningen)

1:50 PM

Memory devices for neuromorphic information processing ⌚ 20m

Speaker: Hermann Kohlstedt (Uni Kiel)

2:10 PM

Functional magnetic and electronic oxides explored by hard X-rays ⌚ 20m

Speaker: Martina Müller (Uni Konstanz)

2:30 PM

Coffee Break ⌚ 15m

2:45 PM

HAXPES for future electronic materials and devices ⌚ 20m

Speaker: Anna Regoutz (University College, London)

3:05 PM

tbd ⌚ 20m

Speaker: Michael Rübhausen (Uni Hamburg)

3:25 PM

In situ growth of epitaxial thin films ⌚ 20m

Speaker: Joachim Wollschläger (Uni Osnabrück)

3:45 PM → 4:00 PM **Coffee Break** ⌚ 15m

4:00 PM → 6:15 PM **Poster Session**

📍 -- based on remo.co -- (Please ...)

TUESDAY, 3 NOVEMBER

9:00 AM → 10:00 AM **Enabling Technologies (Techniques): -- Red Zoom Room --, Chair: Kai Bagschik**

9:00 AM

Towards K- Microscopy at Petra IV ⌚ 20m

Speaker: Katerina Medjanik (JGU Mainz)

9:20 AM

Large Volume Press (LVP): exploration of high pressures and temperatures on mm-sized samples at PETRA III and PETRA IV ⌚ 20m

Speaker: Robert Farla (DESY)

9:40 AM

Bragg diffraction based microscopy: exploiting resolution in space and time ⌚ 20m

Speaker: Tobias Schulli (ESRF)

10:00 AM → 10:15 AM **Coffee Break** ⌚ 15m

10:15 AM → 12:30 PM **Quantum Materials: Magnetic, Spin, and Correlated Systems II.: -- Red Zoom Room --, Chair: Hlynur Gretarsson and Christoph Schlueter**

10:15 AM

Depth-resolved high resolution hard x-ray photoemission spectroscopy of quantum materials ⌚ 20m

Speaker: Kalobaran Maiti (Tata Institute of Fundamental Research)

10:35 AM

Electronic structure of nanostructured devices probed by nanoARPES ⌚ 20m

Speaker: Soren Ulstrup (Aarhus University)

10:55 AM

Momentum microscopy of complex quantum materials with hard x-rays ⌚ 20m

Speaker: Ralph Claessen (Würzburg)

11:15 AM

Coffee Break ⌚ 15m

11:30 AM

Exploring slow magnetic dynamics using speckle spectroscopy ⌚ 20m

Speaker: Elizabeth Blackburn (Lund)

11:50 AM

Topological transitions and emergence in magnetic mesospins ⌚ 20m

Speaker: Björgvin Hjörvarsson (UPPSALA)

12:10 PM

X-ray magnetic circular dichroism in low-dimensional quantum spin systems ⌚ 20m

Speaker: Lino da Costa Pereira (KU Leuven)

12:30 PM

→ 1:30 PM

Lunch Break

1:30 PM

→ 3:45 PM

Fundamental Studies in the Gas Phase: Photo-Induced Reactions of Atoms, Molecules, and Clusters: -- Red Zoom Room --, Chair: Florian Trinter, Kai Bagschik

📍 Online

1:30 PM

Towards a Photon-Ion-Electron correlation spectrometer for studies of structure and dynamics of polyatomic systems ⌚ 20m

Speaker: Raimund Feifel (University of Gothenburg)

1:50 PM

Perspectives for Photon-Ion Merged-Beams Experiments at PETRA IV ⌚ 20m

Speaker: Stefan Schippers (Justus-Liebig-Universität Gießen)

2:10 PM

eCOMO, a new endstation for controlled molecule experiments ⌚ 20m

Speaker: Sebastian Trippel (CFEL)

2:30 PM

Coffee Break ⌚ 15m

2:45 PM

Perspectives in High Resolution Electron Spectroscopy in the soft and tender x-ray region in gas phase ⌚ 20m

Speaker: Marc Simon (Sorbonne Université)

3:05 PM

Perspectives for Nuclear Quantum Optics ⌚ 20m

Speaker: Ralf Röhlsberger (DESY)

3:25 PM

Fundamental Studies in the Gas Phase using COLTRIMS Reaction Microscopes ⌚ 20m

Speaker: Till Jahnke (Goethe-Universität Frankfurt am Main)

3:45 PM

→ 4:00 PM

Coffee Break ⌚ 15m

4:00 PM

→ 6:15 PM

Extreme Pressure & Temperature Research in the Field of Earth Science: -- Red Zoom Room --, Chair: Robert Farla, Hanns-Peter Liermann

4:00 PM

Insitu rock deformation and liquids under extreme conditions - the value of specialized LVPs at PETRA IV ⌚ 20m

Speaker: Melanie Sieber (Uni. Potsdam, GFZ)

4:20 PM

Modeling and understanding of planetary interiors by in-situ high pressure and high temperature XRD and X-ray imaging ⌚ 20m

Speaker: Clemens Prescher (Uni Freiburg, DESY)

4:40 PM

Shaping the future of extreme condition science for the Earth and Environment: a unique synergy of diffraction and spectroscopy at PETRA IV ⌚ 20m

Speaker: Ingrid Blanchard (Uni Potsdam)

5:00 PM

Coffee Break ⌚ 15m

5:15 PM

Electronic structure and bonding properties of light-element compounds at conditions of planetary interiors

🕒 20m

Speaker: Christian Sternemann (TU Dortmund)

5:35 PM

Scientific Instrument Proposal for Nuclear Resonance Scattering instrument at extreme conditions in the field of Earth Sciences 🕒 20m

Speaker: Ilya Kupenko (Uni. Münster)

5:55 PM

Mimicking planetary interiors and violent impacts by dynamic compression experiments 🕒 20m

Speaker: Dominik Kraus (Uni Rostock)

WEDNESDAY, 4 NOVEMBER

9:00 AM

→ 10:00 AM

Enabling Technologies (Techniques): -- Red Zoom Room --, Chair: Kai Bagschik

9:00 AM

The DESY NanoLab and PETRA IV 🕒 20m

Speaker: Andreas Stierle (DESY)

9:20 AM

Nuclear Resonant Scattering: Opportunities at PETRA IV 🕒 20m

Speaker: Ilya Sergeev (DESY)

9:40 AM

Densely spaced, parts-per-billion-reproducible x-ray photon energy standards 🕒 20m

Speaker: Jose Ramon Crespo Lopez-Urrutia (MPI Heidelberg)

10:00 AM

→ 10:15 AM

Coffee Break 🕒 15m

10:15 AM

→ 12:30 PM

Structure of Nanomaterials and Nanoparticles during growth, in-situ and operando conditions: -- Red Zoom Room --, Chair: Vedran Vonk

10:15 AM | **Nuclear resonant scattering with nanofocused beam at Petra IV** ⌚ 20m

Speaker: Svetoslav Stankov (KIT)

10:35 AM | **Probing local structure in metallic and oxide nanoparticles by in-situ X-ray absorption spectroscopy** ⌚ 20m

Speaker: Janis Timoshenko (FHI)

10:55 AM | **Using X-rays as in situ and in operando probe of semiconductor nanostructures** ⌚ 20m

Speaker: Jesper Wallentin (Lund)

11:15 AM | **Coffee Break** ⌚ 15m

11:30 AM | **In situ strain imaging and defect dynamics during the catalysis** ⌚ 20m

Speaker: Hyunjung Kim (Sogang University, South Korea)

11:50 AM | **Insights into the formation of artificial biohybrid materials: Investigating the formation of nanoparticles inside protein containers** ⌚ 20m

Speaker: Tobias Beck (UHH)

12:10 PM | **Opportunities for diffraction-based temporally and spatially resolved nanostructure studies in situ with small beams** ⌚ 20m

Speaker: Simon Billinge (Colombia/Brookhaven)

12:30 PM → 1:30 PM | **Lunch Break** ⌚ 1h

1:30 PM → 3:45 PM | **Glasses and Amorphous Solids: -- Red Zoom Room --, Chair: Michael Sprung**

1:30 PM | **X-ray photon correlation spectroscopy experiments on oxide glasses** ⌚ 20m

Speaker: Giulio Monaco (Department of Physics, University of Trento, Italy)

1:50 PM | **A dynamical view at polyamorphism in glass-formers** ⌚ 20m

Speaker: Beatrice Ruta (University of Lyon/CNRS)

2:10 PM

Connecting structure to the micro-mechanics and macro-scale fracture toughness of a laser-processed BMG using micro-focussed high-energy X-rays at PETRA III ⌚ 20m

Speaker: James Best (Structure and Nano- / Micromechanics of Materials, Max-Planck-Institut für Eisenforschung GmbH, Düsseldorf, GERMANY)

2:30 PM

Coffee Break ⌚ 25m

2:55 PM

Study of thermal and mechanical stability of metallic glasses using synchrotron radiation ⌚ 20m

Speaker: Jozef Bednarcik (Faculty of Science, Institute of Physics, P.J. Safarik University in Kosice)

3:15 PM

Multiscale relaxation of permanently densified glass using SAXS and WAXS ⌚ 20m

Speaker: Dominique de Ligny (Department of Materials Science and Engineering, FAU)

3:35 PM

Wrap-up Discussion ⌚ 10m

Speaker: Michael Sprung (DESY)

3:45 PM → 4:00 PM

Coffee Break ⌚ 15m

4:00 PM → 6:15 PM

CMWS Research in Molecular Physics, Astrochemistry, and Atmospheric Science: -- Red Zoom Room --, Chair: Melanie Schnell, Florian Trinter

4:00 PM

CMWS Overview ⌚ 10m

Speaker: Melanie Schnell (DESY)

4:10 PM

Water and aerosols in the atmosphere: where we are and where we are going ⌚ 20m

Speaker: Nonne Prisle (University of Oulu)

4:30 PM

Photoelectron spectroscopy of liquid jets at SOLEIL ⌚ 20m

Speaker: Christophe Nicolas (Synchrotron SOLEIL)

4:50 PM

Comet and Interstellar Ice and the Molecular Origins of Life ⌚ 20m

Speaker: Uwe Meierhenrich (Université Côte d'Azur)

5:10 PM

Coffee Break ⌚ 5m

5:15 PM

Protein complex dissociation with soft X-rays ⌚ 20m

Speaker: Charlotte Uetrecht (Heinrich-Pette-Institut)

5:35 PM

Operando soft-X-ray PES measurements from electrode-electrolyte interfaces ⌚ 20m

Speaker: Robert Seidel (Helmholtz-Zentrum Berlin)

5:55 PM

Investigation of heterogeneous chemical reactions at liquid-vapor interfaces with XPS ⌚ 20m

Speaker: Hendrik Bluhm (Fritz-Haber-Institut)

4:00 PM → 6:15 PM

Non-destructive Analysis of Environmental, Geochemical, and Cultural Heritage Samples under Ambient Conditions: -- Blue Zoom Room --, Chair: Gerald Falkenberg, Edmund Welter

4:00 PM

Application of XAS in Environmental Sciences ⌚ 20m

Speaker: Christian Mikutta

4:20 PM

Investigation of metal(loid) distribution and speciation in plants by μ XRF and μ XANES on frozen-hydrated and living samples ⌚ 20m

Speaker: Hendrik Kuepper (Czech Academy of Sciences)

4:40 PM

Preservation of organic matter in soil: Nano-imaging and spectroscopy from carbon to phosphorus ⌚ 20m

Speaker: Karin Eusterhues (Friedrich-Schiller-Universität Jena)

5:00 PM

Coffee Break ⌚ 15m

5:15 PM

Synchrotron Radiation for (painted) Cultural Heritage ⌚ 20m

Speaker: Frederik Vanmeert

5:35 PM

Micro-spectroscopy in Earth Science ⌚ 20m

Speaker: Max Wilke (Universität Potsdam)

5:55 PM

Quantitative large volume main and trace element tomography for sample return missions ⌚ 20m

Speaker: Frank Brenker (Goethe University Frankfurt)

6:15 PM → 6:45 PM

Summary / Close Out: (Open end) -- Red Zoom Room --, Chair: Kai Bagschik, Stephan Klumpp, Christian Schroer, Hans-Christian Wille, Oliver Seeck