

PETRA IV Workshop - Materials and Processes for Energy and Transport Technology

Monday 19 October 2020 - Wednesday 21 October 2020

Online Programme

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Monday 19 October 2020

Opening Session - (09:00-09:20)

time	[id] title	presenter
09:00	[75] Welcome (00h10')	SCHROER, Christian (DESY)
09:10	[76] Zoom Session Netiquette (00h10')	KLUMPP, Stephan (DESY)

Enabling Technologies (Techniques) - -- Blue Zoom Room --, Chairs: Kai Bagschik, Michael Stückelberger, (Click for details) (09:20-10:00)

time	[id] title	presenter
09:20	[14] Perspectives for Correlative and Multimodal Experiments at PETRA IV (00h20')	KELLER, Thomas F. (DESY)
09:40	[15] In-situ and operando measurement approaches in catalysis research (00h20')	SHEPPARD, Thomas (Karlsruhe Institute of Technology)

Energy Conversion I. - -- Blue Zoom Room --, Chairs: Andreas Stierle, Michael Stückelberger, (Click for details) (10:15-12:30)

time	[id] title	presenter
10:15	[16] The Diffraction Revolution: How Modern Lightsources Impact Industrial Research (00h20')	HINRICHSSEN, Bernd (BASF)
10:35	[17] High-energy diffraction for catalysis research (00h20')	GUSTAFSON, Johan (Lund University)
10:55	[18] Nanoparticle Exsolution: Tailoring Surfaces for Chemical Energy Conversion (00h20')	RAMESHAN, Christoph (Institute of Materials Chemistry, TU Wien)
11:15	Coffee Break (00h15')	
11:30	[20] Time-resolved spectroscopy of catalytic reactions (00h20')	NILSSON, Anders (Stockholm University)
11:50	[21] Pump-probe X-ray spectroscopy to study photocatalysis at PETRA IV (00h20')	BAUER, Matthias (Paderborn University)

Energy Conversion II. - -- Blue Zoom Room --, Chairs: Jan-Dierk Grunwaldt, Michael Stückelberger, (Click for details) (13:30-15:45)

time	[id] title	presenter
13:30	[22] Electrochemical processes in energy technology: A case for operando XRD studies at model electrodes (00h20')	MAGNUSSEN, Olaf (Kiel University)
13:50	[23] Operando experiments in heterogeneous catalysis (00h20')	ROLDAN CUENYA, Beatriz (FHI Berlin)
14:10	[24] Spatial and temporal explorations of heterogeneous catalysts using Synchrotron-based X-ray microscopy (00h20')	MEIRER, Florian (Utrecht University)
14:30	Coffee Break (00h15')	

14:45	[25] Unwanted effects of X-rays and what to do about them: a case study. Operando XAS studies of copper exchanged zeolites for the direct synthesis of methanol from methane (00h20')	NEWTON, Mark (ETHZ)
15:05	[26] PDF analysis on materials for chemical energy conversion (00h20')	ZOBEL, Mirijam (University of Bayreuth)
15:25	[27] Complementary operando synchrotron-based studies in electrocatalysis (00h20')	OEZASLAN, Mehtap (TU Braunschweig)

Poster Session - -- based on remo.co -- (please see instructions listed on this [indico website](https://remo.co)) (16:00-18:15)

Tuesday 20 October 2020

Enabling Technologies (Techniques) - -- Blue Zoom Room --, Chairs: Tobias Kipp, Kai Bagschik, (Click for details) (09:00-10:00)

time	[id] title	presenter
09:00	[28] Scanning X-Ray MicroscopyTechniques (00h20')	STUECKELBERGER, Michael (DESY)
09:20	[29] Diamond anvil cell: the tool for extreme condition research at PETRAIII and PETRAIV (00h20')	GLAZYRIN, Konstantin (DESY)
09:40	[30] XAFS-Ptychography at 4th generation storage rings (00h20')	TAKAHASHI, Yukio (Tohoku University)

Energy Storage I. - -- Blue Zoom Room --, Chairs: Ann-Christin Dippel, Michael Stückelberger, (Click for details) (10:15-12:30)

time	[id] title	presenter
10:15	[31] In-situ Investigation of Materials for Hydrogen Storage (00h20')	DORNHEIM, Martin (HZG)
10:35	[32] Anomalous Small Angle X-ray Scattering study to understand the nanostructure and functional relationship of supercapacitors (00h20')	PARIS, Oskar (Montanuniversität Leoben)
10:55	[33] Opportunities with X-Ray Raman Scattering in the field of materials for energy storage and catalysis (00h20')	HUOTARI, Simo (University of Helsinki)
11:15	Coffee Break (00h15')	
11:30	[34] Electrochemical mechanism of redox active organic materials studied by X-ray Raman scattering (00h20')	KAV■I■, Matjaž (University of Ljubljana)
11:50	[35] XAFS and complementary methods for energy storage research at 4th generation storage rings (00h20')	DIXON, Ditty (Ramanujan Fellow, Central Electrochemical Research Institute, Karaikudi, India)
12:10	[36] In situ and in operando X-ray diffraction of electroceramics (00h20')	HINTERSTEIN, Manuel (Karlsruhe Institute of Technolgy)

Structure, Properties, and Processing of Materials I. - -- Blue Zoom Room --, Chairs: 1st half: Ulrich Lienert, Peter Staron; 2nd half: Christina Krywka, Ulrich Lienert, (click for details) (13:30-15:45)

time	[id] title	presenter
13:30	[57] Multiscale microscopy of polycrystalline materials (00h20')	POULSEN, Henning (DTU)
13:50	[58] Hierarchical design of advanced steels - opportunities with a multi-scale x-ray microscope (00h20')	HEDSTRÖM, Peter (KTH)
14:10	[59] Dynamics of metal deformation by in situ high resolution reciprocal space mapping (00h20')	PANTLEON, Wolfgang (DTU)
14:30	Coffee Break (00h15')	
14:45	[60] Understanding multiscale material structure and processes through combined scattering and imaging (00h20')	HALL, Stephen (Lund University)

15:05	[61] Developing new materials and optimizing existing ones using high-throughput scanning X-ray Nanodiffraction (00h20')	KECKES, Jozef (MU Leoben)
15:25	[62] Nano SAXS with in situ mechanical testing on glasses (00h20')	FUHRMANN, Sindy (TU Freiburg)

Energy Harvesting - -- Blue Zoom Room --, Chairs: Stephan Roth, Michael Stückelberger, (Click for details) (16:00-18:15)

time	[id] title	presenter
16:00	[37] In-situ studies for the correlation of structure formation with functionality (00h20')	MÜLLER-BUSCHBAUM, Peter (TU München)
16:20	[38] Multimodal and Coherent X-ray imaging techniques for thin-film solar cell research (00h20')	ANDREASEN, Jens Wenzel (Technical University of Denmark)
16:40	[39] Some current developments and open questions in thermoelectrical research (00h20')	IVERSEN, Bo (Aarhus University)
17:00	Coffee Break (00h15')	
17:15	[40] Atomic-scale structure of complex solar cell absorbers (00h20')	SCHNOHR, Claudia (Leipzig University)
17:35	[41] Harnessing Diffraction-Limited Storage Rings to Probe Halide Perovskite Solar Cells (00h20')	FENNING, David (UC San Diego)
17:55	[42] Tracking carrier and phonon relaxation in energy conversion materials with hard x-ray scattering (00h20')	TEITELBAUM, Samuel (Arizona State University)

Extreme Pressure & Temperature Research in the Field of Energy and Transport Technology - -- Red Zoom Room --, Chairs: Hans Peter Liermann, Robert Farla, (Click for details) (16:00-18:15)

time	[id] title	presenter
16:00	[43] Extreme pressure and temperature research at PETRA IV (00h20')	LIERMANN, Hanns-Peter (Petra III, DESY)
16:20	[44] Benefits at PETRA IV for high-pressure research using the LVP: synthesis of novel nitrides and fullerenes (00h25')	SIEBER, Melanie (University of Potsdam)
16:45	[45] Materials Discovery and Characterization under extreme static high pressure and temperature conditions using XRD and imaging (00h25')	PRESCHER, Clemens (DESY, FS-PS)
17:10	Coffee Break (00h15')	
17:25	[46] Shaping the future of extreme condition materials science: a unique synergy of diffraction and spectroscopy at Petra IV (00h25')	LANIEL, Dominique (Bayreuth University)
17:50	[47] Opportunities for dynamic compression science at synchrotrons (00h25')	KRAUS, Dominik (HZDR)

Wednesday 21 October 2020

Enabling Technologies (Techniques) - -- Blue Zoom Room --, Chairs: Simone Techert, Kai Bagschik, (Click for details) (09:00-10:00)

time	[id] title	presenter
09:00	[48] Coherent imaging techniques (00h20')	HAGEMANN, Johannes (FS-PETRA)
09:20	[49] Monochromators for high-energy experiments (00h20')	LIENERT, Ulrich (DESY)
09:40	[50] Sample environments for engineering materials experiments (00h20')	STARON, Peter (Helmholtz-Zentrum Geesthacht) LIENERT, Ulrich (DESY)

CMWS in Energy and Transport Technology - -- Blue Zoom Room -- Chairs: Gerhard Grübel, Felix Lehmkuhler, Claudia Goy, (click for details) (10:15-12:30)

time	[id] title	presenter
10:15	[69] Introduction CMWS (00h20')	GRÜBEL, Gerhard (DESY)
10:35	[70] Selective removal of organic matter from drinking water: Understanding electro-sorption in membrane filtration (00h20')	ERNST, Mathias (TUHH)
10:55	[71] Shaping the Energy System of the Future (00h20')	EBERHARDT, Wolfgang (CFEL)
11:15	Coffee Break (00h15')	
11:30	[72] Interactions between water and nanoporous functional oxides (00h20')	MASCOTTO, Simone (UHH)
11:50	[73] Importance of water and in-situ X-ray spectroscopy for green hydrogen (00h20')	RISCH, Marcel (HZB)
12:10	[74] Revealing corrosion of nano-structured alloys by nano X-ray beam (00h20')	PAN, Jinshan (KTH)

Structure, Properties, and Processing of Materials II. - -- Blue Zoom Room -- Chairs: 1st half: Christian Krywka, Peter Staron; 2nd half: Peter Staron, Christina Krywka, (click for details) (13:30-15:45)

time	[id] title	presenter
13:30	[63] Multiscale imaging of nanostructured functional materials for battery research (00h20')	MANKE, Ingo (HZB)
13:50	[64] X-ray imaging of high temperature metal processing with high temporal and spatial resolution (00h20')	TOLNAI, Domonkos (HZG)
14:10	[65] Real-time monitoring of very rapid scientific engineering processes by means of diffraction methods (00h20')	GIBMEIER, Jens (KIT Karlsruhe)
14:30	Coffee Break (00h15')	
14:45	[66] In-situ X-ray diffraction experiments under difficult conditions (00h20')	EPP, Jeremy (Leibniz-Institut für Werkstofforientierte Technologien-IWT)
15:05	[67] Structural materials under real manufacturing and service conditions: from state-of-the-art to the challenges of tomorrow (00h20')	BARRIOBERO VILA, Pere (DLR Köln)

15:25	[68] The HZG scientific instrumentation plans for PETRA IV (00h20')	MÜLLER, Martin (HZG)
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Energy Storage II. - -- Blue Zoom Room --, Chairs: Christoph Schlueter, Michael Stückelberger, (Click for details) (16:00-18:15)

time	[id] title	presenter
16:00	[51] In-operando and in-situ characterization of Li-Ion and post-Li accumulators (00h20')	WÜRSIG, Andreas (Fraunhofer ISIT)
16:20	[52] Using Coherent X-rays to Understand Ion Transport in Electrolytes (00h20')	STEINRÜCK, Hans-Georg (Paderborn University)
16:40	[53] In situ XAS investigations on electrode materials for Li-ion and Na-ion batteries (00h20')	INDRIS, Sylvio (KIT)
17:00	Coffee Break (00h15')	
17:15	[54] How could X-ray based battery research look in 2030? (00h20')	NAYLOR, Andy (Uppsala University)
17:35	[55] Nanoscale structure dynamics in operando sodium-ion battery cathodes studied by Bragg CDI (00h20')	SINGER, Andrej (Cornell University)
17:55	[56] Future Direction for Transport in Electrochemical Energy Storage (00h20')	TONEY, Michael (SLAC)

Summary / Close out - (18:15-18:45)