

APXPS-2021 Virtual Workshop Agenda
Brookhaven National Laboratory
December 7-10, 2021

(All times are in Eastern Standard Time/UTC-05:00)

Time (Eastern Standard Time, UTC-05:00)	Tue, 12/7 Topic: Heterogeneous Catalysis	Wed, 12/8 Topic: Electrochemistry and Battery	Thu, 12/9 Topic: Materials and Interfaces	Fri, 12/10	
10:00 AM	Welcome	Overview of the day	Overview of the day	Technical session	
10:10 AM	Plenary 1 - Rodriguez	Invited 5 - Jeong	Invited 9 - Yamamoto		
10:20 AM					
10:30 AM					
10:40 AM					
10:50 AM	Invited 1 - Blomberg	Invited 6 - Park	Plenary 3 - Ammann		
11:00 AM					
11:10 AM					
11:20 AM	Invited 2 - Grinter	Plenary 2 - Yano	Invited 10 - Allen		Break
11:30 AM					
11:40 AM					
11:50 AM		Contributed 1 - Garcia Martinez	Contributed 4 - Chaveanghong	Contributed 7 - J. Wang	Contributed 10 - Goodwin
12:00 PM					
12:10 PM	Break	Break	Break	Contributed 11- Boucly	
12:20 PM					
12:30 PM	Invited 3 - Eren	Invited 7 - Yashina	Invited 11 - Bournel	Contributed 12 - Jones	
12:40 PM					
12:50 PM					
1:00 PM	Invited 4 - Weaver	Invited 8 - Mom	Invited 12 - Starr	Next APXPS workshop and Closeout	
1:10 PM					
1:20 PM					
1:30 PM					
1:40 PM	Contributed 2 - Jenkins	Contributed 5 - Källquist	Contributed 8 - Gross		
1:50 PM					
2:00 PM	Contributed 3 - Mosevitzky Lis	Contributed 6 - Javed	Contributed 9 - Karagoz		

Pre-recorded contributed talks and poster presentations will be made available to registered workshop participants on Dec. 7-31, 2021.

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Day 1: Tuesday, December 7, 2021

10:00 am – 10:10 am	Welcoming remarks – John Hill (NSLS-II Director)
10:10 am – 10:50 am	Plenary 1 – Jose Rodriguez (Brookhaven National Laboratory) <i>“APXPS and C1 Catalysis: Fundamental Studies on the Conversion of CO₂ and CH₄”</i>
10:50 am – 11:20 am	Invited 1 – Sara Blomberg (Lund University) <i>“In situ APXPS applied to catalysis for renewables”</i>
11:20 am – 11:50 am	Invited 2 – David Grinter (Diamond Light Source) <i>“Ambient Pressure NEXAFS at VerSoX B07-B”</i>
11:50 am – 12:10 pm	Contributed 1 – Fernando Garcia-Martinez (Centro de Física de Materiales (CSIC - UPV/EHU)) <i>“Asymmetric CO ignition on Rh stepped surfaces studied with a curved sample”</i>
12:10 pm – 12:30 pm	Break
12:30 pm – 1:00 pm	Invited 3 – Baran Eren (Weizmann Institute of Science) <i>“The interaction of methanol vapor with copper surfaces”</i>
1:00 pm – 1:30 pm	Invited 4 – Jason Weaver (University of Florida) <i>“Methane Oxidation on IrO₂(110) Thin Films”</i>
1:30 pm – 1:50 pm	Contributed 2 - Jessica Jenkins (Oregon State University) <i>“Reaction of 2-Propanol on SnO₂(101) and SnO₂(110) Studied using Ambient-Pressure X-ray Photoelectron Spectroscopy”</i>
1:50 pm – 2:10 pm	Contributed 3 - Bar Mosevitzky Lis (Lehigh University) <i>“Surface-bulk dynamics of bulk mixed oxide and supported metal oxide catalysts under reaction conditions: an in situ NAP-XPS study”</i>

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Day 2: Wednesday, December 8, 2021

10:00 am – 10:10 am	Overview of the day
10:10 am – 10:40 am	Invited 5 – Beomgyun Jeong (Korea Basic Science Institute) <i>“Ongoing APXPS studies in Korea Basic Science Institute”</i>
10:40 am – 11:10 am	Invited 6 – Jeunghye Park (Korea University) <i>“Two-Dimensional Transition Metal Dichalcogenide Alloy Nanosheets to Enhance Electrocatalytic Performance”</i>
11:10 am – 11:50 am	Plenary 2 – Junko Yano (Lawrence Berkeley National Laboratory) <i>“Application of X-ray Techniques for Studying Artificial Photosynthetic Systems”</i>
11:50 am – 12:10 pm	Contributed 4 – Suwilai Chaveanghong (Institute for Molecular Science, Japan) <i>“Sulfur poisoning Pt and PtCo anode and cathode catalysts in polymer electrolyte fuel cells studied by Operando near ambient pressure hard X-ray photoelectron spectroscopy”</i>
12:10 pm – 12:30 pm	Break
12:30 pm – 1:00 pm	Invited 7 – Lada Yashina (Lomonosov Moscow State University) <i>“Photoemission studies of Li-O₂ batteries”</i>
1:00 pm – 1:30 pm	Invited 8 – Rik Mom (Leiden University) <i>“Modeling of Fuel Cell and Electrolyzer processes using Electrochemical XPS and XAS data”</i>
1:30 pm – 1:50 pm	Contributed 5 – Ida Källquist (Uppsala University) <i>“Potentials in Li-ion batteries probed by operando APPES”</i>
1:50 pm – 2:10 pm	Contributed 6 – Hassan Javed (Leiden University) <i>“Platinum electrocatalyst oxidation under steady state and transient conditions examined by in situ XPS and XAS”</i>

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Day 3: Thursday, December 9, 2021

10:00 am – 10:10 am	Overview of the day
10:10 am – 10:40 am	Invited 9 – Susumu Yamamoto (Tohoku University) <i>“Operando observation of photo-excited carriers and molecules at solid surfaces using time-resolved XPS”</i>
10:40 am – 11:20 am	Plenary 3 – Markus Ammann (Paul Scherrer Institut) <i>“Surface Science in the Atmosphere”</i>
11:20 am – 11:50 am	Invited 10 – Heather Allen (Ohio State University) <i>“Interfacial Aqueous Organization and Electric Fields Generated from Chemical Composition: Environmental and Material Surfaces”</i>
11:50 am – 12:10 pm	Contributed 7 – Jiayue Wang (Massachusetts Institute of Technology) <i>“Quantifying the strain-dependent surface defect equilibria of perovskites”</i>
12:10 pm – 12:30 pm	Break
12:30 pm – 1:00 pm	Invited 11 – Fabrice Bournel (Sorbonne University and Synchrotron SOLEIL) <i>“Real time NAP-XPS study of dry silicon oxidation”</i>
1:00 pm – 1:30 pm	Invited 12 – David Starr (Helmholtz-Zentrum Berlin) <i>“Solid-liquid interfaces studied with synchrotron-based ambient pressure X-ray photoelectron spectroscopy”</i>
1:30 pm – 1:50 pm	Contributed 8 – Adam Gross (University of California, Davis) <i>“Copper migration in intercalated topological insulator $Cu_xBi_2Se_3$”</i>
1:50 pm – 2:10 pm	Contributed 9 – Burcu Karagoz (Brookhaven National Laboratory) <i>“Surface Chemistry of NO_2 and CO on a $Cu_2O(111)$ Surface”</i>

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Day 4: Friday, December 10, 2021

10:00 am – 10:05 am	<p>Overview of technical session</p> <p>“Streamlining and Enabling Automated/Remotely-Controlled AP-XPS Experiments”</p> <p>Contributions from:</p>
10:05 am – 10:20 am	<ul style="list-style-type: none"> • Ignacio Villar (ALBA Synchrotron, Spain) <i>“Remote experiments at the CIRCE-NAPP station in ALBA”</i>
10:20 am – 10:35 am	<ul style="list-style-type: none"> • Patrick Zeller (BESSY, Germany) <i>“NAP-XPS remote operation capabilities at BESSY II”</i>
10:35 am – 10:50 am	<ul style="list-style-type: none"> • Luca Artiglia (Swiss Light Source/PSI, Switzerland) <i>“PShell software implementations to control the In Situ Spectroscopy beamline at SLS”</i>
10:50 am – 11:05 am	<ul style="list-style-type: none"> • Robert Temperton (MAX IV, Sweden) <i>“Enabling remote AP-XPS measurements at the HIPPIE and SPECIES beamlines at MAX IV”</i>
11:15 am – 11:20 am	<ul style="list-style-type: none"> • Georg Held (Diamond Light Source, UK) <i>“Remote Operation at the VerSoX beamline of Diamond Light Source”</i>
11:20 am – 11:35 am	<ul style="list-style-type: none"> • Slavomir Nemsak (Advanced Light Source, USA) <i>“Semi-automated remote APXPS experiments at the ALS”</i>
11:30 am – 11:50 am	Break
11:50 am – 12:10 pm	<p>Contributed 10 - Christopher Goodwin (Stockholm University)</p> <p><i>“In situ observations of ammonia synthesis”</i></p>
12:10 pm – 12:30 pm	<p>Contributed 11 - Anthony Boucly (Paul Scherrer Institut)</p> <p><i>“Water inhibition effect and highly cationic Pd species detected by AP-XPS on Pd/Al₂O₃ catalysts for methane oxidation reaction”</i></p>
12:30 pm – 12:50 pm	<p>Contributed 12 - Rosemary Jones (Lund University)</p> <p><i>“AP-XPS study of the adsorption of ethanol on rutile TiO₂ (110)”</i></p>
12:50 pm – 1:00 pm	Next APXPS workshop and Closeout

APXPS-2021 Virtual Workshop Agenda

Pre-Recorded Contributed Talks

	Name	Affiliation	Title
RT-01	Peter Amann	Scienta Omicron	The State of Zn under Methanol Synthesis Conditions over Zn/ZnO/Cu(211) Catalyst
RT-02	Hao Chen	Lawrence Berkeley National Laboratory	Resolving the Nature of SMSI among Au-CoO _x Model Catalyst
RT-03	David Degerman	Stockholm University	Pressure hopping: Investigating CO and CO ₂ hydrogenation on Rh in the borderlands between operando and post-mortem
RT-04	Pedro Alzaga	Oregon State University	Oxidation of amorphous metal alloy surfaces studied using ambient pressure X-ray photoelectron spectroscopy
RT-05	Heath Kersell	Oregon State University	In-situ evolution of structure and chemical state during nanoparticle exsolution from perovskite hosts by reduction in H ₂
RT-06	Esko Kokkonen	MAX IV Laboratory	Using Ambient Pressure XPS to study ALD in real-time
RT-07	<i>Withdrawn</i>	<i>Withdrawn</i>	<i>Withdrawn</i>
RT-08	Alexander Large	Diamond Light Source	Anodized aluminium as a model catalyst support material in the complete oxidation of methane
RT-09	Patrick Lömker	Stockholm University	Single crystalline Co(0001) Fischer-Tropsch observations at 550mbar (and above) using a virtual cell approach and hard X-rays
RT-10	<i>Withdrawn</i>	<i>Withdrawn</i>	<i>Withdrawn</i>
RT-11	Richard Oleksak	National Energy Technology Laboratory	In situ study of alloy degradation in high temperature CO ₂
RT-12	Christoph Rameshan	TU Wien	Tailoring of Catalyst Surfaces for Energy Conversion – In-situ Studies of Electrochemical driven Nanoparticle Exsolution

RT-13	Joachim Schnadt	Lund University	APXPS investigation of atomic layer deposition of HfO ₂ on SiO ₂ : evidence for a bimolecular reaction mechanism in the initial metal half-cycle
RT-14	Markus Soldemo	Stockholm University	Subsurface oxygen in oxide derived Cu catalyst for CO ₂ reduction
RT-15	Andreas Thissen	SPECS Surface Nano Analysis GmbH	Quantification and reporting of XPS data taken under Near Ambient Pressure conditions – chances and challenges in acquisition speed, beam damage, sensitivity, reliability, reproducibility and repeatability
RT-16	Ryan Thorpe	Lehigh University	Lab-Based NAP-XPS at the Lehigh University Materials Characterization Facility
RT-17	Ryo Toyoshima	Keio University	In situ analysis of a Pt thin film H ₂ gas sensor surface by AP-XPS
RT-18	Matthijs Van Spronsen	Diamond Light Source	Electrode-Electrolyte Interface Sensitivity in soft X-ray absorption spectroscopy via electron/ion yield
RT-19	Mykhailo Vorokhta	Charles University	Understanding the gas sensing mechanisms by NAP-XPS
RT-20	Haiko Wittkämper	FAU Erlangen-Nürnberg - Physikalische Chemie II	Spectroscopic Insights to Pt-, Pd- and Rh-Ga Alloys as Models for SCALMS Catalysts during Oxidation
RT-21	Rito Yanagi	Yale University	Operando Probing of the Energetics of Protective Coating for Solar Fuels Production
RT-22	Youngseok Yu	KBSI	Water adsorption behavior on anatase TiO ₂ (111) utilizing Near Ambient Pressure XPS
RT-23	Xueqiang Zhang	Beijing Institute of Technology	Surface Reconstruction in In ₂ O ₃ /m-ZrO ₂ Catalyzed CO ₂ Hydrogenation

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Pre-Recorded Poster Presentations

	Name	Affiliation	Title
PP-01	Luca Artiglia	Paul Scherrer Institut	The In Situ Spectroscopy beamline at the Swiss light source
PP-02	Sheng Yuan Chen	National Tsing Hua University	APXPS investigation of photocatalytic nitrogen reduction reaction in $\text{Bi}_5\text{O}_7\text{Br}_{0.5}\text{I}_{0.5}$: the critical role played by oxygen vacancy
PP-03	Sabrina Gericke	Lund University	An in situ APXPS characterization of Al_2O_3 supported NiMo catalyst
PP-04	<i>Withdrawn</i>	<i>Withdrawn</i>	<i>Withdrawn</i>
PP-05	Man Guo	Paul Scherrer Institut	Unveiling the active oxygen species in ethylene epoxidation over silver by ambient pressure X-ray photoelectron spectroscopy
PP-06	Tianhao Hu	Stony Brook University	In situ Spectroscopy Studies of Anisole Adsorption in NiMoO _x Catalysts
PP-07	Nuria J. Divins	Technical University of Catalonia	Investigation of ball-milled Pd/CeO ₂ catalysts under operando methane combustion conditions
PP-08	Moonjung Jung	GIST	Exploring chemical/electronic change of environment of platinum atom on Pt ₃ M (M=Ti,V) alloy surface under oxidation process
PP-09	Geonhwa Kim	Pohang Accelerator Laboratory	Catalytic reactivity stud on an atomically modified glassy carbon surface
PP-10	Xiansheng Li	ETH Zurich and Paul Scherrer Institute	Structure-activity evolution of platinum species supported on ceria during Water-Gas Shift Reaction
PP-11	Hojoon Lim	Gwangju Institute of Science and Technology	Nature of the surface space charge layer on undoped SrTiO ₃ (001)
PP-12	Bo-Hong Liu	Lawrence Berkeley National Laboratory	Ambient Pressure X-ray Photoelectron Spectroscopy Study of Room-Temperature Oxygen Adsorption on Cu(100) and Cu(111)
PP-13	Carlos Morales	Brandenburg University of Technology Cottbus-Senftenberg	Induced reduction by H ₂ exposure at room temperature of ceria ultrathin films grown by atomic layer deposition
PP-14	Andreas Nenning	TU Wien	Voltage dependent kinetics and surface chemistry of solid oxide cell electrodes

PP-15	Philip Petzoldt	Technical University of Munich	Monitoring the Behavior of Pt Loaded TiO ₂ (110) under Oxidizing and Reducing Conditions
PP-16	Ina Schmidt-Hanke	InProcess Instruments GmbH	Tailored Mass Spectrometry Solutions for the Gas Analysis of APXPS Systems at Different Pressure Ranges
PP-17	Minsik Seo	Gwangju Institute of Science and Technology	Investigation of surface oxidation on Pt3V alloys using ambient pressure XPS
PP-18	Stefan Van Vliet	ARCNL	Oxidation kinetics of Ru(0001) studied by NAP-XPS
PP-19	<i>Withdrawn</i>	<i>Withdrawn</i>	<i>Withdrawn</i>
PP-20	Chia-Hsin Wang	NSRRC	Ambient pressure/ UHV X-ray Photoelectron Spectroscopy End Stations at TPS BL43A
PP-21	Chueh Cheng Yang	National Yang Ming Chiao Tung University	Investigation of Redox Reaction of Platinum during Electrochemical Catalysis Reaction by Ambient Pressure XPS
PP-22	Youngseok Yu	KBSI	Surface chemical states of carbon-steel utilizing near ambient pressure XPS