



Surface Analysis 24 and 35th Annual Symposium of the Pacific Northwest Chapter of AVS



AUGUST 7-9, 2024

DISCOVERY HALL

PACIFIC NORTHWEST NATIONAL LAB, RICHLAND, WA 99354

WEDNESDAY, AUGUST 7

8:00 – 8:15	Chair Greeting	Vijay Murugesan and Ajay Karakoti	Pacific Northwest National Laboratory (PNNL)
8:15 – 8:30	Opening and Welcome Remarks	Lou Terminello , Associate Lab Director for Physical and Computational Sciences Directorate	PNNL

Session 1 Chair: **Vijay Murugesan, PNNL**

8:30 – 9:10	Invited Talk: Lucas Ellis <i>Identifying Reductant Descriptors and Surface Structures that Enhance Active Site Formation in Mo-Based Heterogenous Olefin Metathesis Catalysts</i>	Oregon State University
9:10 – 9:30	Xingyu Wang <i>Tracking Elementary Steps in Conversion of Carboxylic Acids on Single Crystalline and Nanofaceted Anatase TiO₂(101)</i>	PNNL
9:30 – 9:50	Jose Ortiz-Garcia <i>Coverage-dependent Adsorption, Reactivity, and Morphological Changes of Formic Acid on the Fe₃O₄(001) Surface</i>	PNNL

9:50–10:20 Break and **Vendor Exhibit** in Discovery Hall Lobby

Session 2 **Emerging Leader Award Finalist Talks** Chair: **Ajay Karakoti, PNNL**

10:20 – 10:50	Christopher Hendon <i>Hydrogenic defects in conductive metal-organic frameworks</i>	University of Oregon
10:50 – 11:20	Connor Bischak <i>Mapping Ion and Polaron Densities in Organic Mixed Conductors at the Nanoscale</i>	University of Utah
11:20 – 11:50	Dan Thien Nguyen <i>Advanced X-ray Photoelectron Spectroscopy for Studying the Surface Chemistry of Li-ion Battery Electrodes</i>	PNNL
11:50 – 12:20	Amal El-Ghazaly <i>Controlling Anisotropy in Magnetic Thin-Films for Integrated Device Operation</i>	Cornell University

12:20 – 1:30 Lunch and **Vendor Exhibit** in Discovery Hall Lobby

Session 3 Chair: **Tiffany Kaspar, PNNL**

1:30 – 2:10	Invited Talk: Breton May <i>Epitaxial Synthesis and Integration of Cubic Nitrides</i>	Idaho National Laboratory
2:10 – 2:30	Tomoko Borsa <i>HS-LEIS and XPS Characterization of Hafnium Zirconium Oxide ALD Thin Films</i>	University of Colorado Boulder
2:30 – 2:50	Jijo Christudasjustus <i>Growth and irradiation effect of MBE grown Fe-Cr based metallic and oxide thin films</i>	PNNL

2:50 – 3:30 Break and **Vendor Exhibit** in Discovery Hall Lobby

Session 4 Chair: **Arthur Barnard**, *University of Washington*

3:30 – 4:10	Invited Talk: Britta Johnson <i>Using Path-Integral Methods to Study Nuclear Quantum Effects in Condensed Phase Hydrogen-Bonded Systems</i>	PNNL
4:10 – 4:30	Megan Dunlap <i>Proton Diffusion and Hydrogen/Deuterium Exchange in Amorphous Solid Water Investigated with Reflection Absorption Infrared Spectroscopy</i>	PNNL
4:30 – 4:50	Buddhika Alupothe Gedara <i>Deuterium Adsorption on N-doped Graphene on Ru(0001)</i>	PNNL

Session 5 Chair: **Shuttha Shutthanandan**, *PNNL*

5:00 – 8:00 **Poster Session 1 (Graduate Student Poster Competition)** and **Vendor Exhibit** with Hors d'oeuvres in Discovery Hall Lobby

THURSDAY, AUGUST 8

Session 6 Chair: **Yingge Du, PNNL**

8:00 – 8:40	Invited Talk: Brendan Faeth <i>Thermal Laser Epitaxy for Ultraclean Heterostructures</i>	Cornell University
8:40 – 9:00	James Lallo <i>Correlative Surface Analysis: Combining XPS, Electron Microscopy, and Other Spectroscopies</i>	Thermo Fisher Scientific
9:00 – 9:20	Chris Moffitt <i>Tracking changes in graphite bonding structures caused by high energy Cs ion implantation using traditional XPS and HAXPES.</i>	Kratos Analytical
9:20 – 10:00	Invited Talk: Tiffany Kinnibrugh <i>APS Upgrade and Overview of the Capabilities for the Structural Science Group Beamlines</i>	Argonne National Laboratory

Session 7 Chair: **Theva Thevuthasan, PNNL**

10:00 – 12:00 **Poster Session 2 and Vendor Exhibit**

12:00 – 1:00 Lunch and **Vendor Exhibit** in Discovery Hall Lobby

Session 8 Chair: **Shannon Lee, PNNL**

1:00 – 1:40	Invited Talk: Tim Fister <i>Understanding interfacial barriers for Mg-ion batteries: surface diffraction from model cathode thin films during cycling</i>	Argonne National Laboratory
1:40 – 2:00	Thanh-Nhan Tran <i>Synergetic Dual-Additive Electrolyte Enables Highly Stable Performance in Sodium Metal Batteries</i>	PNNL
2:00 – 2:20	Colin Campbell <i>Sr-Doped barites and their enhanced epitaxial growth of PbSO4 in lead-acid batteries</i>	PNNL

2:20 – 2:50 Break and **Vendor Exhibit** in Discovery Hall Lobby

Session 9 Chair: **Lucas Ellis, Oregon State University**

2:50 – 3:30	Invited Talk: Yi Xia <i>Phonon Dynamics and Heat Transfer in Energy Materials: Advanced Theory, Materials Discovery, and Machine Learning</i>	Portland State University
3:30 – 3:50	Jean-Sabin McEwen <i>Elucidating the Effects of Oxygen Vacancies and Electric Fields on Adsorbed Species on La-Based Perovskites</i>	Washington State University
3:50 – 4:10	Yongsoo Shin <i>Plasma activation of adherends, interfacial bonding formation mechanism, and stability of adhesively bonded joints</i>	PNNL
4:10 – 4:50	Invited Talk: Brian Jaques <i>Additively manufactured components and materials for extreme environments: Advanced Characterization</i>	Boise State University

Session 10

6:00 – 8:00 **Conference Banquet, Plenary Talk and Award Ceremony**
Plenary Talk: Chi Chen, Microsoft Corporation

FRIDAY, AUGUST 9

Session 11 Chair: **Kartik Srinivasan**, *Boise State University*

8:30 – 9:10	Invited Talk: David Bazak	Pacific Northwest National Laboratory
9:10 – 9:30	Don Baer <i>Using XPS to best advantage – Avoiding Common Errors and Extracting More Information</i>	PNNL
9:30 – 9:50	Shuai Zhang <i>Protein dynamics on minerals resolved by in situ atomic force microscopy and machine learning</i>	PNNL

9:50 – 10:10 Break in Discovery Hall Lobby

Session 12 Chair: **Dan Thien Nguyen**, *PNNL*

10:10 – 10:50	Invited Talk: Ramana Chintalapalle <i>Pulsed Laser Deposition and Characterization of Intrinsic and Alloyed Ga₂O₃ Thin Films for Optoelectronics</i>	University of Texas at El Paso
10:50 – 11:10	Chenyang Shi <i>Observing Silk Nanofibril Formation in Real Time Unveils a Continuous Nucleation-Growth Pathway</i>	PNNL
11:10 – 11:30	Pravalika Butreddy <i>Selective dissolution and re-precipitation by pH cycling enables facile recovery of pure manganese from surface nodules</i>	PNNL

11:30 – 12:00 Closing Remarks

12:00 – 12:30 Boxed Lunch

12:30 – 1:30 PNWAVS Board Meeting