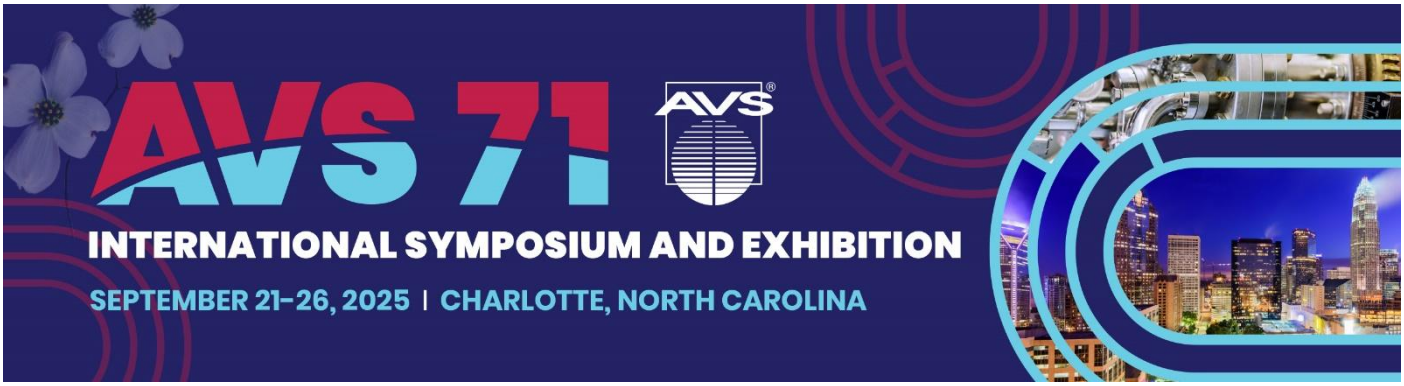

CALL FOR ABSTRACTS

We are delighted to invite you on behalf of AVS to submit an abstract for the AVS 71st International Symposium & Exhibition, scheduled to be held at the Charlotte Convention Center in Charlotte, NC, USA, from September 21-26, 2025. The AVS Symposium serves as a premier platform for presenting and discussing interdisciplinary science and technology in the fields of materials, interfaces, and processing, catering to both the research and manufacturing communities.

Our symposia cultivate a dynamic, multidisciplinary environment that transcends traditional disciplinary boundaries. They feature papers from AVS Technical Divisions, Groups, Focus Topics, and Mini-Symposia, focusing on emerging technologies, many of which significantly contribute to the overarching conference theme.

The theme for this year's Symposium is "***Engineering the Future: Collaborative Frontiers in Surface, Quantum, and Energy Sciences"*** This theme underscores topics of national and international significance, which are increasingly vital to the AVS community, and it supports the 2025 International Year of Quantum Science and Technology.

We are delighted to announce that this year's plenary speaker is Prof. Michael Manfra from Purdue University. He is the Bill and Dee O'Brien Distinguished Professor of Physics and Astronomy, Professor of Materials Engineering, and Professor of Electrical and Computer Engineering. He is also the Scientific Director of Microsoft Quantum Lab West Lafayette, and he will speak about current challenges and opportunities in quantum computing, in alignment with the International Year of Quantum Science and Technology.

We warmly invite you to explore the program and submit your abstract, enabling your participation in this exciting event! Below is a list of AVS Divisions, Technical Groups, Focus Topics, and Mini-Symposia sessions planned for AVS 71. Take a moment to review the diverse session themes and submit your oral or poster abstract to the topic that best aligns with your research. ***Each topic listed below has specified areas of interest, available on the submission site. When submitting to your chosen topic, ensure you select either the oral or poster session. The program committee will thoroughly review the abstracts and make the most appropriate scheduling decisions as they build their sessions.***

- 2D Materials (2D)
- Actinides and Rare Earths (AC)
- Advanced Microscopy and Spectroscopy to Explore Field-Assisted Chemistry (AMS)
- Advanced Surface Engineering (SE)
- AI/ML for Scientific Discovery (AIML)
- Applied Surface Science (AS)
- Atomic Scale Processing (AP)
- Quantum Science (QS)
- Biomaterials Interfaces (BI) & Plenary Session (BP)
- Chemical Analysis & Imaging of Interfaces (CA)
- CHIPS Act (CPS)
- Electronic Materials and Photonics (EM)
- Light Sources Enabled Science (LS)
- Magnetic Interfaces and Nanostructures (MI)
- Manufacturing Science and Technology (MS)
- MEMS and NEMS (MN)
- Nanoscale Science (NS) and Technology and Nanoscale Plenary Session (NSP)
- Plasma Science and Technology (PS)
- Spectroscopic Ellipsometry (EL)
- Surface Science (SS)
- Resilient Semiconductor Manufacturing (SM)
- Thin Films (TF)
- Undergraduate Poster Session (UN)
- Vacuum Technology (VT)
- AVS Quantum Science Workshop (AQS All-Invited Session)

Focused topic sessions and mini-symposia complement our traditionally strong core of sessions on fundamental surface science and interfacial phenomena, applied surface science, surface engineering, micro- and nano-electronics, nanoscale science and technology, manufacturing science and technology, thin films, plasma science and technology, micro- and nano-electromechanical systems, electronic and photonic materials, biomaterials, and vacuum science and technology.

We are confident that you will find many sessions of interest, as well as oral and poster sessions providing opportunities to showcase your latest research. Poster presentations are an excellent way to promote your work and engage in one-on-one interactions with many scientists and engineers in a relaxed environment. AVS 71 will also feature a special poster session

to highlight undergraduate research, with prizes for the top presentations. Please note that for AVS 71, you are allowed to present one oral abstract and one poster abstract, so please consider submitting both! In addition to a vibrant technical program, there will be an extensive equipment and vendor exhibition, short courses, and numerous networking, career advancement, and recruitment events for those launching their careers and established researchers. Opportunities to apply for travel grants, as well as student, early career, and professional awards, are also available.

If you are new to the AVS community, WELCOME! We are confident that you will find the symposium to be a great place to meet new colleagues and friends with whom to share ideas for years to come. We encourage you to participate in this year's Symposium by submitting an abstract before the deadline of Tuesday, April 1, 2025.

We eagerly anticipate your valuable contribution to the AVS 71st International Symposium & Exhibition and we hope to see you in Charlotte!

STEPHANIE LAW
Pennsylvania State University
AVS 71 Program Chair

MARK LOSEGO
Georgia Tech
AVS 71 Program Vice-Chair

AVS 71 PROGRAM COMMITTEE

PROGRAM CHAIR:
Stephanie Law
Pennsylvania State University, slaw@psu.edu

PROGRAM VICE-CHAIR:
Prof. Mark Losego
Georgia Institute of Tech, losego@gatech.edu

2D MATERIALS (2D)
Topic Chair: Kai Xiao, Oak Ridge National Lab
Topic Co-Chair: Cristina Satriano, University of Catania, Italy
Rafik Addou, The University of Texas at Dallas
Matthias Batzill, University of South Florida
Jyoti Katoch/, Carnegie Mellon University
Huamin Li, University at Buffalo-SUNY
Peter Sutter, University of Nebraska - Lincoln
Fei Yao, University at Buffalo
Tiancong Zhu, Purdue University

ACTINIDES AND RARE EARTHS (AC)
Topic Chair: James G. Tobin, University of Wisconsin-Oshkosh
Topic Co-Chair: Ladislav Havela, Charles University, Prague, Czech Republic
Topic Co-Chair: David Shuh, Lawrence Berkeley National Laboratory
Edgar Buck, Pacific Northwest National Lab
Tomasz Durakiewicz, Idaho National Lab
Krzysztof Gofryk, Idaho National Laboratory
Itzhak Halevy, Ben Gurion University Be'er Sheva, Israel
Alison Pugmire, LANL
Paul Roussel, AWE, UK
Eteri Svanidze, Max Planck Institute for Chemical Physics of Solids, Germany
Evgenia Tereshina-Chitrova, Institute of Physics CAS, Prague, Czechia
Gertrud Zwicknagl, Technische Universität Braunschweig, Germany

ADVANCED MICROSCOPY AND SPECTROSCOPY TO EXPLORE FIELD-ASSISTED CHEMISTRY (AMS)
Topic Co-Chair: Shawn Kathmann, Pacific Northwest National Laboratory
Topic Co-Chair: Sten V. Lambeets, Pacific Northwest National Laboratory
Topic Co-Chair: Daniel Perea, Pacific Northwest National Laboratory

ADVANCED SURFACE ENGINEERING (SE)
Topic Co-Chair: Diana Berman, University of North Texas
Topic Co-Chair: Filippo Mangolini, The University of Texas at Austin
Jyh-Ming Ting, National Cheng Kung University, Taiwan

AI/ML MINI SYMPOSIUM (AIML)
Topic Co-Chair: Alain Diebold, SUNY Poly
Topic Co-Chair: Erica Douglas, Sandia National Lab
Topic Co-Chair: Tina Kaarsberg, Dept. of Energy

APPLIED SURFACE SCIENCE (AS)
Topic Co-Chair: Jordan Lerach, PPG Industries
Topic Co-Chair: Alexander Shard, National Physical Laboratory, UK
Steve Consiglio, Tokyo Electron
Andrew Francis, Medtronic, Inc.
Jodi Grzeskowiak, Tokyo Electron
David Morgan, Cardiff University, UK
Hong Piao, FUJIFILM Electronic Materials USA., Inc.
Benjamen Reed, National Physical Lab, UK
Samantha G. Rosenberg, Lockheed Martin
P.M.A. Sherwood, Kansas State University
Timothy Spila, University of Illinois
Lyndi Strange, PNNL
Tanguy Terlier, Rice University
Jeff Terry, Illinois Institute of Technology
Julia Zakel, IONTOF GmbH, Germany

ATOMIC SCALE PROCESSING MINI-SYMPOSIUM (AP)
Topic Co-Chair: Bobby Bruce, IBM TJ Watson Research Center
Topic Co-Chair: Eric A. Joseph, IBM Research Division, T.J. Watson Research Center
Heeyeop Chae, Sungkyunkwan University (SKKU), Republic of Korea
Erin Cleveland, University of Maryland
April Jewell, Jet Propulsion Laboratory (NASA/JPL)

Han-Bo-Ram Lee, Incheon National University, Republic of Korea
Alyssa Mock, Weber State University
Angelique Raley, TEL US
Bridget Rogers, Vanderbilt University
Junjie Zhao, Zhejiang University, China

AVS QUANTUM SCIENCE WORKSHOP (AQS)

Topic Co-Chair: Ekta Bhatia, NY CREATES and University at Albany SUNY
Topic Co-Chair: Kasra Sardashti, University of Maryland, College Park
Topic Co-Chair: Andre Schleife, University of Illinois at Urbana-Champaign
Philippe Bouyer, Quantum Delta, Netherlands
Joe Castellano, AIP Publishing
Charles R. Eddy, Jr., Office of Naval Research Global - London, UK
Sebastian Engelmann, IBM T.J. Watson Research Center
Sean Jones, Argonne National Laboratory
Sisira Kanhirathingal, Rigetti Computing

BIOMATERIAL INTERFACES (BI)/ BIOMATERIALS PLENARY (BP)

Topic Chair: Sapun Parekh, University of Texas at Austin
Topic Co-Chair: Christopher So, Naval Research Laboratory, USA
Pierluigi Bilotto, CEST GmbH, Austria
Kenan Fears, U.S. Naval Research Laboratory
Morgan Hawker, California State Univ., Fresno
Markus Valtiner, Vienna University of Technology, Austria
Rong Yang, Cornell University

CHEMICAL ANALYSIS AND IMAGING AT INTERFACES (CA)

Topic Co-Chair: Andrei Kolmakov, National Institute of Standards and Technology (NIST)
Topic Co-Chair: Xiao-Ying Yu, Oak Ridge National Laboratory

CHIPS ACT: SEMICONDUCTOR MANUFACTURING SCIENCE AND TECHNOLOGIES (MS+CPS)

Topic Co-Chair: Alain Diebold, SUNY Poly
Topic Co-Chair: Bridget Rogers, Vanderbilt University
Erica Douglas, Sandia National Lab
Timothy Gessert, Gessert Consulting LLC., USA
Eric A. Joseph, IBM Research Division, T.J. Watson Research Center
Tina Kaarsberg, Department of Energy
John Lannon, Micross
Daniel Lu, NIST

ELECTRONIC MATERIALS AND PHOTONICS (EM)

Topic Co-Chair: Erin Cleveland, University of Maryland
Topic Co-Chair: Philip Sanghyun Lee, University of Kentucky
Parag Banerjee, University of Central Florida
Erica Douglas, Sandia National Lab
Michael A. Filler, Georgia Institute of Technology
Cheng Gong, University of Maryland
Sang M. Han, University of New Mexico
Michael David Henry, Sandia National Lab
Jessica Hilton, SPECS-TII, Inc.
SeonHee Jang, University of Louisiana
Jason Kawasaki, University of Wisconsin - Madison
Seth King, University of Wisconsin - La Crosse
Stephen McDonnell, University of Virginia
Rachael L. Myers-Ward, U.S. Naval Research Laboratory
Guangxin Ni, Florida State University
Michelle M. Paquette, University of Missouri-Kansas City
Daniel Pennachio, NRL
Angus Rockett, Colorado School of Mines
Nicholas Strandwitz, Lehigh University
Samantha Tomiko Jaszewski, Sandia National Lab
George Wang, Sandia National Lab
Haozhe Harry Wang, Duke University

LIGHT SOURCES ENABLED SCIENCE MINI-SYMPOSIUM (LS)

Topic Co-Chair: Jakub Drnec, ESRF, Grenoble, France
Topic Co-Chair: Jessica McChesney, Argonne National Laboratory
Topic Co-Chair: Slavomir Nemsak, Advanced Light Source, Lawrence Berkeley National Lab

MAGNETIC INTERFACES AND NANOSTRUCTURES (MI)

Topic Chair: Hendrik Ohldag, Lawrence Berkeley National Laboratory
Markus Donath, Westfälische Wilhelms-Universität Münster, Germany
Axel Enders, University of Bayreuth, Germany
Thomas Feggeler, Brookhaven National Lab
Zheng Gai, Oak Ridge National Laboratory
Mikel B. Holcomb, West Virginia University
Jeffry Kelber, University of North Texas
Valeria Lauter, Oak Ridge National Laboratory
Greg Szulczewski, The University of Alabama
Peng Wei, George Washington University

MEMS AND NEMS (MN)

Topic Co-Chair: Jaesung Lee, University of Central Florida
Topic Co-Chair: Yanan (Laura) Wang, University of Nebraska-Lincoln
Jorge Castro, University of Texas at El Paso
Robert Davis, Brigham Young University
Vikrant Gokhale, Naval Research Laboratory
Matthew Jordan, Sandia National Laboratories
Sushma Kotru, University of Alabama
Robert Roberts, University of Texas at El Paso
Christian Zorman, Case Western Reserve University

NANOSCALE SCIENCE AND TECHNOLOGY (NS)/ NANOSCALE SCIENCE AND TECHNOLOGY PLENARY SESSION (INVITED SESSION) (NSP)

Topic Chair: Nikolai Klimov, National Institute of Standards and Technology
Topic Co-Chair: Alex Belianinov, Sandia National Laboratories
Topic Co-Chair: Deep Jariwala, University of Pennsylvania
Nancy Burnham, Worcester Polytechnic Institute
Aubrey Hanbicki, Laboratory for Physical Sciences
Erin Iski, University of Tulsa
Joohoon Kang, Yonsei University, Republic of Korea
Marek Kolmer, Ames Laboratory
Son Le, University of Maryland
Yongtao Liu, ORNL
Mausumi Mahapatra, Loyola University Chicago
Andrew Mannix, Stanford University
Taisuke Ohta, Sandia National Laboratories
Radislav Potyrailo, GE Research Center
Aditya Sood, Princeton University

PLASMA SCIENCE AND TECHNOLOGY (PS)

Topic Co-Chair: Kenji Ishikawa, Nagoya University, Japan
Topic Co-Chair: Angelique Raley, TEL Technology Center America, LLC
Sumit Agarwal, Colorado School of Mines
John Arnold, IBM Research Div., Albany, NY
Philippe Bezard, IMEC, Belgium
Bobby Bruce, IBM TJ Watson Research Center
Luxherta Buzi, IBM Research Division, T.J. Watson Research Center
Thierry Chevolleau, CEA-Leti, France
Maxime Darnon, CNRS, Laboratoire Hubert Curien
Emilie Despiau-Pujo, CNRS-LTM, Université Grenoble Alpes, France
Sebastian Engelmann, IBM T.J. Watson Research Center
Sathya Ganta, Applied Materials, USA
Michael Gordon, University of California at Santa Barbara
Hisataka Hayashi, DAIKIN INDUSTRIES, LTD., Japan
Yohei Ishii, Hitachi High Technologies America Inc.
W.M.M. (Erwin) Kessels, Eindhoven University of Technology, The Netherlands
Catherine Labelle, Intel
Thorsten Lill, Lam Research Corporation
David Lishan, Plasma-Therm LLC
Lei Liu, Lam Research Corp.
Pingshan Luan, TEL Technology Center, America, LLC
Kenji Maeda, Hitachi High Technologies, Japan
Nathan Marcha, IBM T. J. Watson Research Center
Selma Mededovic Thagard, Clarkson University
Eric Miller, IBM Research Division, Albany, NY
Phong Nguyen, Air Liquide Laboratories
Nobuyuki Kuboi, Sony Corporation, Japan
Premkumar Panneerchelvam, KLA-Tencor

Erwine Pargon, CNRS-LTM, Université Grenoble Alpes, France
Floran Peeters, LeydenJar Technologies
Nicolas Posseme, CEA-LETI, France
Francois Reniers, Université libre de Bruxelles, Belgium
Mohan Sankaran, University of Illinois at Urbana-Champaign
Jeffrey Shearer, TEL Technology Center, America, LLC
Yu-Hao Tsai, TEL Technology Center, America, LLC
Necip Uner, Middle East Technical University, Turkey
Christophe Vallee, University at Albany
Steven Vitale, MIT Lincoln Laboratory
Scott Walton, Naval Research Laboratory
Jun-Chieh Wang, Applied Materials, USA
Mingmei Wang, Lam Research Corp.

QUANTUM SCIENCE AND TECHNOLOGY MINI-SYMPOSIUM (QS)
Topic Co-Chair: Ekta Bhatia, NY CREATES and University at Albany SUNY
Topic Co-Chair: Kasra Sardashti, University of Maryland, College Park
Topic Co-Chair: Andre Schleife, University of Illinois at Urbana-Champaign
Charles R. Eddy, Jr., Office of Naval Research Global - London, UK
Sebastian Engelmann, IBM T.J. Watson Research Center
Sean Jones, Argonne National Laboratory
Sisira Kanhirathingal, Rigetti Computing
Corey Rae McRae, University of Colorado Boulder/National Institute for Science and Technology (NIST)
Drew Rebar, Pacific Northwest National Lab

SPECTROSCOPIC ELLIPSOMETRY (EL)
Topic Co-Chair: Alyssa Mock, Weber State University
Topic Co-Chair: Megan Stokey, Milwaukee School of Engineering
Tom Tiwald, J.A. Woollam Co., Inc.
Stefan Zollner, New Mexico State University

SURFACE SCIENCE (SS)
Topic Chair: Nan Jiang, University of Illinois - Chicago
Florencia Calaza, UNL-Conicet, Argentina
Lifeng Chi, FUNSOM - Soochow Univ., China
Abner de Siervo, State University of Campinas, Brazil
M.Veronica Ganduglia-Pirovano, Institute of Catalysis and Petrochemistry-CSIC, Spain
Dan Killelea, Loyola University Chicago
Barbara A.J. Lechner, Technical University of Munich, Germany
Reinhard Maurer, University of Warwick, UK
Manos Mavrikakis, University of Wisconsin - Madison
Mildred Quintana, Universidad Autónoma de San Luis Potosí, Mexico
Tim Schäfer, University of Göttingen, Germany
Dario Stacchiola, Brookhaven National Lab

RESILIENT SEMICONDUCTOR MANUFACTURING (SM)
Topic Co-Chair: Adam Hock, Illinois Institute of Technology
Topic Co-Chair: Jeff Terry, Illinois Institute of Technology

THIN FILMS (TF)
Topic Co-Chair: Mark Losego, Georgia Institute of Technology
Topic Co-Chair: Junjie Zhao, Zhejiang University, China
Sarah Atanasov, Intel
Joe Becker, Kurt J. Lesker Company
David Bergsman, University of Washington
Ashley Bielinski, Argonne National Laboratory
Devika Choudhury, ASM
John Conley, Jr., Oregon State University
Adriana Creatore, Eindhoven University of Technology, Netherlands
Lauren Garten, Georgia Institute of Technology
Steven M. George, University of Colorado at Boulder
Elton Graugnard, Boise State University
Robert Grubbs, IMEC, Belgium
Subhadra Gupta, University of Alabama
April Jewell, Jet Propulsion Laboratory (NASA/JPL)
Alex Kozen, University of Vermont
Adrie Mackus, Eindhoven University of Technology, Netherlands
Austin Minnich, California Institute of Technology
Siamak Nejati, University of Nebraska-Lincoln
Blake Nuwayhid, Naval Research Laboratory
Gregory N. Parsons, North Carolina State University
Sagar Udyavara, Lam Research
Christophe Vallee, SUNY POLY, Albany
Richard Vanfleet, Brigham Young University
Rong Yang, Cornell University
Matthias Young, University of Missouri

UNDERGRADUATE POSTER SESSION (UN)
Topic Chair: Morgan Hawker, California State University, Fresno
Topic Co-Chair: Liney Arnadottir, Oregon State University
Topic Co-Chair: Ashleigh Baber, James Madison University
Topic Co-Chair: Joshua Blechle, Wilkes University
Topic Co-Chair: Erin Iski, University of Tulsa

VACUUM TECHNOLOGY (VT)
Topic Chair: Sol Omolayo, Lawrence Berkeley Lab, University of California, Berkeley
Klaus Bergner, VACOM, Germany
Russell Gleason, Infleqtion
Christopher Malocsay, UC Components Inc.
Freek Molkenboer, TNO Science and Industry, the Netherlands
Jacob Ricker, NIST
Julia Scherschligt, NIST
Charles Smith, ORNL
Marcy Stutzman, Jefferson Laboratory
Alan van Drie, TAE Technologies
Martin Wuest, Inficon, Liechtenstein

2D MATERIALS (2D): The program covers all aspects of 2D materials science and technology, including synthesis and processing, characterization, properties, and applications. Topics include but are not limited to synthesis, novel materials, topological and quantum phenomena, properties (electronic, magnetic, optical, mechanical), characterization (microscopy and spectroscopy), functionalization, devices, and applications in health, environment, energy, microelectronics, and quantum information science. The 2D Materials group will award student poster prizes to support young scientists in sharing their research with a diverse audience.

Areas of Interest: 2D is seeking abstracts in areas including, but not limited to the following topics:
2D1: 2D Materials: Synthesis and Processing
2D2: 2D Materials: Advanced characterization
2D3: 2D Materials: Heterogeneity: defects, dopants, edges, stacking
2D4: 2D Materials: Photonics, Optoelectronics, Plasmonics
2D5: 2D Materials: Twistronics and Topological Phenomena
2D6: 2D Materials: Magnetism, Ferroelectrics, Piezoelectric
2D7: 2D Materials: Devices and applications
2D8: Poster Session: Poster

2D1: 2D Materials Oral Session
Invited Speakers:
Kenneth Burch, Boston College, "Non-Local Transport from Magnetic Topological Superconductivity in 2D Fe-Chalcogenides"
David Estrada, Boise State University
Stephan Hofmann, University of Cambridge, UK
Shengxi Huang, Rice University, "Designer 2D Materials for Quantum Optical Emission"
Zhurun Ji, Stanford University
Bruno Schuler, EMPA (Swiss Federal Laboratories for Materials Science and Technology), Switzerland, "Probing the Ultrafast Charge Dynamics and Exciton Emission from Single Atomic Defects in 2D Semiconductors by Lightwave-Driven STM"
Sufei Shi, Carnegie Mellon University, "Correlated Excitons in Semiconducting Moire Superlattice"
Felice Torrisi, Imperial College London, UK
Yihang Zeng, Cornell University
Liuyan Zhao, University of Michigan, Ann Arbor
2D2: 2D Materials Poster Session

ACTINIDES AND RARE EARTHS (AC): Actinides and rare earths exhibit unique and diverse physical, chemical and magnetic properties resulting from the complexity of the 5f and 4f electronic structure. The Actinide and Rare Earth Focus Topic Session concentrates on the fundamental chemistry, physics, materials, and interface science of f–electron materials with an emphasis on all aspects of nuclear technology, while facilitating the involvement of early career scientists and diverse individuals. The role of fundamental f-electron science in resolving challenges posed by actinide chemistry and materials will be central, particularly with regard to topics such as separation science, nuclear fuels, structural materials, nuclear energy processes, nuclear safeguards/forensics, and stewardship. Contemporary experimental approaches, including synchrotron radiation-based investigations and emerging techniques, all coupled to theory, will be featured to understand these complex materials.

Areas of Interest: AC is seeking abstracts in the following topics: *Magnetism, Electron Correlations, and Superconductivity in the Actinides/Rare Earths•Chemistry and Physics •Emerging Topics and Methods*

AC1: Actinides and Rare Earths Oral Session
Invited Speakers:
Daniel Chaney, ESRF, Grenoble, France
Sarah Hernandez, LANL, "Exploring the Surface Chemistry of Plutonium using ToF-SIMS"
Shinsaku Kambe, JAEA, Japan, "Unconventional Superconductivity and Magnetism in Strongly Correlated U-Based Compounds"
Adam Pikul, INTIBS, Poland, "Superconductivity in High Entropy Actinide Alloys"
Yusei Shimizu, Tohoku University, Japan
AC2: Actinides and Rare Earths Poster Session

ADVANCED MICROSCOPY AND SPECTROSCOPY TO EXPLORE FIELD-ASSISTED CHEMISTRY (AMS): T**he** AMS Focus Topic **t**argets recent developments aimed at unraveling the effects of strong external electric fields on chemical reactivity. External electric fields can be used to alter thermodynamics and kinetics of chemical reactions with as great or better influence than with temperature or pressure alone. It opens new opportunities across fundamental and applied areas in chemistry/material science and brings new perspectives on precision chemistry. The experimental portion focuses on advanced microscopy and spectroscopy techniques to explore field-assisted chemistry (e.g., Atom Probe/Atomic Force Microscopies, Electron holography, and Raman/Stark vibrational spectroscopies, etc.). The theoretical portion focuses on modelling local electric fields (e.g., quantum or classical), underlying these approaches and their impact on surface and molecular chemical and physical properties. This symposia will serve as platform for interdisciplinary exchange, aiming to advance our understanding of field-assisted chemistry and its potential applications in materials science, catalysis and beyond.

Areas of Interest: *AMS will bring together scientists and researchers with a shared interest in experimental and theoretical investigation of the effects of electric fields on chemical reactions. It aims to trigger discussions and potential collaborations in the following areas:*

- Microscopy and Spectroscopy techniques: Advancements in traditional, in situ, and operando methods to study, measure and exploit electric fields, notably Atom Probe Tomography (APT), Electron Holography, Scanning Tunneling Microscopy (STM), Atomic Force Microscopy (AFM), Infrared (IR) spectroscopy, Raman spectroscopy, and more...
- Computational methods: Modeling and simulation methods (including AI/ML) for understanding and predicting the effects of electric fields on chemical systems.
- Electrochemistry and Dynamics: Electrochemical applications, electric-field-induced molecular dynamics, surface reactivity, and catalysis.

AMS1: Advanced Microscopy and Spectroscopy to Explore Field-Assisted Chemistry Oral Session

Invited Speakers:

Fanglin Che, University of Massachusetts, "Integrating Physical Principles with Machine Learning for Predicting Field-Enhanced Catalysis"

Martha McCartney, Arizona State University

Lorenzo, Rigutti, Université de Rouen, France

AMS2: Advanced Microscopy and Spectroscopy to Explore Field-Assisted Chemistry Poster Session

ADVANCED SURFACE ENGINEERING (SE): The SE Division program will cover state-of-the-art developments of techniques and processes for improving the surface properties of materials for protection in demanding contact conditions and aggressive environments (wear-, oxidation-, corrosion-resistant, tribological surfaces). We are soliciting contributions on novel methods to tailor multifunctional properties, including quantum, electronic, magnetic, optical, and mechanical. Contributions on advanced characterization techniques of composition/nanostructure, properties, and performance as well as new surface engineering approaches for energy and materials efficiency are also highly welcome.

Areas of Interest: SE is soliciting contributions in the following topics:

- Fundamentals of Plasma Processes
- Nanostructured Coatings
- Nanocrystalline Coatings
- Nanocomposite Coatings
- Nanoporous Coatings
- Multifunctional Coatings
- Multilayer Coatings
- Gradient Coatings
- Biocompatible Coatings
- Advanced Deposition Techniques
- In-Situ Characterization Techniques
- Applications:
  - Tribological Applications
  - Corrosion Protection
  - Optical Applications
  - Energy Applications
- Surface Engineering Solutions for Quantum Computing
  - Surface Engineering for Quantum Devices
  - Quantum Materials and Surfaces
- Surface Engineering Solutions for Energy Sciences
  - Surface Engineering for Energy Conversion and Storage:
  - Energy-Efficient Surfaces

SE1: Advanced Surface Engineering Oral Session

Invited Speakers:

Grzegorz Greczynski, Linköping University, Sweden, "Physics of Sample Charging During X-Ray Photoelectron Spectroscopy: Insights from Experiments with Thin Film Insulators"

Christopher Muratore, University of Dayton, "Tools for High-Throughput Autonomous Materials Discovery and Development for the Surface Engineer"

SE2: Advanced Surface Engineering Poster Session

AI/ML MINI SYMPOSIUM (AIML): The integration of AI and machine learning across various domains—from accelerating scientific discovery and optimizing big data experiments to enhancing characterization techniques and advancing semiconductor technologies—highlights a transformative approach that not only leverages computational power for innovative materials and devices but also seeks to reconcile AI methodologies with fundamental physical principles to deepen our understanding of material properties. This mini-symposium will bring together leaders in the rapidly growing field of data science, artificial intelligence, and machine learning (AI/ML) for materials, processes, and interfaces to drive scientific discovery. AI, ML and deep learning (DL) are being utilized to understand materials at the atomic scale, discover new scientific laws, and even design the next generation of advanced microelectronics for AI/ML. As researchers from academia to industry search for more effective means of advancing technology, AI/ML is being utilized as a means to reduce the burden on resources that have long relied on traditional experiments and computationally heavy modeling and simulation. This mini-symposium will bring together the community to disseminate the latest advances in the field, discuss challenges, and share future directions for AI & ML.

Areas of Interest: AIML is seeking abstracts in areas including, but not limited to:
Driving Scientific Discovery through AI/ML: Utilizing AI/ML to develop and evaluate new materials, processes, and devices, thereby reducing the need for extensive experimental design and costly modeling, while predicting performance outcomes
AI/ML for Big Data: Designing experiments and data collection methods to enhance data generation and throughput, developing datasets and tools for model training, and ensuring model quality, uncertainty quantification, and trust in AI models
AI/ML for Modeling and Characterization: Applying AI/ML techniques for the modeling and characterization of materials and systems, including synthetic data generation
Compute & Memory for AI: Development of new materials to address challenges in memory bandwidth, storage, and energy consumption -e.g., neuromorphic, non von Neumann
AI vs. Physical Principles: Exploring fundamental approaches to predicting material properties in contrast to AI/ML methodologies

AIML1: AI/ML for Scientific Discovery Oral Session
AIML2: AI/ML for Scientific Discovery Poster Session

APPLIED SURFACE SCIENCE (AS): The AS Division provides a world-leading forum for the design and characterization of the surfaces and interfaces that underpin technologies ranging from medical implants to electronic devices. The session topics include the popular "Quantitative Surface Analysis" session which offers comprehensive insight and discussion into quantitative analysis. This year, we provide a special focus on "The Power of SIMS", highlighting recent innovations and developments in this widely-used method. The "Theory for Surface Processes" session provides greater detail on the extraction of chemical and physical information from core-level spectroscopies with a particular concern for the electronic structure of the systems. The "Characterization of Energy Materials" session addresses both the fundamental and practical surface analytical science of next-generation devices including batteries and electrode materials to support innovation in sustainable technologies. The "Data Handling and AI" session covers up-and-coming topics about the needs for fair and transparent data sharing and methods to speed up the translation of data into relevant information. The topics flow seamlessly into the "Complementary Methods and Industrial Challenges" session where perspectives on practical approaches for problem-solving are discussed in the context of emerging industrial needs. The Applied Surface Science Poster Session will capture condensed highlights on all of these subjects on Thursday evening.
The division will hold its annual Business Meeting and Awards Ceremony on Tuesday evening. Highlights of this event include the student award competition and the ASTM E42 Committee on Surface Analysis forum. All members of the Applied Surface Science community are invited to attend.

Areas of Interest: AS is seeking abstracts in areas including, but not limited to:
AS1: Quantitative Surface Analysis
Invited Speakers:
Ben Spencer, University of Manchester, UK, "Quantified Photoemission Using Ga Kα (9.25 keV) Hard X-Rays Applied to Advanced Materials"
AS2: Surface Characterization of Energy Materials
Invited Speakers:
Anass Benayad, CEA-LITEN, France
AS3: The Future Challenges of Industry
Invited Speakers:
Rita Tilmann, IMEC, Belgium, "Challenges in Next Generation Semiconductor Devices: Insights by TOF-SIMS"
Christophe Vallee, University of Albany
AS4: The Power of SIMS
Invited Speakers:
Steve Harvey, National Renewable Energy Laboratory, "Solar Energy from a Big Picture Perspective to Nanoscale Insights via TOF-SIMS"
Hua Tian, University of Pittsburgh, "Delineating Spatial Cellular Complexities Using Multi-omics Approach by GCIB-SIMS Imaging"

AS5: Theory for Surface Processes

Invited Speakers:

Paul Bagus, University of North Texas, "Distinguishing the XPS of Surface and Bulk Atoms"

Jeffry Kelber, University of North Texas, "Theory as a Guide to Electrocatalysis: an Experimentalist's Point of View"

AS6: Data Handling and Artificial Intelligence

Invited Speakers:

Alex Henderson, University of Manchester, UK

AS7: Applied Surface Science Poster Session

ATOMIC SCALE PROCESSING MINI-SYMPOSIUM (AP): The AP program aims to provide a unique forum to expand the scope of atomic layer deposition (ALD) and atomic layer etching (ALE) processes towards understanding the fundamentals needed to achieve true atomic scale precision and the application of such processing on various areas of interest to the broader AVS community. The emphasis will be on synergistic efforts, across multiple AVS divisions and groups, to generate area selective processes as well as novel characterization methods to advance the field of processing at the atomic scale. We are excited to offer several sessions in collaboration with Plasma Science & Technology Division, the Thin Film Division as well as the Electronic Materials and Photonics Division focusing on area selective deposition, atomic layer process chemistry & surface characterization, both thermal and plasma based atomic layer etching, and atomic layer deposition.

Areas of Interest: AP is seeking abstracts in the following areas:

AP1: Area Selective Processing and Patterning

AP2: Advancing Metrology and Characterization to enable Atomic Scale Processing

AP3: Atomic Layer Processing: Integration of deposition and etching for advanced material processing

AP4: Thermal and Plasma enhanced Atomic Layer Etching

AP5: Thermal and Plasma-Enhanced Atomic Layer Deposition

AP6: Emerging Applications for ALD including Precursors and Surface Reactions

AP7: Atomic Scale Processing Poster Session

BIOMATERIAL INTERFACES (BI): The BI Division is organizing a series of sessions to provide an interdisciplinary forum for the presentation and discussion of fundamental aspects of bio-interface science, engineering, and state-of-the-art characterization methods. The BI program brings together recent advances in biomaterials science with those in imaging, diagnostics, surface and interface analysis methods, and theoretical and computational approaches to model biological systems, starting with the traditional Sunday afternoon Plenary Session on Advances in Biomaterials Science. We enthusiastically invite abstract submissions in any of the Areas of Interest below. We also invite submissions of Flash/Poster Presentations, to be made in a dedicated session with an accompanying Networking Session during the AVS-wide poster session. Joint BID/Biointerphases prizes will be awarded for the best student Flash/Poster presentations. Early career scientists should check out the Biointerphases Special Topic Collection, The Future of Biointerface Science 2025. This collection will feature the perspective early-career scientists have on the future of biointerface science. Postdocs and senior PhD students are *particularly encouraged* to contribute. Selected contributing authors will be invited to present their work and compete for the Biointerphases Ascending Researcher Award. All invited speakers will be supported by a travel award and the winner of the Ascending Researcher Award and associated article will be widely promoted via email and on social and professional networks.

Areas of Interest: BI is seeking abstracts in the following areas:

- **Biomolecules and Biophysics at Interfaces**
- **Characterization of Biological and Biomaterials Surfaces**
- **New Methods For Analysis of 3D Biomaterial Samples**
  Vibrational Spectroscopy in Biomaterial and Interface Science
- **Functional Materials and Biosensing**
  Future of Biointerface Science Collection (ALL-INVITED SESSION)
- **SIMS characterization of Biomaterials (joint with the Applied Surface Science Division)**

BI1: Biomaterial Interfaces Oral Sessions

Invited Speakers:

Narayan Bhattarai, North Carolina A&T State University

Zhan Chen, University of Michigan, "Determine Protein Conformation and Orientation at Buried Solid/Liquid Interfaces in Situ"

Jon Pham, University of Cincinnati

BI2: Biomaterial Interfaces Poster Session

CHEMICAL ANALYSIS AND IMAGING AT INTERFACES (CA): Chemical and physical processes occurring at surfaces and gas-liquid, solid-liquid, and gas/plasma-solid interfaces are crucial for many applications and yet their analysis often represents grand scientific and engineering challenges. The CA Focus Topic is designed as a cross-disciplinary "melting pot" and aims to disseminate the latest developments in experimental methods and understanding of the interfacial physical and chemical processes relevant (but not limited) to materials synthesis, device microfabrication, energy/catalysis research, biomedical applications, environmental sciences, and surface modifications, to name a few. In particular, in (ex-) situ/in vivo/operando chemical imaging, microscopy and spectroscopy studies using electron, X-ray, ion, and neutron beams, as well as optical methods and synchrotron radiation/ FEL facilities are strongly encouraged. Attention will also be paid to correlative spectroscopy and microscopy methods, modern image/spectra processing, and AI-enabling data analytics techniques. Contributions are invited, including but not limited to experimental, fundamental research, industrial R&D, novel analytical techniques/approaches, and metrology of realistic surfaces and interfaces.

Areas of Interest: The CA Focus Topic serve as a dynamic, cross-disciplinary forum intended to foster the exchange of cutting-edge research and insights. Its primary goal is to highlight the latest advancements in experimental techniques and the fundamental understanding of interfacial physical and chemical processes. The symposium covers a broad range of applications, including materials synthesis, device microfabrication, energy and catalysis research, biomedical innovations, environmental science, and surface modification technologies and we are seeking abstracts in the following areas:

- In situ and operando characterization of energy surfaces
- AI-assisted modeling and learning applied to interfacial processes characterization and analysis
- Advances in multimodal measurement capabilities in the industry
- Materials and interfaces for next-generation electronics
- Chemical analysis and imaging in harsh environments (radiation, chemical, thermal, plasma)

CA1: Chemical Analysis and Imaging at Interfaces Oral Session

Invited Speakers:

Stacey Alastair, Princeton University Plasma Physics Lab

Henrik Arlinghaus, IONTOF GmbH, Germany, "ToF-SIMS Acquisition Multiplexing - Concept, Applications, and Data Analysis"

Henrik Bluhm, Fritz Haber Institute of the Max Planck Society, Germany

Jinghua Guo, Lawrence Berkeley Laboratory

Yue Qi, Brown University, "Modeling of Evolving Solid State Electrochemical Interfaces"

CA2: Chemical Analysis and Imaging at Interfaces Poster Session

CHIPS ACT : SEMICONDUCTOR MANUFACTURING SCIENCE AND TECHNOLOGIES (CPS+MS): This topic will bring together leaders in the semiconductor manufacturing industry, including those funded by the CHIPs Act. As the industry expands manufacturing capabilities and launches new facilities, many areas of research and development are influencing the future of the industry.

Areas of Interest: CPS+ MS is seeking abstracts in work related to semiconductor manufacturing challenges such as:

- Metrology
- Reliability
- Quality control
- Sustainability
- Digital twins
- Processing equipment
- 2.5D and 3D packaging
- User facilities
- Workforce Development for a rapidly growing industrial demand

CPS+MS1: CHIPS Act: Semiconductor Manufacturing Science and Technologies Oral Session

Invited Speakers:

Robert J. Baseman, IBM T.J. Watson Research Center, "Digital Twins and the SRC MAPT2 Chapter on Digital Twins and Applications"

Robert Geer, NY CREATES

Moon Kim, University of Texas at Dallas

Bahgat Sammakia, Binghamton University, "Overview of research at the Center for Heterogeneous Integration Research in Packaging (CHIRP)"

Michelle Williams-Vaden, SEMI Foundation, "Workforce Development in the Semiconductor Industry: Challenges, Strategies, and Solutions"

CPS+MS2: CHIPS Act: Semiconductor Manufacturing Science and Technologies Poster Session

ELECTRONIC MATERIALS AND PHOTONICS (EM): The EM Division is soliciting abstracts that will address the latest advancements in a wide variety of materials and devices for quantum information systems, computing, and memory, as well as, energy conversion, storage and harvesting. Abstracts that report experimental and theoretical discoveries underpinning the structure-property-synthesis correlations of new materials and their integration into devices are welcome. For AVS 71, EMPD is particularly seeking abstracts that fall under several broad thematic areas: 1) The Emerging Frontiers in Quantum Materials and Devices Session will highlight the materials and process challenges as applied to quantum and advanced computing, sensing, and energy applications. 2) The Emerging Memories Session will highlight materials and integration of novel memory devices including ferroelectrics, resistive-RAM, spin tunneling-RAM, and magnetoresistive-RAM. Developments in materials leading to progress in the manufacturing and application of photonic memory are encouraged. 3) The Wide Bandgap and Ultra-Wide Bandgap Materials and Devices Session will concentrate on semiconductors used in extreme environments, such as those with high or low temperatures, ionizing radiation, or energetic particles, high-power and RF-electronics, deep-UV optoelectronics, and quantum electronics. 4) The Advance in Materials and Processes for Devices and Interconnects (FEOL and BEOL) Session will focus on manufacturing aspects of semiconductor materials, processes, and integration, as applied to low-power logic, memory and high-to-ultrahigh wide bandgap devices. Manufacturing strategies that enable 2D materials-based devices, new interconnects and BEOL devices are encouraged. Lastly, 5) The Evolution of Materials for Energy Harvesting, Storage, and Conversion Session will focus on advanced materials and novel structural and engineering strategies that exploit alternative energy sources. Energy materials include dielectric materials for energy storage, ferroelectrics, piezoelectrics, thermoelectrics, photocatalysis, photovoltaics, fuel cells, batteries and supercapacitors. Other energy-related functional materials and devices are welcome. A joint mini-symposium (a roundtable discussion of industry/academia and government leaders) on the CHIPS Act will be organized in conjunction with the CHIPS Act Mini Symposium (CPS) to discuss opportunities in growing the community of quantum materials and device researchers. A Flash Poster session is being organized to encourage poster presenters to showcase their work as part of the oral sessions. As in past years, we will offer multiple awards including a graduate student poster and presentation awards as well as post-doc and graduate student travel awards to help create a forum in which younger scientists can present their work and develop relationships for the future.

Areas of Interest: EM is soliciting abstracts that will address the latest advancements in a wide variety of materials and devices for quantum information systems, computing, and memory, as well as, energy conversion, storage and harvesting. Abstracts that report experimental and theoretical discoveries underpinning the structure-property-synthesis correlations of new materials and their integration into devices are welcome. For AVS 71, EM is particularly seeking abstracts that fall under the following broad thematic areas:

- Materials and Devices in Quantum and Advanced Computing, Sensing, and Energy Applications
- Materials and Devices in Emerging Memories
- Materials and Devices in Wide Bandgap and Ultra-Wide Bandgap
- Materials and Processes for Devices and Interconnects (FEOL and BEOL)
- Materials and Devices for Energy Harvesting, Storage, and Conversion

EM1: Electronic Materials and Photonics Oral Session

Invited Speakers:

Kirstin Alberi, National Renewable Energy Lab
Lars Grabow, University of Houston
Charles Marcus, University of Washington
John Muth, North Carolina State University
Lisa Porter, Carnegie Mellon University, "Ga_2O_3 Polymorphs: Epitaxial Film Growth, Characterization and Contacts"
Ramamoorthy Ramesh, Rice University
Dan Stick, Sandia National Lab

EM2: Electronic Materials and Photonics Poster Session

LIGHT SOURCES ENABLED SCIENCE MINI-SYMPOSIUM (LS): Recent rapid development and implementation of 4th generation synchrotron sources and free electron lasers opens further opportunities to study materials with high intensity, coherent X-ray beams. Development of new techniques, together with improvement of more established approaches, allows unprecedented insight and holistic understanding of the structure, chemical environment, electronic structure across a broad range of length scales from the atomic scale to macroscopic scales, over time scales from femtoseconds to minutes, hours and days in a variety of conditions from ultra-high vacuum to ambient pressure to high pressures. In this mini symposium we will highlight some resent science advances in characterizing energy conversion and storage materials, and quantum materials.

Areas of Interest: LS is seeking abstracts in the cutting-edge science enabled at synchrotron and free electron laser light sources specifically in the area of quantum materials and energy storage and conversion materials.

LS1: Light Sources Enabled Science Mini-Symposium Oral Session

Invited Speakers:

Matthew Brahlek, Oak Ridge National Laboratory, **"**Epitaxial Control of Magnetism and Superconductivity in Quantum Materials"

LS2: Light Sources Enabled Science Mini-Symposium Poster Session

MAGNETIC INTERFACES AND NANOSTRUCTURES (MI): The MI program will focus on two fascinating areas in magnetism. The first session will address of how to control and engineer spins in real space, momentum space and time on nanoscale structures to manipulate the macroscopic manifestation of magnetic properties. The second session will highlight the latest research in the very new field of altermagnetism. Both of these sessions will give researchers working at forefront issues in magnetism an opportunity to present and share their work. In addition we are planning a special focus session on careers in magnetism/physics that will feature several early career researchers as well as a moderated career panel. In addition, we will select the best graduate student presentation from finalists for the Leo Falicov Award and will also offer an award for postdoctoral fellows who will be presenting papers at the MI sessions. The winners of both awards will be announced towards the end of the meeting.

Areas of Interest: MI's program will focus around two particular areas and it will feature a focus session on careers in physics. The two scientific focus areas of interest are:

- Spin Phenomena and Engineering in Real Space, Momentum Space and Time
- Novel Magnetic Phenomena: Altermagnetism and More

MI1: Magnetic Interfaces and Nanostructures Oral Session

Invited Speakers:

Miaofang Chi, Oak Ridge National Laboratory
Jyoti Katoch, Carnegie Mellon University
Simranjeet Singh, Carnegie Mellon University
Libor Smejkal, University Mainz

MI2: Magnetic Interfaces and Nanostructures Poster Session

MEMS AND NEMS (MN): The MN Group program warmly invites abstract contributions in the fields of micro/nanoelectromechanical systems (MEMS/NEMS) and heterogeneous integration, encompassing fundamental studies of novel materials and processes, devices, and emerging functions and applications. Our program highlights interdisciplinary studies of microsystems and nanoscale devices that synergize the performances and functionalities over different physical domains, such as electromechanics, optomechanics, quantum phononics, RF acoustics, magnetoacoustics, etc. The program continues to embrace the latest progress in nanomechanics, 2.5D/3D heterogeneous integration/packaging, and additive manufacturing. It also aims to capture some of the latest advances in soft materials, environmental sensors and transducers, wearable and wireless healthcare, wearable/implantable/ingestible bio-MEMS, and bio-inspired microsystems.

Areas of Interest: MI is seeking abstracts in the following areas of interest:

- **Optomechanics and Quantum Phononics:** Optomechanical/phononic devices and systems for signal sensing, processing, and transduction in classical and quantum regimes.
- **Micro and Nano Biosystems:** Soft/flexible materials, wearables, implantables, ingestibles, and bio-inspired microsystems.
- **RF Acoustics and Magnetics:** Novel materials (e.g., WBG, UWBG, piezoelectric, ferroelectric, and magnetic materials) and devices for RF acoustic and magnetoacoustic applications.
- **Nanomechanics:** Resonant low-dimensional (1D and 2D) materials, nonlinear resonators, and coupled resonators.
- **Microscale Additive Manufacturing:** 3D and high-aspect-ratio microscale devices, systems, and packaging based on additive manufacturing techniques, including 3D printing and polymerization.
- **3D Heterogeneous Integration and Packaging:** Advanced integration and packaging techniques, including 2.5D/3D heterogeneous integration, bulk and surface micromachining, and wafer bonding to enable multifunctional devices and systems.

MN1: MEMS and NEMS Oral Session

Invited Speakers:

Philip Feng, University of Florida
Marcel Pruessner, Naval Research Laboratory, "MEMS-Enabled Photonic Integrated Circuits"
Margo Staruch, Naval Research Laboratory, "Control of Magnetoelastic Properties for Magnetoelectric Magnetic Field Sensors"
Dana Weinstein, Purdue University

MN2: MEMS and NEMS Poster Session

NANOSCALE SCIENCE AND TECHNOLOGY (NS): NS seeks to advance energy frontiers to engineer the future by showcasing developments in nanoscience with a focus on microscopy (electron, ion, and scanning probes), nanofabrication, device characterization, and photonics. We encourage contributions in areas of materials, instrumentation, and theory to access shorter timescales, correlated systems, light-matter interactions, magnetism, and quantum phenomena.

Areas of Interest: Nanoscale Science and Technology is seeking abstracts in the following areas:

- **Frontiers in Nanoscale Electron, Ion, and Scanning Probe Imaging**
- **Light-Matter Interactions at the Nanoscale**
- **Advanced Nanoscale Material & Device Technologies**

- **AI for Material Discovery and Characterization**
- **Multimodal Techniques in Surface and Interface Engineering at the Nanoscale**
- **Advanced Nanomaterial for Quantum and Energy Applications**

All *graduate students*, *early career, and senior personnel* are strongly encouraged to submit applications for NS *Graduate Competition, Early Career Competition, and Professional Awards:* https://avs.org/about-avs/chapters/avs-divisions/nanoscale-science-and-technology/awards/

NS1: Nanoscale Science and Technology Oral Session

Invited Speakers:

Robertus Elbertse, NIST, "Design, Construction, and Performance of a Dilution Refrigerator-Based ESRSPM System with Cryogenic Switches"

Farnaz Niroui, MIT

Archana Raja, LBNL

Mathew Rosenberger, Notre Dame University, "Generalized Defect Quantification of 2D Materials with Atomic Force Microscopy"

Michael Titze, Sandia National Laboratories

Rama Vasudevan, Oak Ridge National Laboratory

NS2: Nanoscale Science and Technology Poster Session

PLASMA SCIENCE AND TECHNOLOGY (PS): The PS program highlights the latest advances in plasma science, ranging from fundamental studies of plasma physics and chemistry to plasma-matter interactions and new applications for etch processing. Our global community spans academia, national facilities and industry and strives to engineer the future in plasma research applied to sustainable semiconductor processing, as well as atmospheric pressure plasmas and chemical and energy conversion, novel materials synthesis and catalysis. Novel areas such as advanced packaging, AR/VR technologies and pattern shaping techniques are also of interest. PS is seeking abstracts that fall within the following themes:

Plasma etching, deposition, and processing for advanced device fabrication: State-of-the-art front (FEOL) and back (BEOL) end of line patterning and processing for logic devices, emerging memory applications, quantum devices, and photonics; advanced packaging, chiplets & heterogeneous integration.

Plasma enhanced atomic layer processing: Area selective deposition, characterization and metrology to enable atomic scale processing, atomic layer process chemistry, surface reactions and atomic layer etching. Novel thin film deposition processes and material synthesis studies are also encouraged.

Plasmas and plasma-surface interactions - experiment and modeling: Fundamental understanding of plasma-surface interactions, modeling and simulation challenges associated with plasma-based materials synthesis, processing, and etching; kinetic, fluid, hybrid and data-driven models; control; and experimental validation of simulations.

Plasma sources, diagnostics, sensing, and control: Novel plasma generation schemes and (ion beam) sources at low and high pressures ; plasma diagnostics ; pulsed plasmas and waveform shaping; process sensing and control schemes.

Plasmas for chemical, energy and sustainable applications: Emerging venues where plasmas provide unique advantages in chemical, environmental, energy, and biological applications. New plasma processes for sustainable technologies (chemical conversion, batteries, fuel cells, electrochemistry, photovoltaics, low GWP gases) and atmospheric pressure processing. Making today's processes more energy efficient and environmentally friendly.

Areas of Interest: PS is seeking abstracts in the following areas:

• Plasma Processing for Advanced Logic and Memory Device Fabrication
• Plasma Processing for EUV and High-NA EUV
• Plasma Processing for Advanced Packaging Technologies
• Plasma Processing for Emerging Device Technologies
• Area Selective Processing and Patterning
• Plasma ALD/ALE
• Plasma Processes for Coatings and Thin Films
• Plasma Surface Interactions
• Plasma Modeling
• Plasma Sources, Diagnostics, Sensing and Control
• Atmospheric Pressure Plasmas and their Applications
• Plasma Chemistry, Catalysis, Environment and Sustainability

PS1: Plasma Processes for Coatings and Thin Films

PS2: Advanced Logic

Invited Speakers:

Koji Eriguchi, Kyoto University, Japan, "Current Status and Future Perspectives of Plasma-Induced Damage and its Characterization"

Sara Paolillo, IMEC Belgium, "Dry Etch Challenges Towards the High NA EUV Lithography Patterning"

Cedric Thomas, Tokyo Electron US, "Challenges and Perspectives in Process Control for Next Generation Devices"

PS3: Advanced Memory
PS4: Plasmas in Advanced Packaging
Invited Speakers:
Fee Li Li, IBM
James Papanu, Tokyo Electron Ltd., Japan, "Critical Plasma Processing Steps for Fusion and Hybrid Bonding Applications"

PS5: Plasma Surface Interactions
Invited Speakers:
Christophe Cardinaud, Universite de Nantes, France
Michele Sarazen, Princeton University, "Elucidating Complex Interactions in Non-Thermal Plasma-Assisted Reactions on (Supported) Porous Catalysts"
PS6: Plasma Chemistry and Catalysis
Invited Speakers:
Wallis Scholl, Colorado School of Mines, "Interaction of Etching Plasmas with Polyurea Films deposited by Molecular Layer Deposition for Surface and Sidewall Passivation"
Hartmut Wiggers, Universitaet Duisburg-Essen, Germany, "Gas-Phase Plasma Synthesis as a Method for Producing Nanomaterials with Special Properties"
PS7: Plasmas for Emerging Device Technologies
Invited Speakers:
Patricia Pimenta-Baros, CEA-LETI, France, "Main Etching Challenges in the GaN-based Devices Patterning"
PS8: Sustainability and Plasmas
David Speed, GLOBALFOUNDRIES, NY, "Sustainability Challenges in Plasma Processing and Call to Action"
PS9: Atomic Level Processing in Plasma
Invited Speakers:
Stacey Bent, Stanford University, "Area Selective ALD for Future Engineering Challenges"
PS10: Plasma Modelling
Invited Speakers:
Vladimir Kolobov, University of Alabama at Huntsville, "Modeling: Integrating AI with Traditional Methods"
Shahid Rauf, Applied Materials, "Plasma Prize 2024 Award Talk: Plasma Prize 2024 Award Talk: Some Tales from Our Model Validation Adventures"
Abhishek Verma, Applied Materials, "Machine Learning Surrogates for 2D Plasma Modeling"
PS11: Atmospheric Plasma
PS12: Plasma Sources, Diagnostics and Control I & II
Invited Speakers:
David Pai, Ecole Polytechnique, France, "Scratching the Surface: Physics, Chemistry, and In-situ Diagnostics of Solids and Liquids in Contact with Atmospheric-Pressure Plasmas"
Jente Wubs, Eindhoven University of Technology, Netherlands, "Absolute Atomic Density Measurements in Hydrogen- and Oxygen-Containing Plasmas"
PS13: Plasma Science and Technology Poster Session

QUANTUM SCIENCE AND TECHNOLOGY MINI-SYMPOSIUM (QS): In UNESCO's International Year of Quantum, the QS Mini-Symposium invites abstracts showcasing cutting-edge research in quantum science and technology. The QS program highlights the latest advances in quantum science and applications, spanning material sciences, quantum technology, and diverse qubit modalities for computing and sensing. We seek contributions across a broad range of topics, including advancements in materials and surface engineering to enhance quantum device performance, developments in qubit modalities such as superconducting, spin, ion trap, and donor qubits, and innovations in quantum sensing and metrology, with devices like Nitrogen-Vacancy sensors, transition edge sensors, and superconducting nanowire single-photon detectors. We encourage submissions addressing the integration challenges and technological innovations in quantum systems, devices, and manufacturing, as well as quantum simulations and quantum-inspired technologies utilizing new computational methods incorporating quantum principles and machine learning. The symposium will highlight interdisciplinary applications bridging quantum technology with fields like vacuum technology, phononics, and electronic materials. The symposium will discuss quantum education initiatives, and groundbreaking research happening at quantum user facilities, and quantum information science centers, raising awareness of such resources and encouraging their use in advancing research. Poster sessions will provide emerging scientists with a platform to showcase their work through posters and flash talks, and they will have an opportunity to interact with established leaders in the field. Each session will feature talks from renowned subject matter experts such as Prof. Jason Petta, Dr. Jay Hendricks, Prof. Nathalie de Leon, Dr. Mollie Schwartz, Dr. Adam Schwartzberg, and numerous contributed discussions. This platform aims to help researchers leverage their traditional skills and shape their future in the exciting domain of quantum science. The symposium invites a global community of scholars from academia, national laboratories, nonprofits, and industry to explore innovative topics. We encourage all interested researchers to submit their abstracts and join us in shaping the future of quantum science and technology.

Areas of Interest: QS is seeking abstracts in the following areas:
Materials and Surface Engineering for Quantum: Advances in material synthesis and surface treatments enhancing quantum device performance.
Qubit Modalities in Quantum Computing: Discuss progress and challenges in superconducting, spin, ion trap, and donor qubits.
Quantum Sensing and Metrology: Highlight advances in quantum sensors like Nitrogen Vacancy centers, SNSPDs, and TESs.
Systems, devices, and manufacturing technologies: Explore integration challenges and innovations in quantum hardware development.
Quantum Education and User Facilities: Spotlight on educational and user facilities propelling quantum technologies.
Quantum Simulations and Technologies: Explore quantum-inspired technologies and computational methods.
Interdisciplinary Quantum Applications: Connect quantum technology with vacuum technology, phononics, and electronic materials.
Quantum Sci. & Tech Poster Sessions: Emerging scientists showcase research through presentations and flash talks.

QS1: Quantum Science and Technology Mini-Symposium Oral Session

Invited Speakers:

Jerry Chow, IBM Quantum, "Quantum Keynote Lecture"
Nathalie de Leon, Princeton University, "New Material Platforms for Quantum Processors"
Sophia Economou, Virginia Tech
Jay Hendricks, National Institute of Standards and Technology (NIST)
David Pappas, Rigetti Computing
Jason Petta, UCLA
Mollie Schwartz, MIT Lincoln Laboratory
Adam Schwartzberg, Lawrence Berkeley National Laboratory (LBNL)

QS2: Quantum Science and Technology Mini-Symposium Poster Session

SPECTROSCOPIC ELLIPSOMETRY (EL): The EL Group integrates themes ranging from classical materials science and thin film characterization to nanometer-scale science and novel optical sensing concepts. We will host oral sessions dedicated to traditional applications of spectroscopic ellipsometry in optical materials and thin film characterization as well as new and emerging topics as well as a poster session. The aim of the Spectroscopic Ellipsometry group is to improve accessibility of this conference for undergraduate and graduate students. To this end, we have worked with our industry partners to establish funding to offset the registration costs of students. Additionally, the J.A. Woollam Co. continues to proudly sponsor the Outstanding Student Oral Award as well as the Outstanding Student Poster award.

Areas of Interest: Topics will consist of themes ranging from ellipsometric application to classical materials science and thin film characterization to nanometer-scale science and novel optical sensing concepts, which include:

- Quantum and novel materials characterization using ellipsometry
- Methodology and ellipsometric data acquisition
- Integrating theory and advanced computation with ellipsometry
- Integrating ellipsometry with material deposition

EL1: Spectroscopic Ellipsometry Oral Session

Invited Speakers:

Carlos Armenta, New Mexico State University, "Band Filling and Relaxation Effects in Semiconductors Using Ultrafast Spectroscopic Ellipsometry"
Tino Hoffmann, University of North Carolina at Charlotte
Gerald Jellison, Oak Ridge National Laboratory, "Crystal Symmetry and Spectroscopic Ellipsometry"
Marcel Junige, University of Colorado at Boulder, "*In-Situ* Spectroscopic Ellipsometry Studies of Selective Thermal Dry Etching"
Ufuk Kilic, University of Nebraska – Lincoln

EL2: Spectroscopic Ellipsometry Poster Session

SURFACE SCIENCE (SS): The SS program is soliciting abstracts that describe recent advances in cutting-edge and foundational research that involves solid surfaces and interfaces, including gas-solid and liquid-solid interactions with emphasis in chemical reactions on surfaces, surface spectroscopies using ions, electrons, or photons. We aim to understand the wide range of processes taking place on surfaces and at interfaces, together with a full characterization of those systems, to finally improve the process by building upon this critical knowledge. This year a wide range of topics will be covered from surface chemistry with water and in liquids, to reactions on alloy surfaces, nanoparticles, and oxide, chalcogenide, and 2D materials surfaces. We showcase advances on Operando/in-situ reaction conditions and on-surface synthesis. We will hold a special Thursday afternoon session entitled "Late Breaking Discoveries from the Rising Stars in Surface Science" with a reception.

Areas of Interest: SS is soliciting abstracts in the following areas:

- **Mechanisms at surfaces and interfaces**
- **Dynamic processes at surfaces**
- **Surface science of reduced dimensional materials**
- **Light-Matter Interaction on Surfaces**
- **Photo/Electrochemistry**
- **Liquid-solid interfaces**
- **Oxide and chalcogenide surfaces/interfaces and their reactivity**
- **Magnetism on surfaces**
- **On surface synthesis**
- **Single atom catalysis**
- **Late breaking discoveries**

SS1: Surface Science Oral Session

Invited Speakers:

Johannes Barth, TU Munich, Germany
Harald Brune, EPFL, Switzerland, "Storing and Processing Information in Single Surface Adsorbed Atoms"
Zdenek Dohnalek, Pacific Northwest National Laboratory
Shixuan Du, Institute of Physics Chinese Academy of Sciences
Felix Fischer, UC Berkeley, "Engineering Low Energy Modes in 1D and 2D Carbon Nanomaterials"
Thomas Frederiksen, DIPC - Donostia International Physics Center, Spain, "π-Magnetism and Quantum Transport in Graphene Nanostructures"
Michael Gottfried, University of Marburg, Germany
Peter Grutter, McGill University, Canada
Nathan Guisinger, Argonne National Laboratory, USA, "Atomic-Scale Exploration of Low-Dimensional Materials"
Liv Hornekær, Aarhus University, Denmark
Pavel Jelinek, Institute of Physics of the CAS, Czechia
An-Ping Li, Oak Ridge National Laboratory, USA, "Bridging Atomic Structures with Quantum Behaviors via Scanning Tunneling Microscopy"
Suljo Linic, University of Michigan, USA, "Light Driven Chemical Reactions on Plasmonic Nanoparticles"
Sebastian Loth, University of Stuttgart, Germany
Gareth Parkinson, TU Wien, Austria
David Sholl, Oak Ridge National Laboratory, USA

SS2: Surface Science Poster Session

RESILIENT SEMICONDUCTOR MANUFACTURING (SM): Advance the future of resilient semiconductor manufacturing at the 71st AVS International Symposium! With the CHIPS Act driving unprecedented investments and innovations, now is the time to explore solutions that drive energy efficiency, reduce waste, and innovate greener processes across the semiconductor supply chain. We invite abstracts on groundbreaking advancements in semiconductor processing, recycling, energy reduction, and PFAS replacement. Be part of the essential dialogue on eco-friendly practices that redefine the industry's impact. Submit your abstract and help shape the future of resilient semiconductor manufacturing in this pivotal moment!

Areas of Interest: SM is seeking abstracts in the following areas:

- Energy Efficiency Innovations in Semiconductor Processing
- Sustainable Materials and PFAS Alternatives
- Semiconductor Recycling and Circular Economy Solutions
- Advanced Materials Characterization for Process Improvements

- Sustainable Etching and Lithography Techniques
- Green Material Synthesis and Integration
- Impact of the CHIPS Act on Sustainable Manufacturing

SM1: Resilient Semiconductor Manufacturing Oral Session

Invited Speakers:

Ram Gupta, Pittsburg State University

Eleanor Mullen, Trinity College Dublin, Ireland

Paul Westerhoff, Arizona State University

SM2: Resilient Semiconductor Manufacturing Poster Session

THIN FILMS (TF): The TF Division program provides a week-long forum for academic, government, and industrial researchers and practitioners to share new advances in the processing, structure, properties, and applications of thin films. Topics span from the fundamental science of thin film processing and characterization to the scale-up and commercialization of thin film deposition equipment and devices. TF is particularly seeking abstracts that fall under five broad thematic areas:

- **Atomic Scale Processing for Thin Film Formation and Patterning**: These sessions will highlight current advances in atomic-scale processes including energy-enhanced atomic layer deposition (ALD), atomic layer etching (ALE), area-selective deposition (ASD), and integration of deposition with etching for patterning. These sessions will be integrated with the **Atomic Scale Processing Mini-Symposium**.
- **Thin Film Processing for Microelectronics and Advanced Packaging**: These sessions will gather experts from academia, government, and industry to explore current challenges and opportunities in thin film processing for microelectronics and advanced packaging. Discussions will cover chemical vapor deposition (CVD) and ALD processes for BEOL and packaging applications, along with recent developments in deposition processes for ferroelectrics and other functional materials.
- **Vapor Synthesis of Hybrid, Organic, and Polymeric Materials (VSHOP)**: These sessions will coalesce experts in the vapor deposition of organic, polymeric, and organic-inorganic hybrid materials including 2D and 3D frameworks using processes like molecular layer deposition (MLD), initiated chemical vapor deposition (iCVD), vapor infiltration (VPI, SIS, and ALI) and other related techniques to discuss recent advances in processing science, structure-property relations, and material applications.
- **Thin Films for Energy Applications**: These sessions will address the use of thin film technologies for energy generation and storage (e.g., photovoltaics,capacitors, batteries and fuel cells), sustainable systems (e.g., membranes for chemical separations), and extreme environment (e.g., space).
- **Fundamentals of Thin Films and Thin Film Processing**: These sessions will focus on the foundational aspects of nucleation and growth behaviors during thin film deposition, encompassing in-situ characterizations and multi-scale modeling.
- All graduate student participants are encouraged to submit an application for the Harper Award along with their abstract. Besides giving their session talk, the four Harper Award finalists will also compete in a special session giving interactive "TED-Style Talks" for the top prize.

Areas of Interest: TF is seeking abstracts in the following areas:

TF1: Atomic Scale Processing

Invited Speakers:

Silvia Armini, IMEC, Belgium

Yuri Barsukov, Lam Research, "Quantum Chemistry and Integrated Modeling for Understanding the Mechanisms of Selective and Cryogenic Atomic-Scale Etching"

Michael Nolan, Tyndall National Institute, University College Cork, Ireland, "Multiscale Simulations for Atomic Scale Processing"

TF2: Thin Films for Microelectronics and Advanced Packaging

Invited Speakers:

Ageeth Bol, University of Michigan, "Plasma Enhanced Atomic Layer Deposition of 2D Transition Metal Dichalcogenides for Nanoelectronics"

Francois Fabreguette, Micron, "Area Selective Deposition Processing in the Memory Industry: How to Take Advantage of the High-Volume Manufacturing Environment"

Asif Khan, Georgia Technical Institute

Nian Sun, Northeastern University, "Integrated Magnetoacoustic Isolators with Giant Non-Reciprocity"

TF3: Vapor Synthesis of Hybrid, Organic, and Polymeric Materials

Invited Speakers:

Jolien Dendooven, Ghent University, Belgium, "Selective Deposition and Infiltration of Ru and RuO_2:"

Jeff Elam, Argonne National Lab

Sung Gap Im, KAIST, Republic of Korea, "Vapor-Phase Deposited Functional Polymer Films and Their Device Applications"

Jessie Mao, Oklahoma State University

Sarah Park, POSTECH, Republic of Korea

TF4: Thin Films for Energy Applications

Invited Speakers:

Dameron Arrelaine, ForgeNano, "Manufacturing-Scale Powder Atomic Layer Deposition for Battery Applications"
Reeja Jayan, Carnegie Mellon University
Marianna Kemell, University of Helsinki, Finland, "Atomic Layer Deposition of Metal Iodides"
Paul Poodt, SparkNano, Netherlands, "Spatial ALD for Sustainable Energy Applications"
Feng Yan, Arizona State University

TF5: Fundamentals of Thin Films and Thin Film Processing

Invited Speakers:
Joseph Falson, Caltech
Megan Holtz, Colorado School of Mines, "Mapping Nanoscale Polarity Using Scanning Nanobeam Electron Diffraction Techniques"

TF6: Thin Film Poster Session

UNDERGRADUATE POSTER SESSION (UN): AVS 71 will host its fifth annual undergraduate poster session, open to any undergraduate conducting research on an AVS-related topic. This special session provides undergraduate researchers the opportunity to present and network with students, professors, and industry leaders! We welcome the newest members of AVS to share their important work with all Society members and greatly encourage participation. Registration is discounted for undergraduate students and limited travel assistance may be available. Cash awards will be given for the top poster presentations!

UN1: Undergraduate Poster Session

VACUUM TECHNOLOGY (VT): The Vacuum Technology Division (VTD) provides a community to share ideas and novel approaches to advancing vacuum science and technology. We are soliciting abstracts in a broad range of topics relating to the science and engineering involved in achieving, maintaining, analyzing, and measuring vacuum wherever it is required. Our contributors come from industry, national laboratory, and academic and their presentations range from novel methods and devices for measuring gas composition, as well as outgassing of materials, large vacuum systems, vacuum technology for semiconductor and aerospace applications. We strive to grow in areas like vacuum applications for Quantum Science and Sustainable Energy production. VT hosts the Ask the Experts (ATE) booth during exhibit hours: an informal forum—staffed by vacuum experts—where conference attendees may ask questions, discuss their work and gather ideas for innovative solutions.

Areas of Interest: VTD offers a platform for sharing latest research results, ideas and innovative approaches to advancing vacuum science and technology and we encourage submissions on the following topics:

- Vacuum Measurement, Gas Analysis
- Pumping, Outgassing, and Contamination
- Accelerators, Aerospace, and Large Vacuum Systems
- New and Applied Technologies: Vacuum for quantum computing, additive manufacturing, and vacuum manipulation
- Vacuum Systems for Fusion

Contributors from industry, national laboratories, and academia are invited to present their work in these areas, with opportunities to share novel methods, devices, and applications relevant to vacuum technology.

Additionally, VTD will host the popular "Ask the Experts" (ATE) booth during exhibit hours. This informal forum, staffed by leading vacuum experts, offers attendees an opportunity to ask questions, discuss challenges, and explore ideas for innovative solutions.

We look forward to receiving your contributions and advancing the discussion on critical topics in vacuum technology and materials science.

VT1: Vacuum Technology Oral Session

Invited Speakers:
Jason Carter, Argonne National Laboratory, USA, "Commissioning of the APS Upgrade Storage Ring Vacuum System"
Austin Chaires, ORNL
Juan Pablo Romero, inovoal
Nico Volker, Pfieffer Vacuum, Germany
Ivo Wevers, CERN, Switzerland, "The Einstein Telescope Beam Pipe Vacuum System: The Pilot Sector"

VT2: Vacuum Technology Poster Session

ALL-INVITED SESSIONS

AVS QUANTUM SCIENCE WORKSHOP (AQS):

The quantum industry is currently evolving rapidly, with progress made in several aspects including materials synthesis, device fabrication, algorithm and library development, and exploration of early applications of quantum computing, sensing, storage, and networks. The quantum sector not only seeks technological and scientific advancements on a fundamental level but also urgently needs

to train a skilled workforce adept at bridging quantum mechanics, mathematics, computer science, and domain-specific sciences. While this is true for many interdisciplinary fields, there is a risk that the gap that needs to be bridged is particularly large between the fundamental fields of quantum mechanics, math, computer science, and domain science. In this all-invited session, we will have speakers from academia, industry, national labs, non-profit, and funding agencies. They will share insights on the current state of the art, highlight ongoing challenges, propose strategies to address these issues, and brainstorm on what is most needed immediately to shape the near-term future of the workforce that will support the quantum industry. This Workshop will be followed by a number of QS mini-symposium sessions throughout the week that will explore the different aspects of quantum science and technology.
We invite all AVS attendees to join this pivotal workshop to help define strategies for advancing our industry and training the next generation of quantum professionals. Your insights are valuable in shaping a dynamic and responsive quantum workforce.

AQS1: AVS Quantum Science Workshop Oral Session (ALL-INVITED SESSION)

Invited Speakers:

- **Government/National Lab:** Dr. Matthew LaHaye, AFRL
- **Non-profit:** Satyavolu Papa Rao, NY CREATES, "Enabling the Scaling of Superconducting Quantum Devices in a 300 mm Wafer Fab"
- **Celebrating International Year of Quantum:** Prof. John Martinis, UCSB, NIST, QoLab
- **Industry:** Roman Lutchyn, Microsoft
- **Academia:** Richard Ross, Program Director for UCLA MS degree in quantum

This workshop is just the beginning of a week filled with QS scientific sessions that will delve deeper into the technical advancements of quantum science and technology.

BIOMATERIALS PLENARY (BP): The Biomaterials Interfaces program kicks off with the traditional Biomaterials Plenary Session. This year we are pleased to have presentations from three prominent scientists who will present seminars, including, "Protein Structure at Interfaces – Its Where the Action Is" by Tobias Wiedner (Aarhus University), and the speakers listed below.

BP1: Biomaterials Plenary Session (ALL-INVITED SESSION)

Invited Speakers:

Ashley Brown, NCSU and UNC-Chapel Hill

Sebastian Diaz, Naval Research Laboratory, "Peptide Based Liquid-Liquid Coacervates for Biosensing, Degradation Resistance, and as Biofoundries"

Tobias Weidner, Aarhus University, Denmark, "Protein Structure at Interfaces – Its Where the Action Is"

NANOSCALE SCIENCE AND TECHNOLOGY PLENARY SESSION (NSP): The Nanoscale Science and Technology Division starts the week with a plenary session featuring a talk from the Nanotechnology Recognition Award winner. Following this talk, we will have our Early Career and Graduate Student competitions. Please join us for these engaging talks on nanoscale science and technology and for lively discussion during a reception, immediately after the competitions.

NSP1: Nanoscale Science and Technology Plenary Session (ALL-INVITED SESSION)

Zetian Mi, University of Michigan

SPECIAL SESSIONS & EVENTS

AVS 71 PLENARY LECTURE: Professor Michael Manfra, the Bill and Dee O'Brien Distinguished Professor of Physics and Astronomy, Professor of Materials Engineering, and Professor of Electrical and Computer Engineering at Purdue University, who serves as Scientific Director of Microsoft Quantum Lab, will present the Plenary Lecture on Monday, September 22, 2025, 5:30-6:30 p.m. and followed by the AVS 71 Welcome Mixer.

EXHIBITOR TECHNOLOGY SPOTLIGHT SESSIONS (EW): The Exhibitor Technology Sessions will take place in the stage area of the exhibition during the technical session breaks on Tuesday and Wednesday. These sessions are free and open to all registered AVS 71 attendees. This is your opportunity to learn about new products, research techniques and services offered by AVS exhibitors. Each session is followed by a brief Q&A session making it a truly interactive learning experience. After the sessions, you may visit the presenting exhibitors at their booths to further discuss any points that you would like to receive more details on. Come learn how new technology can benefit your research efforts! To reserve your spot, please contact us at exhibits@avs.org.

EW1: Exhibitor Technology Spotlight Session

AVS VENDOR EXHIBIT: The Exhibit comprises an extensive display of tools, equipment, and services for Surface Science; Biomaterial Interfaces; Electronic Materials & Photonics; Magnetic Interfaces; Manufacturing Science; MEMS/NEMS; Nanoscience; Thin Film; Plasma Science; Vacuum Technology, educational material, career services and professional literature, journals and publications. Each year, the technical symposium expands into new and exciting technical disciplines which bring new exhibitors showing new technology

and research methods. The continuously expanding technical program consistently keeps our Symposium fresh and exciting for exhibitors and attendees alike. The exhibition will be open from Tuesday morning until Thursday afternoon (September 23-25, 2025). Reserve your booth today using our online system (link to https://avs71.avs.org/sales) or contact us at exhibits@avs.org for more information.

AVS LATE BREAKING ABSTRACT SUBMISSIONS: There will be opportunities for presentation of post-deadline discoveries in all fields relevant to the AVS membership. Submissions that address topics in surfaces, interfaces, films, nanometer-scale phenomena, emerging technologies, or new innovations. Abstracts will be solicited starting in mid-June for either (1) an individual 15-minute oral presentation, or (2) a poster presentation. Our Call for Late Breaking Abstracts will launch in mid-June with a July 28, 2025 deadline. Submissions will be used to fill holes in the program and grow the poster sessions, and they must be submitted via the AVS website by Monday, July 28, 2025. Notification of acceptance/rejection will be made soon thereafter. Please check the AVS 71 website for details and submission guidelines in mid-June, after the AVS 71 Technical Program launches.

AVS SPONSORSHIP PROGRAM: AVS is a not-for-profit Society that offers a myriad of services, programs and events related to science and technology in the fields of vacuum, materials, interfaces and processing to scientists and engineers from around the world. An extensive recognition and exposure program, which is active before and during the Symposium, is available to our Symposium Sponsors. Symposium Sponsor logos will appear on the AVS website, in the Technical/Exhibitor Program, on signage and slide shows at the Symposium. The earlier AVS Symposium Sponsorships ensure the greatest exposure. To learn more about Sponsorship opportunities, please contact exhibits@avs.org or Yvonne Towse at 212-248-0200 ext. 222 or **yvonne@avs.org.**

ONLINE ABSTRACT SUBMISSION ONLY: ***www.avsconferences.org***

Deadline: 11:59 p.m. ET, Tuesday, April 1, 2025

Supplemental data (1-2 pages, 1MB) will also be accepted via the submission site.

Instructions may be found at the web site above.

*** ***A presenter may present ONE ORAL AND ONE POSTER at the Symposium*** ***

Contributed oral presentations are 15 minutes and invited talks are 30 minutes.
All submitting authors should review the areas of interest for which their desired topic is seeking abstracts and then submit their abstract to an oral or poster session. Presenters may submit two different abstracts at AVS 71 – an oral and a poster.

ORAL Sessions: Rooms will be set up with projectors, screens, microphones, and laptops (PCs).
POSTER Sessions: Each poster presenter will be allotted space that is 4 feet wide by 4 feet high. Please make your poster no larger than 46 inches wide by 46 inches high to ensure it fits nicely into the allotted space.

AVS AWARDS & TRAVEL GRANTS

All award applications for AVS National and Division/Group awards may be found at the following link: ***(http://www.avs.org/awards).*** *Please contact Angela Klink, Director of Member Services, (angela@avs.org, 212-248-0200 ext. 221) for any additional information.*

DOROTHY M. AND EARL S. HOFFMAN TRAVEL GRANTS

The Hoffman Travel Grants have been created in an effort to promote student involvement in AVS and encourage their participation in the annual AVS International Symposium. These travel grants will be given to any applying students who meet the following criteria: 1) you must be the presenter of an accepted Symposium abstract, 2) you must be a full-time student, 3) the grant is not transferable, 4) you must attend the Symposium to receive the grant and, 5) you are not eligible to receive the grant if you are receiving any other travel support from AVS. An invitation e-mail will be sent to eligible students (mid-June 2025) and the student should apply for the grant by responding to the invitation email. The application deadline is Monday, August 11, 2025. Should your application be approved, you will receive an e-mail notification by Wednesday, August 13, 2025. Grants will be given on a random basis until the 2025 funds are depleted. Funds for the grant recipients will be available at the Symposium Registration Manager's desk, and you will also be asked to present a student I.D. Please note that all travel grants must be collected at the meeting.

AVS PROFESSIONAL AWARDS

Each year, the AVS solicits nominations for major national awards. These include the Medard W. Welch Award, the Gaede-Langmuir Award, the John A. Thornton Memorial Award and Lecture, the Peter Mark Award, Fellow of the Society and the George T. Hanyo Award. Nominations are due March 10, 2025 and should be submitted through the AVS online award submission site. Nomination information is available on www.avs.org or through Angela Klink (212-248-0200, ext. 221 or **angela@avs.org**).

NATIONAL STUDENT AWARDS

Students may apply for one National Student Award and one Division/Group Award in a given year.

Each year, the AVS solicits nominations for eight graduate student awards. These are the Russell and Sigurd Varian Award, the Nellie Yeoh Whetten Award, the Dorothy M. and Earl S. Hoffman Award, two Dorothy M. and Earl S. Hoffman Scholarships (N.B. the Hoffman Award and Scholarships are distinct from the Hoffman Travel Grants described below) and three Graduate Research Awards. The nomination procedures are on www.avs.org or through Angela Klink (212-248-0200, ext. 221 or **angela@avs.org**) Applicants should use the AVS online award submission site. **The deadline is April 14, 2025**

DIVISION/GROUP STUDENT AWARDS

The **Applied Surface Science Division** welcomes you or your student(s) to apply for this year's Student Awards Competition. For the competition, the top finalists will be selected from this year's applicants, and each will present a 3 slide, 5 minute talk summarizing their research. The finalists will be competing for three monetary prizes totaling $1500 as well as reimbursement for the 2025 Symposium for the 1st place winner! In addition to these incentives, the competition is also a great way to interact with the ASSD and get to know some of its members, regardless of whether you are participating in the student awards competition. Students wishing to participate in the competition should complete the application on the awards submission site, submit a copy of the abstract and current CV by **4/1/25.**

Biomaterial Interfaces Division is offering student awards ($250, $150 and $100) for the best combined Flash and Poster Presentation based on their graduate research. These awards are sponsored by our AVS Biointer*phases* journal. All graduate students presenting at both the flash poster presentation and the poster session will be considered for the prizes automatically. They will be judged on the scientific merit and originality of their research, as well as the quality of presentation. Individuals more than one year past the date when their PhD degree was awarded are not eligible to compete for the student prize. Inquiries may be addressed to Dr. Kenan Fears, kenan.p.fears.civ@us.navy.mil.

The **Electronic Materials & Photonics Division (EMPD) Student Poster/Presentation Award** is given at the annual AVS International Symposium and Exhibition. All abstracts, both poster and oral, submitted to an EMPD session will be automatically considered. The presenting author must be a graduate or undergraduate student at the time of submission. Awards will be judged on the scientific merit and originality of their research, their contribution to it, as well as the quality of their presentation. Poster award candidates must be present during the EMPD poster session for judging. Award consists of a certificate and a $500 cash prize; multiple awards are anticipated.

The **Electronic Materials & Photonics Division (EMPD) Student Travel Award** is given annually to graduate and undergraduate students who have been invited to submit to the EMPD session at the Internal Symposium. Students are selected from presenters at regional AVS conferences. Multiple awards are anticipated.

Magnetic Interfaces & Nanostructures Division: Leo M. Falicov Student Award has been established in memory of Professor Leo M. Falicov to recognize outstanding research performed by a graduate student in areas of interest to MIND. Finalists will be selected on the basis of abstract submission, and will receive a cash award upon attending the AVS International Symposium and presenting their paper in an oral MIND session. The winner will be selected on the basis of the oral presentation, considering quality of research and clarity of presentation, and will receive a cash prize and a certificate. Interested applicants (except for former winners) should complete the application on the awards submission site and submit a copy of the submitted AVS abstract and a letter of recommendation before the **abstract deadline of April 14, 2025.**

Manufacturing Science and Technology Group is pleased to announce and solicit applications to be competitively awarded to up to 2 graduate students who present papers in MSTG sponsored sessions. The purpose of the MSTG award is to both encourage participation of students in the MSTG program and to acknowledge the valuable contributions they make in advancing state-of-the-art in manufacturing science and technology. Full-time university graduate students with primary appointments at universities are eligible to apply. Preference will be given to those who give oral presentations of their papers. Students awarded the MSTG Award will receive a grant. Submission materials consist of: 1) Letter of application describing the student's research (1 pg. max.); 2) Letter of endorsement by the student's research advisor (1 pg. max.); 3) Copy of submitted abstract; 4) CV (2 pg. max) 5) completed application materials should be submitted through the awards submission site by the **deadline of April 14, 2025**

MEMS and NEMS Technical Group is pleased to announce two types of student awards. One is "**Outstanding Paper Award"** competition at the AVS Symposium and Exhibition. The number of student awardee(s) will be determined at the discretion of MN Awards Committee. The award includes a cash prize ($200) and a certificate to the well deserving student presenting his/her research in an MN-sponsored session. Both graduate and undergraduate students are eligible. All students presenting at our sessions will be considered for the prizes automatically. They will be judged on the scientific merit and originality of their research as well as the quality of presentation. In addition, the MN group will consider a "**Best Research Work Award**" by offering a registration waiver to the well deserving graduate/undergraduate student(s) submitting an abstract to the MN session. The number of student awardee(s) will be determined at the discretion of MN Awards Committee. This award will be solely based on the quality of work described in the abstract. All students will automatically be considered for this award as well. MEMS and NEMS students are also encouraged to apply for the National Student Awards which should be submitted through the awards submission site by the **deadline of April 14, 2025**

The **Nanoscale Science and Technology Division Graduate Competition** As nanoscience has continued to expand its impact in diverse fields, including quantum science, biology, mechanics, and energy, the Nanoscale Science and Technology Division (NSTD) has been a hub of research broadly related to instrumentation, lithography, manipulation, imaging, and translation to industry. The NSTD holds a Graduate Competition at the annual AVS International Symposium to highlight and celebrate exceptional researchers working on the frontiers of nanoscience. All graduate students presenting a poster or oral presentation in an NSTD-sponsored or co-sponsored session are encouraged to apply. To apply, submit a cover letter, resume, advisor support letter, and AVS abstract to the awards submission site by the **deadline date of April 14, 2025. For** eligibility, the applicant must not have received a doctoral degree at the time of abstract submission. All finalists will receive a student registration waiver for the conference!!! The NSTD Awards Committee will select all finalists, and they will be informed in the summer of 2025. All finalists must present a five-minute talk (with additional time for questions) at the NSTD Sunday plenary session for the awards competition. The winner will be selected based on the quality of the talk, the responses to subsequent questions, and the level of the research. The graduate award winner will receive a certificate and a cash award of $500. This award is made possible by financial support from NSTD's sponsors, in 2024 they were Quantum Design, Heidelberg Instruments, Horiba Scientific, Scienta Omicron, SPECS-TII.

The **Plasma Science and Technology Division Student Poster Prize** recognizes poster presentations submitted to PSTD at the annual AVS International Symposium. The winning poster presentation is characterized by the presenter's excellence in research, clarity of the delivery, and depth of knowledge, in response to the examination of the judges. **Eligibility and how to apply:** The PSTD Student Poster Prize is given to a student presenter whose poster is accepted by the PSTD division at the annual AVS International Symposium. Candidates for the award must be a registered graduate or undergraduate student in an accredited academic institution at the time of the presentation, a member of the AVS and the PSTD, and first author on the poster presentation. The finalists of PSTD's Coburn and Winters Award are not eligible for the poster award. All accepted student poster presenters who meet these criteria will be automatically entered into this competition. **Selection process** : Poster Prize winner(s) will be selected by a group of judges appointed by the PSTD Executive Committee and based on the following criteria: Scientific merit and originality; Quality of the poster content; Clarity and engagement of the presentation; Response to questions and depth of knowledge. **Winner announcement and award ceremony:** Winner(s) of the PSTD Student Poster Prize will be announced during the PSTD Annual Business Meeting at Symposium, or at a time determined by the Executive Committee. The award certificate will be presented to the recipient along with $250 cash prize.

John Coburn and Harold Winters Student Merit Award recognizes meritorious achievements by students in an area fostered and encouraged by the Plasm Science and Technology Division, while also encouraging student participation in the Division. The John Coburn and Harold Winters Award is given in recognition of outstanding research achievements and an oral presentation given by a Student Merit Award winner at the AVS International Symposium. **Eligibility and how to apply** The following materials are required to apply for the Award: 1) A curriculum vitae of the nominee; 2) A one-page letter of recommendation from the student's research advisor/mentor; 3) A copy of the nominee's submitted abstract for the AVS International Symposium. An eligible nominee must have their abstract accepted to the AVS International Symposium for the year they are nominated and be a registered student at the time of the earliest deadline for abstract submission. Only one student from a given research group may be nominated in each year and previous winners of the Coburn and Winters Award are not eligible. All materials should be submitted on the awards application link below and must be received on or before **April 14, 2025. Selection Process:** A maximum of five (5) Student Merit Award finalists will be selected by the PSTD Awards Committee based on technical/scientific merit and the originality of research. Preference will be given to senior graduate students who are close to graduation. Each Merit Award finalist will receive a $500 cash award and must present their research in a private session to the PSTD Awards Committee. This private presentation will be in addition to the regularly scheduled PSTD oral session at the AVS Symposium. The Coburn and Winters Award winner will be selected from the finalists based on the quality of both their research (50%) and oral presentation skills (50%). The overall winner will receive an additional $500 cash prize and certificate. **Winner announcement and award ceremony** The winner(s) of the Coburn & Winters Award will be announced during the PSTD Business Meeting at the AVS International Symposium, or at a time determined by the Executive Committee. The award certificate will be presented to the recipient.

The **Surface Science Division** solicits nominations for the Morton M. Traum Surface Science Student Award to be given to the best student presenter at the AVS International Symposium. **Who can apply?** Candidates for the award must be registered to give an oral or poster presentation at the AVS International Symposium and be either a current graduate student or have received their Ph.D. degree in the year of the Symposium. Up to five finalists will be selected to compete with posters during the Surface Science poster session; these poster presentations are in addition to any presentation they are registered for at the Symposium but presents the same scientific content. **What are the prizes?** All finalists and the winner will receive cash prizes starting at $1000 for the winner, and certificates. The winner's name will be added to the list of previous winners on the AVS website, and on a plaque on display at the Symposium. **How do I participate?** Traum award applicants should submit on the AVS website 1) a copy of the abstract submitted to the AVS that includes the abstract submission number; 2) an extended abstract that does not exceed two pages (including tables, figures, and references); 3) their expected graduation date, 4) two letters of recommendation, and 5) an AVS application form for student awards. Please use the online award submission site to complete your application. **Deadline: April 14, 2025**

Thin Film Division James Harper Award Graduate Student Award: The Thin Film Division's premier, competitive graduate student award is in honor of James M.E. Harper, who was a pioneer in the thin film areas of interconnects and silicides, and was active in the

AVS as a Trustee, Director, vice-program chair, Thin Film chair, and many other roles. Finalists for the award will be chosen based on the application packages below. The finalists will then compete for the final Harper Award by presenting their work in a special session giving interactive "TED-Style" Talks at the AVS symposium, where they will be judged in real time for both content as well as presentation quality and originality. The Harper Award consists of a plaque and cash prize of $800. Other finalists will receive Thin Film Graduate Student Awards of $400. To be eligible for the Harper Award, the student must be the presenter of an oral presentation in the Thin Film Division sessions at the AVS meeting and must be a currently registered graduate student on the date of the abstract submission deadline. Interested applicants should send 1) their CV; 2) a copy of their submitted AVS abstract; and 3) a letter of recommendation from their research advisor. Application materials should be submitted through the awards submission site. **Deadline: April 14, 2025.**

Vacuum Technology Division Student Poster Competition: **Vacuum Technology Division Student Poster Competition** – The competition is held annually to encourage graduate and undergraduate students to showcase the design, development, and/or operation of creative student-built vacuum systems. Though these vacuum systems may not represent the state-of-the-art in vacuum technology, they often feature original designs driven by unique use cases, and/or significant resource constraints. Successful submissions detail innovative and/or cost-effective solutions to problems encountered in vacuum system design and/or operation in pursuit of a research goal. The driving research project, complete or not, is presented along with the vacuum-related challenges that were encountered and solved. To be considered, graduate or undergraduate students must submit poster abstracts and applications directly to the AVS Awards submission web page, in addition to submitting their abstracts to the AVS Symposium call for abstracts under one of the VTD topics. The application deadline for entering this year's competition is **April 14, 2025**. The submissions shall be judged during the VTD poster session and cash prizes of up to $500 shall be awarded to the winners. Please direct inquiries to VTD Student Award Coordinator, Yev Lushtak, at yevgeniy.lushtak@ionq.co.

Vacuum Technology Division Student Presenter: The award is bestowed annually to encourage graduate and undergraduate students to present their research and the required vacuum system design at one of the VTD sessions during the symposium. The VTD Student Presenter award consists of a certificate as well as a cash prize up to $500. To qualify, an applicant must be a full-time graduate or undergraduate student at an accredited educational or research facility. Each candidate must submit an oral presentation abstract to the annual AVS International Symposium & Exhibition and enter the contest via the AVS Awards submission web page on or before the April 14, 2025 deadline; furthermore, the applicant must present their work at one of the VTD sessions at the AVS symposium. Each presentation shall be judged by a panel of experts according to the following criteria: the quality of the work presented, the extent of the presenter's contribution to the effort, and the overall quality of the presentation. Please direct inquiries to VTD Student Award Coordinator, Yev Lushtak, at yevgeniy.lushtak@ionq.com.

The 2D Materials Group is pleased to announce the annual student poster award with an aim at providing a platform for young scientists to interact and present their research work to a large audience from diverse fields. The posters will be judged during the poster session and cash prizes of up to $500 will be awarded to the winners of the competition. The application deadline for entering the competition is **April14, 2025. Eligibility and how to apply:** The 2D Materials Student Poster Prize is given to a student presenter whose poster is accepted by the 2D Materials Group to present their research at the annual AVS International Symposium. Candidates for the award must be a registered graduate (or an undergraduate) student in an accredited academic institution at the time of the presentation, a member of AVS and the 2D Materials Group, and first author on the poster presentation. All accepted student poster presenters who meet these criteria will be automatically entered into this competition. **Selection Process:** The Poster Prize winner(s) will be selected by a group of judges appointed by the 2D Materials Executive Committee and based on the following criteria: Scientific merit and originality; Quality of the poster content; Clarity and engagement of the presentation; Response to questions and depth of knowledge. **Winner announcement and award ceremony: T**he winner(s) of the 2D Materials Group Student Poster Prize will be announced during the poster session at the AVS International Symposium, or at a time determined by the Executive Committee. The award certificate and cash prizes will be presented to the recipient.

The Spectroscopic Ellipsometry Technical Group presents multiple awards annually at the International Symposium: student poster/presentation award and student travel award. These awards are made possible by financial support from J.A. Woollam Co., Inc. Student Poster/Presentation Award is given at the annual AVS International Symposium and Exhibition. All student participants, both poster and oral, participating in a Spectroscopic Ellipsometry Technical session will be automatically considered. The presenting author must be a graduate or undergraduate student at the time of submission. Awards will be judged on the scientific merit and originality of their research, their contribution to it, as well as the quality of their presentation. Poster award candidates must be present during the Spectroscopic Ellipsometry Technical poster session for judging. The Award consists of a certificate and a cash prize. Multiple awards are anticipated. Student Travel Award: is available for the 2025 AVS International Symposium and Exhibition. Any graduate and undergraduate students who have an accepted abstract AND will be presenting in a Spectroscopic Ellipsometry Technical session at the International Symposium. All accepted abstracts with a student as presenting author are automatically considered. Multiple awards are anticipated.

SOCIETY/DIVISION/GROUP PROFESSIONAL AWARDS (NOT FOR STUDENTS)

The **AVS Applied Surface Science Division (ASSD) Peter M. A. Sherwood Mid-Career Professional Award** recognizes achievements leading to exceptional progress in research and development made by professionals in their mid-career in an area of interest to the ASSD. The award consists of a cash award plus a plaque. **The nomination deadline is April 14, 2025**. The nomination

package must contain the nomination form, nominating letter, biographical materials and three supporting letters. The Awardee will give a featured talk at the AVS International Symposium where the award will be presented. The Award will be made only if an appropriate candidate is identified. All documents including the Nomination Form and the supporting letters should be sent to the ASSD Awards committee at tt39@rice.edu. See the AVS Awards website for the nomination form and full submission guidelines.

The **AVS Advanced Surface Engineering Division (ASED)** establishes the *ASED Young Investigator Award* to recognize outstanding participation and research based on presentations in SE program at the AVS International Symposium. PhD students or engineers/researchers from industry or academia up to 5 years after PhD graduation, who will be members of the ASED of AVS, are eligible. Members of the ASED AVS Program Committee and a member of the ASED award committee will judge all nominations and make the selection of the winner, based on the submitted documents. The committee may conduct on-line interviews with the nominees in the selection process. The winner will receive a certificate, $500 prize after presenting his/her work at the symposium. **Nomination Procedure:** The Nominator, who is either the supervisor of the young researcher or a senior colleague in the case of a junior academic, shall submit the following items to the current Chair of the ASED Awards Committee by the abstract submission deadline for AVS International Symposium. Late or incomplete applications will not be evaluated.1. Recommendation letter from the Nominator; 2.Abstract submitted to the ASED program of the AVS International Symposium; both oral and poster presentations are eligible; 3.Two-page description of the research of the young investigator, including a clear and concise description of the aim of the research and its relationship to the status of the field, a summary of the applicant's specific contributions, exceptional ability, and future promise; 4.Resume, which shall include education and employment history with dates, awards and honors received, current professional/technical affiliations (including AVS) and related activities, and complete publication list with full citations. **Nomination Submission and Deadline:** The same as the Abstract Submission Deadline (the year of the AVS Symposium) April 1, 2025. All nomination materials must be compiled by the Nominator and submitted as a package. The complete nomination package is to be sent electronically to the current Chair of the ASED Awards Committee (asedawards@avs.org) such that it is received by the Abstract Submission Deadline April 1, 2025. Late or incomplete application packages will not be evaluated. **Rising star presentations:** The Advanced Surface Engineering Division Program Committee at AVS71 will designate outstanding presentation of graduate students as "Rising star presentations" based on the quality of the accepted abstract. The graduate students will receive a certificate for the distinction. The ASED may request a Curriculum Vitae from the graduate student.

The **AVS Biomaterial Interfaces Division (BID)** invites applications for the **Early Career Researcher (ECR) Award**. Open to all authors submitting an abstract to a BID session at the Annual International Symposium, the prize consists of symposium registration and $500 towards travel costs as well as an honorary presentation in a relevant BI session. The nominee's Ph.D. or equivalent degree must have been earned less than 15 years prior to January 1 of the award year. Required application materials: 1) a nominating letter and two supporting letters, 2) a biography and CV of the nominee, and 3) a copy of the nominee's abstract submitted to the AVS symposium. Application materials will be reviewed, and the award winner chosen by the BID Executive Committee. Submitted applications will be considered for 2 consecutive years as long as requirements still apply. Nominators are encouraged to resubmit updated application material in the following year. Application materials should be sent by email to: Kenan Fears, kenan.p.fears.civ@us.navy.mil by the deadline date: March 13, 2025.

Electronic Materials & Photonics Division Postdoctoral Travel Award is given annually to postdoctoral fellows who have an accepted abstract AND will be presenting an EMPD presentation at the International Symposium. All abstracts will be reviewed and multiple awards are anticipated. **Deadline: annually on August 2** Submissions and inquiries should be directed to Philip Lee (philip.lee@uky.edu)

Magnetic Interfaces and Nanostructures Division: The MIND Postdoctoral Award recognizes outstanding contributions to the areas of interest to MIND. The award comes with a certificate and a cash prize for the winner Postdoctoral fellows (except for former winners) up to five years after PhD graduation who do not hold a permanent position at the time of the application, are eligible. Candidates who will be presenting their papers at this year's International Symposium in an oral MIND session are welcome to apply. The application consisting of (i) a copy of the accepted abstract, (ii) a recommendation letter from her/his advisor, (iii) her/his CV, plus (iv) a cover letter should be sent to Markus Donath (markus.donath@uni-muenster.de) by **August 1, 2025**

Nanoscale Science and Technology Division Early Career Competition: As nanoscience has continued to expand its impact in diverse fields, including quantum science, biology, mechanics, and energy, the Nanoscale Science and Technology Division (NSTD) has been a hub of research broadly related to instrumentation, lithography, manipulation, imaging, and technology translation. The NSTD holds an Early Career Competition at the annual AVS International Symposium to highlight and celebrate exceptional researchers working on the frontiers of nanoscience. Post-doctoral researchers and beginning independent researchers presenting a poster or oral presentation in an NSTD-sponsored or co-sponsored session are encouraged to apply. To apply, send a cover letter, resume, and AVS abstract to the NSTD Awards Coordinator, Alex Belianinov (aabelia@sandia.gov)), as a single PDF file. For consideration, **the application must be sent by May 30, 2025**. Please mention AVS NSTD Award in the title of your email. For eligibility, the applicant must hold a doctoral degree for no more than five years at the time of abstract submission. Note that this award highlights work performed after the Ph.D.; thus, research conducted toward a doctorate will not be considered. Applications from industry, national laboratories, and academic institutions are encouraged. The NSTD Awards Committee will select all Early Career award finalists, and they will be informed in the summer of 2025. All finalists must present a five-minute talk (with additional time for questions) at the NSTD Sunday plenary

session for the awards competition. The winner will be selected based on the quality of the talk, the responses to subsequent questions, and the level of the research. The NSTD Early Career Award winner will receive a certificate and a cash award of $500. Depending on the needs of the following year's AVS Symposium, the winner will be considered for an invited talk. This award is made possible by financial support from NSTD's sponsors, who in 2024 were Quantum Design, Heidelberg Instruments, Horiba Scientific, Scienta Omicron, SPECS-TII.

The **Nanotechnology Recognition Award** recognizes members of NSTD for outstanding scientific and technical contributions in the science of fabrication, characterization, and fundamental research employing nanometer-scale structures, scanning probe microscopy, technology transfer involving nanometer-scale structures, and/or the promotion and dissemination of knowledge and development in these areas. The award comprises a cash award plus a certificate. The nomination is for 2025, and the **deadline is May 30, 2025**. The nomination material should include a nominating letter, biographical material, and three supporting letters, which should be emailed as a single pdf file to Alex Belianinov (aabelia@sandia.gov). The Award will be presented at the AVS International Symposium. Conference registration will be waived for the award winner. This award is made possible by financial support from NSTD's sponsors, 2024 were Quantum Design, Heidelberg Instruments, Horiba Scientific, Scienta Omicron, SPECS-TII.

The **Plasma Science & Technology Division** is pleased solicit nominations for the PSTD Plasma Prize. The Plasma Prize is awarded annually for outstanding scientific and technical contributions to the fields of plasma science and technology that are fostered and encouraged by the PSTD at AVS international symposia and topical conferences. Plasma Prize candidates are expected to have contributed extensively to the plasma science and technology fields through outstanding achievement and publications in theory or experiment, discovery, understanding, inventions, measurements, technique development, or management. The nominee must have published work in JVST or presented work in PSTD sessions at AVS International Symposia and be a current AVS Platinum member. Please submit ONLY the following required application materials. A nomination letter highlighting scientific contributions and AVS community involvement of the nominee; bio-sketch and curriculum vitae of the nominee. Nomination should be made by colleagues or others who are well acquainted with the nominee. Application materials will be reviewed and the award winner chosen by the PSTD Executive Committee. The award consists of an honorary lecture at the AVS International Symposium, a certificate citing the accomplishments of the recipient, and a cash prize. Nominations must be submitted as a single pdf file by email to: Michael Gordon (gordon@ucsb.edu). **Nomination deadline: April 14, 2025**

The **Plasma Science and Technology Division** is committed to promoting the advancement of young scientists and engineers along with future leaders in the plasma science and technology field. In support of this mission, the Plasma Science and Technology Division is pleased to solicit nominations for the PSTD Young Investigator Award. The nominee must be a young scientist or engineer who has made outstanding basic and/or applied science and engineering contributions in an area of importance to the Plasma Science and Technology Division. Applications are reviewed based on the merit and impact of the nominee's contributions to the field of plasma science and technology. To be eligible, the nominee must have no more than 7 years of full-time employment after their highest degree was earned, prior to January 1 of the award year, and be a current AVS Platinum member. Required application materials include: Nomination letter that includes a description citing the reason for nomination; Two letters supporting the nomination; Bio-sketch and CV of the nominee. The applicant must also submit an abstract to the International Symposium in a PSTD-sponsored session in the year of the nomination. Application materials will be reviewed and the award winner chosen by the PSTD Executive Committee. The award consists of an honorary lecture in one of the PSTD oral sessions at the International Symposium, a certificate citing the accomplishments of the recipient, and a cash prize. Application materials should be sent to Michael Gordon (gordon@ucsb.edu). **Nomination deadline: April 14, 2025.**

The **Thin Film Division** is pleased to solicit nominations for a prestigious award, the **Paul H. Holloway Young Investigator Award**. This award is named after Professor Paul H. Holloway, who has a distinguished history of scholarship and services to AVS. The nominee must be a young scientist or engineer who has contributed outstanding theoretical and experimental work in an area important to the AVS Thin Film Division and be a current AVS member. The nominee's Ph.D. or equivalent degree must have been earned less than 7 years prior to January 1 of the award year. Required application materials: a description citing the reason for nomination; a nominating letter and two supporting letters; a biography and CV of the nominee. It is expected that an applicant will also submit an abstract to the Annual Symposium in Thin Film sponsored or co-sponsored session. Application materials will be reviewed and the award winner chosen by the TFD Awards Committee. The award consists of a cash prize, a certificate citing the accomplishments of the recipient, and an honorary lecture at one of the TFD oral sessions at the International Symposium. Application materials should be sent to Elton Graugnard, eltongraugnard@boisestate.edu **Nomination Deadline: May 14, 2025**

Thin Film Division Distinguished Technologist Award: The Award serves to recognize individuals who have provided exceptional technical support of thin film research or related development activities. We are all indebted to the support provided at some point in our careers by outstanding technologists or technicians, and this award is meant to recognize the importance of that role in thin film research and development. There is no requirement that a nominee be an AVS member, however membership and/or an active role in the society at the national or local level is advantageous. The nominee must have provided outstanding technical support to a laboratory research or development program in an area of interest to the Thin Film Division, as evidenced by a nomination letter, and a letter of support. It is expected that the nomination come from an active AVS member. The award includes a plaque, a $500 cash award, and up to $500 in travel

expenses to the AVS International Symposium. These will be presented to the awardee at the annual AVS Symposium & Exhibition by the Thin Film Division. The winner does not have to be present to receive the award but is encouraged to attend. The Distinguished Technologist Award will be granted to a maximum of one person per year. This award was created in 2015 by the New Mexico Chapter of AVS to honor its founders and their many contributions. The New Mexico Chapter of AVS provided the endowment for this Award. Required application materials include 1) a nominating letter and one letter of support, and 2) a brief biography and CV of the nominee. Application materials will be reviewed and the award winner chosen by the TFD Awards Committee. Application materials should be sent by email to Elton Graugnard, eltongraugnard@boisestate.edu by May 14, 2025.

The **VTD Early Career Award** strives to recognize outstanding experimental and/or theoretical work related to vacuum science and technology by a scientist or engineer early in their professional career. The contributions must be in the field of vacuum science such as vacuum metrology and measurement, gas dynamics, vacuum equipment design, or related fields such as gas analysis or surface science for accelerator applications. The nominee does not have to be a current member of the AVS. To be eligible, the nominee must meet AT LEAST ONE of the following two criteria: (1) The nominee is not older than thirty-eight (38) years of age during the year in which the award is made; (2) the nominee is within 10 years of their undergraduate degree or 5 years of their graduate degree during the year which the award is made. Final eligibility will be subject to the judgment of the VTD Early Career sub-committee. The award consists of $800 cash and an award certificate setting forth the reasons for the recognition. The awardee is required to give an invited talk in one of the VTD sessions at the AVS National Symposium during the year in which the award is given. To be considered for this award please submit: a nomination letter, up to 2 pages long, citing at least one major contribution or significant accomplishment by the nominee. The key contribution must be summarized in three sentences or less and supported by publications, presentations, patents, or any other evidence to be included in the nomination package; 2) A curriculum vitae including a short (one paragraph) biography; 3) at least (1) one letter of recommendation. A phone or web interview with candidates may also be requested. Self-nominations are accepted. Application materials or questions should be sent by email to the VTD Award Coordinator, Gerardo Brucker (gerardo.brucker@mks.com). **Deadline: May 16, 2025**.

Theodore E. Madey Award: AVS, in cooperation with the Polish Vacuum Society (PVS), is pleased to solicit nominations for the 2027 Theodore E. Madey Award. In the spirit of its namesake, the Award fosters collaboration between Polish and North American scientists. The Awardee is sponsored to visit Poland, present a seminar at a university, and engage in scientific discussions. The Awardee will be selected on the bases of: (1) outstanding theoretical and/or experimental research in areas of interest to the AVS and PVS, including surface science; (2) demonstrated leadership in international collaborative research; and (3) the potential to develop fruitful new international collaborations within the span of his/her career. Required nomination materials include: 1) a letter from the nominator that describes the ways in which the applicant fits the criteria for this award; 2) two supporting recommendation letters; 3) CV (5 pages maximum) which should include education, employment history, professional recognitions (invited, appointed or elected positions), and awards; and 4) complete list of publications, patents, and invited talks. Nomination documents must all be in PDF format. Nomination materials will be reviewed, and the award winner will be selected, by a special committee consisting of both AVS and PVS members. Nominations are due in even-numbered years, and awards are given in odd-numbered years. Nominations are viable for two consecutive award cycles**. Nomination materials for the 2027 award should be sent by email to: Angela Klink, AVS Director of Member Programs, angela@avs.org by March 31, 2026.**