



 **YOUNG
RESEARCHER
SYMPOSIUM
2015**
BROOKHAVEN NATIONAL LABORATORY

November 17, 2015



PROGRAM

LETTER FROM THE ORGANIZERS

Dear Guest,

Welcome and thank you for participating in the fourth annual Young Researcher Symposium (YRS), presented by the Association of Students and Postdocs (ASAP). This symposium is a showcase of the excellent research that is performed by graduate students and postdocs at Brookhaven National Laboratory (BNL). Today the BNL young researcher community will present their recent work through 36 oral presentations and 47 posters. A career panel and two distinguished lectures will complement this display of work.

In the morning, we will hear from Dr. Surita Bhatia, Professor of Chemistry at Stony Brook University specializing in the structure, rheology, and transport characteristics of soft materials. In the afternoon, Dr. John Hill, Director of the National Synchrotron Light Source II and Deputy Associate Lab Director for Energy Sciences, will address the symposium. Lab Director Doon Gibbs will deliver the award ceremony and closing remarks, which will be followed by a networking reception.

The symposium was organized by a group of students and postdocs whose work and generous donation of time show great dedication to their fellow young researchers. Financial support was provided by the Director's office and the sponsors listed on the back cover of this program. We encourage you to visit their booths throughout the day and explore the links provided on the YRS website (www.bnl.gov/bnlyrs2015/sponsors.php).

ASAP is an organization dedicated to ensuring a high quality of life for young researchers at BNL. It is funded by Brookhaven Science Associates and supported by senior staff members. The ASAP board recognizes the importance of professional development to its members and it is in this spirit that we present the YRS.

Thank you for your participation and support for the YRS. We hope that you enjoy your day.

Sincerely,

The ASAP Board



David Shaffer



Neil Robinson



Wen Hu



Olivia Donaldson



Dhananjay Ravikumar

PROGRAM SCHEDULE

8:45-9:10	Registration Poster Hanging	Lobby
9:10-10:25	Parallel Oral Sessions	A, B, C, Auditorium
10:30-11:30	Career Panel Dr. Lee Cheatham Dr. Jarrod French Dr. Ignace Jarrige Dr. Yan Li Dr. Mamta Naidu	Room B
11:35-12:20	Morning Keynote Address Dr. Surita Bhatia	Auditorium
12:25-2:25	Poster Session 12:25-1:25 – Odd numbered 1:25-2:25 – Even numbered Exposition Lunch (on your own)	Lobby
2:25-3:40	Parallel Oral Sessions	A, B, C, Auditorium
3:45-4:30	Afternoon Keynote Address Dr. John Hill	Auditorium
4:30-5:00	Closing Remarks Director Doon Gibbs Awards Presentation	Auditorium
5:00-7:00	Reception	Lobby

PARALLEL ORAL SESSIONS: MORNING

	<p>Room A Session Chair: John Lyons</p>	<p>Room B Session Chair: Fang Xu</p>	<p>Room C Session Chair: Neil Robinson</p>	<p>Auditorium Session Chair: Dhananjay Ravikumar</p>
9:10-9:25	<p>Study of Aerosol-Cloud Interactions with a New Parcel Model <i>Jingyi Chen</i> Biological, Environmental & Climate Sciences (EE), BNL</p>	<p>Observing Gallium Nitride Nanowire Growth with Electron Microscopy <i>Andrew Gamalski</i> Center for Functional Nanomaterials (NC), BNL</p>	<p>Propagating Optical Phonon-like Modes in Liquid Water <i>Daniel Elton</i> Institute for Advanced Computational Science, Stony Brook University</p>	<p>Laser Zone Annealing of Block Copolymers, or How to Iron-out the Wrinkles of Self-assembly <i>Pawel Majewski</i> Center for Functional Nanomaterials (NC), BNL</p>
9:25-9:40	<p>Direct Numerical Simulation Model for Studying Entrainment-mixing Processes at Sub-meter Scales <i>Zheng Gao</i> Biological, Environmental & Climate Sciences (EE), BNL</p>	<p>Watching Reactions: The Structure and Behaviour of Model Catalysts at the Atomic Scale <i>David Grinter</i> Chemistry Department (CO), BNL</p>	<p>Software Tools to Study Structural Dynamics in Materials <i>Sameera Abeykoon</i> Computational Science Center (CC), BNL</p>	<p>Structural Defects of Silver-Hollandite, Ag₃Mn₂O₆, Nanorods: Dramatic Impact on Electrochemistry <i>Jessica Durham</i> Directorate - Energy Sciences (DC), BNL</p>
9:40-9:55	<p>Development of an Unmanned Aerial System (UAS) for Scaling Terrestrial Ecosystem Traits <i>Ran Meng</i> Biological, Environmental & Climate Sciences (EE), BNL</p>	<p>In-situ X-ray Diffraction and the Evolution of Polarization During the Growth of Ferroelectric Superlattices <i>Benjamin Bein</i> National Synchrotron Light Source (LS), BNL</p>	<p>New Understanding of the Pressure-temperature Diagram <i>Dima Bolmatov</i> National Synchrotron Light Source II (LT), BNL</p>	<p>Morphological and Chemical Evolution of Nanoporous Stainless Steel for Energy Applications <i>Chonghang Zhao</i> National Synchrotron Light Source II (LT), BNL</p>
9:55-10:10	<p>Transcriptional Regulation of Suberin Biosynthesis Gene Expression by COHI <i>Mingyue Gou</i> Biological, Environmental & Climate Sciences (EE), BNL</p>	<p>Tracking Ionic Transport in Working Nanostructured Electrodes <i>Wei Zhang</i> Sustainable Energy Technologies Department (ST), BNL</p>	<p>Phonon/Short-range Order Coupling in a Relaxor Ferroelectric <i>John Schneeloch</i> Condensed Matter Physics and Materials Science Department (PM), BNL</p>	<p>Indirect Avalanche Amorphous Selenium Radiation Detector <i>James Scheuermann</i> Center for Functional Nanomaterials (NC), BNL</p>
10:10-10:25	<p>FTIR Imaging of Copper Zinc Superoxide Dismutase Aggregation in Living Cells for the Study of Familial ALS <i>Paul Gelfand</i> National Synchrotron Light Source II (LT), BNL</p>		<p>Quantifying the Resolution Limits of Powder Diffraction-based Structural Characterization Techniques Used on Nanoparticles <i>Shangmin Xiong</i> Computational Science Center (CC), BNL</p>	

PARALLEL ORAL SESSIONS: AFTERNOON

	Room A Session Chair: Richard Petti	Room B Session Chair: David Grinter	Room C Session Chair: Thuy Duong Nguyen Phan	Auditorium Session Chair: David Sprouster
2:25-2:40	<p>How Memory Effects Influence the Search for the QCD Critical Point in Heavy Ion Collisions <i>Yi Yin</i> Physics Department (PO), BNL</p>	<p>Role of Potassium: Structure and Activity at Atomic Level <i>Fang Xu</i> Chemistry Department (CO), BNL</p>	<p>Recombination Mechanisms in Cu(In_{0.5}Ga_{0.5})Se Photovoltaics at Single-Grain Resolution <i>Ahsan Ashraf</i> Sustainable Energy Technologies Department (ST), BNL</p>	<p>Optimization of CVD Grown Boron Phosphide Thin Film <i>Xuejing Wang</i> Center for Functional Nanomaterials (NC), BNL</p>
2:40-2:55	<p>Nuclear Modification of Jet Fragmentation in Au+Au Collisions at PHENIX <i>Zachary Rowan</i> Physics Department (PO), BNL</p>	<p>Biomass-derived Tungsten-based Electrocatalysts on Graphene for High-performance Hydrogen Evolution <i>Fanke Meng</i> Chemistry Department (CO), BNL</p>	<p>Plasmonic Nanohole Arrays for Combined Photon and Electron Management in Solar Cells <i>Andreas Lippis</i> Center for Functional Nanomaterials (NC), BNL</p>	<p>Tuning Strain in Flexible Graphene Fiele Effect Transistors <i>Fen Guan</i> Center for Functional Nanomaterials (NC), BNL</p>
2:55-3:10	<p>Superconducting Qubit Quantum Trajectories under Unitary Evolution <i>Arian Jadbabaie</i> Chemistry Department (CO), BNL</p>	<p>Correlating Size and Composition-Dependent Effects with Magnetic, Mössbauer, and PDF Measurements in a Family of Catalytically Active Ferrite Nanoparticles <i>Crystal Lewis</i> Condensed Matter Physics and Materials Science Department (PM), BNL</p>	<p>Solar Water Splitting over Ti-doped Hematite Thin Film Produced by a Novel Physical Vapor Deposition Technique <i>Darhua Yan</i> Center for Functional Nanomaterials (NC), BNL</p>	<p>Chemical and Morphological Heterogeneity in Zinc Oxide Thin Films Under Humidity Treatment <i>Hua Jiang</i> National Synchrotron Light Source II (LT), BNL</p>
3:10-3:25	<p>Magnon and Electromagnon Excitations in DyFeO₃ Antiferromagnet <i>Taras Stanislavchuk</i> Photon Sciences (PS), BNL</p>	<p>Correlating the Chemical Composition and Size of Various Metal Oxide Substrates with the Catalytic Activity and Stability of As-Deposited Pt Nanoparticles for the Methanol Oxidation Reaction <i>Megan Scofield</i> Condensed Matter Physics and Materials Science Department (PM), BNL</p>	<p>Design of Protein-based Hybrid Catalysts for Renewable Fuel Production <i>Dayn Sommer</i> Chemistry Department (CO), BNL</p>	<p>Block Copolymer Adsorbed Nanolayers: The Novel Structure and Its Use as a Template to Control Microdomain Orientations in Thin Films <i>Mani Sen</i> Center for Functional Nanomaterials (NC), BNL</p>
3:25-3:40	<p>Itinerant Magnetism in YFe₂Al₁₀ on the Verge of Magnetic Order <i>Wenhu Xu</i> Condensed Matter Physics and Materials Science Department (PM), BNL</p>	<p>Synthetic Biofuel Studies <i>Galit Idan</i> Sustainable Energy Technologies Department (ST), BNL</p>		

KEYNOTE SPEAKER



Dr. Surita R. Bhatia

Surita R. Bhatia is a Professor and Vice Chair for Facilities and Research in the Department of Chemistry at Stony Brook University, and previously held a joint position between Stony Brook University and the Center for Functional Nanomaterials (CFN) at Brookhaven National Laboratory. Her research group studies the structure and rheology of polymeric hydrogels, biomaterials, and colloidal gels and glasses. Professor Bhatia's application-driven projects include using polymers to control nanoparticle cluster assembly and improving gas transport in hydrogels, which could lead to a new generation of biomedical devices. Though she is no longer based at BNL, her group continues to utilize CFN facilities and is involved in a number of collaborations.

Previously, Professor Bhatia was a Professor of Chemical Engineering, Adjunct Professor of Polymer Science and Engineering, and Associate Director of the Institute for Cellular Engineering at the University of Massachusetts, Amherst. She received her B.Ch.E. in Chemical Engineering from the University of Delaware, her Ph.D. in Chemical Engineering from Princeton University, and her postdoctoral training from the Centre National de la Recherche Scientifique / Rhodia Complex Fluids Research Laboratory.

Professor Bhatia is a recipient of a number of awards for research, including a National Science Foundation CAREER Award, a Dupont Young Professor Award, and a 3M Non-tenured Faculty Award. Professor Bhatia has also received an American Institute of Chemical Engineers Women's Initiatives Committee Mentorship Excellence Award and was an invited participant in the 2009 National Academy of Engineering "Frontiers of Engineering Education" Symposium and a recent NSF/AAAS Workshop on Diversity in Nanoscience Fields.

KEYNOTE SPEAKER



Dr. John Hill

Now the Director of the National Synchrotron Light Source II and Deputy Associate Laboratory Director for Energy Sciences, John Hill joined BNL as a postdoc in 1992. During his career he has become a world leader in applying x-ray scattering techniques to the study of condensed matter systems. He has focused on using resonant elastic scattering to study magnetic and electronic order in a range of materials, recently extending these studies by pioneering the use of inelastic x-ray scattering techniques to study electron dynamics in similar systems.

Dr. Hill earned a B.Sc. degree in physics in 1986 from Imperial College and a Ph.D. in physics from the Massachusetts Institute of Technology in 1992. After serving as a postdoc in BNL's Physics Department, he obtained a permanent position, receiving tenure in 1999 and becoming the leader of the X-ray Scattering Group in 2001. Hill was awarded the Presidential Early Career Award and the DOE Young Independent Scientist Award in 1996, was elected a fellow of the APS in 2002, and received a Brookhaven Science and Technology Award in 2012.

Hill served on the NSLS Users Executive Committee from 1999 to 2001, and from 2001 to 2007 he was the Executive Director of IXS-CDT, a consortium that led the design, construction and commissioning of an inelastic x-ray scattering beamline at the Advanced Photon Source. From February 2006 to August 2008, he served as Experimental Facilities Division Director for the NSLS-II project, with responsibility for overseeing all aspects of the design, construction and commissioning of NSLS-II's experimental facilities, a scope of work that included beamlines, the associated R&D programs and interactions with users.

CAREER PANEL SPEAKERS



Dr. Lee Cheatham

Lee Cheatham has focused his career on leadership in research management and operations, especially in the translation of that research into commercial products. He is now Director of BNL's Strategic Partnerships Office, whose mission is to engage the Lab with industry, federal agencies, and state/regional organizations, including commercializing Laboratory technologies.

Dr. Cheatham previously served as Chief Operating Officer and General Manager of Commercialization for The Biodesign Institute at Arizona State University. Prior to that, he led the Washington

Technology Center, chartered by the State to accelerate growth and expand economic impact of small businesses. Dr. Cheatham's private sector experience includes positions as Vice President of Worldwide Product Engineering for a library software company and founder of a start-up real estate information services company. An electrical engineer by training, Dr. Cheatham received a Ph.D. from Carnegie-Mellon University, MS from Washington State University, and BS from Oregon State University.



Dr. Jarrod French

Jarrod French is an assistant professor with a joint appointment in the Departments of Chemistry and Biochemistry & Cell Biology at Stony Brook University. As an undergraduate at Brock University, Professor French studied computational and organic chemistry. For his graduate studies, he joined a tri-institutional chemical biology program offered jointly between Cornell University, Rockefeller University, and Memorial Sloan-Kettering Cancer Center. After earning his Ph.D., Professor French went on to become a Canadian Institutes of Health Research Postdoctoral Fellow at The Penn-

sylvania State University. During his three years there, he used an integrative, cross-disciplinary approach to investigate a newly discovered protein complex called the purinosome. He began his independent academic career at Stony Brook in 2014. His research group employs a multi-disciplinary and highly collaborative approach to characterize the structure-function relationship and mechanism of several proteins and protein complexes implicated in numerous human disease states.

CAREER PANEL SPEAKERS



Dr. Ignace Jarrige

Ignace Jarrige is the Group Leader for the Soft Inelastic X-ray scattering (SIX) beamline currently under construction at NSLS-II. He is overseeing the design, construction, and the development of the scientific mission of this beamline, which will see first light toward the end of 2016. He joined NSLS-II in May 2012, after twelve years of research focusing on the use of x-ray emission spectroscopy and resonant inelastic x-ray scattering applied to problems in materials science and condensed matter physics.

Dr. Jarrige earned a Ph.D. in physical chemistry from the University Pierre et Marie Curie in Paris in 2003. He held a postdoc and then a research scientist appointment for the Japan Atomic Energy Agency at the synchrotron SPring-8 until 2012. His research interests span the fields of superconductivity, the Kondo effect, high-pressure science, and heterogeneous catalysis.



Dr. Yan Li

Yan Li is a journal editor at the American Physical Society. After her Ph.D. from the University of Illinois at Urbana-Champaign and a postdoc at the University of California, Davis, she spent five years with the Computational Science department at BNL. She has been working primarily on first-principles studies of ground- and excited-state properties of solids, nanostructures, and interfaces, and has actively collaborated with experimental groups at BNL, ANL, Stony Brook University, and Columbia University. She served two years on the executive board of Brookhaven Women in Science,

and was an organizing committee member and co-chair for the 2013-2015 CARE workshop series. In 2015, Dr. Li joined APS and became an editor for Physical Review B, the largest and most comprehensive international journal in condensed matter physics.



Dr. Mamta Naidu

Mamta Naidu is an Associate Investigator at the GeneSys Research Institute / Tufts Center of Cancer Systems Biology. She is a radiation biologist trained through the NASA Space Radiation Laboratory program at BNL from 2003 to 2012.

Dr. Naidu earned her Ph.D. in biochemistry from Mumbai University and worked as a postdoc in molecular immunology and virology at the North Shore University Hospital. After leaving BNL, she worked for one year as a Research Assistant Professor at Stony Brook, then moved to the Center of Cancer Systems Biology. Her

NASA-funded research program focuses on understanding the mechanisms of radiation-induced DNA damage. Throughout her career, Dr. Naidu has received a number of NASA research grants, chaired sessions at international conferences, and reviewed grants for the National Institutes of Health.

POSTERS

1. **Investigating the Chemical and Mechanical Aspect of Cu/CHA Catalysts for Selective Catalytic Reduction of NO_x with NH₃**
Nusnin Akter, Taejin Kim, J. Anibal Boscoboinik**
2. **Purification, crystallization and preliminary X-ray diffraction studies of the C terminal domain of Ribophorin I**
*Lin Bai, Alexander Scalia, Huilin Li**
3. **Oxygen vacancies induced changes in single phase hexagonal YMnO₃**
*Shaobo Cheng, Menglei Li, Wenhui Duan, Yonggang Zhao, Xuefeng Sun, Jing Zhu**
4. **Preparation and characterization of photolabile block copolymers for control of morphology in organic photovoltaics**
*Deokkyu Choi, Pawel W. Majewski, Kevin G. Yager and Robert B. Grubbs**
5. **Studying photon structure at EIC**
Xiaoxuan Chu
6. **Using anomaly detection to facilitate intelligence gathering for satellite imagery**
*Daniel Cisek, Susan Pepper**
7. **Star-like Gold Nanoparticle Morphologies for SERS**
*Richard E. Darienzo, Tatsiana Mironava, Rina Tannenbaum**
8. **J/ψ photo-production at RHIC using $\sqrt{s_{NN}} = 200$ GeV Au+Au collisions**
L. Chanaka De Silva
9. **Role of interface termination in SrRuO₃/PbTiO₃/SrRuO₃ capacitors under epitaxial strain**
*Simon Divilov, M.-V. Fernández-Serra**
10. **In situ analysis of microstructural evolution during the heat treatment of nanocrystalline and amorphous tantalum films**
Olivia Donaldson, Khalid Hattar, and Jason R. Trelewicz
11. **Sample environment for in situ corrosion studies of zirconium and advanced steel cladding alloys in extreme environments**
Mohamed Elbakhshwan, Simerjeet Gill, Arthur Motta, Randy Weidner, Thomas Anderson, Lynne Ecke
12. **Flipping Molecular Attachment Amps Up CO₂ Activity of Photocatalyst**
*Komal Garg, Mehmed Z. Ertem, Yasuo Matsubara, David J. Szalda, James T. Muckerman, Etsuko Fujita**
13. **Comparing Electrochemical Sodiation and Lithiation of Nickel Oxide**
*Kai He, Feng Lin, Eric A. Stach, Yifei Mo, Huolin L. Xin, Dong Su**
14. **Strong Dependence of Ultrafast Desorption Dynamics on CO Overlayer Structure on Palladium (111)**
*Sung-Young Hong, Nicholas Camillone III**

POSTERS

15. **Synthesis and optical studies of extended range of (GaN)_{1-x}(ZnO)_x solid solution**
*Huafeng Huang, Alexandra Reinert, Elizabeth Sklute, Jian Liu, Philip Allen, Timothy Glotch, Peter Khalifah**
16. **Reversibility of intersystem crossing in the $\bar{a}^1A_1(000)$ and $\bar{a}^1A_1(010)$ states of methylene, CH₂**
Anh T. Le, Trevor Sears, Gregory Hall **
17. **Imaging Dirac-Mass Disorder from Magnetic Dopant-Atoms in the Ferromagnetic Topological Insulator Cr_x(Bi_{0.1}Sb_{0.9})_{2-x}Te₃**
*Inhee Lee, Chung Koo Kim, Jinho Lee, Simon Billinge, Ruidan Zhong, John A. Schneeloch, Tiansheng Liu, Tonica Valla, John M. Tranquada, Genda Gu, James C. Davis**
18. **Transmission Electron Microscopy Study on Electrode Materials of Lithium-ion Battery**
Jing Li, Lei Wang, Stanislaus Wong, Amy Marschilok, Esther Takeuchi, Eric A. Stach
19. **Measurement of Longitudinal Electron Diffusion in Liquid Argon**
Yichen Li, Thomas Tsang, Craig Thorn, Xin Qian, Milind Diwan, Jyoti Joshi, Steve Kettell, William Morse, Triveni Rao, Jim Stewart, Wei Tang, Brett Viren
20. **Structural dynamics of working nanocatalysts investigated via combined XAFS and STEM**
Yuanyuan Li, Dmitri Zakharov, Shen Zhao, Ryan Tapper, Ulrich Jung, Annika Elsen, Philipp Baumann, Ralph G. Nuzzo, Eric A. Stach, Anatoly I. Frenkel**
21. **Synthetic Crystallite Size Control of Copper Birnessite, and Resulting Electrochemical Properties**
Yue-Ru Li, Esther S. Takeuchi, Amy C. Marschilok*, Kenneth J. Takeuchi**
22. **Fabrication of 40nm Zone Plate**
Yu Chung Lin, Yong S. Chu and Yeukuang Hwu**
23. **Laponite® and Laponite®-PEO Hydrogels with Enhanced Elasticity in Phosphate-Buffered Saline**
*Xiao Liu, Surita Bhatia**
24. **Structure and dissociation mechanisms of water at aqueous-titania interfaces**
*John L. Lyons, Neerav Kharche, Mehmed Z. Ertem, James T. Muckerman, Mark S. Hybertsen**
25. **Elucidating Hydrogen Oxidation/Evolution Kinetics in Base and Acid by Enhanced Activities at the Optimized Pt-Shell Thickness on the Ru Core**
*Zhong Ma, Katherine Elbert, Jue Hu, Yu Zhang, Guangyu Chen, Wei An, Ping Liu, Hugh S. Isaacs, Radoslav R. Adzic, Jia X. Wang**

POSTERS

26. **Visible Light-Driven H₂ Production over Highly Dispersed Ruthenia on Rutile TiO₂ Nanorods**
*Thuy-Duong Nguyen-Phan, Si Luo, Dimitriy Vovchok, Jordi Llorca, Jesús Graciani, Shawn Sallis, Wenqian Xu, Jianming Bai, Louis F. J. Piper, Dmitry E. Polyansky, Etsuko Fujita, Sanjaya D. Senanayake, Dario J. Stacchiola, José A. Rodríguez**
27. **Reconstruction of the charge collection probability in a CIGS solar cell by the self-constrained regularization method**
Yutong Pang, H. Efstathiadis, D. Dwyer, Matthew D. Eisaman
28. **An ARPES Survey of the Band Structure of CeCoIn₅**
*Theodore J. Reber, Jonathon D. Rameau, Rongwei Hu, Cedimir Petrovic, Peter D. Johnson**
29. **Oligomeric FimD usher functions in uropathogenic pilus assembly**
Samema Sarowar, Tong Wang, Glenn Werneburg, Olivia Hu, Lin Bai, Hongjun Yu, David Thanassi, Huilin Li*
30. **Meso-graphene oxide roses for Cancer applications**
*Shruti Sharma, Viet H. Pham, James H. Dickerson, Rina Tannenbaum**
31. **Electrocatalytic and photocatalytic CO₂ reduction by a polypyridyl cobalt complex**
*Tomoe Shimoda, Takuji Hirose, Etsuko Fujita**
32. **Geometrical Correlations in Ab-Initio Simulations of Liquid Water**
Adrián Soto, Fernández-Serra, Deyu Lu, Shijae Yoo*
33. **Boosted object hardware trigger development and testing for the Phase 2 upgrade of the ATLAS Experiment**
Michael Begel, David Miller*, Giordon Stark*
34. **Vibrational Coupling Pathways as Revealed by Highly Precise Spectroscopy of C₂H₂ in the 1.5 μm region**
Sylvestre Twagirayezu, Trevor J. Sears, Gregory E. Hall
35. **Symbiotic Changes in Nutrient Distribution in the Poplar Rhizosphere Observed with FTIR Imaging**
Tiffany Victor, Lisa Miller, Leland Cseke
36. **How radiative parameter uncertainty affects simulated plant growth**
*Toni T. Viskari, Shawn P. Serbin**
37. **Probing Differential Optical and Coverage Behavior in Nanotube-Nanocrystal Heterostructures Synthesized by Covalent versus Non-covalent Approaches**
*Lei Wang, Jinkyu Han, Jessica Hoy, Fang Hu, Haiqing Liu, Molly M. Gentleman, Matthew Y. Sfeir, James A. Misewich, Stanislaus S. Wong**

POSTERS

- 38. Water oxidation by ruthenium complexes incorporating multifunctional bipyridyl phosphonate ligands**
*Yan Xie, David W. Shaffer, Anna Lewandowska-Andralojc, David J. Szalda, Javier J. Concepcion**
- 39. A GPU Based 3D Particle Tracking Code for Multipacting Simulation**
T. Xin, I. Ben-Zvi, S. Belomestnykh, J. C. Brutus, V. N. Litvinenko, I. Pinayev, J. Skaritka, Q. Wu, B. Xiao*
- 40. Two-Color Sub-Doppler Saturation Recovery Kinetics in CN ($X, v = 0, J$)**
*Hong Xu, Damien Forthomme, Paul J. Dagdigian, Trevor J. Sears, Gregory E. Hall**
- 41. Controlling the interfacial interactions in block copolymer thin films**
*Daniel H. Yi, Charles T. Black, Robert B. Grubbs**
- 42. Structural snapshots of a Notch-modifying xylosyltransferase support an S_Ni -like retaining mechanism**
*Hongjun Yu, Megumi Takeuchi, Jamie LeBarron, Joshua Kantharia, Erwin London, Hans Bakker, Robert S. Haltiwanger, Hideyuki Takeuchi, Huilin Li**
- 43. A 3D PIC code for Beam-Plasma Interaction**
*Kwangmin Yu, Roman V. Samulyak**
- 44. $Ag_7Fe_3(P_2O_7)_4$: Iron-Based Pyrophosphate Framework Materials for Rechargeable Batteries**
Yiman Zhang, Kevin Kirshenbaum, Amy C. Marschilok, Esther S. Takeuchi*, Kenneth J. Takeuchi**
- 45. Reaction induced deactivation of Pd catalysts as probed by operando spectroscopy and microscopy**
Shen Zhao, Yuanyuan Li, Alexander Orlov, Ralph G. Nuzzo, Eric A. Stach, Anatoly I. Frenkel**
- 46. Oxidation and reduction reactions in a confined space at the silica/Ru(0001) interface**
*Jian-Qiang Zhong, Iradwikanari Waluyo, John Kestell, J. Anibal Boscoboinik**
- 47. Improving superconductivity in the topological crystalline insulators: SnTe and (Pb,Sn)Te**
*Ruidan Zhong, John A. Schneeloch, Cheng Zhang, Xiaoya Shi, Guan Du, Haihu Wen, Qiang Li, John M. Tranquada, Genda Gu**

THANK YOU

Surita Bhatia

Noel Blackburn

Tiffany Bowman

Scott Bronson

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Lee Cheatham

Ruth Comas

Andrea Dehler

Joanne Delles

Ray Dumont

Liz Flynn

Jarrold French

Doon Gibbs

John Hill

Marta Kowalczyk

Yan Li

Ignace Jarrige

Mamta Naidu

Maria Ohlsen

Danielle Pontieri

Will Safer

Ted Sampieri

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Karen Viscusi

Chris Weaver

Stan Wong

Special thanks to all of the scientists that served as judges
for the poster and oral sessions.

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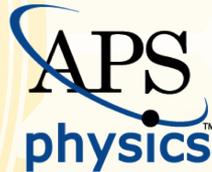
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