

66th ANNUAL MAY CONFERENCE

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The Cleveland Section of
the Society for Applied
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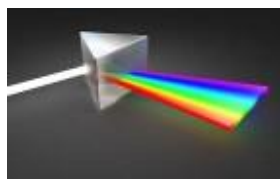
Microscopy Society of
NE Ohio



Akron Council of Engineering
& Technical Societies

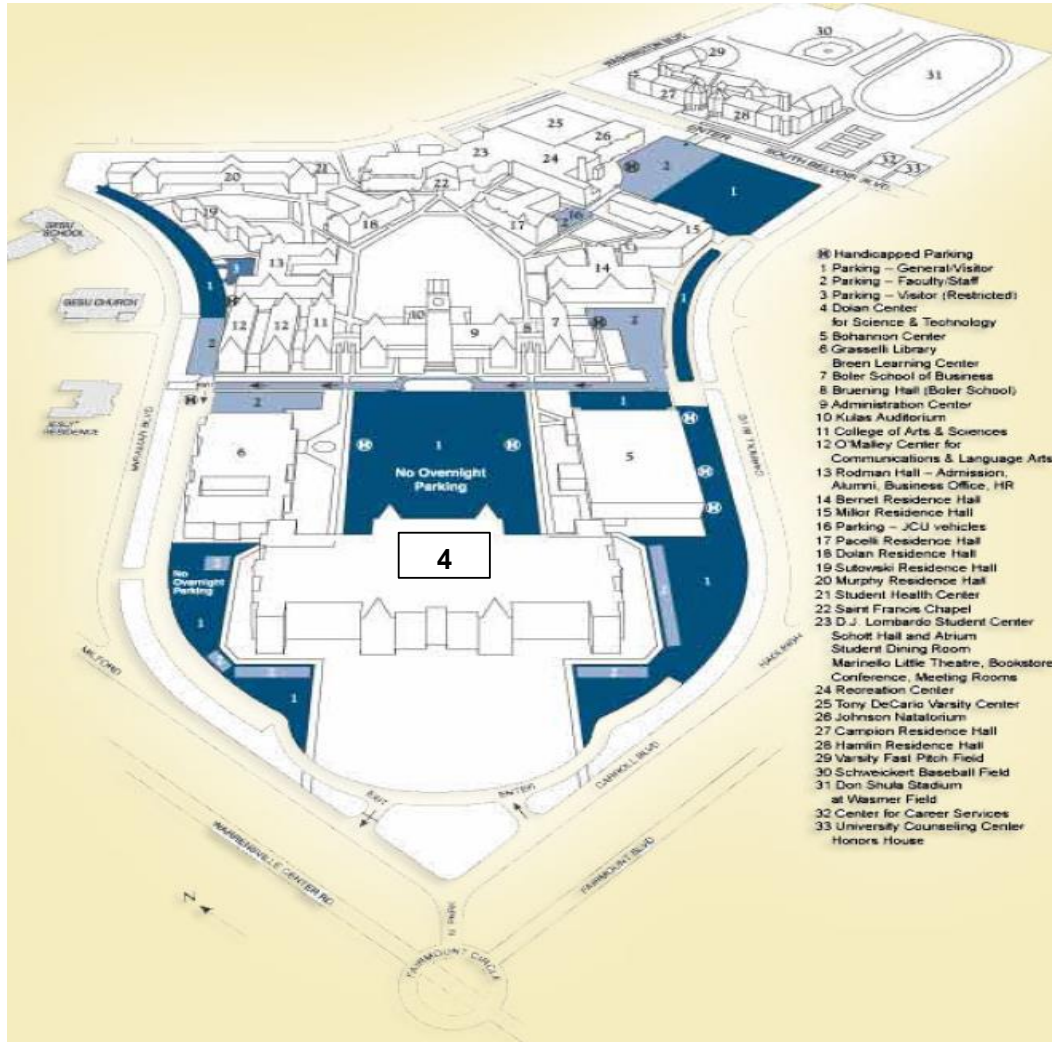


Akron section of the American
Chemical Society



May 22, 2024
Dolan Science Center
John Carroll University
University Heights, Ohio

John Carroll University Campus Map



**66th Annual
SAS / MSNO / ACESS / ACS - Akron
May Conference**

**May 22, 2024
John Carroll University
Dolan Science Center**

PROGRAM

- 7:30 a.m.** **Registration/Continental Breakfast:**
(Edward M. & Ann Muldoon Atrium)
- 8:30 a.m.** **Opening Remarks:** (Donahue Auditorium)
Brian Perry, *ParkerLORD*
Janet Gbur, *Case Western Reserve University*
Mike Nichols, *John Carroll University*
- Recognition of Meeting Sponsors**
Rick Kus
- 8:45 a.m.** **Keynote Address:** (Donahue Auditorium)
Chair: Janet Gbur, *Case Western Reserve University*
- Andrew Shoffstall, Case Western Reserve University
- “Fibers, Fascicles and Nerves, Oh Mi(croscopy)”
- 9:35 a.m.** **Break (15 minutes):** (Edward M. & Ann Muldoon Atrium)

Presentation Session I

	Session IA Dolan E138 Chair: Jemila Edmond	Session IB Dolan E228 Chair: Emily Benson	Session IC Dolan E134 Chair: Abigail Jarosz
9:50 a.m.	IA-1 Zachary Harris “Leveraging Correlative Microscopy to Understand Hydrogen Environment- Assisted Cracking in Additively Manufactured 17- 4PH Stainless Steel” <i>The University of Pittsburgh</i>	IB-1 Rengasayee (Sai) Veeraraghavan “Unlocking the Investigative Power of High-Resolution Microscopy through Computational Image Analysis” <i>The Ohio State University</i>	IC-1 Hamza Balci “Investigating the Role of G- quadruplex Structures in Transcription Control and Telomere Protection Contexts Using Single Molecule Fluorescence Approaches” <i>Kent State University</i>
10:15 a.m.	IA-2 Drew Davidson “Investigation of Surface and Sub-Surface Cracking of Additively Manufactured H230 through Correlative Microscopy and Fractography” <i>NASA-Glenn Research Center</i>	IB-2 Dylan Wood “Advancing Research in Energy Production and Storage Using In Situ Liquid-Phase TEM” <i>Protochips, Inc.</i>	IC-2 Hope Zehr “Using Spectroscopy to Engineer Carbon Nanomaterials for Skin Cancer Prevention” <i>Cleveland Clinic/Cleveland State University</i>
10:40 a.m.	IA-3 Janet Gbur “Characterization of Corrosion in Percutaneous Leads used in Neuromodulation Applications” <i>Case Western Reserve University</i>	IB-3 Min Gao “Building a Toolbox for Direct and Indirect Electron Microscopy Imaging of Liquid Crystals and Other Complex Molecular Fluids” <i>Kent State University</i>	IC-3 Yang Yang “A Novel Catalyst for Pheomelanin Inhibition to Prevent Melanoma” <i>Lerner Research Institute</i>

11:05 a.m. Break (20 minutes): (Edward M. & Ann Muldoon Atrium)

11:25 a.m. Yeager Award: (Donahue Auditorium)
Co-Chairs: Rick Kus,
Melanie Knowlton, *ParkerLORD*

"TBD"

12:00 p.m. Lunch: (O'Connell Reading Room)

12:45 - 1:45 p.m. Poster Session: (Second Floor Hallway)

Presentation Session II

	Session IIA Dolan E138 Chair: Jeffrey Pigott	Session IIB Dolan E228 Chair: Kim Fraser	Session IIC Dolan E134 Chair: Emily Graves
2:00 p.m.	IIA-1 Caleb Holyoke "Melt Segregation Mechanisms During Syndeformational Partial Melting of an Amphibolite" <i>University of Akron</i>	IIB-1 Weinan Xu "Advanced Polymer Nanocomposites and their Structure- Property Relationship" <i>University of Akron</i>	IIC-1 Utkarsh Patil "Measurement of Nanoscale Interfacial Contact Area Using Vibrational Spectroscopy" <i>University of Akron</i>
2:25 p.m.	IIA-2 Samantha Semmler "Identification and Characterization of Filamentous Fungi for Degradation of Pre- treated Plastic Films" Penn State-Erie	IIB-2 Heather Everson "Purification of DNA Nanoparticles Using Photocleavable Biotin Tethers" <i>Case Western Reserve University</i>	IIC-2 Jay Amicangelo "Characterization of a Hydrogen Peroxide-Benzene Complex Using Matrix Isolation Infrared Spectroscopy" <i>Penn State - Erie</i>
2:50 p.m.	IIA-3 Praneetha Sundar Prakash "DNA Origami Barcodes for Immunostaining" <i>Kent State University</i>	IIB-3 Yindong Ge "The Effect of Carbon black on the Morphology and Mechanical Characteristics of Synthetic Rubber Blends" <i>Parker Hannifin Corporation</i>	IIC-3 Veebha Havaladar "Characterization of Pheomelanin and Eumelanin with Experimental and Computational FTIR Spectroscopy" <i>Case Western Reserve University/Lerner Research Institute</i>

3:15 p.m. Break (15 minutes): (Edward M. & Ann Muldoon Atrium)

Presentation Session III

	Session IIIA Dolan E138 Chair: Mike Fricke	Session IIIB Dolan E228 Chair: Laura Wilson	Session IIIC Dolan E130 Chair: Mike Dowell
3:30 p.m.	IIIA-1 Xiong Gong "Wireless Self-Charging Powered Packs/Electronics" University of Akron	IIIB-1 Sylvie Crowell "Investigation of Process-Property Relationships of Aerosol Jet Printing with Silver Nanoparticle Ink for Flexible Electronics" <i>Case Western Reserve University</i>	IIIC-1 Nilanthi Haputhanthrige "Liquid Crystalline Structures Formed by Rigid Sphere-Rod Macromolecules" <i>Kent State University</i>
3:55 p.m.	IIIA-2 Lei Liu "Bulk Heterojunction Perovskite Solar Cells Incorporated with Conjugated Polyelectrolytes" University of Akron	IIIB-2 Jinyu Bu "Integration of Low-melting-point Alloys and Thermoplastic Elastomers for 3D Printing of Multifunctional Composites" <i>University of Akron</i>	IIIC-2 David Bialas "Insight Into the Optical Properties of Organic Dye Aggregates" <i>Penn State - Erie</i>
4:20 p.m.	IIIA-3 Jason Bennett "Fabrication of Flexible Microelectrodes Coated with Poly(3,4-ethylenedioxythiophene) and Electrochemically Reduced Graphene Oxide" <i>Penn State - Erie</i>	IIIB-3 Daniel Rakowsky "Image Processing and Analysis Methods for Assessing Aerosol Jet Printed Traces" <i>Case Western Reserve University</i>	IIIC-3 Jeanpun Antarasen "Cross-correlation Increases Sampling in Diffusion-Based Super-Resolution Optical Fluctuation Imaging" <i>Case Western Reserve University</i>

4:45 p.m.

Best Student Poster Awards

Tom Steele

MSNO Student Award

Jeffrey Pigott, *Case Western Reserve University*

Best Student Paper Awards

Regan Silvestri, *Lorain County Community College*

5:00 - 7:00 p.m. Reception/Program

Chair, Brian Perry, *ParkerLORD*

Bell Award Presentation

Tom Steele, *VP, Cleveland SAS*

Recognition of Meeting Sponsors

Rick Kus

Closing Comments

Brian Perry, *ParkerLORD*

2024 May Conference Planning Committee

General Committee	Jeffrey Pigott, <i>Case Western Reserve University</i> Brian Perry, <i>ParkerLORD</i> Janet Gbur, <i>Case Western Reserve University</i> Min Gao, <i>Kent State University</i> Rick Kus, <i>SAS/MSNO</i> Kim Fraser, <i>Lubrizol</i> Regan Silvestri, <i>Lorain County Community College</i> Laura Wilson, <i>NASA-Glenn</i> Mike Nichols, <i>John Carroll University</i> Tom Steele, <i>SAS</i> Emily Graves, <i>ParkerLORD</i> Melanie Knowlton, <i>ParkerLORD</i> Coleen McFarland, <i>Envantage, Inc.</i> Miroslav Bogdanovski, <i>Cleveland State University</i> Michael Fricke, <i>Akron ACS</i> Emily Benson, <i>The Cleveland Clinic</i> Jemilia Edmond, <i>Case Western Reserve University</i> Ricardo Monge Neria, <i>Case Western Reserve University</i>
Corporate Sponsors	Jeffrey Pigott, <i>CWRU Swagelok Center for Surface Analysis of Materials</i> Emily Graves, <i>ParkerLORD</i>
Technical Program	Min Gao, <i>Kent State University</i> Brian Perry, <i>ParkerLORD</i> Jeffrey Pigott, <i>Case Western Reserve University</i> Rick Kus, <i>SAS/MSNO</i> Regan Silvestri, <i>Lorain County Community College</i> Janet Gbur, <i>Case Western Reserve University</i>
Publicity	Kim Fraser, <i>Lubrizol</i> Min Gao, <i>Kent State University</i> Janet Gbur, <i>Case Western Reserve University</i> Jeffrey Pigott, <i>Case Western Reserve University</i> Laura Wilson, <i>NASA-Glenn</i>
Finance	Bob Williams, <i>SAS</i> Rick Kus, <i>SAS, MSNO</i>
E. B. Yeager Award	Melanie Knowlton, <i>ParkerLORD</i> Rick Kus, <i>SAS/MSNO</i> Mike Kenney, <i>Cuyahoga Community College</i> Doug Rohde, <i>The Cleveland Clinic</i>
Student Paper Awards	Regan Silvestri, <i>Lorain County Community College</i>

Melanie Knowlton, *ParkerLORD*
Laura Wilson, *NASA-Glenn*
Michael Fricke, *Akron ACS*
Jeffrey Pigott, *Case Western Reserve University*
Anushree Deshpande, *ParkerLORD*
Min Gao, *Kent State University*

Student Poster Awards

Tom Steele, *SAS*
Erica Winkler, *ParkerLORD*
Coleen McFarland, *Envantage, Inc.*
Kim Fraser, *Lubrizol*
Mike Dowell, *ACCESS*
Emily Graves, *ParkerLORD*

John Bell Award

Tom Steele, *SAS*
Brian Perry, *ParkerLORD*
Rick Kus, *SAS/MSNO*

Abstract Booklet

Brian Perry, *ParkerLORD*
Rick Kus, *SAS/MSNO*
Emily Graves, *ParkerLORD*
Melanie Knowlton, *ParkerLORD*
Erica Winkler, *ParkerLORD*
Miroslav Bogdanovski, *Cleveland State University*

SOCIETY OFFICERS

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Vice-President	Thomas Steele, <i>Godfrey & Wing, Inc.</i>
Secretary	Coleen McFarland, <i>Envantage, Inc.</i>
Treasurer	Robert Williams

Microscopy Society of Northeast Ohio

President	Jeffrey Pigott, <i>Case Western Reserve University</i>
President Elect	Laura Wilson, <i>NASA-Glenn</i>
Past President	Virgil Solomon, <i>Youngstown State University</i>
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Treasurer	Rick Kus
Trustee	Miroslav Bogdanovski, <i>Cleveland State University</i>
Trustee	Min Gao, <i>Kent State University</i>
Trustee	Emily Benson, <i>The Cleveland Clinic</i>
Student Committee	Jemila Edmond, <i>Case Western Reserve University</i>
Student Committee	Ricardo Monge Neria, <i>Case Western Reserve University</i>

Akron Council of Engineering and Scientific Societies (ACCESS)

Executive Director	David Perry, <i>ACS</i>
President	Michael Fricke, <i>Akron ACS</i>
Treasurer	Denise Kotz, Principal Consultant, <i>Strategic Realm Consulting</i>
Administrator	David Shultz, <i>SPE</i>

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Chair	Katherine Huisinga, <i>Malone University</i>
Chair Elect	Walter Salamant <i>Bridgestone</i>
Secretary	Roderick Durham, <i>Omnova Solutions</i>
Treasurer	Charles Kausch, <i>Lorain County Community College</i>
Councilor	Michael Fricke
Councilor	Daryl Stein

Ernest B. Yeager Award

Ernest B. Yeager, the Frank Hovorka Professor Emeritus of Chemistry at Case Western Reserve University, was internationally known for his pioneering contributions to the fundamental understanding of electrochemical reactions and to the development of fuel cell and battery technology. During nearly 50 years on the Case Western Reserve faculty, he mentored 80 doctorate students and 45 post-doctorate fellows, authored 270 scientific papers, and edited and co-edited 20 books. He was internationally recognized as an authority in physical acoustics and electrochemistry. His students and colleagues knew him for his uncompromising demand for excellence in research and scholarly writing. Professor Yeager, 77, died March 8, 2002, in Cleveland, Ohio, after a long struggle with Parkinson's Disease.

In 1962, the Cleveland Section of the Society for Applied Spectroscopy established the Ernest B. Yeager Award, which now consists of a certificate and a four-hundred-dollar stipend. This award is made annually by the Cleveland Sections of the Society for Applied Spectroscopy and the American Chemical Society to an outstanding undergraduate student who is attending a college or university in Northeastern Ohio, and who has demonstrated an interest in some phase of spectroscopy. The award also carries a free one-year membership in the Society for Applied Spectroscopy.

Year	Recipient	Year	Recipient
1962	Eric A. Entemann	1993	Baonian Hu
1963	John H. Konnert	1994	Amy L. Lusk
1964	Sheldon J. Green	1995	John W. Cave
1965	Cheryl H. Miller	1996	Michael Fiorentino
1966	Dale Wingeleth	1997	Jonathan Flad
1967	Richard D. Ash, Jr.	1998	Christopher S. Callam
1968	Jon Mynderse	1999	David T. Clark
1969	Virginia E. Coates	2000	Adam Van Wynsberghe
1970	Charles F. Cobb	2001	David C. Oertel
1971	Gerald R. Cappo	2002	Richard L. Barger, Jr.
1972	Donald R. Diehl	2003	Michelle Adams
1973	Fred A. Fortunato	2004	Tiffany Leigh Copeland
1974	Douglas B. Rahrig	2005	Stacey Lynne Dean
1975	William Hart	2006	Colleen M. Burkett
1976	John Havens	2007	Manasi Bhate
1977	Thomas M. Leiden	2008	Nikolas Joseph Neric
1978	Scott A. Raybuck	2009	Deacon J. Nemchick
1979	Jeff Weidenhamer	2010	Rachel V. Bennett
1980	Alexander Kondow	2011	Daphne A. Guinn and Jennifer L. Miller
1981	Raymond E. Cline	2012	Jean Quenneville
1982	Marie Zaper	2013	Yihui Chen
1983	Brian L. Cousins	2014	Jocienne Nelson
1984	Ka-Pi Hoh	2015	Kevin Budge
1985	Chris Scott	2016	Ian Campbell
1986	Ann M. Mulichak	2017	Rachel Molé
1987	Rex Ramsier	2018	Nicole Wagner
1988	Joy Gorecki	2019	Corianna Borton
1989	Sheryl Tucker	2020	Ryan Reffner
1990	No Award Given	2021	Eric Rachita
1991	Stephen C. Stone	2022	Megan Zins
1992	No Award Given	2023	Emma Schell

2024 Ernest B. Yeager Award Recipient

"TBD"

John Bell Memorial Award

John Bell was a long-time member of the Society for Applied Spectroscopy (SAS). The Northeastern Ohio Science and Engineering Fair was one of John's special interests; he took great pleasure in representing our Society's local section as a judge at this event. Unfortunately, John died in November 1994. After his death, the members of the Cleveland Section of SAS voted to honor him by establishing the John Bell Memorial Award, for the Science Fair project which best uses or illustrates a principle of spectroscopy in an innovative manner.

Year	John Bell Award	John Bell Merit Award	Special Mention Award
1995	Mary Elizabeth Bruce		
1996	Jonathan Parkhurst		
1997	Lavanya Kondapalli		
1998	Justine Wang	Vivek Mathur	
1999	Elizabeth Long	Kara Urbanek	
2000	Elizabeth Wood	Srinivas Kondapalli	
		Frank Pucci	
2001	Catherine T. Burke		
2002	Mallory Horejis	Alia Evans	Gabe Jakubisin
		Monica Sberna	Scott Brigeman
2003	Zenon Mural	Cecilia Michel	Matthew McPheeters
		Monica Benedikt	Christina Beall
2004	Kevin Rinz	Emily C. Wirtz	Gabrielle L. Petrie
		Sarah Lynn Martin	Zack Puskar
2005	Christine Debaz	Simone Duval	
		Sara Yacyshyn	
2006	Ellen Napoli	Patrick Rinz	Brittney Williams
		Julia Juster	Derek Poindexter
2007	Anna Faist	Mary Ryan	Rebecca Rabinovich
		Jennifer Haag	Margarat Sivit
2008	Jonathan Sender	Shrey Shah	Daniel Kernan
		Johnathan Ungvarsky	Peter Suwondo
2009	Katherine Reading	Johnathan Ungvarsky	Daniel Krentz
		Morde Khaimov	
2010	Maddie Mooney	Katrina Feldkamp	Samuel Stroebel
			Leat Perez
2011	Kevin Yang	Emily Peterson	Sara Mann
			Jane Kim
2012	Jane Kim	Dongham Kim	Paige Rogozinski
		Maurice Ware	Noah Nicholas
2013	Grace Gamble	Justin Boes	
2014	Alison Jin	Claire Chalkin	Morgan Fink
		Anjali Prabhakaran	Kenna Marblestone
2015	Christine Larson	Nicholas Kernan	Lauren Zipp
			Ian Thompson
2016	Klaudia Sirk	Adriana Gildone	Audrey Higgins
			Kei Kojima
2017	Maya Dori	Natalie Haddad	Patrick McFarland
2018	Kotaro Kojima	Albert Zhu	Tingzhang Li
2019	Daniel Anthony	Henry Poduska	
2021	David Anand	Praveen Kumar	Markus Downie
2022	Jacob Rolda	Mathew Gray	
2023	Emily Meckler		
2024	Will Northup	Henrik Burda	Conley Quinn

The 2024 John Bell Memorial Award Recipient

Will Northup

“Prototyping a Cheaper Alternative for LIBS IR Spectroscopy”

The 2024 John Bell Merit Award Recipient

Henrik Burda

“Dependent Solvatochromism of Betaine 30 Dye”

The 2024 John Bell Special Mention Award Recipient

Conley Quinn

“The Diving Bell Spider”

Poster Session

Biological Sciences Section

1. **John Kim**
Case Western Reserve University
Analysis of Waxy Plant Surface on Rudbeckia Fulgida Leaf
2. **Aththanayake Adhikarige**
Case Western Reserve University
Enhancing Energy Transfer Efficiency with ENZ Platforms: Quantum Emitters in DNA Beacons
3. **Tim Socash**
Penn State Erie
Exploring the Use of Hypervalent Iodine to Aid in the Selective Electrochemical Detection of THC and CBD
4. **Tom Chrzanowski**
Penn State Erie
Determining if Pretreatment Aids in Facilitating Fungal Degradation of Plastic Films
5. **Mehdi Ali**
Lorain County Community College
Targeting CCR5 function as a Therapy for AIDS
6. **Janan Alfehaid**
Kent State University
Resetting Single Molecule Microfluidic Sample Chambers by Using UV Light or High pH
7. **Min Gao**
Kent State University
Cryo-based Microscopy Sample Preparation
8. **John Martin**
Lorain County Community College
Evaluation of Growing Rod Surgical Implants Used in the Treatment of Pediatric Scoliosis by Finite Element Analysis
9. **Sineth Kodikara**
Kent State University
Detecting Secondary Structure Formation with FRET-PAINT
10. **Soumya Chandrasekhar**
Kent State University
Polyethylene Glycol-Modified DNA-based Nanodiscs for Incorporation and Characterization of Membrane Proteins

Physical Sciences Section

11. **Tugce Karakulak Uz**
Case Western Reserve University
TSEM-EDS Study of Nanoprecipitates in Oxide-Dispersion-Strengthened (ODS) 14YWT Ferritic Alloys
12. **Suraj Pathak**
Kent State University
Xeuss 3.0: Unveiling X-ray Scattering at Our State-of-the-Art SAXS Facility
13. **Ricardo Monge Neria**
Case Western Reserve University
Super-resolution imaging reveals resistance to mass transfer in functionalized stationary phases
14. **Peter McPike**
University of Akron
Machine Learning for Bond Classification: An Undergraduate Chemistry Student Exercise
15. **Nathan Rothacker**
The Ohio State University
Multiscale quantification of nanostructure across extended sample volume

16. **Gabriel Gemadzie** Application of Machine Learning to Single-Entity Electrochemical analysis
University of Akron
17. **Eric Trout**
Case Western Reserve University MATLAB Algorithm to Analyze XPS Data of Functionalized Surface
18. **Zechariah Pfaffenberger** Sensing and mapping metal corrosion in-situ via a fluorescence spectroscopy
Case Western Reserve University and single-molecule microscopy
19. **Shubendu Kumar** Impact of Nanometer-Thin Stiff Layer on Adhesion to Rough Surfaces
University of Akron
20. **Lexi Miskey** Creating an Instrumented Pressure Sensing Prosthetic Liner using Aerosol Jet Printed
Case Western Reserve University Electronics
21. **Tyler Vu** Development Aerosol Jet Printing on PMMA for of Sensorized Contact Lenses
Case Western Reserve University
22. **Olivia Bogna** Analysis of AGN through Spectroscopy
Lorain County Community College
23. **Jemila Edmond** Kinetics of Iron Oxide Reduction at High Pressures

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