Matthias J. Young

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Education:

B.S., Chemical Engineering, University of Missouri-Columbia
Graduation: May 2010, **GPA: 3.993 of 4.0**, summa cum laude with university honors

Ph.D., Chemical Engineering, University of Colorado Boulder
Graduation: May 2015, **GPA: 3.966 of 4.0**

Experience:

Associate Professor in Chemical and Biomedical Engineering, joint appointment in Chemistry
Department Chairs: Jennifer Fiegel, Justin Walensky Columbia, MO September 2018-Present

- ***Thin Film Coatings and Materials Electrochemistry Lab*** - energy storage and water treatment
- Currently Advising 11 Ph.D. Students, 2 Undergrad (16 publications, 4 pending)
- Vapor-phase oxidative molecular layer deposition (oMLD) of ***redox-active polymer thin films***
- ***Molecular design*** of polymer thin films for ***sensor and battery applications***
- Study battery interfaces by *cryogenic electron diffraction pair distribution function analysis* ***(cryo-ePDF)***
- ***Functional Group Lithography for Patterned Atomic Layer Deposition (AS-ALD)***
- Integration of ***Machine Learning (ML)*** into Experimental Research and Self-Driving Labs

Postdoctoral Researcher at Argonne National Laboratory
Supervisor: Jeffrey Elam Lemont, IL April 2017-September 2018

- Project: atomic layer deposition of interfacial coatings in lithium ion batteries (5 publications)
- Spearheaded the use of ***synchrotron measurements to study the structure of amorphous*** ALD films
- Discovered first ***Molecular Layer Etching*** chemistry for layer-by-layer removal of polymers
- ***Identified the removal of carbonate*** layers from battery electrode materials ***upon TMA exposure***
- In the ***Center for Electrochemical Energy Science*** and ***Joint Center for Energy Storage Research***

NRC Postdoctoral Fellow at the National Institute of Standards and Technology (NIST)
Supervisor: Timothy Quinn Boulder, CO June 2015-April 2017

- Project: discovery of nanomaterials for electrochemical desalination (3 publications)
- ***Discovered materials for anion insertion electrochemistry*** for energy efficient desalination
- ***Led multiple project proposals—***received grants to fund my research project and syncthrotron studies
- Led ***two (2) successful proposals for user time at Advanced Photon Source,*** Argonne National Lab
- ***Mentored undergraduate researchers*** for summer internship projects

NSF Graduate Research Fellow at the University of Colorado (CU Boulder)
Advisors: Steven George and Charles Musgrave Boulder, CO Fall 2010-May 2015

- Project: understanding charge storage in thin film MnO_2 for supercapacitors and batteries (6 publications)
- ***Led multiple project funding proposals***, and ***received fellowship from National Science Foundation***
- ***Managed*** the work of ***three masters students and a visiting professor*** to support my research project
- ***Discovered decoupled ionic and electronic electrochemistry which enables high rate charge storage***
- ***Designed and constructed ALD reactor and control system***, and acted as reactor custodian

Intern in Upstream R&D at Proctor & Gamble Cincinnati, OH Summers 2009,2010
DAAD-RISE Research Fellow at University of Stuttgart Stuttgart, Germany Summer 2008

Skills:

Project Leadership: Creativity in Science • Team Building • Conflict Mediation and Compromise
Thin Films: Atomic Layer Deposition • Molecular Layer Deposition • Custom Reactor Design • In Situ Tools
Electrochemistry: Li-ion batteries • Ion Selective Electrodes • Redox-Active Polymers • Solid-State Electrolytes
Advanced Characterization: (Cryogenic) 4D-STEM • Synchrotron • Pair Distribution Function Analysis (PDF)
Materials Informatics: RDKit • Graph Neural Networks (GNNs) • Feature Engineering • Deep Neural Networks
Data Science: Data Cleansing • Data Carpentry • Non-negative Matrix Factorization • VAT/iVAT, clustering
Automation: Autonomous Research • Bayesian Optimization • Agentic Systems • Self-Driving Lab
Communication: Native English Speaker • Fluent in German

Publication Record:

- H-index of 17, i10 index of 25, cited 1328 times, https://goo.gl/veAJKi
- Twelve published first-author articles, seventeen corresponding author publications
- Presented forty-five (45) talks, including nine (9) invited talks and talks at twenty (20) national and international conferences
- Six patents granted with two more under consideration.

Teaching Experience:

Instructor for Atomistic Materials Analytics Columbia, MO Spring 2025- Present
- Instructed class of ~16 graduate students across disciplines, cotaught with AI expert
- Use jupyter, pytorch, rdkit, scikitlearn, git, NIST chemical web-book, NREL HTEM, Materials Project
- Established instructional materials applying machine learning (ML) to experimental materials datasets
- Teach data scraping, data carpentry, neural network (NN) design, hyperparameter optimization, etc.
- Focused on "real" (often dirty) experimental data and working toward actionable deliverables
- Establish concepts for how experimental researchers can integrate machine learning into workflow
- Original semester research project for each student, culminating in end-of-semester poster session
- Deployed instructional materials as jupyter notebooks deployed publicly on github

Instructor for Chemical Reaction Engineering Columbia, MO Fall 2019-Fall 2025
- Instructed class of ~30 undergraduate juniors and seniors
- Implemented data-driven flipped-classroom practices for improved student learning
- Defined course learning objectives and restructured testing format to target learning objectives
- Prepared online video lectures using Powerpoint and Panopto
- Created online assessments within Canvas to evaluate learning objectives
- Implemented anonymous mid-semester feedback using Poll Everywhere to improve engagement
- Implemented peer learning assistants (PLAs) to improve student learning

Instructor for Quantitative Methods of Analysis Columbia, MO Spring 2021
- Instructed class of ~70 undergraduate juniors and seniors
- Oversaw three graduate teaching assistants to deliver ten laboratory experiments to six lab sections
- Completed online teaching certificate for best practices in digital course development
- Created online assessments with randomized problem statements and solutions within Canvas

Instructor for Quantum Simulations Boulder, CO Fall 2015
- Co-Instructed class of ~30 graduate and undergraduate students
- Prepared teaching material and wrote and graded homework problems
- Prepared in-class simulation exercises on CU's Janus supercomputer for lectures
- Taught Vienna Ab Initio Simulations Package, unix, python, and various data visualization suites

Workshop on Pymatgen Materials Software Boulder, CO Fall 2015

- Prepared and delivered workshop on pymatgen materials software

Teaching Assistant for Process Control Boulder, CO Spring 2011,2013

- Prepared teaching material and taught a weekly recitation of ~40 undergraduate students
- Prepared and presented two lectures to a class of ~100 students on control system instrumentation
- Directed a process control lab weekly which used simulation software Control Station
- Assisted in grading exams, tests, homework, and in-class workshops
- Wrote out solutions to homework problems to be posted for student reference
- Maintained grade spreadsheet and uploaded grades to Desire2Learn

Instructor for Science Discovery K-12 Program Boulder, CO 2010-2011

- Taught after-school hands-on courses to elementary and middle school students

Undergraduate Tutor Columbia, MO 2007-2010

- Had open office hours available to engineering students at the University of Missouri

Broader Impacts/Outreach Activities:

- ***Participant in Columbia Youth Science Expo at University of Missouri*** 2023-present
  - >200 K-12 regional students and their caregivers in attendance
- ***Participant in Mizzou Academy Site Visit with International High School Students*** 2022-2023
  - ~25 students from a variety of countries including Brazil and Spain in attendance.
  - Hands-on interactive activities to introduce students to STEM career pathways
  - Casual interaction and discussion with graduate and undergraduate students
- ***Organizer for Materials Science and Engineering Lab Exhibit at Engineers' Week*** 2022-present
  - >500 K-12 students in attendance from throughout Missouri
- ***Organized Hands-on Outreach Event at Missouri Scholars Academy (MSA)*** 2022-present
  - >300 high school sophomores from through Missouri attend MSA
  - Laser Diffraction, Atomic Patterns, and tour of the Electron Microscopy Core
  - Participated in half-day of hands-on activities with students
- ***Developed and Implemented Outreach Activities at 4H Summer Camp*** 2021
  - 30 youth attended day camp
  - 93% of youth agreed they learned something new
- ***Collaborated with Family Impact Center for After-school Outreach Event*** 2021
  - 14 youth participated
  - 71% of youth agreed they learned something new
  - "I learned how electrons go from one part of the circuit to another and how it works"
  - "I learned about different materials that conduct electricity"
- ***Organizer for "Charge-Up" Informal Science Education K-12 Outreach Event*** 2021
  - Four adults and five youth participated
  - 100% of adult participants strongly agreed that their family enjoyed the event, learned something new, engaged in the activities, and provided them with resources that helped them to communicate with their child about science.
  - All families successfully completed the Charge up Passport
  - Youth "I didn't want to leave"
- ***Served on University of Maryland's Gemstone Honors Thesis Review Committee*** 2021
- ***Participant in Regional NSF Innovation iCorps Program, Wichita State*** 2020

- ***Recorded YouTube Video Explaining Conductive Polymers to Broad Audience*** 2020

Professional Service:

Peer Reviewer

Service on External Student Committees

- External pre-examination committee for Ph.D. student at University of Helsinki (2025)

Service on Funding Review Panels

NSF:

- Graduate Research Fellowship Program (NSF-GRFP) Reviewer (2021, 2023)
- Engineering Directorate (NSF ENGR) Panel Reviewer (2020, 2023, 2024 x2)
- Division of Materials Research (NSF DMR) Panel Reviewer (2025)

Peer Reviewer on Journal Publications

Advanced Functional Materials (2020)
Journal of Vacuum Science and Technology (2020)
Electrochemical Society Journal of Solid State Science and Technology (2020)
Advanced Energy Materials (2020)
Macromolecules (2020)
Chemistry of Materials (2021)
ACS applied Materials and Interfaces (2021)
Nature Communications (2021)
Green Chemistry Letters (2022)
ACS Energy Letters (2022)
Chemistry of Materials (2022 x2)
ACS Omega (2022)
Journal of Physical Chemistry C (2022)
Angewandte Chemie (2023)
Journal of Vacuum Science and Technology A (2023)
Applied Surface Science (2024)
Journal of Physical Chemistry C (2024)
ACS Nano (2024)
ACS Applied Electronic Materials (2024)
Small (2024)
ACS Materials Letters (2024)
Energy and Environmental Science Batteries (2025)
Nature Nanotechnology (2025)
Langmuir (2025)

Professional Organizations

Missouri Water Center Local 2022-present

- Primary Faculty Member in Missouri Water Center at the University of Missouri

MU Materials Science and Engineering Institute (MUMSEI) Local 2021-present

- Primary Faculty Member and regular participant in MUMSEI activities at the University of Missouri

Missouri Center for Advanced Power (MOCAP) Regional 2021-present

- Executive committee: Advise and facilitating collaboration for energy storage research in Missouri
- Contributed in organizing undergraduate research fellowships and student poster competition (2022)

National Alliance for Water Innovation (NAWI) National 2020-present

- Serve as Institutional Point of Contact for University of Missouri
- Established Missouri as an Alliance Member of Department of Energy NAWI Hub

Electrochemical Society (ECS) International 2018-present
- Served as co-organizer for the symposia of the Electronics and Photonics Division (2020-present)
- Assisted in planning symposium G01: ALD Applicatoins for the 240th ECS Meeting.

American Institute of Chemical Engineers (AIChE) National 2015-present
- Member of the board of directors for the transport and energy processes (TEP) division (2021-present)

American Vacuum Society (AVS) International 2013-present
- Served as moderator for ALD-ALE 2021 Annual Meeting and Symposium (2021)
- Elected as secretary and treasurer of the thin film division (2022-present)

University Service

Department and Campus Service Columbia, MO
- Served on Administrative Committee for NSF-NRT Graduate Traineeship Program (2023-present)
- Served on MU Materials Science and Engineering Faculty Advisory Council (2023-present)
- Served on Task Force to reorganice ChBME Department Seminar (2023)
- Served on Faculty Advisory Council for Energy and Sustainability Building (2023)
- Served on Task Force to Identify Target Candidates for Mizzou Forward (2021-2023)
- Served on Task Force to Review Department Peer Evaluation of Teaching Policy (2021)
- Served on BBCE search committee for non-tenure track faculty hires, and hired three instructors (2019)
- Served on Chemical Engineering graduate committee (2018-present)
- Served on Chemical Engineering grade appeals committee (2018)
- Presented at two strategic planning meetings on behalf of the chemical engineering department (2018)
- Chair of the Biomedical, Biological, and Chemical Engineering Seminar Series (Fall 2019-Present)

CU ChBE Graduate Representative Boulder, CO 2012-2013
- Acted as a liaison between graduate students and faculty and aided in improving graduate student life
- Organized networking events for graduate students to interact with each other and faculty
- Attended faculty meetings and brought graduate student concerns to the attention of the faculty
- Helped coordinate and run the department's graduate recruiting weekends

CU StARS 2012 Committee Member Boulder, CO Fall 2012
- Helped in coordinating and planning the campus-wide student annual research symposium

Current Research Group Members: *Coadvised		**Expected Graduation**
▪ Mahya Mehregan	Ph.D. Chemistry	Fall 2025
▪ Shima Mehregan	Ph.D. Chemistry	Fall 2025
▪ Will Murphy	B.S. Mechanical Engineering	Fall 2025
▪ Amit Datta	Ph.D. Chemistry	Spring 2026
▪ Azeez Musa*	Ph.D. Chemistry	Spring 2026
▪ Anthony Khoury	B.S. Electrical Engineering	Spring 2026
▪ Sabu Adhikari	Ph.D. Chemistry	Spring 2027
▪ Colin Gopaul*	Ph.D. Chemistry	Spring 2027
▪ Nazifa Khan*	Ph.D. Chemistry	Spring 2027
▪ Erick Gutierrez*	Ph.D. Chemical Engineering	Spring 2028

Former Research Group Members: *Coadvised		**Graduated**
▪ Xianglei Li*	M.S. Chemical Engineering	Fall 2019

▪ Lauren Baratta	B.S. Chemical Engineering	Spring 2021
▪ Katy Whitledge	B.S. Chemical Engineering	Fall 2021
▪ Quinton Wyatt	Ph.D. Chemistry	Fall 2022
▪ Gabe Luebbert	B.S. Chemical Engineering	Fall 2022
▪ Katrina Brathwaite	B.S. Chemical Engineering	Spring 2023
▪ Eric Throm	B.S. Chemical Engineering	Spring 2023
▪ Jack Shultz	B.S. Chemical Engineering	Fall 2023
▪ Ryan Gettler	Ph.D. Chemical Engineering	Spring 2024
▪ Nikhila Paranamana	Ph.D. Chemistry	Fall 2024
▪ Henry Koenig	B.S. Chemistry	Spring 2024
▪ Andreas Werbrouck*	Postdoctoral Scholar	N/A
▪ Tawfiq Thabit*	B.S. Chemical Engineering	Spring 2025

Student Honors/Awards: (*Regional, **National, ***International)

- Shima Mehregan – AVS Thin Film Division Harper Award Finalist*** 2025
- Anthony Khoury – MOCAP 2nd Prize Undergrad Poster Winner* 2024
- Amit Datta – MOCAP 3rd Prize Graduate Poster Winner* 2024
- Nikhila Paranamana – AVS Thin Film Division Harper Award Finalist*** 2023
- Ryan Getter – Outstanding Graduate Student in Chemical Engineering 2023
- Ryan Gettler – Entrepreneurial Lead for NSF ICorps Grant ($50K budget)** 2023
- Nikhila Paranamana - MOCAP 1st Prize Graduate Poster Winner* 2023
- Mahya Mehregan - MOCAP 3rd Prize Graduate Poster Winner* 2023
- Katrina Brathwaite - MOCAP 2nd Prize Undergraduate Poster Winner* 2023
- Nikhila Paranamana - MOCAP 1st Prize Graduate Poster Winner* 2022
- Quinton Wyatt - MOCAP 3rd Prize Graduate Poster Winner* 2022
- Katrina Brathwaite - MOCAP 2nd Prize Undergraduate Poster Winner* 2022
- Lauren Baratta – Outstanding Senior in Chemical Engineering 2021

Honors/Awards: (*Regional, **National, ***International)

- ***Students' Choice Outstanding Professor in Chemical Engineering*** 2025
- ***Outstanding Junior Faculty Researcher Award in College of Engineering*** 2025
- ***2024 American Institute of Chemical Engineers (AIChE) Futures Recipient**** 2024
- ***NSF CAREER award recipient**** 2023
- ***AVS Prairie Chapter Early Career Research Award Recipient**** 2023
- ***Selected as 2023 Emerging Investigator by the journal Nanoscale***** 2023
- ***Recipient of ACS-PRF Doctoral New Investigator Award**** 2022
- ***AVS Thin Film Division Paul H. Holloway Young Investigator Award***** 2020
- ***Featured Article in Journal of Vacuum Science and Technology A***** 2020
- ***Top 100 Downloaded Articles in Scientific Reports, Nature Research***** 2019
- ***Richard Wallace Faculty Incentive Grant Recipient**** 2018
- ***National Research Council Postdoctoral Fellow at NIST**** 2015-2017
- ***NSF Graduate Research Fellow at CU Boulder**** 2012-2015
- American Institute of Chemists ***Graduate Student Faculty Leadership Award*** 2013
- ***Category winner*** in Generation and Storage at Energy Frontiers Poster Session* 2013
- ***Category winner*** in Transportation at Energy Frontiers Poster Session* 2012
- Selected for ***RASEI Energy Certificate Program**** 2011

- ***Dean's Outstanding Merit Fellowship*** at the University of Colorado 2010
- ***Mizzou '39***—one of top 39 graduating seniors at University of Missouri* 2010
- ***Outstanding Senior*** in chemical engineering at University of Missouri 2010
- ***DAAD-RISE Scholar*** ** 2008
- ***Ferry Engineering Scholarship*** 2008
- ***Munich Summer Fellow***—invited to Munich to tour universities and study German** 2007
- ***Engineering Dean Research Innovation Fund Scholar*** 2007
- ***Hightower Excellence in Engineering Scholarship*** 2007
- ***William R Kimel Engineering Scholarship*** 2007
- ***CRC Freshman Chemistry Achievement Award**** 2006
- ***Hightower Excellence in Engineering Scholarship*** 2006
- ***Robert Byrd Scholar*** 2006
- ***Missouri Bright Flight Scholar*** 2006
- ***Missouri Alumni Association Scholarship*** 2006
- ***Elks Lodge Most Valuable Student Scholarship*** 2006

Grants:

Current Research

ASUB00001728 (Grant)
U.S. Army Corps of Engineers
$3,466,000
2023/10-2025/9
Accelerating Materials Design and Manufacturing through Artificial Intelligence and Machine Learning
Co-PI

2344900 (Young)
National Science Foundation
$50,000
2023/11-2024/11
I-Corps: Molecular layer deposition for polymer cathode fabrication
PI

2243526 (Maschmann)
National Science Foundation
$3,000,000
2023/07-2028/06
NRT-HDR: Advancing Materials Frontiers with Creativity and Data Science
Co-PI

2235161 (Young)
National Science Foundation
$656,712
2023/06-2028/05
CAREER: Molecular-level Understanding of Conductive Polymer Properties
PI

2216026 (Maschmann)
National Science Foundation

$836,490
2022/09-2024/08
MRI: Acquisition of Active Holders for in-situ and in-operando Transmission Electron Microscope Experiments
Co-PI

2219060 (Young)
National Science Foundation
$537,725
2022/08-2025/07
Understanding interphase layer formation at the cathode/electrolyte junction
PI

PRF# 65193-DNI5 (Young)
American Chemical Society Petroleum Research Fund
$110,000
2022/01-2025/08
Impact of surface chemistry on the initiation and growth of pyrrolic gum deposits in fuel
PI

2149721 (Rogers)
National Science Foundation
$369,513
2022/03-2025/02
REU Site: Creative Approaches to Materials Design and Processing
Co-PI

Completed Research

G21AC10446 (Young)
United States Geological Survey
$320,252
2021/08-2024/07
Benchmarking Improved Synthesis Methods for Nitrate Sensing
Polymers to Enable Low-cost Nitrate Sensors for Distributed Deployment
PI

2131282 (Young)
National Science Foundation
$200,000
2021/09-2024/08
EAGER: Polymer Sponge Electrodes for Energy-Efficient Desalination
PI

G21AC10041 (Young)
United States Geological Survey
$13,108
2021/01-2021/12

Development of Robust Sensing Materials to Enable Low-cost Nitrate Sensors for Distributed Deployment
PI

G16AP00066 (Young)
United States Geological Survey
$22,000
2020/03 - 2021/12
Advanced Materials for Low-Cost Electronic Nitrate Sensors to Prevent Harmful Algal Blooms in Missouri Water Resources
PI

University of Missouri Research Council
$12,500
2019/05-2020/04
Multimodal Cell to Understand Degradation of Battery Materials Under Flow
PI

University of Missouri Alumni Association
$4,000
2019/01 – 2020/01
Advancing battery technology by understanding decoupled ionic and electronic mechanisms
PI

The Connector at the University of Missouri
$4,000
2021/06-2022/06
Charge-Up Informal Science Education K-12 Outreach Event
PI

1122374 (Young)
National Science Foundation
$120,000
2012/09-2015/09
NSF GRFP: Improved Electrochemical Supercapacitors Using Atomic Layer Deposition of Manganese Oxide
Student Recipient

Journal Articles: *: corresponding author, †:invited

Top Five Most-Cited Papers:

1. 222 Citations: D. M. Piper, J. J. Travis, M. Young, S. B. Son, S. C. Kim, K. H. Oh, S. M. George, C. Ban, and S. H. Lee, "Reversible high-capacity Si nanocomposite anodes for lithium-ion batteries enabled by molecular layer deposition," *Advanced Materials*, vol. 26, pp. 1596–1601, **2014**. doi: 10.1002/adma.201304714
2. 182 Citations: M.J. Young, A.M. Holder, S.M. George, C.B. Musgrave*, "Charge Storage in Cation Incorporated α-MnO_2," *Chemistry of Materials*. vol. 27, no. 4, pp 1172-1180,**2015**. doi: 10.1021/cm503544e

3. 98 Citations: L. Sang, K.L. Bassett, F.C. Castro, M.J. Young, L. Chen, R.T. Haasch, J.W. Elam, V.P. Dravid, R.G. Nuzzo, A.A. Gewirth, **"**Understanding the Effect of Interlayers at the Thiophosphate Solid Electrolyte/Lithium Interface for All-Solid-State Li Batteries" *Chemistry of Materials* Vol 30, no. 24, pp. 8747-8756. **2018**. doi: 10.1021/acs.chemmater.8b02368
4. 92 Citations: J. Liu, Z. Li, X. Zhang, K. Otake, L. Zhang, A.W. Peters, M.J. Young, N.M. Bedford, S. Letourneau, D.J. Mandia, J.W. Elam, O.K. Farha, J.T. Hupp "Introducing Nonstructural Ligands to Zirconia-Like MOF Nodes to Tune the Activity of Node-Supported Nickel Catalysts for Ethylene Hydrogenation" *ACS Catalysis*, 9 (4), pp 3198–3207, **2019**. doi: 10.1021/acscatal.8b04828
5. 90 Citations: Y. Lee, H. Sun, M.J. Young, S.M. George*, "Atomic Layer Deposition of Metal Fluorides Using HF-Pyridine as the Fluorine Precursor" *Chemistry of Materials.* Vol. 28, no. 7, pp 2022-2032, **2016**. doi: 10.1021/acs.chemmater.5b04360

Other Papers:

6. Andreas Werbrouck, Nikhila C. Paranamana, Xiaoqing He, Matthias J. Young* Fast 4D-STEM-based phase mapping for amorphous and mixed materials, (Under Review) First published: 22 July 2025 2025. doi: 10.48550/arXiv.2507.17068
7. Musa O. Azeez, Andreas Werbrouck, Gordon Koerner, Nikhila C. Paranamana, Matthew R. Maschmann*, Matthias J. Young* Ultraviolet Light-Induced Functional Group Formation on Molybdenum Disulfide for Patterned Atomic Layer Deposition, *Chemistry of Materials*, First published: 2 June 2025. doi: 10.1021/acs.chemmater.5c00537
8. Andrew G. Reinhard, Mahya Mehregan, Matthias J. Young*, and Matthew R. Maschmann* Conformal Nanoscale Conductive Polymer Films on Carbon Nanotube Forests for Electrochemical Water Desalination, *ACS Applied Nano Materials*, First published: 20 March 2025 2025. doi: 10.1021/acsanm.5c00707
9. Young, B., Alvey, B., Werbrouck, A., Murphy, W., Keller, J., Young, M., Maschmann, M., "Active Learning and Explainable AI for Multi-Objective Optimization of Spin Coated Polymers" Proceedings, AAAI Spring Symposium on AI for Engineering and Scientific Discoveries, San Francisco, CA, March 31 – April 2, 2025.
10. Ahmed M. Jasim, Gan Xu, Matthias J. Young, Yangchuan Xing* "Tuning Vacancy in Metal Oxide Support to Enhance Activity and Durability of Pt Catalysts for the Methanol Oxidation Reaction." ACS Catalysis, **2025**. doi: 10.1021/acscatal.5c00000
11. Nikhila C. Paranamana, Andreas Werbrouck, Amit K. Datta, Xiaoqing He, Matthias J. Young,* "Understanding Cathode–Electrolyte Interphase Formation in Solid State Li-Ion Batteries via 4D-STEM." *Advanced Energy Materials*, **2024**. doi: 10.1002/aenm.202403904
12. Camden Boyle, Conrad Tauer, Shubhra Gangopadhyay, Timothy Gaines, Grant Scott, James M. Keller, Stanton R. Price, Matthias J. Young, and Matthew R. Maschmann* "Rapid Shape Change and Spallation of Isolated Nanoscale Aluminum Cubes, Rods, Pyramids, and Spheres: Implications for Plasmonic and Energetic Materials" *ACS Applied Nano Materials*. **2024**. doi: 10.1021/acsanm.4c05428
13. Nikhila C. Paranamana, Amit K. Datta, Quinton K. Wyatt, Ryan C. Gettler, Andreas Werbrouck, and Matthias J. Young* "Molecular layer deposition of polyhydroquinone thin films for Li-ion battery applications." *AIChE Journal*, **2024**. doi: 10.1002/aic.18613
14. R.C. Gettler, S. Mehregan, H.D. Koenig, A. Kaess, M.J. Young,* "Non-Equilibrium Anion Detection in Solid-Contact Ion-Selective Electrodes." *ACS Omega*, **2024**, doi: 10.1021/acsomega.4c00131**.**
15. N.C. Paranamana, M.J. Young,* "Role of surface chemistry in pyrrole autoxidation." *Langmuir*, **2024**, doi: 10.1021/acs.langmuir.3c04036.
16. R.C. Gettler, P. Kinlen, M.J. Young,* "Postprocessing of solution-cast polyaniline for enhanced electrochemical processes." *Journal of Power Sources*, **2023** Vol. 583, No. 233557 2023. doi: 10.1016/j.jpowsour.2023.233557

17. M. Mehregan, L. Baratta, Q.K. Wyatt, M.J. Young,* "Compressible sponge electrodes by oxidative molecular layer deposition (oMLD) of polyethylenedioxythiophene (PEDOT) onto open-cell polyurethane sponges." *Nanotechnology*, **2023**, Vol. 34, No. 465606 2023. doi: 10.1088/1361-6528/acef2b
18. K. Brathwaite, Q.K. Wyatt, A. Atassi, S.A. Gregory, M.D. Losego, M.J. Young,[†,]* "Electrochemical Capacity of Thin-Film Polyethylenedioxythiophene Grown by Molecular Layer Deposition". *Nanoscale*, **2023**, Vol. 15, pp. 6187-6200. doi: 10.1039/D3NR00708A
19. Q.K. Wyatt, N.C. Paramana, M. Ardiansyah, K. Brorsen, M.J. Young,* "Mechanistic Insights into Oxidative Molecular Layer Deposition of Conjugated Polymers." *Chemistry of Materials*, **2023** Vol. 35, Iss. 1, pp. 154–162 2023. doi: 10.1021/acs.chemmater.2c02923
20. R. Gettler, N. Alaal, K. Brorsen, M.J. Young,* "Effects of Interchain Crosslinking by Alkyl Dihalides on the Electrochemical Performance of Nanoscale Polypyrrole Films." *Chemistry of Materials*, 34 (17) pp 8065–80762022 **2022** doi: 10.1021/acs.chemmater.2c02225 (In Press)
21. N.C. Paranamana, R. Gettler, H. Koenig, S. Montgomery-Smith, X. He, M.J. Young,* "Measuring Local Atomic Structure Variations through the Depth of Ultrathin (<20 nm) ALD Aluminum Oxide: Implications for Lithium-Ion Batteries" *ACS Applied Nano Materials*, 5 (9) pp. 12582–125912022 **2022** doi: 10.1021/acsanm.2c02312
22. G. Koerner, Q.K. Wyatt, B. Bateman, C. Boyle, M.J. Young,* M.R. Maschmann,* "Area-selective atomic layer deposition on HOPG enabled by writable electron beam functionalization" *Nano Select*, 3 (10) pp. 1448-1457 **2022** doi: 10.1002/nano.202200091
23. Q.K. Wyatt, M. Vaninger, N.C. Paranamana, T.W. Heitmann, H. Kaiser, and M.J. Young* "Oxidative Molecular Layer Deposition of Amine-Containing Conjugated Polymer Thin Films" *ACS Applied Polymer Materials* 4 (8) pp. 6156–61682022 **2022**. doi: 10.1021/acsapm.2c00942
24. N.C. Paranamana, M.J. Young,*[,†,] "Atomic layer deposition of thin-film sodium manganese oxide cathode materials for sodium ion batteries" *Dalton Transactions*, 50 (48), pp 18128-18142 **2021** doi: 10.1039/D1DT03479K
25. R. Gettler, H. Koenig, M.J. Young,* "Iterative Reverse Monte Carlo and Molecular Statics for Improved Atomic Structure Modeling: A Case Study of Zinc Oxide Grown by Atomic Layer Deposition" *Physical Chemistry Chemical Physics* 23 (46) pp 26417-26427 **2021** doi: 10.1039/D1CP03742K
26. R. Gettler, M.J. Young,* "Multimodal Cell with Simultaneous Electrochemical Quartz Crystal Microbalance and *operando* Spectroscopic Ellipsometry to Understand Thin Film Electrochemistry" *Review of Scientific Instruments* 92 pp 053902 **2021** doi: 10.1063/5.0035309
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Presentations: *: presenting author, **: corresponding author, †:invited

1. Matthias J. Young, Angel Yanguas-Gil, Michael Nolan, "Panel on AI for Thin Film Materials Research," AVS 71 International Symposium and Exhibition, Charlotte, NC, September 24, 2025. (Oral Presentation)
2. Lucas R. Kuehnel*, Erick A. Gutierrez Monje, Anthony A. Khoury, Campbell A. Sweet, and Matthias J. Young**, "Machine Learning Predictions for Selecting Organic Small Molecules in Atomic Layer Processing," AVS 71 International Symposium and Exhibition, Charlotte, NC, September 24, 2025. (Oral Presentation)
3. Shima Mehregan*, Mahya Mehregan, Erick Gutierrez Monje, and Matthias J. Young**, "Oxidative Molecular Layer Deposition of Polythiourea for Nitrate Sensing," AVS 71 International Symposium and Exhibition, Charlotte, NC, September 24, 2025. (Oral Presentation)
4. Mahya Mehregan*, Shima Mehregan, Andrew Reinhard, Matthew R. Maschmann, and Matthias J. Young**, "Temperature Effects in Oxidative Molecular Layer Deposition (oMLD) of Polypyrrole," AVS 71 International Symposium and Exhibition, Charlotte, NC, September 24, 2025. (Oral Presentation)
5. Matthias J. Young*,**, Andreas Werbrouck, Andrew Meng, Dilan Gamachchige, Indeewari Herathlage, Nikhila C. Paranamana, and Xiaoqing He, "Data Science Tools to Disentangle Large Electron Diffraction Datasets of Thin Films," AVS 71 International Symposium and Exhibition, Charlotte, NC, September 22, 2025. (Oral Presentation)
6. Nazifa Z. Khan*, Nikhila C. Paranamana, Xiaohua Liu, and Matthias J. Young**, "Poly(P-Phenylenediamine) by oMLD for Amine Functionalization of Polydioxanone for Biomedical Applications," AVS 2024, Tampa Bay, FL, November 7, 2024. (Poster Presentation)
7. Mahya Mehregan*, Jack Schultz, Matthew R. Maschman, and Matthias J. Young**, "The Impact of Copolymer Molecular Sequence on Electronic Transport," AVS 2024, Tampa Bay, FL, November 6, 2024. (Oral Presentation)
8. Amit K. Datta*, Nikhila C. Paranamana, Patrick J. Kinlen, and Matthias J. Young**, "Synthesis of Disulfide Polymer by Oxidative Molecular Layer Deposition (oMLD)," AVS 2024, Tampa Bay, FL, November 6, 2024. (Oral Presentation)
9. Azeez O. Musa*, Andreas Werbrouck, Nikhila C. Paranamana, Matthew R. Maschmann, and Matthias J. Young**, "Examining UV-Induced Functional Group Formation on 2D Nanomaterials for Patterned ALD," AVS 2024, Tampa Bay, FL, November 4, 2024. (Oral Presentation)
10. Matthias J. Young*,**,†, Nikhila C. Paranamana, Mahya Mehregan, Shima Mehregan, and Amit K. Datta, "Growing Polymers Molecule by Molecule Through Vapor Deposition," AVS 2024, Tampa Bay, FL, November 4, 2024. (Invited Oral Presentation)
11. Nikhila C. Paranamana, Andreas Werbrouck, Amit Datta, Xiaoqing He, Matthias J. Young*,**,†, "Informing Development of MLD Coatings for Solid State Batteries via 4D-STEM of LGPS and NMC Interfaces," AVS 2024, Tampa Bay, FL, November 4, 2024. (Invited Oral Presentation to replace Cancelled Speaker)
12. Matthias J. Young*,**,†,, "Hybrid MLD/oMLD Growth of Poly(p-hydroquinone) as a Mixed Electron and Lithium Ion Conducting Polymer," AIChE 2024, San Diego, CA, October 29, 2024. (Invited Oral Presentation)
13. Andreas Werbrouck*, Nikhila C. Paranamana, Xiaoqing He, and Matthias J. Young**, "Understanding the Amorphous Structure of Al- and Zn-Doped TiO2 with an Automated 4D-STEM Analysis Pipeline" ECS PRiME 2024, Honolulu, HI, October 7, 2024. (Oral Presentation)
14. Andrew Reinhard*, Mahya Mehregan, Matt Maschmann, and Matthias J. Young**, "Conformal Conductive Polymer Deposition on Carbon Nanotube Forests" ECS PRiME 2024, Honolulu, HI, October 9, 2024. (Oral Presentation)

15. Matthias J. Young*,**, Nikhila C. Paranamana, Mahya Mehregan, Shima Mehregan, and Amit Datta, "Controlling Electronic and Ionic Conductivity in oMLD Polymer Coatings" ECS PRiME 2024, Honolulu, HI, October 9, 2024. (Oral Presentation)
16. Shima Mehregan*, Colin S. Gopaul, Henry D. Koenig, Will E.M. Murphy, Charlie T. Veal, Derek T. Anderson, and Matthias J. Young**, "Multiplex Pulsed Current Sensors for Anion Detection" ECS PRiME 2024, Honolulu, HI, October 8, 2024. (Oral Presentation)
17. Colin Gopaul*, Mahya Mehregan, Andreas Werbrouck, Ryan C. Gettler, Nikhila C. Paranamana, Kurt P. Brorsen, and Matthias J. Young**, "Development of Autonomous Reactor for High-Throughput Exploration of Electrically Conductive Copolymers Using Vapor-Phase Deposition" ECS PRiME 2024, Honolulu, HI, October 7, 2024. (Poster Presentation)
18. Anthony Khoury*, Ryan Gettler, and Matthias J. Young**, "Using Electrochemical Impedance Spectroscopy to Analyze the State of Health of Lead Acid Batteries" *Missouri Center for Advanced Power (MOCAP)*, Columbia, Missouri, February 27, 2024 (Poster Presentation – second prize undergraduate poster category).
19. Andreas Werbrouck*, Nikhila C. Paranamana, Xiaoqing He, and Matthias J. Young**, "Automated structural refinement of energy materials with 4D-STEM" *Missouri Center for Advanced Power (MOCAP)*, Columbia, Missouri, February 27, 2024 (Poster Presentation).
20. Nikhila C. Paranamana*, Xiaoqing He, Andreas Werbrouck, and Matthias J. Young**, "Investigation of Cathode-Solid Electrolyte Interface formation in Solid-state Lithium-Ion Batteries" *Missouri Center for Advanced Power (MOCAP)*, Columbia, Missouri, February 27, 2024 (Poster Presentation).
21. Amit Datta*, Nikhila C. Paranamana, and Matthias J. Young**, "Oxidative Molecular Layer Deposition of Polyhydroquinone" *Missouri Center for Advanced Power (MOCAP)*, Columbia, Missouri, February 27, 2024 (Poster Presentation – third prize graduate poster category).
22. Shima Mehregan*, Henry Koenig, Will Murphy, and Matthias J. Young**, "Synthesize and electrochemical characteristics of o-MLD poly thiourea and Multielectrode anion sensor" *Missouri Center for Advanced Power (MOCAP)*, Columbia, Missouri, February 27, 2024 (Poster Presentation).
23. Mahya Mehregan*, and Matthias J. Young**, "The Influence of Short-range Molecular Structure on the Electronic Conductivity of Polymers" *Missouri Center for Advanced Power (MOCAP)*, Columbia, Missouri, February 27, 2024 (Poster Presentation).
24. Matthias J. Young*,**,†, "Molecular Control of Charged Co-Polymers for Electrochemical Applications" *Georgia Institute of Technology Materials Science and Engineering Seminar Series*, Atlanta, Georgia, January 29, 2024 (Invited Oral Presentation).
25. Nikhila C. Paranamana*, Amit Datta, Xiaoqing He, Matthias J. Young**, "Towards Dual Lithium-Ion and Electronically Conductive Polymer Coatings by MLD" *AVS 2023*, Portland, Oregon, November 07, 2023 (Oral Presentation).
26. Matthias J. Young*,**, Quinton K. Wyatt, Katrina G. Brathwaite, Muhammad Ardiansyah, Nikhila C. Paranamana, Kurt R. Brorsen, "On the mechanism of Oxidative Molecular Layer Deposition" *AVS 2023*, Portland, Oregon, November 09, 2023 (Oral Presentation).
27. Matthias J. Young*,**, Mahya Mehregan, Gabe Luebbert, Katrina G. Brathwaite, Quinton K. Wyatt, Eric Throm, David Stalla "Oxidative Molecular Layer Deposition of Conductive PEDOT Coatings onto Polymer Sponges to form Compressible Porous Electrodes" *244th ECS Conference*. Gothenburg, Sweden, October 11, 2023 (Oral Presentation)
28. Ryan C. Gettler*, Patrick J. Kinlen, Emad Renfroe, Yangchuan Xing, Matthias J. Young**, "Postprocessing of Solution-Cast Polyaniline (PANI) for Enhanced Electrochemical Properties" *244th ECS Conference*. Gothenburg, Sweden, October 12, 2023 (Oral Presentation)
29. Ryan Gettler*, Shima Mehregan, Henry Koenig, Matthias J. Young**, "Non-Equilibrium Nitrate Detection in Ionophore-Based Solid-Contact Ion-Selective Electrodes (SC-ISEs)" *244th ECS Conference*. Gothenburg, Sweden, October 8, 2023 (Oral Presentation)
30. Matthias J. Young*,**,†, "Measuring and Modifying Electrochemical Interfaces" *AVS Prairie Chapter Regional Meeting*, Chicago, Illinois, September 13, 2023 (Oral Presentation).

31. M.J. Young[*,**], Q.K. Wyatt, K.G. Brathwaite, M. Ardiansyah, N.C. Paranamana, K.R. Brorsen, "Oxidative Molecular Layer Deposition of Charged Polymers for Electrochemical Applications" *ACS Fall 2023*. San Francisco, California, August 16, 2023. (Oral Presentation).
32. N.C. Paranamana[*], J. Cook, M.J. Young[**], "Role of surface acid-base character in pyrrole autoxidation" *ACS Fall 2023*. San Francisco, California, August 13, 2023. (Oral Presentation).
33. M.J. Young[*,**], Q.K. Wyatt, K.G. Brathwaite, M. Ardiansyah, N.C. Paranamana, K.R. Brorsen, "Recent Developments in Oxidative Molecular Layer Deposition" *AVS 23rd International Conference on Atomic Layer Deposition (ALD 2023)*. Bellevue, Washington, July 26, 2023. (Oral Presentation).
34. M. Mehregan[*], D. Stalla, G. Luebbert, L. Baratta, K.G. Brathwaite, Q.K. Wyatt, N.C. Paranamana, M.J. Young[**], "Compressible polymer sponge electrodes via oMLD of PEDOT onto Polyurethane Sponge Supports" *AVS 23rd International Conference on Atomic Layer Deposition (ALD 2023)*. Bellevue, Washington, July 23, 2023. (Oral Presentation).
35. M.J. Young[*,**,†], G. Koerner, C. Boyle, Q.K. Wyatt, N.C. Paranamana, A. Mussa, M.R. Maschmann, "Area selective atomic layer deposition enabled by writeable functional group patterning" *7th Area Selective Deposition Workshop*. Incheon, South Korea, Apr. 4, 2023. (Invited Oral Presentation)
36. N.C. Paranamana[*], X. He, M.J. Young[**], "Investigation of cathode-solid electrolyte interface formation and impact of barrier coatings in lithium-ion batteries" *2023 Spring Summit of the Missouri Center for Advanced Power Systems*, Joplin, Missouri. Mar. 7, 2023. (Poster Presentation - first prize graduate poster competition)
37. M. Mehregan[*], K. Brathwaite, D. Stalla, M.J. Young[**], "Compressible Polymer Sponge Electrodes via oMLD of PEDOT onto Polyurethane Sponge Supports" *2023 Spring Summit of the Missouri Center for Advanced Power Systems*, Joplin, Missouri. Mar. 7, 2023. (Poster Presentation - third prize graduate poster competition)
38. K.G. Brathwaite[*], Q.K. Wyatt, A. Atassi, S.A. Gregory, E. Throm, D. Stalla, S.K. Yee, M.D. Losego, M.J. Young[**], "Electrochemical Properties of Nanoscale Polyethylenedioxythiophene (PEDOT) Thin-Films Grown by Oxidative Molecular Layer Deposition (oMLD)" *2023 Spring Summit of the Missouri Center for Advanced Power Systems*, Joplin, Missouri. Mar. 7, 2023. (Poster Presentation - second prize undergraduate poster competition)
39. R. C. Gettler[*], P.J. Kinlen, M.J. Young[**], "Solution Processable Polyaniline for the Manufacturing of Conductive Films with Charge Storage Capability" *2023 Spring Summit of the Missouri Center for Advanced Power Systems*, Joplin, Missouri. Mar. 7, 2023. (Poster)
40. N.C. Paranamana[*], R. Gettler, H. Koenig, S. Montgomery-Smith, X. He, M.J. Young[**], "Measuring Local Atomic Structure Variations Through the Depth of Ultrathin ALD Aluminum Oxide" *AVS 68th International Symposium and Exhibition,* Pittsburgh, PA, Nov. 10, 2022. (Oral Presentation).
41. M.J. Young[*,**], Q.K. Wyatt, M. Vaninger, N.C. Paranamana, T.W. Heitmann, H. Kaiser "Oxidative Molecular Layer Deposition of Electrochemically Active Polymers" *AVS 68th International Symposium and Exhibition,* Pittsburgh, PA, Nov. 09, 2022. (Oral Presentation).
42. M.J. Young[*,**], Q.K. Wyatt, M. Vaninger, N.C. Paranamana, T.W. Heitmann, H. Kaiser "Oxidative Molecular Layer Deposition of Conjugated Amine Polymer Thin Films" *242nd ECS Meeting,* Atlanta, Georgia, Oct. 11, 2022. (Oral Presentation).
43. M.J. Young[*,**,†], N.C. Paranamana, R. Gettler, H. Koenig, S. Montgomery-Smith, X. He, "Characterization of the Local Atomic Structure of ALD Coated Interfaces" *242nd ECS Meeting,* Atlanta, Georgia, Oct. 10, 2022. (Invited Oral Presentation).
44. G. Koerner, Q. K. Wyatt, B. Bateman, C. Boyle, M. J. Young[*,**], M. R. Maschmann, "Electron-beam Functional Group Pattering on HOPG for Area-Selective Atomic Layer Deposition" *22nd International Conference on Atomic Layer Deposition*, Ghent, Belgium, June 28, 2022 (Oral presentation)
45. N.C. Paranamana[*], R. Gettler, H. Koenig, X. He, M.J. Young[**], "Localized cryo-ePDF to Measure the Atomic Structure of Metal Oxide Interfaces" *2022 Spring Summit of the Missouri Center for Advanced Power Systems*, Springfield, Missouri. Mar. 8, 2022. (Poster Presentation - first prize graduate poster competition)

46. Q.K. Wyatt[*], M.J. Young[**], "Oxidative molecular layer deposition of redox-active polymers " *2022 Spring Summit of the Missouri Center for Advanced Power Systems*, Springfield, Missouri. Mar. 8, 2022. (Poster Presentation - third prize graduate poster competition)
47. K. Brathwaite[*], Q.K. Wyatt, M.J. Young[**], "Electrochemical Properties of thin-film PEDOT grown by Molecular Layer Deposition" *2022 Spring Summit of the Missouri Center for Advanced Power Systems*, Springfield, Missouri. Mar. 8, 2022. (Poster Presentation - third prize undergraduate poster competition)
48. G. Luebbert[*], M.J. Young[**], "Thermodynamic analysis of the energetic limits of water desalination" *2022 Spring Summit of the Missouri Center for Advanced Power Systems*, Springfield, Missouri. Mar. 8, 2022. (Poster Presentation)
49. M. Maschmann[*,**], M.J. Young[*,**,†], G.Koerner, Q.K. Wyatt, N.C. Paranamana, B.Bateman, "Area-Selective Atomic Layer Deposition by Electron Beam Functionalization on Graphene Substrates" *ASM International,* Phoenix, Arizona. Jan. 12, 2022. (Invited Oral Presentation).
50. G.Koerner[*], Q.K. Wyatt, N.C. Paranamana, B.Bateman, M.J. Young[**], M. Maschmann[**], "Area-Selective Atomic Layer Deposition on Graphene Substrates" *2021 Materials Research Society Fall Meeting & Exhibit,* Boston, Massachusetts. Dec. 2, 2021. (Oral Presentation).
51. M.J. Young[*,**], Q.K. Wyatt, R.C. Gettler, N.C. Paranamana, T.A. White, X. He "Thin-Film Polymer Coatings by Molecular Layer Deposition for Advanced Energy Storage Electrodes" *2021 AIChE Annual Meeting*, Boston, Massachusetts (virtual). Nov. 17, 2021. (Oral Presentation)
52. M.J. Young[*,**], Q.K. Wyatt, R.C. Gettler, N.C. Paranamana, T.A. White, X. He "Redox-Active Polymer Thin Films by MLD for Enhanced Electrochemical Desalination" *American Vacuum Society 67th International Symposium & Exhibition*, Orlando, Florida (virtual). Oct. 18, 2021. (Oral Presentation)
53. M.J. Young[*], Q.K. Wyatt "Advances in Molecular Layer Deposition of Conductive and Redox-active Polymer Thin Films" *240th Electrochemical Society Meeting*, (virtual). Oct. 12, 2021. (Oral Presentation)
54. R.C. Gettler[*], M.J. Young[**], "Effects of Interchain Crosslinking by Alkyl Dihalides on the Electrochemical Performance of Polypyrrole Thin Films" *240th Electrochemical Society Meeting*, (virtual). Oct. 11, 2021. (Oral Presentation)
55. M.J. Young[*,**], N.C. Paranamana, T.A. White, X. He "Cryo-ePDF to Measure the Atomic Structure of Amorphous ALD Interfaces" *AVS 21st International Conference on Atomic Layer Deposition (ALD 2021)*, (virtual). June 21, 2021. (Oral Presentation)
56. N.C. Paranamana[*], M.J. Young[**], "ALD of Thin-Film NaxMnyO Cathode Materials for Sodium Ion Batteries" *AVS 21st International Conference on Atomic Layer Deposition (ALD 2021)*, (virtual). June 21, 2021. (Oral Presentation)
57. Q.K. Wyatt, M.J. Young[**], "Oxidative Molecular Layer Deposition of Conjugated Amine Polymer Thin-Films" *AVS 21st International Conference on Atomic Layer Deposition (ALD 2021)*, (virtual). June 24, 2021. (Oral Presentation)
58. M.J. Young[*,**,†], Q.K. Wyatt, R.C. Gettler, N.C. Paranamana, T.A. White, X. He "Polymer Thin Films for Applications in Water Sensing and Treatment" *Missouri Water Resources Research Center (MOWRRC) Seminar Series*, Columbia, Missouri (online). April 30, 2021. (Invited Oral Presentation)
59. M.J. Young[*], "Bridging Industry and Academia for Materials Innovations in Water Treatment Technology" *NAWI Annual Meeting 2020: Roadmapping Critical Water Challenges Unconference Session*, (online). November 19, 2020.
60. M.J. Young[*,**,†], Q.K. Wyatt, R.C. Gettler, N.C. Paranamana, T.A. White, X. He "Investigations into molecular layer deposition of conjugated amine polymers" *ECS Pacific Rim Meeting on Electrochemical and Solid State Science (PRiME) 2020*, Honolulu, Hawaii (online). September 21, 2020. (Invited Oral Presentation)
61. M.J. Young[*,**,†], Q.K. Wyatt, R.C. Gettler, N.C. Paranamana, T.A. White, X. He "Atomic and Molecular Layer Deposition of Redox-active Thin Films" *University of Maryland College Park Chemical*

Engineering Seminar Series, College Park, Maryland (online). October 20, 2020. (Invited Oral Presentation)

62. M.J. Young[*,**,†],A.M. Jasim, X. He, T.A. White, Y. Xing "Measuring the local atomic structure of nanoscale and amorphous interfaces – an example for amorphous thin films grown by atomic layer deposition" *NSF Midscale Research Infrastructure Workshop on Ice Lithography*, Columbia, Missouri (online). August 6, 2020. (Invited Oral Presentation)
63. M.J. Young[*,†], N. Bedford, J.W. Elam, A. Yanguas-Gil, S. Letourneau, M. Coile, D. Mandia, B. Aoun, S.M. George, A.S. Cavanagh, X. He, A. Jasim, Q.K. Wyatt, N.C. Paranamana, T. White, "From the noise: measuring the atomic structure in amorphous thin films grown by atomic layer deposition" *AVS 20th International Conference on Atomic Layer Deposition (ALD 2020)*, Ghent, Belgium (online). June 30, 2020 (Invited Oral Presentation)
64. M.J. Young[*], N. Bedford, J.W. Elam, A. Yanguas-Gil, S. Letourneau, M. Coile, D. Mandia, S.M. George, A.S. Cavanagh, X. He, A. Jasim, Q. Wyatt, T. White, H. Kaiser, T.W. Heitmann "Probing the Atomic-Scale Structure of Thin Films Grown By Atomic Layer Deposition" *236th Electrochemical Society Meeting*, Altanta, GA, US. Oct. 16, 2019. (Oral Presentation)
65. M.J. Young[*], S. Letourneau, R. Warburton, W. Dose, J. Greeley, C.S. Johnson, J.W. Elam "Surface Reorganization and Rate Enhancement of Spinel LiMn2O4 (LMO) on First Trimethylaluminum/Water Exposure" *236th Electrochemical Society Meeting*, Altanta, GA, US. Oct. 14, 2019. (Oral Presentation)
66. Q. Wyatt[*], M.J. Young[**] "Investigation of Electrochemical Mechanisms in Redox-Active Polymer Thin-Films" *236th Electrochemical Society Meeting*, Altanta, GA, US. Oct. 13, 2019. (Oral Presentation)
67. R. Warburton, L. Chen, M.J. Young, K. Bassett, A.A. Gewirth, J.W. Elam, J. Greeley, "First Principles Studies of Solid-Solid Interfaces between LiMn2O4 and Protective Coatings" *235th Electrochemical Society Meeting*, La Jolla, CA. Feb. 1, 2019. (Oral Presentation)
68. M.J. Young[*,†], D. Mandia, A. Yanguas-Gil, S. Letourneau, M. Coile, D. Choudhury, J. Libera, J.W. Elam, "Understanding the atomic structure of thin film and amorphous materials grown by atomic layer deposition" *APS User Science Seminar*, Lemont, IL, US. Jun. 8, 2018. (Invited Oral presentation)
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Organizations:

- ***Electrochemical Society*** 2018-Present
- ***American Institute of Chemical Engineers*** 2015-Present
- ***American Vacuum Society*** 2013-Present
- ***American Chemical Society*** 2011-Present
- ***Order of the Engineer*** 2010-Present
- ***Tau Beta Pi*** engineering honors society 2007-Present
- ***University of Missouri Engineers Club*** 2006-2010
  - ***President*** 2009
- ***Mizzou Hydrogen Car Team*** 2006-2010
  Designed and built a hydrogen fuel cell vehicle for competition in the Shell Eco-Marathon
  - ***Lead Chemical Engineer*** 2008-2010
- Studied abroad in ***Germany*** with the ***American Field Service*** 2004-2005

Certification/Training:

- ***Certified Engineer in Training (EIT)*** in Missouri, PE Eligible 2010
- ***Certified for Online Teaching*** 2020
- ***Participant in Regional NSF Innovation iCorps Program, Wichita State*** 2020