

JOAQUÍN RODRÍGUEZ LÓPEZ

LAS Distinguished Professorial Scholar

J. Andrew and Susan Langan Professorial Scholar

Professor, Department of Chemistry, Materials Research Laboratory and
Beckman Institute for Advanced Science and Technology

University of Illinois Urbana-Champaign, 600 S. Mathews Ave. Box 33-5
58 Roger Adams Laboratory, MC-712, Urbana, IL, USA 61801

Telephone: (217) 300-7354; e-mail: joaquinr@illinois.edu

Group website: <https://rodriguezlopez.chemistry.illinois.edu/>



Outline. Click link to jump to: [General Information and Honors](#); [Invited Presentations](#); [Research Support](#); [Review and Professional Service](#); [Teaching and Outreach](#); [Student and Postdoctoral Advising](#); [Publications and Patents](#).

General Information and Honors

[\[back to top\]](#)

Professional Appointments (UIUC: University of Illinois at Urbana-Champaign)

- Professor, **2023-present**, Department of Chemistry, Beckman Institute for Advanced Science and Technology, Materials Research Laboratory, UIUC
- Associate Professor, **2022-2023** Beckman Institute, UIUC
- Associate Professor, **2019-2023**, Materials Research Laboratory, UIUC
- Associate Professor, **2018-2023**, Department of Chemistry, UIUC
- Faculty Affiliate, **2016-2022**, Beckman Institute, UIUC
- Assistant Professor, **2012-2018**, Department of Chemistry, UIUC
- Instructor/Research assistant, **January-May 2006**, Department of Chemistry, Tecnológico de Monterrey, Campus Monterrey, Mexico

Education

- **Post-Doctoral:** Cornell University, Ithaca, NY.
Advisor: Prof. Hector D. Abruña, (**2010-2012**).
Project: *Characterization and Applications of Single-Layer Graphene Electrodes*.
- **Graduate:** The University of Texas at Austin, Austin, TX.
Doctor of Philosophy, Analytical Chemistry, (2006-2010). Advisor: Prof. Allen J. Bard.
Thesis: *The use of Scanning Electrochemical Microscopy for the Detection and Quantification of Adsorbed Intermediates at Electrodes*.
- **Undergraduate:** Tecnológico de Monterrey (ITESM), Campus Monterrey, Mexico.
Bachelor in Science, Chemistry, with honors, (2001-2005). Advisor: Prof. Marcelo Videia.
Thesis: *Use of the Ion Transfer Across the Interface Between Two Immiscible Liquids for the Detection of Quaternary Ammonium Ions*.
Bicultural Baccalaureate, with honors, (1998-2001). Tecnológico de Monterrey (ITESM), Campus Eugenio Garza Sada, Monterrey, Mexico.

Honors, Recognitions, and Outside Achievements

SINCE STARTING AT THE UNIVERSITY OF ILLINOIS

- 2023 **SCS Faculty Teaching Award**, School of Chemical Sciences, UIUC
- 2023 **LAS Distinguished Professorial Scholar**, College of LAS, UIUC
- 2022 **The Analytical Scientist Top 40 under 40 Power List**
- 2021 **J. Andrew and Susan Langan Professorial Scholar**, College of LAS, UIUC
- 2021 **Zhaowu Tian Prize for Energy Electrochemistry**, International Society of Electrochemistry (ISE).
- 2021 **IAspire Leadership Academy Fellow** by the Aspire Alliance.
- 2020 **Arthur F. Findeis Award for Achievements by a Young Analytical Scientist**, American Chemical Society Division of Analytical Chemistry.
- 2019 **Discovery Award**, Department of Chemistry at the University of Illinois.
- 2018 **Science News SN10: Scientists to Watch.**
- 2017 **Scialog Fellow**, by the Research Corporation for Scialog: Advanced Energy Storage.
- 2017 **Royce W. Murray Young Investigator Award**, by the Society for Electroanalytical Chemistry.
- 2016 **Sloan Research Fellowship**, by the Alfred P. Sloan Foundation.
- 2016 **ECS-Toyota Young Investigator Award**, by the Electrochemical Society and the Toyota Research Institute of America.
- 2016 **Distinguished Service Award**, by the East-Central Illinois ACS Section.
- 2016 **Carl Storm Underrepresented Minority Fellowship**, by the Gordon Research Conference to attend the Electrochemistry theme conference in Ventura CA.
- 2015 **Starter Grant**, by the Society for Analytical Chemists of Pittsburgh (SACP).
- 2015 **ISE Young Investigator Travel Award**, by the International Society of Electrochemistry for attending the 66th meeting of the ISE in Taipei, Taiwan.
- 2015 **ECS Travel Award**, by the Electrochemical Society for attending the 228th ECS Meeting in Phoenix, AZ.
- 2014 **Young Investigator Travel Award**, by the Midwestern Universities Analytical Chemistry Conference (MUACC).
- 2014 **Director's Fund Award**, by the Joint Center for Energy Storage Research (JCESR).

PRIOR TO JOINING THE UNIVERSITY OF ILLINOIS

- 2012 **Young Investigator Award**, by the Energy Materials Center at Cornell.
- 2010 **Livingston Fellowship**, by The William S. Livingston Endowment Fund at the University of Texas at Austin.
- 2010 **ACS Division of Analytical Chemistry Graduate Fellowship**, sponsored by Eli Lilly.
- 2009 **Dean's Prestigious Graduate Fellowship Award**, by the Office of Graduate Studies at the University of Texas at Austin.
- 2008 **Swagelok Award**, Nano Night '08 Poster Session, The University of Texas at Austin.
- 2006 **First Place for Best Bachelor Thesis in Electrochemistry**, Sociedad Mexicana de Electroquímica (SMEQ).
- 2005 **Testimony of Outstanding Performance**, National Exam of Chemistry (CENEVAL, México).
- 2005 **Honorable Excellence Mention and first in Chemistry class**, Tecnológico de Monterrey.
- 2004 **Xorge A. Dominguez Scholarship**, Tecnológico de Monterrey.
- 2001 **Bicultural Baccalaureate, Honorable Excellence Mention**, Tecnológico de Monterrey.

Invited Lectures and Invited Conference Presentations

[\[back to top\]](#)

INVITED PRESENTATIONS DELIVERED WHILE AT THE UNIVERSITY OF ILLINOIS

Upcoming

- 144** Fall 2024 Materials Research Society Meeting, Boston MA, December, 2024.
- 143** 75th Meeting of the International Society for Electrochemistry, Montréal, Canada, August 2024.
- 142** Telluride Science Conference on Charge Transfer, Telluride CO, August, 2024.

Invited seminars and invited conferences presented

- 141** The Electrolab: An Automated Platform for the Versatile Characterization of Electrocatalytic Processes. **ACS Colloid and Surface Science Symposium, Seattle WA, May 3, 2024.**
- 140** Automating Electrochemistry: Exploring Homogeneous and Heterogeneous Catalysis. **University of Wisconsin – Electrochemical Synthesis Workshop, Online, May 3, 2024.**
- 139** Putting a New Spin on Oxygen Detection at Interfaces for Energy Storage and Conversion. **University of Arkansas, Fayetteville AR, April 29, 2024.**
- 138** Automated Electrochemical Characterization for Redox Flow Batteries Using The Electrolab: Molecules, Polymers, Electrolytes and their Interactions. **Spring 2024 Materials Research Society Meeting, Seattle WA, April 24, 2024.**
- 137** Putting a New Spin on Oxygen Detection at Interfaces: SECM and Probes for Detecting Intermediates during Energy Storage and Conversion. **University of Houston, Houston TX, April 8, 2024.**
- 136** Building a Forward-Looking Toolset for Redoxmers in Flow: Leveraging Polyelectrolyte Dynamics, End-of-Life, and Automated Testing. **Gordon Research Conference in Batteries, Ventura CA, February 28, 2024.**
- 135** SECM in New Light: Multimodal Measurement Using Spectroelectrochemistry. **Waters Symposium at Pittcon 2024, San Diego CA, February 26, 2024.**
- 134** Putting a New Spin on Oxygen Detection at Interfaces: SECM and Probes for Detecting Intermediates during Energy Storage and Conversion. **University of Arizona, Tucson AZ, February 8, 2024.**
- 133** Putting a New Spin on Oxygen Detection at Interfaces: SECM and Probes for Detecting Intermediates during Energy Storage and Conversion. **Florida State University, Tallahassee FL, December 8, 2023.**
- 132** Putting a New Spin on Oxygen Detection at Interfaces: SECM and Probes for Detecting Intermediates during Energy Storage and Conversion. **Ball State University, Online, November 30, 2023.**

- 131 Putting a New Spin on Oxygen Detection at Interfaces: SECM and Probes for Detecting Intermediates during Energy Storage and Conversion. **University of Texas El Paso, El Paso, TX**, November 8, 2023.
- 130 Redoxmer Electrolytes: Electrochemical Characterization, Dynamics, and Deconstruction Properties for the Size-Exclusion Flow Battery. **Case Western Reserve University, Cleveland OH**, November 2, 2023.
- 129 Putting a New Spin on Oxygen Detection at Interfaces: SECM and Probes for Detecting Intermediates during Energy Storage and Conversion. **University of Wisconsin, Madison WI**, October 26, 2023.
- 128 Expanding the Reach of Electrochemistry Through Automation and Chemical Operations. **Frontiers in Energy Technologies Workshop, University of Chicago, Chicago IL**, October 13, 2023.
- 127 Reactive Imaging using Scanning Electrochemical Microscopy (SECM): Energy Applications, Raman-SECM, and New Tricks. **Gordon Research Conference on Chemical Imaging, Stonehill College, Easton MA**, August 2, 2023.
- 126 Putting a New Spin on Oxygen Detection at Interfaces: SECM and Probes for Detecting Intermediates during Energy Storage and Conversion. **Université Paris Cité, Paris, France**, June 30, 2023.
- 125 New Methods and Concepts at the Intersection of Redox-Active Polymers and Batteries: Redoxmer Dynamics, End-of-Life, and Automated Testing. **Université Paris Cité, Paris, France**, June 29, 2023.
- 124 Redoxmer Electrolytes: Electrochemical Characterization, Dynamics, and Deconstruction Properties for the Size-Exclusion Flow Battery. **Gordon Research Conference on Polymers, Mt. Holyoke College, South Hadley MA**, June 8, 2023.
- 123 Advancing the Analytical and Materials Toolset for Redox Flow Batteries: Dynamics, End-of-Life, and Automation. **Purdue University, West Lafayette IN**, April 25, 2023.
- 122 Advancing the Analytical and Materials Toolset for Redox Flow Batteries: Dynamics, End-of-Life, and Automation. **University of Chicago, Chicago IL**, April 7, 2023.
- 121 Redox-active spin trap approach for capturing OH during reductive and oxidative processes at electrodes using scanning electrochemical microscopy. *The role of fundamental interfacial processes in electrocatalysis symposium*. **Spring 2023 Meeting of the American Chemical Society, Indianapolis IN**, March 29, 2023.
- 120 Electrochemical SERS on graphitic interfaces via underlayer-modified electrodes: In situ probing of adsorbed, redox-active molecular assemblies. *Molecular ordering at interfaces symposium*. **Spring 2023 Meeting of the American Chemical Society, Indianapolis IN**, March 27, 2023.
- 119 Putting a Different Spin on the Detection of Reactive Oxygen Species at Interfaces for Electrocatalysis and Energy Storage. **Hope College, Holland MI**, March 10, 2023.

- 118 Putting a Different Spin on the Detection of Reactive Oxygen Species at Interfaces for Electrocatalysis and Energy Storage. **Calvin University, Grand Rapids MI**, March 9, 2023.
- 117 Advancing the Analytical and Materials Toolset for Redox Flow Batteries: Dynamics, End-of-Life, and Automation. **University of Notre Dame, South Bend IN**, February 23, 2023.
- 116 Putting a Different Spin on the Detection of Reactive Oxygen Species at Interfaces for Electrocatalysis and Energy Storage. **Center for Electrochemistry Workshop, University of Texas, Austin TX**, February 18, 2023.
- 115 Everything, Everywhere, All at Once: Decoupling (and Embracing) the Complexity of Electrochemical Processes at Electrified Interfaces. **Beckman Institute Director's Seminar, Urbana IL**, February 2, 2023.
- 114 Evaluating Chemical, Electrochemical, and Spatial Heterogeneities during Degradative Oxygen Evolution at Battery Cathodes using SECM. *Advanced Characterizations of Heterogeneities in Electrochemical Energy Storage Materials Symposium*. **Fall 2022 Materials Research Society Meeting, Boston MA**, November 30, 2022.
- 113 Microband Electrode Platforms for Identifying Homogeneous and Heterogeneous Factors Limiting Redoxmer Performance for Redox Flow Batteries. *Redox Flow Batteries – Materials Methods and Devices Symposium*, **Fall 2022 Materials Research Society Meeting, Boston MA**, November 29, 2022.
- 112 SECM as a Versatile Toolbox for Elucidating Manifold Challenges at the Electrochemical Interface: Oxygenated Intermediates. **George Mason University, Online**. November 4, 2022.
- 111 Advancing the analytical and materials toolset for redox-flow batteries: redoxmer dynamics and end-of-life considerations. *Redox-flow battery session*. **73rd Annual ISE Meeting**. Online, Available September 11, 2022.
- 110 Tapping into the dynamics of macromolecular redoxmer electrolytes for flow battery applications. *Macromolecular and Structured Electrolytes Session*. **ACS Fall 2022 Meeting, Chicago IL**, August 23, 2022.
- 109 Real-time quantification of hydroxyl radical using scanning electrochemical microscopy: a milestone in a career-long interest of detecting oxygenated reactive intermediates at electrodes. *A Diverse Path to Success in Analytical Chemistry Session*, **ACS Fall 2022 Meeting, Chicago IL**, August 23, 2022.
- 108 Think Small: The Great Power of Small Electrodes (and what they can do for you) *and* Scanning Electrochemical Microscopy: A Versatile Tool for Inspecting Interfaces in Energy Storage. **Graduate School Electrochemical Energy Storage (GS-EES), online presentation at the Karlsruhe Institute of Technology (KIT) and Ulm University**, July 4, 2022.
- 107 Think Small: The Great Power of Small Electrodes (and what they can do for you). Next Generation Electrochemistry (NGenE), **University of Illinois, Chicago IL**, June 7, 2022.
- 106 The SECM Generation-Collection Experiment in Electrochemical Energy Storage Research. Rodríguez-López, 5

Advanced Analytical Techniques for the Study of Energy Conversion and Storage Session. Pittcon 2022. Online, Available June 9, 2022.

- 105 Interactive spectroelectrochemistry: exploring interfacial perturbations at the electrode/electrolyte interface using Raman spectroscopy – Scanning Electrochemical Microscopy (Raman-SECM). *Shedding Light on Electrochemical Interfaces: How New Spectroscopic Strategies Inform Electrochemical Materials and Transformations Session. Pittcon 2022.* Online, Available May 12, 2022.
- 104 Thinking Big about Batteries: A Solution for Energy Storage. *James B. Kaler Science Lecture. William M. Staerckel Planetarium at Parkland College, Champaign IL, April 1, 2022.*
- 103 Exploring chemical reactivity at the electrochemical interface using scanning electrochemical microscopy. *ACS Award in Analytical Chemistry Session Honoring Prof. Héctor D. Abruña. American Chemical Society Spring 2022 Meeting.* Online, March 20, 2022.
- 102 Gearing Up Electrochemical Microscopy for Observing and Controlling Interfacial Processes in Energy Storage and Conversion. **UNICAMP (Universidade Estadual de Campinas, Brazil).** Online, December 9, 2021.
- 101 Electroquímica Interactiva: Maneras Diversas de “Ver” un Electrodo (*Presentation in Spanish*). **Breaking Barriers Through Chemistry (BBTC) 2021.** Online, August 4, 2021.
- 100 Reaction Rate Mapping at Electrodes for Redox Flow Batteries – Impacts of Adsorption and Electrode Structure. **“Progress in Understanding Charge Transfer at Electrochemical Interfaces in Batteries” session at the Spring 2021 MRS Meeting.** Online, April 23, 2021.
- 99 Mapping Alkali Ion Fluxes at Battery Interfaces: Application to Understanding the Formation of the Solid-Electrolyte Interphase. **“In Situ/Operando Characterization of Solid-Liquid Interfaces for Sustainable Energy, Water and Environment” session at the Spring 2021 MRS Meeting.** Online, April 22, 2021.
- 98 Ions in the Spotlight: Extending the Electrochemical Imaging Toolset for Detecting Ion Fluxes During Ion Intercalation and Solid-Electrolyte Interphase Formation. **Pittcon 2021, “Advances in Electrochemical and Ion Current Imaging” New Orleans LA/Online,** March 8, 2021.
- 97 Gearing Up Electrochemical Microscopy to Address Challenges in Energy Storage. **Washington University in St. Louis,** Department of Energy, Environment, and Chemical Engineering. Online, December 11, 2020.
- 96 Gearing Up Electrochemical Microscopy to Address Challenges in Energy Storage. **University of Massachusetts, Dartmouth.** Online, December 2, 2020.
- 95 Elucidating the degradation of redoxmer electrolytes at the carbon-electrolyte interface using spatially-resolved electrochemistry. **Live keynote for “Flow-Based Open Electrochemical Systems” 2020 MRS Fall Meeting.** Online, November 28, 2020.
- 94 Gearing Up Electrochemical Microscopy to Address Challenges in Energy Storage. **Diversity in Analytical Chemistry Virtual Seminar.** Online, November 18, 2020.

- 93 Gearing Up Electrochemical Microscopy to Address Challenges in Energy Storage (Presentation in Spanish). **Magisterial Lecture, XXXV Congreso de la Sociedad Mexicana de Electroquímica (SMEQ)**, Ciudad Juárez, Mexico. Online, October 16, 2020.
- 92 Gearing Up Electrochemical Microscopy to Address Challenges in Energy Storage. **260th ACS National Meeting in San Francisco**, “ANYL Division Awards Session”, presented with Arthur F. Findeis award. Online, August 18, 2020.
- 91 Probing Interfacial Kinetics on Atomically-Thin Electrodes Using SECM coupled to Laser Excitation and Raman Spectroelectrochemistry. **260th ACS National Meeting in San Francisco**, “Spectroscopy for Understanding Catalysis.” Online, August 17, 2020.
- 90 Electrodo Interfaz. **Electrochemical Society Student Chapter Colloquia – Monterrey Chapter**. Online, May 11, 2020.
- 89 Electrochemistry at Few-Atom Interfaces: New Opportunities for Electrochemical Imaging. **Pittcon 2020, “Chemical Analysis of Energy Materials at the Nanoscale”**, Chicago IL, March 1, 2020.
- 88 SECM as a Versatile Toolbox for Elucidating Manifold Challenges at the Electrochemical Interface, **Student Selected Seminar, University of Minnesota Twin Cities, Minneapolis MN**, February 18, 2020.
- 87 Scanning Electrochemical Microscopy of Battery Interfaces: In-Situ Imaging of Ionic Fluxes and Single-Site Reactivity on Heterogeneous Carbon Electrodes. **University of Rhode Island, Kingston RI**, November 25, 2019.
- 86 SECM as a Versatile Toolbox for Elucidating Manifold Challenges at the Electrochemical Interface. **California Institute of Technology, Inorganic-Electrochemistry Seminar, Pasadena CA**, November 18, 2019.
- 85 Elucidating Energy Storage through Versatile Electrochemistry, **University of Ulm, Institute of Analytical and Bioanalytical Chemistry, Ulm, Germany**, October 3, 2019.
- 84 Raman-SECM: A powerful tool for spatially and time-resolved spectroelectrochemistry at thin interfaces. **10th Workshop on Scanning Electrochemical Microscopy, Fontainebleau, France**, October 1, 2019.
- 83 SECM as a Versatile Toolbox for Elucidating Manifold Challenges at the Electrochemical Interface. **Iowa State University, Department of Chemistry, Ames IA**, September 20, 2019.
- 82 SECM as a Versatile Toolbox for Elucidating Manifold Challenges at the Electrochemical Interface. **Colorado State University, Department of Chemistry, Fort Collins CO**, September 18, 2019.
- 81 New Approaches for Peroxide (Electro)Catalysis. **Potter’s Lodge Meeting, Blue Mountain Lake NY**, September 5, 2019.
- 80 New Approaches for Peroxide (Electro)Catalysis. **Telluride Science Research Center Conference: Platinum-Group Metal-Free Electrocatalysis, Telluride CO**, June 28, 2019.
- 79 The Great Potential of Small Electrodes – And What they Can Do for You. **Next Generation Electrochemistry (NGenE) Workshop at the University of Illinois at Chicago, Chicago IL**, June 6, 2019.

- 78 Elucidating Energy Storage through Versatile Electrochemistry. **Columbia University, New York City NY**, May 19, 2019.
- 77 Ultrathin Few-Layer Graphene Electrodes as Versatile Platforms for Testing the Limits of Ion Intercalation. **2019 MRS Spring Meeting, ES03 Session: Electrochemical Energy Materials Under Extreme Conditions, Phoenix AZ**, April 24, 2019.
- 76 Single-Particle and Spectroelectrochemical Analysis of Charge Transfer Mechanisms in Redox-Active Polymers for Flow Batteries. **2019 MRS Spring Meeting, ES01 Session: Organic Materials in Electrochemical Energy Storage, Phoenix AZ**, April 24, 2019.
- 75 Scanning Electrochemical Microscopy Imaging of Reactivity Gradients on Electrochemically-Transparent Graphene Electrodes. **24th Topical Meeting of the International Society of Electrochemistry, Assembly at the Meso-, Nano-, and Molecular Scale, Mérida, Mexico**, April 19, 2019.
- 74 Scanning Electrochemical Microscopy of Battery Interfaces: In-Situ Imaging of Ionic Fluxes and Single-Site Reactivity at Heterogeneous Carbon Electrodes. *A New Generation for Ion Battery Analytics*. **Pittcon 2019, Philadelphia PA**, March 18, 2019.
- 73 Electrochemical Versatility of Redox-Active Polymers: Implications for Uses Beyond Energy Storage. *Materials & Techniques to Advance Redox Flow Batteries session*, **ACS Spring 2019 National Meeting and Exposition, Orlando FL**, April 1, 2019.
- 72 Elucidating Energy Storage through Versatile Electrochemistry. **City University of New York, Queens NY**, March 25, 2019.
- 71 Elucidating Energy Storage through Versatile Electrochemistry. **University of Western Ontario, London ON, Canada**, March 19, 2019.
- 70 Elucidating Energy Storage through Versatile Electrochemistry. **The University of Texas at Austin, Austin TX**, February 19, 2019.
- 69 Elucidating Energy Storage through Versatile Electrochemistry. **University of California Los Angeles, Los Angeles CA**, February 8, 2019.
- 68 The Development of Size-Exclusion Polymer Non-Aqueous Flow Batteries, **DOE Workshop on Non-Aqueous Flow Batteries, Santa Fe NM**, January 30, 2019.
- 67 Elucidating Energy Storage through Versatile Electrochemistry. **University of Chicago, Institute for Molecular Engineering, Chicago IL**, December 11, 2018.
- 66 Scanning Electrochemical Microscopy of Battery Interfaces: Versatile Measurement Using Novel Ionic Probes and Multimodal Raman Interrogation. **2018 Materials Research Society Fall Meeting, Boston MA**, November 27, 2018.
- 65 Nano-electrochemical Interrogation of Redox-Active Polymer Electrolytes for Flow Batteries: from New Dynamics to Single Particles. **2018 Materials Research Society Fall Meeting, Boston MA**, November 26, 2018.
- 64 SECM meets Raman: Simultaneous and Co-localized Investigation of Graphene Interfaces for Energy Applications. **SciX 2018 – Light and Electrochemistry in (Ordered) Nanostructures Session**. Atlanta GA, October 23, 2018.
- 63 The Impact of Polyelectrolyte Dynamics on The Electrochemical Reactivity of Soluble Redox-Active Polymers. **AiMES 2018 - K02 symposium: Electron Transfer Activation of**

- Organic and Bioorganic Systems: From Unraveling Electrode Mechanisms to Directed Synthesis of High Valued Products.* Cancun, Mexico, October 1, 2018.
- 62 Titrating Reactive Intermediates at Water-Splitting Photoanodes: Elucidating Spatial, Temporal and Chemical Heterogeneities. **XIX Brazilian Meeting on Inorganic Chemistry, Fortaleza, Brazil**, September 26, 2018.
 - 61 Polyelectrolyte Dynamics of Redox-Active Polymers: Implications for Energy Storage. **3rd International Workshop on Redox Films for Energy Conversion (Redox Shields), Marseille, France**, September 10, 2018.
 - 60 Redox-Active Polymer Electrolytes: New Solutions for Flow Batteries. **International Conference on Energy Conversion & Storage (ORCAS) 2018, San Juan Island WA**, September 7, 2018.
 - 59 Electrocatalysis on Electronically Transparent yet Physically Impermeable Graphene Electrodes. **256th Meeting of the American Chemical Society – Structure and Function of 2D Materials Symposium, Boston MA**, August 21, 2018.
 - 58 SECM meets Raman: In Situ and Simultaneous Probing of Reactivity and Electronic Structure on Single Reacting Sites. **256th Meeting of the American Chemical Society – Light-Nanomaterial Interactions for Ultrasensitive Electrochemical Sensing and Imaging Symposium, Boston MA**, August 21, 2018.
 - 57 Impact of Backbone Structure and Particle Morphology on the Electrochemical Performance of Soluble Redox-Active Polymers. **256th Meeting of the American Chemical Society – Polymers for Function in Electrochemical Energy Storage Devices Symposium, Boston MA**, August 20, 2018.
 - 56 Ion Intercalation in Ultra-Thin Graphene Electrodes: When Bulk and Interface Converge. **Telluride Science Research Center Conference: Interfacial Chemistry and Charge Transfer for Energy Storage, Telluride CO**, July 25, 2018.
 - 55 Redox-Active Polymer Electrolytes: A New Solution for Energy Storage. **Telluride Science Research Center Conference: Molecular Chemistry on Electrochemical Energy Storage, Telluride CO**, July 10, 2018.
 - 54 The Great Power of Small Electrodes – And What they Can Do for Your Research. **Next Generation Electrochemistry (NGenE) Workshop at the University of Illinois at Chicago, Chicago IL**, June 7, 2018.
 - 53 Impact of Polyelectrolyte Dynamics on the Reactivity of Novel Redox-Active Polymers for a New Type of Size-Exclusion Battery. **American Physical Society, 2018 Meeting, Los Angeles CA**, March 5-9, 2018.
 - 52 Elucidating Charge Storage on Nanoscale Assemblies Using Versatile Spectroelectrochemical Probes. **Pittcon 2018, Orlando FL**, February 27, 2018.
 - 51 Titrating Reactive Intermediates at Operating Water-Splitting Photoanodes: Elucidating Spatial, Temporal, and Chemical Heterogeneities. **University of Chicago, Institute for Molecular Engineering, Chicago IL**, February 15, 2018.
 - 50 Elucidating Energy Storage through Versatile Electrochemistry. **Wayne State University, Detroit MI**, October 24, 2017.

- 49 Elucidating Energy Storage through Versatile Electrochemistry. **Ohio State University, Columbus OH**, October 17, 2017.
- 48 New Strategies for Low-Cost Energy Storage for the Grid: A Size-Exclusion Approach Using Polymer Colloids. **SciX 2017, Reno NV**, October 10, 2017.
- 47 Enhancing Electron Transfer Rates on Ultra-Thin Graphene Electrodes Using a Sub-Surface Patterning Approach. **232nd ECS Meeting, National Harbor MD**, October 2, 2017.
- 46 Elucidating Energy Storage through Versatile Electrochemistry. **University of Michigan, Ann Arbor MI**, September 28, 2017.
- 45 Elucidating Energy Storage through Versatile Electrochemistry. **Toyota Research Institute of North America, Ann Arbor MI**, September 13, 2017.
- 44 Exploring the Reactive Modulation of Soluble Redox-Active Polymers via Versatile Electrochemical Interrogation. *Keynote Presentation* - **68th Annual Meeting of the International Society of Electrochemistry, Providence RI**, August 29, 2017.
- 43 Elucidating the Reactivity of Novel Redox-Active Particles via Versatile Electrochemistry. **XXVI International Materials Research Congress, Cancún, México**, August 24, 2017.
- 42 SECM Imaging and Interrogation of Redox and Ionic Processes on Battery Materials. **9th Workshop on Scanning Electrochemical Microscopy and Related Techniques, Warsaw, Poland**, August 16, 2017.
- 41 Versatile Macromolecular Design for Emerging Size-Selective Non-Aqueous Redox Flow Batteries. **Department of Energy, Basic Energy Sciences Summit. Selected speaker representing JCESR. Washington DC**, July 25, 2017.
- 40 Challenges in Reactivity at Electrochemical Interfaces. **Next Generation Electrochemistry (NGenE) Workshop at the University of Illinois at Chicago, Chicago IL**, June 29, 2017.
- 39 Versatile Analysis of Redox and Ionic Reactivity at Battery Materials and Interfaces. **Science and Technology Facilities Council (STFC) Annual Meeting, Abbingdon Oxford, UK**, May 31, 2017.
- 38 Elucidating Energy Storage in Soft Nanostructures Using Versatile Electrochemistry. **Selected Speaker for the Montreal Electrochemical Society Student Chapter Annual Symposium. McGill University, Montreal, Canada**, May 26, 2017.
- 37 Imaging and Quantifying the Reactivity of Chemical and Structural Perturbations on Operating Water Oxidation Photoanodes. **253rd American Chemical Society National Meeting “Light Driven Chemistry” Symposium, San Francisco CA**, April 5, 2017.
- 36 Plenary Lecture, and Elucidating Energy Storage in Nanostructures Using Versatile Electrochemistry. **Eureka College – Jackson Day festivities, Eureka IL**, March 30, 2017.
- 35 Elucidating Energy Storage in Soft Nanostructures Using Versatile Electrochemistry. **Indiana University, Bloomington IN**, March 28, 2017.
- 34 The Impact of Short-Range Interactions on the Reactivity of Ultra-Thin Graphene Electrodes. **Pittcon 2017, Chicago IL**, March 9, 2017.
- 33 Versatile Electrochemical Probes for Emerging Concepts in Energy Materials. **Pittcon 2017 – SEAC Awards Session, Chicago IL**, March 6, 2017.
- 32 Elucidating Energy Storage in Soft Nanostructures Using Versatile Electrochemistry.

- University of Pittsburgh, Pittsburgh PA**, February 16, 2017.
- 31 Digging Deeper into Ionic Reactivity: New Tools and Emerging Trends in Energy Storage. **Center for Electrochemistry Workshop at the University of Texas at Austin, Austin TX**, February 11, 2017.
 - 30 Elucidating Energy Storage in Soft Nanostructures Using Versatile Electrochemistry. **University of Wisconsin, Madison WI**, February 9, 2017.
 - 29 Elucidating Energy Storage in Soft Nanostructures Using Versatile Electrochemistry. **St. Louis University, St. Louis MO**, January 27, 2017.
 - 28 Elucidating Energy Storage in Soft Nanostructures Using Versatile Electrochemistry. **Southern Illinois University Edwardsville, Edwardsville IL**, January 26, 2017.
 - 27 Elucidating Energy Storage in Soft Nanostructures Using Versatile Electrochemistry. **Southern Illinois University Carbondale, Carbondale IL**, January 20, 2017.
 - 26 The Impact of Pendant Interactions on the Electrochemical Response of Redox Active Polymers for Size-Exclusion Flow Batteries. **Materials Research Society Fall Meeting, Boston MA**, November 28, 2016.
 - 25 Elucidating Energy Storage in Soft Nanostructures Using Versatile Electrochemistry. **University of Illinois at Chicago, Chicago IL**, November 17, 2016.
 - 24 Elucidating Energy Storage in Soft Nanostructures Using Versatile Electrochemistry. **Purdue University, West Lafayette IN**, November 8, 2016.
 - 23 Elucidating Energy Storage in Soft Nanostructures Using Versatile Electrochemistry. **University of Alabama, Tuscaloosa AL**, November 3, 2016.
 - 22 Elucidating Energy Storage in Soft Nanostructures Using Versatile Electrochemistry. **University of Maryland, Baltimore MD**, October 21, 2016.
 - 21 Elucidating Soft Nanostructures for Energy Storage Using Versatile Electrochemistry. **University of North Carolina, Chapel Hill NC**, October 3, 2016.
 - 20 Versatile Electrochemical Approaches for Redox Active Polymer Flow Batteries. **Beyond Lithium Ion IX conference, Pacific Northwest National Laboratory**, May 26, 2016.
 - 19 Elucidating Soft Nanostructures for Energy Storage Using Versatile Electrochemistry. **University of Utah, Salt Lake City UT**, May 23, 2016.
 - 18 Elucidating Soft Nanostructures for Energy Storage Using Versatile Electrochemistry. **University of Iowa, Iowa City IA**, April 14, 2016.
 - 17 Electrochemical Imaging of Ionic Reactivity at Operating Ion Battery Electrodes. *SEAC-Young Investigator Session, Pittcon 2016, Atlanta GA*, March 7, 2016.
 - 16 Electrochemical Interrogation of Redox Active Polymer Particles for Energy Storage. **Gordon Research Conference on Electrochemistry, Ventura CA**, January 13, 2016. *Carl Storm Underrepresented Minority Travel Award*.
 - 15 Elucidating Soft Nanostructures for Energy Storage Using Versatile Electrochemistry. **University of Birmingham, Birmingham, UK**, November 27, 2015.

- 14 Redox Active Polymers: A Size Selective Solution for Non-Aqueous Redox Flow Batteries. **United Kingdom Energy Storage Conference (UKES 2015), Birmingham, UK**, November 25, 2015.
- 13 Elucidating Soft Nanostructures for Energy Storage Using Versatile Electrochemistry. **LBNL- The Molecular Foundry Seminar Series, Berkeley CA**, November 10, 2015.
- 12 *Keynote Lecture* - Redox Active Polymers: A Size Selective Solution for Redox Flow Batteries. **228th ECS Meeting**, “Electroactive and Redox Active Polymers”, **Phoenix AZ**, October 14, 2015. *ECS Travel Award*.
- 11 SECM Imaging of Ionic Reactivity at Operating Battery Anodes. **8th Workshop on Scanning Electrochemical Microscopy, Xiamen, China**, October 13, 2015.
- 10 The Impact of Short Range Electronic Interactions on the Electrochemical Activity of Single- and Few- Layer Graphene. **66th Annual Meeting of the ISE, Taipei**, October 8, 2015. *ISE travel award*.
- 9 Redox Active Polymers: A Size Selective Solution for Non-Aqueous Redox Flow Batteries. **PSE Open Mic Session, Argonne National Laboratory, Lemont IL**, September 24, 2015.
- 8 Redox Active Polymers as Storage Materials. **Potters Lodge Meeting in Electrochemistry, Blue Mountain Lake NY**, September 12, 2015.
- 7 The Use of Redox Nano-Titrations for Elucidating Reactive Heterogeneity on Electrodes for Energy Conversion and Charge Storage. Bard Award Session at the **227th Electrochemical Society Meeting, Chicago IL**, May 25, 2015. Honoring award winner Prof. Henry White.
- 6 A Size-Selective Strategy for Redox Flow Batteries. **2nd Annual Joint Center for Energy Research Affiliate Workshop, Hyde Park, Chicago IL**, May 5, 2015.
- 5 The Great Power of Tiny Electrodes: Enabling the Mechanistic Investigation of Charge Transfer on Materials for Chemical Conversion and Energy Storage. **Chemical Sciences and Engineering (CSE) Division Colloquium, Argonne National Laboratory, Lemont IL**, October 14, 2014.
- 4 Elucidating the Reactive Heterogeneity of Water-Splitting Photoelectrocatalysts at the Nano-scale through Combined *In Situ* Surface-Sensitive Approaches. **65th Annual meeting of the International Society of Electrochemistry, Lausanne, Switzerland**, September 3, 2014.
- 3 Spatially-Resolved Electrochemical Methods for Energy Conversion and Storage: Surface Dynamics on Graphene, Photoelectrocatalysts and Li-ion Battery Interfaces. **Universita degli Studi di Milano, Dipartimento di Chimica, Milano, Italy**, May 29, 2014.
- 2 Spatially-Resolved Electrochemical Methods for the Investigation of Electronic and Ionic Reactivity at Interfaces for Energy Conversion and Storage. **Dow Chemical Company, Midland MI**, April 7, 2014.
- 1 *In Situ* Structural Methods for the Investigation of Reactivity in Materials for Photoassisted Electrochemistry. **Pittcon 2013, Philadelphia PA**, March 20, 2013.

INVITED PRESENTATIONS DELIVERED PRIOR TO JOINING UIUC

- 12 A Versatile Toolbox for the Interrogation and Imaging of Electrodes. *Invited as a postdoctoral researcher*. Delivered between October 2011 and February 2012 at the following institutions:

Boston College
University of Illinois at Urbana-Champaign
University of Wisconsin at Madison
Rutgers University
University of Utah

Tufts University
Oregon State University
Cornell University
University of Minnesota Twin Cities
University of Texas at Austin.

- 2 Applications of SECM to the Characterization of Electrocatalysts. *Plenary Lecture*, presented at the **XXVI Symposium of the Mexican Electrochemical Society, Mexico City**, June 1, 2011. *Invited as postdoctoral researcher.*
- 1 The Use of Scanning Electrochemical Microscopy for the Characterization and Discovery of Electrocatalysts. **1st Student Potter's Lodge Meeting, Blue Mountain Lake NY**, September 10, 2010. *Invited as graduate student.*

WORKSHOP AND RESEARCH PANEL INVITATIONS

- **JCESR: Long Duration Storage and Redox Flow Batteries Panel.** Invited as panelist. Organized by the Joint Center for Energy Storage Research. Argonne National Laboratory, Lemont IL, April 4, 2023.
- **Scialog: Negative Emission Science Workshop.** Invited as discussion facilitator and proposal judge. Organized by the Research Corporation for Science Advancement. Tucson AZ, November of 2022.
- **Next Generation Electrochemistry (NGenE) Workshop.** University of Illinois at Chicago, Chicago IL, June 2017, 2018 and 2019, 2021, 2022 and 2023 as facilitator, panelist, and speaker.
- **Future Directions of Synthetic Biology for Energy and Power Workshop.** Invited as participant. Organized by the Assistant Secretary of Defense for Research and Engineering (ASDR&E). Arlington VA, March 6-7, 2018.
- **Scialog: Advanced Energy Storage Workshop.** Invited as participant. Organized by the Research Corporation for Science Advancement. Tucson AZ, November of 2017, 2018 and 2019.
- **Energy Biosciences Institute Workshop.** Invited as participant. University of California Berkeley, Jan. 13, 2017.
- **Energy Storage Panel.** Participated as panelist during the Regional Clean Energy Innovation Forum, Purdue University, June 9, 2016.
- **Battery Science and Characterization Workshop (SciChar).** Invited as participant. Attended at Lawrence Berkeley National Laboratory, May 20-21, 2013.
- **Cottrell Scholars Collaborative New Faculty Workshop.** Invited as participant. Attended at Washington, D.C., July 25-27, 2013.

Research Support: Current and Recent Grants

[\[back to top\]](#)

Current Support

As Principal Investigator (PI)

- PI Department of Energy – Science Foundation Earthshots**, “*Harnessing Electrostatics for the Conversion of Air, Water, and Organics: Driving Redox on Particulate Liquids Earthshot (DROPLETS)*.” Total amount: \$4,500,000; Period: 2024-2027.
This is a collaborative proposal where the PI leads 10 senior personnel.
- PI National Science Foundation – Chemical Measurement and Imaging**, Grant CHE 2004054, “*Quantifying Chemical Surface Intermediates and Interfacial Redox Processes via Combined Raman Spectroscopy and Scanning Electrochemical Microscopy*.” Total amount: \$381,164; Period: 2020-2024.
- PI I-MMAS – UI-UNAM Seed Fund**, “*Development of Convergent Paired Electrofenton Water Treatment Systems by Implementation of Anodic H₂O₂ Production*.” Total amount: \$20,000; Period: 2024-2025.
- PI National Science Foundation – Chemical Measurement and Imaging**, Grant CHE 2404245, “*Quantifying Electrode-Generated Reactive Oxygen Species Using Versatile Redox-Active Spin Traps and Nanoelectrochemistry*.” Total amount: \$390,000; Period: 2024-2027.
- PI Department of Energy – Basic Energy Sciences**, Grant DE-SC0022173, “*Reversible Electrochemical Capture/Release of Carbon Dioxide Mediated by Electrostatically Enhanced Charge Transfer*.” Total amount: \$1,800,000; Period: 2021-2025.
This is a collaborative proposal where the PI leads 2 co-PIs.
- PI Cancer Center at Illinois – Seed Grant**, “*Versatile redox detection of α -glycosylated proteins in blood, a potential universal biomarker for robust cancer detection*.” Total amount: \$200,000; Period: 2022-2024.

As Co-Principal Investigator (Co-PI) or Senior Personnel (SP)

- Co-PI National Science Foundation – Energy Frontiers in Research and Innovation**, Grant EFRI 2029326, “*EFRI: DChem: Renewable Energy Driven Electrocatalytic Co-Conversion of CO₂ and Regional Feedstocks to Chemicals and Fuels*.” Total amount: \$2,000,000; Amount managed by JRL: \$390,858; Period: 2020-2024.
- Co-PI Department of Energy – Office of Energy Efficiency and Renewable Energy**, Grant DE-EE0008673, “*NO Vapor compression Electrochemical Looping Heat Pump NOVEL HP*.” Total amount: \$1,250,000; Amount managed by JRL: \$116,049; Period: 2020-2024.
- SP Department of Energy – Breakthrough Electrolytes for Energy Storage (BEES2) Energy Frontiers Research Center**. Total amount: \$25,000,000; Amount managed by JRL: \$450,000; Period: 2022-2026.
- Co-PI Center for Advanced Climate Solutions (CACs)** “*Methane Capture and Upcycling for Decarbonization*” Total amount: \$100,000; Amount managed by JRL: \$20,000; Period: 2024-2025.

Relevant Past Support

- PI National Science Foundation – Chemical Measurement and Imaging**, Grant 1709391. “*Understanding the Reactive Evolution of Ion-Battery Interfaces through Versatile Single-Site Ionic Interrogation and Imaging Toolset.*” Total amount: \$360,000. Period: 2017-2020.
- PI National Science Foundation – Solid State and Materials Chemistry**, Grant 1611268. “*Elucidating the Impact of Electrostatic Interactions and Number of Layers on the Mechanisms of Ion Intercalation on Graphene Electrodes.*” Total amount: \$510,000. Period: 2016-2020.
- PI Scialog: Advanced Energy Storage – Alfred P. Sloan Foundation.** “*Elucidating a Self-Coating Mechanism for Improved Cathode Performance.*” Total amount: \$55,000. Period: 2020-2022.
- PI Scialog: Advanced Energy Storage – Research Corporation for Science Advancement.** “*DIRECT: Designer Interfacial Reactivity via Electrostatically-Enhanced Charge Transfer.*” Total amount: \$55,000. Period: 2020-2022.
- PI National Science Foundation – Solid State and Materials Chemistry**, Grant DMR 1905803, “*Enabling Fast and Efficient Nonaqueous Ion Co-intercalation for High Energy Density Charge Storage Via Systematic Interfacial Design.*” Total amount: \$547,321; Period: 2019-2023.
- Co-PI US Army – Construction Engineering Research Laboratory.** “*New Technologies to Regenerate Lead-Acid Batteries.*” Total amount: \$1,500,000; Amount managed by JRL: \$700,000; Period: 2020-2022.
- Co-PI Energy Biosciences Institute – Royal Dutch Shell.** “*High Throughput Search for Selective Catalysts for the Synthesis of Hydrogen Peroxide: Synergy of Thermo- and Electrocatalytic Pathways.*” Total amount: \$480,000; Amount managed by JRL: \$210,000; Period: 2017-2021.
- SP Department of Energy – Joint Center for Energy Storage Research (JCESR).** Total amount: \$120,000,000; Amount managed by JRL: ~\$400,000; Period: 2014-2018.
- SP Department of Energy – Joint Center for Energy Storage Research (JCESR).** Total amount: \$120,000,000; Amount managed by JRL: ~\$1,500,000; Period: 2018-2023.
JRL co-led this multi-PI renewal effort in the Flowable Redoxmer Science thrust.

Review and Professional Service

[\[back to top\]](#)

PROPOSAL REVIEW RESEARCH PANELS

- Macromolecular, Supramolecular and Nanochemistry (MSN) program within the Chemistry division (CHE), National Science Foundation
- Chemical Measurement and Imaging (CMI) Electrochemistry and CAREER Panels, National Science Foundation
- Solid-State and Materials Chemistry (SSMC) program within the Division of Materials Research (DMR), National Science Foundation
- Centers for Chemical Innovation (CCI), National Science Foundation
- Science and Technology Centers (STC) Panel, National Science Foundation

- Molecular Foundry Proposal Review Board
- Scialog Negative Emissions Science (2022)
- ECS-Toyota Young Investigator Award (2023, 2024)

AD-HOC PROPOSAL REVIEW

- National Science Foundation – Solid State and Materials Chemistry Program (DMR), Catalysis Program (CHE), and America’s Seed fund (SBIR)
- Air Force Office of Scientific Research
- ACS Petroleum Research Fund
- Army Office of Research
- Department of Energy Basic Energy Sciences – Catalysis Program, Condensed Phase and Interfacial Molecular Science Program, Solar Photochemistry Program.
- South Carolina EPSCoR/IDeA
- Israel Science Foundation
- German Research Foundation (Deutsche Forschungsgemeinschaft, DFG)
- Dutch Research Council (NWO)
- Engineering and Physical Sciences Research Council (EPSRC)
- UIUC BRIDGE program
- Beckman Program Advisory Committee – Review of postdoctoral and graduate proposals
- Lemman Center at UIUC – Review of Graduate Fellowships and Werner Baer Fellowships.
- Research Corporation for Science Advancement (RCSA)

PEER REVIEW FOR JOURNAL PUBLISHERS

Reviewed +200 scientific manuscripts in international journals:

- **American Chemical Society:** *Journal of the American Chemical Society, Analytical Chemistry, Accounts of Chemical Research, ACS Energy Letters, ACS Applied Energy Materials, Langmuir, Journal of Physical Chemistry C, Journal of Physical Chemistry Letters, ACS Catalysis, ACS Nano, Inorganic Chemistry, ACS Measurement Science Au, JACS Au.*
- **Nature Publishing Group:** *Nature, Nature Communications, and Nature Nanotechnology.*
- **AAAS:** *Science.*
- **National Academy of Sciences:** *PNAS*
- **The Electrochemical Society:** *Journal of the Electrochemical Society.*
- **Elsevier:** *Electrochimica Acta, Electrochemistry Communications, Journal of Electroanalytical Chemistry, Surface Science, Surface Coatings and Technology, and Materials Chemistry and Physics.*
- **Royal Society of Chemistry:** *Chemical Science, Analytical Methods, and Physical Chemistry Chemical Physics.*
- **Wiley:** *Angewandte Chemie, ChemNanoMat, ChemElectroChem, and Journal of Raman Spectroscopy.*
- **MDPI:** *Nanomaterials*
- **Cell Press:** *Joule.*

External Committees and Leadership

- **Advisory Board** for the new journal “Electrochemistry” edited by ACS
- **Guest Editor** to the “Chemical Imaging” special issue in *Accounts of Chemical Research* (2024)
- **Guest Editor** to the “Enabling Electrochemical Strategies” Special Issue in *Analyst* (2020)
- Elected to the 2017-2022 **Board of Directors of the Society for Electroanalytical Chemistry**. Served as Memberships Coordinator (2017-2024), overseeing efforts to engage student and faculty members.
- Elected to the 2021-2023 **Electrochemical Society’s (ECS) Physical and Analytical Electrochemistry Division Executive Committee**, and currently aiding in the selection of symposia topics.
- **Leader “Redox Active Polymer Sprint”** (2014-2017) and **Focus Area Leader** (2018-present) for the **Joint Center for Energy Storage Research (JCESR)**. Main activities include coordinating research and communication efforts through bi-weekly video conference, meetings with students and postdocs, file sharing, and travel, between research groups at UIUC, University of Chicago, University of Utah, MIT, Harvard, University of Michigan and Argonne National Laboratory. JCESR Sprint highlights available in *YouTube* videos featuring the PI: [[Video 1](#)], [[Video 2](#)], [[Video 3](#)], [[Video 4](#)].
- **Focus area lead** of the Joint Center for Energy Storage Research (JCESR) since 2018. Coordinated research, communication, and reporting through the organization of bi-weekly videoconferences, meetings with students and postdocs, file sharing, and travel between groups at UIUC, University of Utah, University of Chicago, University of Michigan, and Argonne National Laboratory, among others.
 - **Vice-Chair of Executive Committee** overseeing the establishment of the Electrochemical Society (ECS) Mid-America Section in 2022.
- **Committee Member for the Design of the 2017 ACS Instrumental Analysis Exam**. Activities included the generation, correction, and proofing of questions for the exam.
- **Membership in professional organizations:** American Chemical Society (ACS), The Electrochemical Society (ECS), Society for Electroanalytical Chemistry (SEAC), International Society of Electrochemistry (ISE), Materials Research Society (MRS).

Organization of Symposia and Conferences

1. **Future Symposium Co-organize of “EN-11: Nitrogen-doped carbon, from fundamental understanding to applications”** symposium during the **2024 MRS Fall Meeting** in Boston, December 1-6, 2024.
2. **Symposium Co-Organizer of “L10-Interfacial Analysis for Energy Storage”** and “L09-Physical and Electrochemical Processes at Electrodes for Redox Flow Batteries” for the **Fall 2023 Meeting of the Electrochemical Society**, Gothenburg, Sweden, October 8-12, 2023.
3. **Co-Organizer of 11th International Workshop on SECM and Related techniques**, Montreal, Canada, September 25-27, 2023.
4. **Symposium Co-Organizer of “Shedding Light on Electrochemical Interfaces: How New Spectroscopic Strategies Inform Electrochemical Materials and Transformations,” Pittcon 2022**. Online and On-Demand, March-May, 2022.

5. **Symposium Co-Organizer** of the “A07: Ion Coordination and Dynamics in Battery Electrolytes, Interfaces and Interphases symposium” at the **239th Electrochemical Society Meeting**, Chicago IL, May 30 – June 3, 2021.
6. **Symposium Co-Organizer** of “A Next Generation for Ion Battery Analytics” Symposium during **Pittcon 2019**, Philadelphia PA, March 17-21, 2019.
7. **Symposium Co-Organizer** of “EN09: Materials and Systems for Grid Energy Storage—Redox Flow Batteries” during the **2018 Spring Materials Research Society Meeting**, Phoenix AZ, April 2-6, 2018.
8. **Symposium Co-Organizer** of “Electrochemical Technology for Solving 21st Century Challenges,” during the **68th Annual Meeting of the International Society of Electrochemistry**, Rhode Island, August 27-September 1, 2017.
9. **Symposium Co-Organizer** of “Synthesis & Characterization of Materials for Energy,” during the **253rd American Chemical Society Meeting**, San Francisco CA, April 2-6, 2016.
 - Helped secure \$1,900 in sponsorship for symposium activities.
 - Organized schedule and sessions for 60 speakers.
10. **Conference Organizer and Host** of the **Midwestern Universities Analytical Chemistry Conference (MUACC)** at the I-Hotel, UIUC, October 13-15 of 2016.
 - Designer of Official Website [[Link](#)], Editorial highlight in *Analytical Chemistry* [[Link](#)].
 - Secured \$10,525 in sponsorship from companies for symposium activities.
 - Organized logistics for 25 oral speakers and one poster session.
11. **Symposium Organizer** of “Nano-Electroanalysis for a Sustainable World” during **Pittcon 2016** in Atlanta GA, March 7, 2016.
12. **Symposium Organizer** of “New Enabling Analytical Techniques for Electrochemical Energy Materials” during **Pittcon 2014**, Chicago IL, March 5, 2014.

University Service

DEPARTMENT OF CHEMISTRY SERVICE

2012-2017	Graduate Admissions and Recruiting Committee
2013-present	Diversity Committee
2013	Program Review Committee
2013-2019	NSF/3M REU Committee
2015-2016, 2019	Appeals Hearing Committee
2016	Search Committee for Head of Chemistry Department
2017	Search Committee for Director of Graduate Diversity
2018-present	Budget and Operations, Analytical Chemistry Area
2022-2023	Budget and Operations, Materials Chemistry Area
2024	Search Committee for Assistant Director of DEI
2023-present	Chair, Graduate Admissions and Recruiting Committee

CAMPUS SERVICE

2017-2020	Program Advisory Committee, Beckman Institute
2017-2022	OVCRI Diversity Committee, representing Beckman Institute
2020	Pre-proposal review for campus limited submission programs

2020	Fellowship review for Lemann Center for Brazilian Studies
2022-present	President's Research in Diversity Travel Assistance Scholarship Selection Committee
2024-present	Molecular Science and Engineering co-theme lead and Beckman Institute Executive Committee (BIXC) at Beckman Institute

Teaching and Outreach

[\[back to top\]](#)

Teaching

**Years distinguished in the list of Teachers Ranked Excellent by their Students*

Chem 222 – Quantitative Chemical Analysis	Fall 2012-2016 Fall 2020	~120 students
Chem 581 – Physical Methods for Materials Chem.	Spring 2014, 2015 Spring 2022, 2023* Spring 2024*	~16 students ~30 students
Chem 524 – Electrochemistry	Spring 2016* -2020	~30 students
Chem 420 – Instrumental Characterization Lecture	Fall 2018, Fall 2021*, 2022*, 2023*	~180 students
Chem 592 – Preparing Graduate Fellowships	Fall 2019	~ 25 students

Outreach

- **ACS Chemistry Ambassador** for promoting the value of chemistries and chemistry to the community, American Chemical Society (ACS).
- **Faculty Advisor** to the UIUC Undergraduate ACS Chapter since 2013. The chapter has consistently obtained the designation of “Outstanding Chapter” in the past years.
- **Cena y Ciencias.** The PI is member of the executive board of the “Cena y Ciencias” (CyC, *Supper and Science*), where we design activities and deliver them to K-8 audiences. CyC involves teachers and parents across language and cultural groups to support Spanish-language literacy in the sciences. In 2019 we received a recognition from the Urbana School District. Features highlighting our contribution in 2018 [\[link\]](#) and 2020 [\[link\]](#).
- **Poster judge at th [LatinXChem](#) Twitter/X international event.** Judged posters in the #LXChemAna (analytical chemistry) competition on September 2021, and upcoming in October 2024.
- **“The Electrochemistry Bootcamp”** The Rodriguez-Lopez group organizes every year an event for jumpstarting new students in the group and interested students elsewhere on experimental electrochemistry. This intensive 3-day course currently consists of 18 experiments, 1 simulation session, 6 lectures, and a final project. Since 2019 we have opened this course to schools beyond UIUC. Currently each edition trains from 20-45 students. See a [LinkedIn post](#) from our most recent bootcamp experience!
- **Beckman Open House.** The PI and group also designed activities and demonstrations for the “Beckman Open House” Event in March of 2017, 2019, 2023, and 2024. In 2024, we

highlighted experiments in battery chemistries and in automation and teamed up with the ACS Undergraduate Chapter. See an [X post](#) of our most recent contribution!

Professional Development, Public Speech, and Invited Teaching

1. **Analytical Chemistry class at Hope College** (Instructor: Prof. Natalia Gonzalez-Pech), invited speaker of “Redox Nanotitrations” October 21, 2022, online.
2. **Chem 222 class at the University of Illinois Chicago** (Instructor: Prof. Ginevra Clark) invited speaker of “Redox Nanotitrations” March 3, 2021 and October 29, 2020.
3. **Chem 590F class**, taught by Prof. Steven C. Zimmerman: “*Grantsmanship Panel*”, February 11, 2019, and “*Looking for an Academic Career Panel*” February 4, 2013.
4. **Women’s Chemistry Committee Lunch Panel on Engaging with your Committee Members**, April 10, 2018.
5. “**New Trends in Energy Storage: How Research at the Smallest Scale Impacts our Largest Societal Needs**” Chambana Café (Organized by the Institute for Genomic Biology). February 7th, 2018.
6. **Professional Career Panel** at the Gordon Research Symposium in Electrochemistry, Ventura CA, January 7, 2018.
7. “**Jumpstarting Young Scientists into Advanced Energy Research.**” 68th Annual Meeting of the International Society for Electrochemistry, Joint ISE-ECS Symposium on Education, Providence RI, August 28, 2017.
8. “**Electrochemistry at the Nanoscale.**” Presented to the Quantitative Analysis Laboratory Section, Department of Chemistry, Eureka College, Eureka IL, March 30, 2017.
9. **Student-Faculty-Industry Networking: Getting Students Prepared for their Careers.** Participated as panelist, [Pittcon 2017](#) in Chicago IL, March 7, 2017.
10. **Speech address to the Society of Analytical Chemists of Pittsburgh and the local ACS chapter** at the awards dinner, Pittsburgh PA, May 18, 2015.
11. Regular Participant of the **Science Café series** organized by the ACS Undergraduate Chapter. Presented topics include: “**Electrochemical Storage in Organic Electrodes**” (February 23, 2014), “**Electrochemical Nanoreactors**” (February 1, 2015), and “**Electrochemistry with Ultra-Thin Electrodes**” (September 11, 2016).
12. **Lessons Learned in First Years Q&A panel.** Participated as panelist in the [Illinois New Faculty Orientation](#), held at the I-Hotel and Conference Center, August 20, 2013.
13. **International Student and Scholar Services Professor Lunch Q&A panel**, [University of Illinois ARC Gym](#). Participated as panelist, October 27, 2012.
14. “**Imaging Chemical Reactivity at Catalytic Surfaces Using Tiny Electrodes.**” [American Chemical Society Student Members at UIUC general body meeting](#), March 28, 2013.
15. “**An Electrochemical Firefly.**” Learning activity for the [Illinois New Teacher Collaborative](#) discussing demonstrations for K-12 children, I-Hotel, July 30-31, 2013.

Non-Technical Contributions, Media Highlights, and Outreach

External media

- [ChemTalk Podcast Interview](#). Prof. Rodríguez-López on Electrochemistry, 2022. [[Link](#)]
- [Future Shock](#). *The Analytical Scientist (Online)*, April 17, 2023 [[Link](#)] Main picture of the article was used as cover for this edition.

- [The Chalkboard. Picture your electrode: A primer on scanning electrochemical microscopy. *ECS Interface Magazine*, 2020, 29\(3\), 30-32.](#)
- [The SN10: These scientists defy limits to tackle big problems. *Science News*, September 26, 2018. \[Link\]](#)
- [Interview for Toyota Fellowships Come Full Circle. *ECS RedCat Blog*, November 15, 2017. \[Link\]](#)
- [Interview for the Royce W. Murray SEAC Young Investigator award. *Pittcon Today* \(magazine\), March 6th 2017, p. 12. \[Link\]](#)
- [Research Highlight: Let the Good Times Flow. *JCESR Newsletter*, Issue 3. \[Link\]](#)
- [Ainsworth, S.J. and Wang, L. *Words of Wisdom* – C&EN readers offer advice to help assistant professors soar in their new roles. *Chemical and Engineering News*, Vol. 92, Issue 36, September 8th, 2014, pp 52-53. \[Link\]](#)

Selected UIUC media

- [Featured in the 940 feet series, college of LAS at UIUC. \[Link\]](#)
- [Rodríguez-López leads research team exploring new carbon capture methods. \[Link\]](#)
- [Microdroplets, Macroresults: Beckman Researchers pursue Energy Earthshots. \[Link\]](#)
- [Lightening the Load: Beckman researchers develop autonomous electrochemistry robot. \[Link\]](#)
- [The Analytical Scientist features electrochemistry in Rodríguez-López lab. \[Link\]](#)
- [Professor Joaquín Rodríguez-López, journey from Monterrey to Urbana. \[Link\]](#)
- [Joaquín Rodríguez-López recognized by the Urbana School District as part of “Cena y Ciencias.” \[Link\]](#)
- [Chemistry professor named a scientist to watch. \[Link\]](#)

Student and Postdoctoral Advising

[\[back to top\]](#)

Current Ph.D. Students

Ibrahim, Nafisa

October 2019 – present
Status: PhD candidate, 5th year

Chemistry (Materials)

Pence, Michael A.

October 2020 – present
Status: PhD candidate, 4th year

Chemistry (Analytical)

Gaddam, Durga Raghuram

May 2020 – present
Status: PhD candidate, 4th year

Materials Science and Engineering

Putnam, Seth

October 2021 – present
Status: PhD candidate, 3rd year

Chemistry (Analytical)

Siddiqui, Abdur-Rahman October 2021 – present Status: PhD candidate, 3 rd year	Chemistry (Analytical)
Santiago Carboney, Armando October 2022 – present Status: 2 nd year, good standing	Chemistry (Analytical)
Martin, Kristin October 2022 – present Status: 2 nd year, good standing.	Chemistry (Analytical)
Robinson, Micah October 2022 – present Status: 2 nd year, good standing.	Chemistry (Analytical)
Kim, Dong Ok October 2022 – present Status: 2 nd year, good standing	Chemistry (Materials)
Qian, Peisen October 2022 – present Status: 2 nd year, good standing	Chemistry (Materials)
Wang, Zirui October 2022 – present Status: 2 nd year, good standing	Materials Science and Engineering
Li, Yichen (Ethan) October 2023 – present Status: 1 st year, good standing	Chemistry (Materials)
Das, Riyo October 2023 – present Status: 1 st year, good standing	Chemistry (Materials)
Prasad, Aditi October 2023 – present Status: 1 st year, good standing	Chemistry (Analytical)
Hazen, Gavin October 2023 – present Status: 1 st year, good standing	Chemistry (Analytical)
Pudar, Sanja October 2018 – present Status: 5 th year (<i>currently on leave</i>)	Chemistry (Analytical)

Current Postdoctoral

Dr. Jeanne N'Diaye
September 2021 – present
Project: *Spectroelectrochemistry of surfaces for electrochemical capture.*
Beckman Institute Postdoctoral Fellow

Dr. Abdelilah Asserghine

September 2021 – present

Project: *Regeneration of lead-acid batteries using surface treatment.*

Dr. José Camilo Torres

September 2022 – present

Project: *Development of electrochemical sensors for cancer biomarkers.*

Former Graduate Students and Postdocs

Graduated Ph.D. Students

Dr. Jingshu Hui

Materials Science and Engineering

September 2012 – July 2017

Title: *“Electrochemical Mechanisms in Nanostructured Graphitic and Redox-Active Polymeric Architectures.”*

Now: Associate professor at Soochow University, China in 2020.

Dr. Zachary J. Barton

Chemistry (Analytical)

October 2012 – June 2017

Title: *“Spatially Resolved Ionic Measurements with Scanning Electrochemical Microscopy.”*

Now: Scientist at Lockheed-Martin Space, Denver CO.

Dr. Burton H. Simpson

Chemistry (Analytical)

October 2012 – July 2017

Title: *“Probing Structure-Function Relationships at Catalytic Surfaces with Emerging Electroanalytical Tools.”*

Now: Scientist at Illumina, San Diego CA

Dr. Mark Burgess

Chemistry (Analytical)

October 2013 – July 2017

Title: *“Probing the Electrochemical Dynamics of Soluble Redox Active Polymers.”*

Now: Process analyzer engineer at Exxon Mobil, Houston TX.

Dr. Elena C. Montoto

Chemistry (Materials)

October 2014 – January 2019

Title: *“Soluble redox active macromolecular architectures and their electrochemical analysis for energy storage applications.”*

Now: Senior Researcher at Dow Chemicals, Midland MI.

Dr. Noah B. Schorr

Chemistry (Analytical)

October 2015 – July 2019

Title: *“Coupling Raman spectroscopy and scanning electrochemical microscopy for spectroelectrochemical analysis of electrode interfaces.”*

Now: Senior Technical Staff at Sandia National Laboratories, Albuquerque NM.

Dr. Matthew L. Kromer

Chemistry (Materials)

October 2015 – May 2020

Title: *“Thesis title Electrochemical analysis of photoelectro-, electro-, and thermal catalysis towards more efficient hydrogen peroxide production”*

Now: Lecturer, Stanford University, Palo Alto CA.

Dr. Zachary T. Gossage Chemistry (Analytical)

October 2015 – May 2020

Title: “*Revealing ion transfer kinetics and charge dynamics at operating battery materials through scanning electrochemical microscopy.*”

Now: Postdoctoral researcher at the Tokyo University of Science in Japan.

Dr. Michael J. Coughlan Chemistry (Materials)

October 2016 – December 2021

Title: “*Dynamic measurement and control of electrochemical interfaces for energy storage and conversion.*”

Now: Postdoctoral researcher at Argonne National Laboratory.

Dr. Clare Hatfield Chemistry (Analytical)

October 2017 – May 2022

Title: “*Electrochemical and spectroelectrochemical investigations of interfacial electrode processes.*”

Now: Permanent staff at Los Alamos National Laboratory.

Dr. Dipobrato Sarbapalli Materials Science and Engineering

May 2018 – February 2023

Title: “*Electrochemical analysis of interface structures and functionalization in graphitic carbons for Na-ion and flow battery electrodes.*”

Now: Research engineer at Gotion, a battery company.

Dr. Yuanya Zhao Chemistry (Analytical)

October 2018 – May 2023

Title: “*Optimizing selectivity and activity in heterogeneous and homogeneous catalysts for chemical production.*”

Now: After defending, Yana enrolled in a masters degree in data science at UIUC.

Dr. Abhiroop Mishra Materials Science and Engineering

October 2019 – May 2024

Title: “*Assessing the degradation of battery cathodes in real time via spatially resolved electrochemical methods*”

Now: Postdoctoral researcher at Caltech in the group of Prof. Kimberly See.

Dr. Aravind Baby Materials Science and Engineering

January 2020 – May 2024

Title: “*Refurbishing sulfated lead-acid batteries through surface electrochemical techniques*”

Now: Aravind is currently deciding on his next steps.

Graduated Masters Students

Cristarella, Teresa C. Chemistry (Analytical)

October 2012 – December 2014

Thesis: “*Single Layer Graphene as a Stable and Transparent Electrode for the Measurement of Non-aqueous Electrogenerated Chemiluminescence and Inverse Photoemission.*”

Now: Researcher at Monsanto, St. Louis MO.

Claudio-Cintrón, Marie A. Chemistry (Analytical)
October 2016 – August 2018
Thesis: “*Scanning electrochemical microscopy with conducting polymer probes: validation and applications.*”
Now: Moved to Ohio and is on the job market.

Rajput, Arneet Materials Science and Engineering
October 2017 – May 2019
Non-thesis student.
Now: Followed a DAAD Internship in Germany, then accepted a position in the semiconductor industry in Arizona.

Past Postdoctoral

Dr. Xuan Zhou
June 2014 – May 2016
Project: *Photoelectrochemical imaging with SECM.*
Now: Assistant Professor at the University of Texas San Antonio.

Dr. Kenneth Hernandez-Burgos
October 2015 – November 2018
Project: *Electrochemical Characterization of Redox-Active Polymers.*
Distinctions: Beckman Postdoctoral Fellowship, Ford Foundation Fellowship (declined)
Now: R&D Chemist at Dupont, Boston MA.

Dr. Jingshu Hui
August 2018 – August 2020
Project: *Ultrathin electrodes, Nanoelectrochemistry.*
Now: Associate Professor at Soochow University, China.

Dr. Andrew S. Danis
May 2019 – May 2020
Project: *SECM methods for flow batteries.*
Now: Lecturer, Norwich University, Vermont

Dr. Mehdi Rashvand Avei
November 2020 – July 2021
Project: *Redoxmer chemistries for flow batteries and lead-acid batteries.*
Now: Research scientist at General Motors

Dr. Saadia Chaudhry
July 2021 – April 2022
Project: *Novel electrosynthesis concepts.*
Beckman Institute Postdoctoral Fellow
Now: Saadia moved on to the Eagleton Science and Policy Fellowship at Rutgers University.

Dr. Sazzad Md. Hossain
April 2020 – May 2022
Project: *Interfacial electrostatics and redox imaging.*
Now: Sazzad moved to Ithaca, NY to work in Conamix, a start-up company.

Dr. Oliver Rodríguez Martínez

February 2021 – January 2023

Project: *Automated electrochemical measurement.*

Now: Research scientist at National Physical Laboratory, London UK

Dr. Adolfo I.B. Romo

October 2019 – July 2023

Project: *Redoxmer chemistries for flow batteries and for capturing reactive intermediates.*

Now: Postdoctor at Los Alamos National Laboratory

Visiting Graduate Students

Morandi, Sara	2015 Independent study from University of Milan, Italy
Syrek, Karolina	2017 Independent study from Jagellonian University, Poland
Lawrence, Matthew	2017 BRIDGE collaborative, Birmingham University, UK
Zeng, Yunxiong	2017-2019 Hunan University, China
Scola-Rodriguez, Bárbara	2019 Federal University of ABC, Sao Paulo, Brazil
Barroso Martínez, Jaxiry	2021-2022 CIDETEQ, Querétaro, Mexico
Bolaños, Karla	2022-2023 CIDETEQ, Querétaro, Mexico
Palanisamy, Krishnamani	2022-2023 Ulm University, Germany
Gutiérrez, Daniel	2023 Universidad de Madrid, Spain

Thesis Examination Committees:

Current

• Kharel, Priti	Since 2019	Advisor: Pinshane Huang
• Eddalpalil, Anupriya	Since 2020	Advisor: Mei Shen
• Harris, Lauren	Since 2021	Advisor: Andrew Gewirth
• Nixon, Rachel	Since 2021	Advisor: Prashant Jain
• Paliwal, Akhil	Since 2021	Advisor: Andrew Gewirth
• Gaines, Rachel	Since 2022	Advisor: Paul Kenis
• Yescas, Carlos	Since 2022	Advisor: Paul Braun
• Wang, Heryn	Since 2022	Advisor: Andrew Gewirth
• Croslow, Seth	Since 2022	Advisor: Jonathan Sweedler
• Matsuura, Jonathan	Since 2022	Advisor: Yingjie Zhang
• Prempin, Brittany	Since 2022	Advisor: Charles Schroeder
• Lindsay, Gavin	Since 2022	Advisor: Andrew Gewirth
• Jang, Seongon	Since 2023	Advisor: Charles Schroeder
• Zadeh, Armin	Since 2023	Advisor: Baron Peters
• Elangova, Kavinraaj	Since 2023	Advisor: Ying Diao
• Milton, Conrad	Since 2024	Advisor: Mei Shen
• Qiu, Huihang	Since 2024	Advisor: Nick Jackson
• Mandal, Sohini	Since 2024	Advisor: Qian Chen
• D'Amelio, Jack	Since 2024	Advisor: Daniel Shoemaker
• Turk, Arda	Since 2024	Advisor: Prashant Jain
• Andrade, Francisco	Since 2024	Advisor: Jessica Krogstad

Completed

• Dowd, Sarah	Graduated in 2015	Advisor: Jonathan Sweedler
----------------------	-------------------	----------------------------

• Barile, Christopher	Graduated in 2015	Advisor: Andrew Gewirth
• Pacquette, Adele	Graduated in 2015	Advisor: Andrew Gewirth
• Ma, Sichao	Graduated in 2016	Advisor: Paul Kenis
• Routzahn, Aaron	Graduated in 2016	Advisor: Prashant Jain
• Schmitt, Kevin	Graduated in 2016	Advisor: Andrew Gewirth
• McCurry, Daniel	Graduated in 2016	Advisor: Ryan Bailey
• Hoang, Thao	Graduated in 2016	Advisor: Andrew Gewirth
• Liu, Yao-Min	Graduated in 2017	Advisor: Andrew Gewirth
• Kim, Byoungsu	Graduated in 2017	Advisor: Paul Kenis
• Varnell, Jason	Graduated in 2017	Advisor: Andrew Gewirth
• Chang, Siwei	Graduated in 2018	Advisor: David Flaherty
• Patel, Amit	Graduated in 2018	Advisor: Jonathan Sweedler
• Nicolau, Bruno	Graduated in 2018	Advisor: Andrew Gewirth
• Kim, Sanghyeon	Graduated in 2019	Advisor: Paul Braun
• Neumann, Elizabeth	Graduated in 2019	Advisor: Jonathan Sweedler
• Lyttle, Tyler	Graduated in 2019	Advisor: Charles Sing
• Shin, Minjeong	Graduated in 2019	Advisor: Andrew Gewirth
• Qu, Subing	Graduated in 2020	Advisor: Paul Braun
• Priyardashini, Pranjali	Graduated in 2020	Advisor: David Flaherty
• Zhang, Ruixian	Graduated in 2021	Advisor: Andrew Gewirth
• Philip, Maria	Graduated in 2021	Advisor: Andrew Gewirth
• Esposito, Anne Marie	Graduated in 2021	Advisor: Andrew Gewirth
• Devasia, Dinumol	Graduated in 2021	Advisor: Prashant Jain
• Shrivastava, Aniruddh	Graduated in 2021	Advisor: Kyle Smith
• Madsen, Kenneth	Graduated in 2022	Advisor: Andrew Gewirth
• Bandas-Rivera, Chris	Graduated in 2022	Advisor: Andrew Gewirth
• Lee, Cindy	Graduated in 2022	Advisor: Jonathan Sweedler
• Murphy, Shannon	Graduated in 2022	Advisor: Jonathan Sweedler
• Meyer, Sean	Graduated in 2022	Advisor: Catherine Murphy
• Adams, Jason	Graduated in 2022	Advisor: David Flaherty
• Gole, Mathew	Graduated in 2022	Advisor: Catherine Murphy
• Ricciardulli, Tomas	Graduated in 2022	Advisor: David Flaherty
• Griffith, Paul	Graduated in 2023	Advisor: Lisa Olshansky
• Panse, Kaustubh	Graduated in 2023	Advisor: Yingjie Zhang
• Li, Caroline	Graduated in 2023	Advisor: Charles Schroeder
• Tapia, Rodrigo	Graduated in 2024	Advisor: Jeffrey Chan
• Tetrick, Maxwell	Graduated in 2024	Advisor: Catherine Murphy
• Hua, Qi	Graduated in 2024	Advisor: Andrew Gewirth
• Bello, Liliana	Graduated in 2024	Advisor: Charles Sing

Current Undergraduate Students

Althaus, Curtis
Zoreigt, Michelle

Chemistry
Chemistry

January 2021 – present
March 2022 – present

Konstantinov, Filip	Chemistry	March 2022 – present
Guerrero, Efren	Chemistry	March 2022 – present
Hamilton, Hayden	Chemistry	December 2023 – present

Undergraduate Students with Thesis

Chinderle, Adam J. B.S. Chemistry
 Spring 2013 – Spring 2014
 Supervised Thesis: “*Electrochemical Reduction of Carbon-Containing Molecules to Graphene and the Effects of Underlying Functional Groups on a Graphene Electrode.*”
 Now: Adam works in a pharmaceutical company in Indiana.
 Achievements: Co-author in references 50, 35 and 24.

Benson, Emily B.S. Chemistry
 Spring 2014 – Spring 2015
 Supervised Thesis: “*Electrochemical Imaging of Ion Transfer Processes on Membranes for Desalinization and on Aqueous Battery Anodes.*”
 Now: Emily works at the Grain Processing Corp. in Davenport, Iowa and will soon transition to an M.S. in Food Science program at the University of Saskatchewan, Canada.

Flores, Heriberto B.S. Chemistry
 Spring 2018 – Spring 2019
 Supervised Thesis: “*Modifying Ultramicroelectrodes with Multi-Layer Graphene Fragments for use in Scanning Electrochemical Microscopy.*”
 Now: Heriberto is a graduate student at the University of California, Irvine.
 Achievements: Heriberto is a co-author in reference 66. He received awards including the Carl S. Marvel Undergraduate Research Award, the SACNAS Outstanding Poster Award, and the Wolfram Alpha Award.

Cheng, Xia B.S. Chemistry
 Spring 2018 – Fall 2020
 Supervised Thesis: “*The Effect of Metal Substrates on Outer-Sphere Electron Transfer Kinetics Above Ultrathin Graphene Interface.*”
 Now: Alex is an intern at BASF in Shanghai, China.
 Achievements: Alex is co-author in reference 79.

Undergraduate Students with Significant Contribution

Lichtenstein, Timothy B.S. Materials Science and Engineering
 Fall 2012 – Spring 2015
 Project: *Electrochemical Imaging and Characterization of Redox Active Polymers for Non-Aqueous Redox Flow Batteries.*
 Now: Timothy is a senior scientist at Argonne National Laboratory
 Accomplishments: Co-authored two works, Refs. 30 and 22, and is a patent co-inventor

Bhargava, Richa B.S. Chemistry
 Fall 2013 – Spring 2014
 Project: *Electrochemical Characterization of Single Layer Graphene.*
 Now: Richa works at Heinz in Pittsburgh PA
 Accomplishments: Co-authored two published works, Refs. 35 and 50.

Genise, Amanda B.S. Chemical Engineering
Fall 2014 – Spring 2015
Project: *Mechanistic Investigation of Lithium-ion Batteries using Tiny Electrodes*.
Accomplishments: Amanda was part of the Illinois Scholars Undergraduate Research Program.

Qian, Shaoyi B.S. Chemical Engineering
Fall 2015 – Fall 2016
Project: *Evaluation of the Conductivity of Redox Active Polymer Electrolytes*.
Now: Shaoyi is a graduate student in art restoration at New York University
Accomplishments: Co-authored one published work, Ref. 46.

Zhang, Jiarui (Jerry) B.S. Chemistry
Fall 2015 – Spring 2017
Project: *Electrochemical Characterization of Single Layer Graphene*.
Now: Jerry is a graduate student at Rutgers University.
Accomplishments: Co-authored two works, Refs. 35 and 32.

Krumov, Mihail B.S. Chemical Engineering
Spring 2015 – Fall 2017
Project: *Surface Interrogation SECM for the Detection of Adsorbed Reaction Intermediates*.
Now: Mihail is a graduate student at Cornell University.
Accomplishments: Mihail was first author of a manuscript, Ref. 51, and received a national award (Eastern Analytical Symposium Analytical Chemistry Undergraduate Award).

Jiang, Guanmei (Annie) B.S. Chemistry
Spring 2016 – Spring 2019
Project: *Coupled Raman-SECM*.
Now: R&D Technician in Flexterra Corporation.
Accomplishments: Published in Ref. 54.

Setwipatanachai, Worapol B.S. Chemical Engineering
Fall 2017 – Spring 2019
Project: *Tunneling Microelectrodes for SECM Imaging*.
Now: Chemical Engineer at Surin Bran Oil, Thailand.
Accomplishments: Published in Ref. 64 and Ref. 91.

Qu, Zihan B.S. Chemistry
Fall 2017 – Spring 2019
Project: *Graphene Electrochemistry*.
Now: Graduate student at The Ohio State University, graduated Ph.D in 2024.
Accomplishments: Published in Ref. 58.

Lukhanin, Nikita B.S. Mechanical Engineering
Fall 2021 – Summer 2023
Project: *Automated electrochemistry*.
Now: Nikita is a graduate student at the University of California Berkeley in Mechanical Engineering.
Accomplishments: Nikita had a brilliant run at UIUC. He was distinguished with the NSF Graduate Fellowship, obtained as an undergraduate for his work at UIUC. Nikita published two works with our group, one of them as a first-coauthor and is in the process of writing an

additional first author manuscript detailing the construction of a low-cost scanning electrochemical microscope. Published in Refs. 97 and 111.

Gutiérrez, Efrén B.S. Chemical Engineering

Fall 2022 – Spring 2024

Project: *Automated electrochemistry for glycerol oxidation*

Now: Now working at TSMC.

Accomplishments: Efrén will be a co-author on one publication.

Visiting Undergraduate Students

Elbaar, Nadia	2013 REU Program	Avetian, Sona	2015 REU Program
Kneer, Marissa	2015 REU Program	Davila, Jasmine	2016 REU Program
Wang, Zhe	2016 Peking University	Nguyen, Hung	2016 Hanoi U.
Qin, Terry	2016 Nankai University	Sabah, Clinton	2020 Grinnell C.
Chen, Yuanke	2020 Shanghai Tech	Ramírez, Xóchitl	2022 Tec de Mty.

Publications and Patents

[\[back to top\]](#)

- @ Denotes publication derived from the PI's undergraduate research.
 - # Denotes publication derived from the PI's Ph.D. thesis research.
 - % Denotes publication derived from the PI's postdoctoral research.
 - + Denotes publication that was invited and carries special prestige and recognition.
 - & Denotes publication with UIUC undergraduate author(s) (*undergraduates italicized*)
- PI's name shown in **bold** and corresponding author(s) with *
- All publications have undergone stringent editorial review by peers.

Chapters in Books

- 1 **Rodríguez-López, J.*** Chapter 4: The Surface Interrogation Mode of Scanning Electrochemical Microscopy (SI-SECM): an Approach to the Study of Adsorption and (Electro)catalysis at Electrodes. In *Electroanalytical Chemistry, a series of advances*. Vol. 24. Bard, A.J. and Zoski, C.G., Eds. 2012, CRC Press, 287-352.
ISBN: 1439837511 [\[Link\]](#) (#)
- 2 **Rodríguez-López, J.***; Zoski, C.G.*; Bard, A.J.* Chapter 16. SECM Applications to Electrocatalysis and Photocatalysis and Surface Interrogation. In *Scanning Electrochemical Microscopy*. Bard, A.J.; Mirkin, M.V., Eds. 2012, CRC Press, 525-568.
ISBN: 1439831130 [\[Link\]](#) (#)
- 3 Sarbapalli, D.; Mishra, A.; Hatfield, K.O.; Gossage, Z.T.; **Rodríguez-López, J.*** Chapter 9: Scanning electrochemical microscopy: a versatile tool for inspecting the reactivity of battery electrodes. In *Batteries: Materials principles and characterization methods*. Liao, C. Ed. 2021, IOP Publishing, 9:1-9:44.
DOI: 10.1088/978-0-7503-2682-7ch9 [\[Link\]](#)

- 4 Mishra, A.; Gossage, Z.T.; Sarbapalli, D.; Zhao, Y.; **Rodríguez-López, J.*** Methods and Instrumentation in Energy Storage. In *Encyclopedia of Electrochemistry: Online*. 2021, John Wiley & Sons.
DOI: 10.1002/9783527610426.bard030111 [\[Link\]](#)
- 5 Gossage, Z.T.; Hatfield, K.O.; Zhao, Y.; Gaddam, R.; Sarbapalli, D.; Mishra, A.; **Rodríguez-López, J.*** Chapter 16. Application to Batteries and Fuels Cells. In *Scanning Electrochemical Microscopy*. 3rd, ed. Bard, A.J. and Mirkin, M.V., Eds. 2022, CRC Press.
ISBN: 9781003004592 [\[Link\]](#)

Articles in Journals ([Google Scholar Analysis](#): 4933 citations, h-index = 40, i10-index = 90)

- 128 Gutiérrez-Martín, D.; Asserghine, A.; Torres-Pardo, A.; Varela, A.; **Rodríguez-López, J.***; González-Calbet, J.M.; Parras, M. Evaluating the Impact of Iron Impurities in KOH on OER Performance of BaNiO₃ Single Crystals Using Scanning Electrochemical Cell Microscopy. *Electrochim. Acta.* **2024**, *499*, 144705.
DOI: 10.1016/j.electacta.2024.144705 [\[Link\]](#)
- 127 Martins, P.H.R.; Romo, A.I.B.; Gouveia Jr., F.S.; Paz, I.A.; Nascimento, N.F.; Andrade, A. L.; **Rodríguez-López, J.**; De Vasconcelos, M.A.; Teixeira, E.H.; Moraes, C.A.F.; Lopes, L.G.F.; de Sousa, E.H.S. Anti-bacterial, anti-biofilm and synergistic effects of phenazine-based ruthenium(II) complexes. *Dalton Trans.* **2024**, *Adv. Article*.
DOI: 10.1039/D4DT01033G [\[Link\]](#)
- 126 Romo, A.I.B.; Bello, L.; Pudar, S.; Ibrahim, N.; Wang, Y.; Baran, M.J.; Wu, Q.; Ewoldt, R.H.; Helms, B.A.; Sing, C.* **Rodríguez-López, J.*** Controlling Charge Percolation in Solutions of Metal Redox Active Polymers: Implications of Microscopic Polyelectrolyte Dynamics on Macroscopic Energy Storage. *J. Am. Chem. Soc.* **2024**, *146*, 25, 17474-17486.
DOI: 10.1021/jacs.4c05102 [\[Link\]](#)
- 125 Putnam, S.T.; **Rodríguez-López, J.*** Real-Time Investigation of Reactive Oxygen Species and Radicals Evolved from Operating Fe-N-C Electrocatalysts during the ORR: Potential Dependence, Impact on Degradation, and Structural Comparison. *Chem. Sci.* **2024**, *15*, 10036-10045.
DOI: 10.1039/D4SC01553C [\[Link\]](#)
- 124 Mishra, A.; Lin, J-W.; Zahiri, B.; Braun, P.; **Rodríguez-López, J.*** In Situ Investigation of Lattice Oxygen Loss from Preferentially Faceted Electrodeposited LiCoO₂ via Scanning Electrochemical Microscopy. *J. Electrochem Soc.* **2024**, *171*, 056510.
DOI: 10.1149/1945-7111/ad4f22 [\[Link\]](#)
- 123 Asserghine, A.; Kim, S.; Vaid, T.P.; Santiago-Carboney, A.; McNeil, A.J.*; **Rodríguez-López, J.*** Ionic Strength Impacts Charge Capacity in a Redox-Matched Flow Battery:

From Single-Particle Interrogation to Battery Cycling. *ACS Energy Lett.* **2024**, *9*, 2826-2831.

DOI: 10.1021/acsenergylett.4c00819 [\[Link\]](#)

- 122** Siddiqui, A.R.; N'Diaye, J.; Santiago-Carboney, A.; Martin, K.; Bhargava, R.; **Rodríguez-López, J.*** Spectroelectrochemical Determination of Thiolate Self-Assembled Monolayer Adsorptive Stability in Aqueous and Non-Aqueous Electrolytes. *Analyst* **2024**, *149*, 2842-2854.

DOI: 10.1039/D4AN00241E [\[Link\]](#) (+)

+ **Invited contribution to special issue for 150th Anniversary Collection: Electrochemistry and Electroanalytical Approaches**

- 121** Sheng, H.; Sun, J.; Rodriguez, O.; Hoar, B.B.; Zhang, W.; Xiang, D.; Tang, T.; Hazra, A.; Min, D.S.; Doyle, A.G.; Sigman, M.S.; Costentin, C.; Gu, Q.; **Rodríguez-López, J.**; Liu, C.* Autonomous Closed-Loop Mechanistic Investigation of Molecular Electrochemistry via Automation. *Nat. Comm.*, **2024**, *15*, 2781.

DOI: 10.1038/s41467-024-47210-x [\[Link\]](#)

- 120** Mishra, A.; Zorigt, M.; Kim, D.O.; **Rodríguez-López, J.*** Voltammetric Detection of Singlet Oxygen Enabled by Nanogap Scanning Electrochemical Microscopy. *J. Am. Chem. Soc.*, **2024**, *146*, *13*, 8847-8851. (&)

DOI: 10.1021/jacs.4c00414 [\[Link\]](#)

- 119** de la Parra, L.S.M.; Romo, A.I.B.; **Rodríguez-López, J.**; Nascimento, O.R.; Echevarria, G.A.; Piro, O.E.; Leon, I.E.* Promising Dual Anticancer and Antimetastatic Action by a Cu(II) Complex Derived from Acylhydrazone on Human Osteosarcoma Models. *Inorg. Chem.*, **2024**, *63*, *11*, 4925-4938.

DOI: 10.1021/acs.inorgchem.3c04085 [\[Link\]](#)

- 118** Siddiqui, A.-R.; N'Diaye, J.; Martin, K.; Baby, A.; Dawlaty, J.; Augustyn, V.; **Rodríguez-López, J.*** Monitoring SEIRAS on a Graphitic Electrode for Surface Sensitive Electrochemistry: Real-Time Electrografting. *Anal. Chem.*, **2024**, *96*, *6*, 2435-2444.

DOI: 10.1021/acs.analchem.3c04407 [\[Link\]](#)

- 117** Chagnot, M.; Abello, S.; Wang, R.; Dawlaty, J.; **Rodríguez-López, J.**; Zhang, C.; Augustyn, V.* Influence of Finite Diffusion on Cation Coupled Electron Transfer Kinetics in Thin Film Electrodes. *J. Electrochem. Soc.* **2024**, *171*, 010527.

DOI: 10.1149/1945-7111/ad1d98 [\[Link\]](#)

- 116** Randall, C.R.; Zou, L.; Wang, H.; Hui, J.; **Rodríguez-López, J.**; Chen-Glaser, M.; Dura, J.A.; DeCaluwe, S.C.* Morphology of Thin-Film Nafion on Carbon as an Analogue of Fuel Cell Catalyst Layers. *ACS App. Mater. Interfaces* **2024**, *16*, *3*, 3311-3324.

DOI: 10.1021/acsaami.3c14912 [\[Link\]](#)

- 115** Lu, J.; Baby, A.; Asserghine, A.; **Rodríguez-López, J.;*** Zhao, H.* Amino Acid Based Ionic Liquids for Revitalization of Sulfated Lead Anodes. *J. Power Sources.*, **2024**, *591*, 233824.
DOI: 10.1016/j.jpowsour.2023.233824 [\[Link\]](#)
- 114** Woo, H.K.; Gautam, A.K.; Barroso-Martínez, J.; Baddorf, A. P.; Zhou, K.; Choi, Y.Y.; He, J.; Mironenko, A.V.; **Rodríguez-López, J.;** Cai, L.* Defect Engineering of WO₃ by Rapid Flame Reduction for Efficient Photoelectrochemical Conversion of Methane into Liquid Oxygenates. *Nano Lett.*, **2023**, *23*, *24*, 11493-11500.
DOI: 10.1021/acs.nanolett.3c03131 [\[Link\]](#)
- 113** Asserghine, A.; Baby, A.; Gao, E.; Zhao, H.; **Rodríguez-López, J.;*** Inducing and Real-Time Monitoring of Lead (de)Sulfation Processes Using Scanning Electrochemical Microscopy for Applications in the Refurbishment of Lead-Acid Batteries. *Electrochim. Acta.*, **2023**, 143620.
DOI: 10.1016/j.electacta.2023.143620 [\[Link\]](#)
- 112** Asserghine, A.; Baby, A.; Putnam, S.T.; Qian, P.; Gao, E.; Zhao, H.; **Rodríguez-López, J.;*** In Situ Detection of Reactive Oxygen Species Spontaneously Generated on Lead Acid Battery Anodes: A Pathway for Degradation and Self-Discharge at Open Circuit. *Chem. Sci.* **2023**, *14*, *43*, 12292-12298.
DOI: 10.1039/D3SC04736A [\[Link\]](#)
- 111** Oh, I.; Pence, M.A.; *Lukhanin, N.G.;* Rodriguez, O.; Schroeder, C.M.;;* **Rodríguez-López, J.;*** The Electrolab: An Open-Source, Modular Platform for Automated Characterization of Redox-Active Electrolytes. *Device* **2023**, *1*, 100103.
DOI: 10.1016/j.device.2023.100103 [\[Link\]](#) (&, +)
+ **Editor's choice for Device**
- 110** Zhou, Y.; **Rodríguez-López, J.;** Moore, J.S.* Heterogeneous Electromediated Depolymerization of Highly Crystalline Polyoxomethylene. *Nat. Comm.* **2023**, *14*, 4847.
DOI: 10.1038/s41467-023-39362-z [\[Link\]](#)
- 109** Xiao, Y.; Zheng, P.; Yang, T.; Chakravarty, S.K.; **Rodríguez-López, J.;** Urban. A.; Li, Z.* Integrated Combinatorial Synthesis, Characterization, and Test Platform for Lithium-Ion Battery Cathode Materials. *J. Electrochem. Soc.* **2023**, *170*, 050538.
DOI: 10.1149/1945-7111/acd41d [\[Link\]](#)
- 108** Mishra, A.; Sarbapalli, D.; Rodriguez, O.; **Rodríguez-López, J.;*** Electrochemical Imaging of Interfaces in Energy Storage via Scanning Probe Methods: Techniques, Applications, and Prospects. *Annual Review of Analytical Chemistry* **2023**, *16*, 15.1-15.23.
DOI: 10.1146/annurev-anchem-091422-110703 [\[Link\]](#)
- 107** Hameed, F.; Mohanan, M.; Ibrahim, N.; Ochonma, C.; **Rodríguez-López, J.;** Gavvalapalli, N. Controlling π -Conjugated Polymer-Acceptor Interactions by

Designing Polymers with a Mixture of Π -Face Strapped and Nonstrapped Monomers. *Macromolecules* **2023**, *56*, 9, 3421-3429.

DOI: 10.1021/acs.macromol.3c00175

[\[Link\]](#)

106 Kim, J.; Mishra, A.; Braun, J.E.; Groll, E.A.; **Rodríguez-López, J.**; Ziviani, D.* Electrochemically driven phase transformation for high-efficiency heat pumping. *Cell Reports Physical Science* **2023**, *4*, 101369.

DOI: 10.1016/j.xcrp.2023.101369

[\[Link\]](#)

105 Hossain, M.S.; Romo, A.I.B.; Putnam, S.T.; Dawlaty, J.; Augustyn, V.; **Rodríguez-López, J.*** Electrode potential driven dissociation of N-heterocycle-BF₃ adducts: a possible manifestation of the electro-inductive effect. *Angew. Chem. Int. Ed.* **2023**, e202304218.

DOI: 10.1002/anie.202304218

[\[Link\]](#)

104 Mishra, A.; Kim, J.; *Zorigt, M.*; Romo, A.I.B.; Gaddam, R.; Braun, J.E.; Ziviani, D.; **Rodríguez-López, J.*** Highly Selective TEMPO Catalyzed Bulk Electrooxidation of Isopropanol to Acetone for Application in Electrochemical Heat Pumping. *ACS Sustainable Chem. Eng.* **2023**, *11*, 16, 6241-6249.

DOI: 10.1021/acssuschemeng.2c07419

[\[Link\]](#)

(&)

103 Rodriguez, O.; Pence, M.A.; **Rodríguez-López, J.*** Hard Potato: A Python Library to Control Commercial Potentiostats and to Automate Electrochemical Experiments. *Anal. Chem.* **2023**, *95*, 11, 4840-4845.

DOI: 10.1021/acs.analchem.2c04862

[\[Link\]](#)

102 Danis, A.S.; Counihan, M.J.; Hatfield, K.O.; Zhang, J.; Agarwal, G.; Assary, R.S.; **Rodríguez-López, J.*** Colocalized Raman Spectroscopy - Scanning Electrochemical Microscopy Investigation of Redox Flow Battery Dialkoxybenzene Redoxmer Degradation Pathways. *Electrochim. Acta* **2023**, *447*, 142123.

DOI: 10.1016/j.electacta.2023.142123

[\[Link\]](#)

(+)

+ Invited to special issue on “Advances in Electrochemical Imaging”

101 Hatfield, K.O.; Putnam, S.T.; **Rodríguez-López, J.*** Inducing SERS Activity at Graphitic Carbon Using Graphene-Covered Ag Nanoparticle Substrates: Spectroelectrochemical Analysis of a Redox-Active Adsorbed Anthraquinone. *J. Chem. Phys.* **2023**, *158*, 014701.

DOI: 10.1063/5.0130876

[\[Link\]](#)

(+)

+ Invited to special topic on “In situ and Operando Characterization”

100 Gaddam, R.; Sarbapalli, D.; Howard, J.; Curtiss, L.A.; Assary, R.S.; **Rodríguez-López, J.*** An SECM-Based Spot Analysis for Redoxmer-Electrode Kinetics: Identifying Redox Asymmetries on Model Graphitic Carbon Interfaces. *Chem. Asian J.* **2023**, *18*, 2, e202201120.

DOI: 10.1002/asia.202201120

[\[Link\]](#)

(+)

+ Invited to special issue on “Redox Flow Batteries”

- 99 Romo, A.I.B.; dos Reis, M.P.; Nascimento, O.R.; Bernhardt, P.V.; **Rodríguez-López, J.**; Diogenes, I.C.N. Interplay of electronic and geometric structure on Cu phenanthroline, bipyridine, and derivative complexes, synthesis, characterization, and reactivity towards oxygen. *Coord. Chem. Rev.* **2023**, *477*, 214943.
DOI: 10.1016/j.ccr.2022.214943 [\[Link\]](#)
- 98 Martins, P.H.R.; Romo, A.I.B.; da Silva, F.O.N.; Nascimento, O.R.; **Rodríguez-López, J.**; Diogenes, I.C.N.; Lopes, L.G.F.; Sousa, E.H.S. Reactivity of a nitrosyl ruthenium complex and its potential impact on the fate of DNA - An in vitro investigation. *J. Inorg. Biochem.* **2023**, *238*, 112052.
DOI: 10.1016/j.jinorgbio.2022.112052 [\[Link\]](#)
- 97 Pence, M.A.; Rodriguez, O.; Lukhanin, N.G.; Schroeder, C.M.; **Rodríguez-López, J.*** Automated Measurement of Electrogenerated Redox Species Degradation Using Multiplexed Interdigitated Electrode Arrays. *ACS Measurement Science Au.* **2023**, *3*, *1*, 62-72.
DOI: 10.1021/acsmesuresciau.2c00054 [\[Link\]](#)
- 96 Zhao, Y.; Adams, J.S.; Baby, A.; Kromer, M.L.; Flaherty, D.W.; **Rodríguez-López, J.*** Electrochemical Screening of Au/Pt Catalysts for the Thermocatalytic Synthesis of Hydrogen Peroxide Based on Their Oxygen Reduction and Hydrogen Oxidation Activities Probed via Voltammetric Scanning Electrochemical Microscopy. *ACS Sustainable Chem. Eng.* **2022**, *10*, *51*, 17207-17220.
DOI: 10.1021/acssuschemeng.2c05120 [\[Link\]](#)
- 95 Sarbapalli, D.; Lin, Y-H.; Stafford, S.; Son, J.; Mishra, A.; Hui, J.; Nijamudheen, A.; Romo, A.I.B.; Gossage, Z.T.; van der Zande, A.M.; Mendoza-Cortes, J.L.; **Rodríguez-López, J.*** A Surface Modification Strategy Towards Reversible Na-ion Intercalation on Graphitic Carbon Using Fluorinated Few-Layer Graphene. *J. Electrochem. Soc.* **2022**, *169*, 106522.
DOI: 10.1149/1945-7111/ac9c33 [\[Link\]](#)
- 94 Barroso-Martinez, J.S.; Romo, A.I.B.; Pudar, S.; Putnam, S.T.; Bustos, E.; **Rodríguez-López, J.*** Real-Time Detection of Hydroxyl Radical Generated at Operating Electrodes via Redox-Active Adduct Formation Using Scanning Electrochemical Microscopy. *J. Am. Chem. Soc.* **2022**, *144*, *41*, 18896-18907.
DOI: 10.1021/jacs.2c06278 [\[Link\]](#)
- 93 Mishra, A.; Sarbapalli, D.; Hossain, M.S.; Gossage, Z.T.; Li, Z.; Urban, A.; **Rodríguez-López, J.*** Highly sensitive detection and mapping of Incipient and Steady-State Oxygen Evolution from Operating Li-ion Battery Cathodes via Scanning Electrochemical Microscopy. *J. Electrochem. Soc.* **2022**, *169*, 086501.
DOI: 10.1149/1945-7111/ac857e [\[Link\]](#)
- 92 Scola Rodrigues, B.; Branco, C.M.; Vicente, M.R.S.; **Rodríguez-López, J.**; dos Santos de Souza, J.* Influence of the solvent used for microwave-assisted synthesis of W-BiVO₄ on properties and photoelectroactivity of W-BiVO₄/WO₃. *ChemElectroChem.* **2022**, *9*, e202200098..

DOI: 10.1002/celc.202200098 [\[Link\]](#) (+)

+ Invited to special issue “Latin American Electrochemistry”

- 91 Qian, H.;[‡] Counihan, M.J.;[‡] Doan, H.A.;[‡] Ibrahim, N.; Danis, A.S.; *Setwipatanachai, W.*; Purwanto, N.; **Rodríguez-López, J.**;^{*} Assary, R.S.;^{*} Moore, J.S.^{*} Mesolytic cleavage of homobenzylic ethers for programmable end-of-life function in redoxmers. *J. Mater. Chem. A* **2022**, *10*, 7739-7753. [‡]Co-first author.

DOI: 10.1039/D1TA10291E [\[Link\]](#) (&)

- 90 Zeng, Y.; Gossage, Z.T.; Sarbapalli, D.; Hui, J. **Rodríguez-López, J.**^{*} Tracking Passivation and Cation Flux at Incipient Solid-Electrolyte Interphases on Multi-Layer Graphene using High Resolution Scanning Electrochemical Microscopy. *ChemElectroChem* **2022**, *9*, e20210144.

DOI: 10.1002/celc.202101445 [\[Link\]](#) (+)

+ Invited to special issue “Latin American Electrochemistry”

- 89 Cabana, J.; Alaan, T.; Crabtree, G.W.; Hatzell, M.C.; Manthiram, K.; Steingart, D.A.; Zenyuk, I.; Jiao, F.; Vojvodic, A.; Yang, J.Y.; Balsara, N.P.; Persson, K.A.; Sieger, D.J.; Haynes, C.L.; Mauzeroll, J.; Shen, M.; Venton, B.J.; Balke, N.; **Rodríguez-López, J.**;^{*} Rolison, D.R.; Shahbazian-Yassar, R.; Srinivasan, V.; Chaudhuri, S.; Couet, A.; Hattrick-Simpers, J. NGenE 2021: Electrochemistry Is Everywhere. *ACS Energy Lett.* **2022**, *7*, 368–374.

DOI: 10.1021/acseenergylett.1c02608 [\[Link\]](#)

- 88 Lawrence, M.J.; Celorrio, V.;^{*} Sargeant, E.; Huang, H.; Rodríguez-López, J.; Zhu, Y.; Gu, M.; Russell, A.E.; Rodriguez, P.^{*} Insight into the Activity and Selectivity of Nanostructured Copper Titanates during Electrochemical Conversion of CO₂ at Neutral pH via In Situ X-ray Absorption Spectroscopy. *ACS Appl. Mater. Interfaces* **2022**, *14*, 2742–2753.

DOI: 10.1021/acssami.1c19298 [\[Link\]](#)

- 87 Sarbapalli, D.; Mishra, A.; **Rodríguez-López, J.**^{*} Pt/Polypyrrole Quasi-References Revisited: Robustness and Application in Electrochemical Energy Storage Research. *Anal. Chem.* **2021**, *93*, 14048–14052.

DOI: 10.1021/acs.analchem.1c03552 [\[Link\]](#)

- 86 Li, J.; Pudar, S.; Yu, H.; Li, S.; Moore, J.S.; **Rodríguez-López, J.**; Jackson, N.E.;^{*} Schroeder, C.M.^{*} Reversible Switching of Molecular Conductance in Viologens is Controlled by the Electrochemical Environment. *J. Phys. Chem. C* **2021**, *125*, 21862–21872.

DOI: 10.1021/acs.jpcc.1c06942 [\[Link\]](#)

- 85 Romo, A. I.B.;^{*} Carepo, M.P.; Levín, P.; Nascimento, O.R.; Díaz, D.E.; **Rodríguez-López, J.**; León, I.E.; Bezerra, L.F.; Lemus, L.; Diógenes, I.C.N.^{*} Synergy of DNA intercalation and catalytic activity of a copper complex towards improved polymerase inhibition and cancer cell cytotoxicity. *Dalton Trans.* **2021**, *50*, 11931-11940.

DOI: 10.1039/D1DT01358K [\[Link\]](#)

- 84** Adams, J.;[‡] Kromer, M.;[‡] **Rodríguez-López, J.;*** Flaherty, D.W.* Unifying Concepts in Electro- and Thermocatalysis towards Hydrogen Peroxide Production. *J. Am. Chem. Soc.* **2021**, *143*, 7940-7957. [‡]= Co-first author
DOI: 10.1021/jacs.0c13399 [\[Link\]](#)
- 83** Hatfield, K.O.; Gole, M.; Schorr, N.B.; Murphy, C.J.; **Rodríguez-López, J.;*** Surface-Enhanced Raman Spectroscopy - Scanning Electrochemical Microscopy: Observation of Real-Time Surface pH Perturbations. *Anal. Chem.* **2021**, *93*, 7792-7796.
DOI: 10.1021/acs.analchem.1c00888 [\[Link\]](#)
- 82** Henckel, D.A.; Counihan, M.J.; Holmes, H.E.; Chen, X.; Nwabara, U.O.; Verma, S.; **Rodríguez-López, J.;** Kenis, P.J.A.*; Gewirth, A.A.* Potential Dependence of the Local pH in a CO₂ Reduction Electrolyzer. *ACS Catal.* **2021**, *11*, 255-263.
DOI: 10.1021/acscatal.0c04297 [\[Link\]](#)
- 81** Wang, Y.; Counihan, M.J.; Lin, J.W.; **Rodríguez-López, J.;** Yang, H.; Lu, Y.* Quantitative Analysis of DNA-Mediated Formation of Metal Nanocrystals. *J. Am. Chem. Soc.* **2020**, *142*, 20368-20379.
DOI: 10.1021/jacs.0c08604 [\[Link\]](#)
- 80** Kromer, M.L.; Simpson, B.H.; **Rodríguez-López, J.;*** Evaluating the impact of catalyst selection and semiconductor band edge on the photoelectrochemical production of H₂O₂ via a real-time in situ probe. *J. Electroanal. Chem.* **2020**, 114677.
DOI: 10.1016/j.jelechem.2020.114677 [\[Link\]](#) (+)
+ **Special Issue in Honour of A. Wieckowski**
- 79** Hui, J.; Nijamudheen, A.; Sarbapalli, D.; *Chang, X.;* *Qu, Z.;* Mendoza-Cortes, J.L.* **Rodríguez-López, J.;*** Nernstian Li⁺ intercalation into few-layer graphene and its use for the determination of K⁺ co-intercalation processes. *Chem. Sci.* **2021**, *12*, 559-568.
DOI: 10.1039/D0SC03226C [\[Link\]](#) (&)
- 78** Gossage, Z.T.; Guo, F.; Hatfield, K.O.; Martin, T.A.; Tian, Q.; Gao, E.J.; Kumar, A.; **Rodríguez-López, J.;*** Zhao, H.* Reconstruction of Lead Acid Battery Negative Electrodes After Hard Sulfation Using Controlled Chelation Chemistry. *J. Electrochem. Soc.* **2020**, *167*, 120537.
DOI: 10.1149/1945-7111/abb349 [\[Link\]](#)
- 77** Doan, H.A.; Agarwal, G.; Qian, H.; Counihan, M.J.; **Rodríguez-López, J.;*** Moore, J.S.*; Assary, R.S.* Quantum Chemistry-Informed Active Learning to Accelerate the Design and Discovery of Sustainable Energy Storage Materials. *Chem. Mater.* **2020**, *32*, 6338-6346.
DOI: 10.1021/acs.chemmater.0c00768 [\[Link\]](#) (+)
+ **Selected as JCESR Best Paper Award 2021**

- 76** Li, S.; Li, J.; Yu, H.; Pudar, S.; Li, B.; **Rodríguez-López, J.**; Moore, J.S.; Schroeder, C. M. Characterizing intermolecular interactions in redox-active pyridinium-based molecular junctions. *J. Electroanal. Chem.* **2020**, 114070.
DOI: 10.1016/j.jelechem.2020.114070 [\[Link\]](#)
- 75** Jiang, X.; Lafoon, S.D.; Chen, D.; Pérez-Estrada, S.; Danis, A.S.; **Rodríguez-López, J.**; García-Garibay, M.A.*; Zhu, J.*; Moore, J.S.* A Kinetic Control in the Synthesis of a Möbius Tris ((ethynyl)[5] helicene) Macrocycle Using Alkyne Metathesis. *J. Am. Chem. Soc.* **2020**, *142*, 6493-6498.
DOI: 10.1021/jacs.0c01430 [\[Link\]](#)
- 74** Watkins, T.; Sarbapalli, D.; Counihan, M.J.; Danis, A.S.; Zhang, J.; Zhang, L.; Zavadil, K.R.*; **Rodríguez-López, J.*** A Combined SECM and Electrochemical AFM Approach to Probe Interfacial Processes Affecting Molecular Reactivity at Redox Flow Battery Electrodes. *J. Mater. Chem. A* **2020**, *8*, 15734-15745.
DOI: 10.1039/d0ta00836b [\[Link\]](#) (+)
+ **HOT Article**
+ **2020 Emerging Investigators Issue**
- 73** Nijamudheen, A.; Sarbapalli, D.; Hui, J.; **Rodríguez-López, J.***; Mendoza-Cortes, J.L.* Impact of Surface Modification on the Lithium, Sodium, and Potassium Intercalation Efficiency and Capacity on Few-Layer Graphene Electrodes. *ACS Appl. Mater. Interfaces* **2020**, *12*, 19393-19401.
DOI: 10.1021/acsami.9b23105 [\[Link\]](#) (+)
+ **Selected for Cover Art**
- 72** Gossage, Z.T.; Hui, J.; Sarbapalli, D.; **Rodríguez-López, J.*** Coordinated mapping of Li⁺ flux and electron transfer reactivity during solid-electrolyte interphase formation at a graphene electrode. *Analyst* **2020**, *145*, 2631-2638.
DOI: 10.1039/C9AN02637A [\[Link\]](#) (+)
+ **Invited Contribution to “Versatile Electrochemical Approaches” Issue**
- 71** Schorr, N.B.; Counihan, M.J.; Bhargava, R.; **Rodríguez-López, J.*** Impact of Plasmonic Photothermal Effects on The Reactivity of Au Nanoparticle Modified Graphene Electrodes Visualized Using Scanning Electrochemical Microscopy. *Anal. Chem.* **2020**, 3666-3673.
DOI: 10.1021/acs.analchem.9b04754 [\[Link\]](#)
- 70** Kafle, P.; Zhang, F.; Schorr, N.B.; Huang, K.Y.; **Rodríguez-López, J.**; Diao, Y.* Printing 2D conjugated polymer monolayers and their distinct electronic properties. *Adv. Func. Mater.* **2020**, 19097897.
DOI: 10.1002/adfm.201909787 [\[Link\]](#)
- 69** Syrek, K.; Sennik-Kubiek, A.; **Rodríguez-López, J.**; Rutkowska, M.; Zmudzki, P.; Hnida-Gut, K.E.; Grudzien, J.; Chmielarz, L.; Sulka, G.D*. Reactive and morphological

- trends on porous anodic TiO₂ substrates obtained at different annealing temperatures. *Int. J. Hydrogen Energy* **2020**, 45, 4376-4389.
DOI: 10.1016/j.ijhydene.2019.11.213 [\[Link\]](#)
- 68** Mohammad-Pour, G.S.; Hatfield, K.O.; Fairchild, D.C.; **Rodríguez-López, J.***; Uribe-Romo, F.J.* A Solid-Solution Approach for Redox-Active Metal-Organic Frameworks with Tunable Redox Conductivity. *J. Am. Chem. Soc.* **2019**, 141, 19978-19982.
DOI: 10.1021/jacs.9b10639 [\[Link\]](#)
- 67** Gordon, Z.; Miller, T.J.; Leahy, C.A.; Matson, E.M.; Burgess, M.; Drummond, M.J.; Popescu, C.V.; Smith, C.M.; Lord, R.L.; **Rodríguez-López, J.**; Fout, A.R.* Characterization of terminal iron(III)-oxo and iron(III)-hydroxo complexes derived from O₂ activation. *Inorg. Chem.* **2019**, 58, 15801-15811.
DOI: 10.1021/acs.inorgchem.9b02079 [\[Link\]](#)
- 66** Gossage, Z.T.; Hui, J.; Zeng, Y.; Flores-Zuleta, H.; **Rodríguez-López, J.*** Probing the reversibility and kinetics of Li⁺ during SEI formation and (de)intercalation on edge plane graphite using ion-sensitive scanning electrochemical microscopy. *Chem. Sci.* **2019**, 10, 10749-10754.
DOI: 10.1039/C9SC03569A [\[Link\]](#) (&)
- 65** Counihan, M.J.; Simpson, B.H.; Plaza-Dominguez, M.; **Rodríguez-López, J.*** Towards a Piezoelectric Electroanalytical Platform for Modulating Oxygen Reduction Reactivity on Platinum. *J. Electrochem. Soc.* **2019**, 166, H677-H684.
DOI: 10.1149/2.0121914jes [\[Link\]](#)
- 64** Counihan, M.J.; *Setwipatanachai, W.*; **Rodríguez-López, J.*** Interrogating the Surface Intermediates and Water Oxidation Products of Boron-Doped Diamond Electrodes with Scanning Electrochemical Microscopy. *ChemElectroChem* **2019**, 6, 3507-3515.
DOI: 10.1002/celec.201900659 [\[Link\]](#) (+, &)
+ Invited Contribution to “Trends in Synthetic Diamond” Issue
- 63** Song, Z.; Fu, H.; Wang, J.; Hui, J.; Xue, T.; Pacheco, L.A.; Yan, H.; Baumgartner, R.; Wang, Z.; Xia, Y.; Wang, X.; Yin, L.; Chen, C.; **Rodríguez-López, J.**; Ferguson, A.L.; Lin, Y.; Cheng, J.* Synthesis of polypeptides via bioinspired polymerization of in situ purified *N*-carboxyanhydrides. *Proc. Natl. Acad. Sci.* **2019**, 116, 10658-10663.
DOI: 10.1073/pnas.1901442116 [\[Link\]](#)
- 62** Claudio-Cintrón, M.A.; **Rodríguez-López, J.*** Scanning Electrochemical Microscopy using Conducting Polymer Probes: Validation and Applications. *Analytica Chimica Acta* **2019**, 1069, 36-46.
DOI: 10.1016/j.aca.2019.04.022 [\[Link\]](#)
+ Invited Contribution to “New Directions in Electroanalytical Chemistry” Issue
- 61** Li, B.; Yu, H.; Montoto, E.C.; Liu, Y.; Li, S.; Schwieter K.; **Rodríguez-López, J.**;

- Moore, J.S.; Schroeder, C.M.* Intrachain Charge Transport through Conjugated Donor-Acceptor Oligomers. *ACS Appl. Electron. Mater.* **2019**, *1*, 7-12.
DOI: 10.1021/acsaelm.8b00050 [\[Link\]](#)
- 60** Hui, J.; Gossage, Z.T.; Sarbapalli, D.; Hernández-Burgos, K.; **Rodríguez-López, J.*** Advanced Electrochemical Analysis for Energy Storage Interfaces. *Anal. Chem.* **2019**, *91*, 60-83. (+)
DOI: 10.1021/acs.analchem.8b05115 [\[Link\]](#)
+ **Invited Contribution to Analytical Chemistry Annual Reviews Issue**
- 59** Schorr, N.B.; Hui, J.; **Rodríguez-López, J.*** Electrocatalysis on ultra-thin 2D electrodes: New concepts and prospects for tailoring reactivity. *Current Opinion in Electrochemistry*, **2018**, *13*, 100-106. (+)
DOI: 10.1016/j.coelec.2018.11.003 [\[Link\]](#)
+ **Invited Contribution to “Nanoelectrochemistry” Issue**
- 58** Hui, J.; Schorr, N.B.; *Qu*, Z.; Pakhira, S.; Mendoza-Cortes, J.L.*; **Rodríguez-López, J.*** Achieving Fast and Efficient K⁺ Intercalation on Ultrathin Graphene Electrodes Modified by a Li⁺ Based Solid-Electrolyte Interphase. *J. Am. Chem. Soc.* **2018**, *140*, 13599-13603.
DOI: 10.1021/jacs.8b08907 [\[Link\]](#) (&)
- 57** Lawrence, M.J.; Celorrio, V.; Shi, X.; Wang, Q.; Yanson, A.; Adkins, N.J.E.; Gu, M.; **Rodríguez-López, J.***; Rodriguez, P.* Electrochemical Synthesis of Nanostructured Metal-doped Titanates and Investigation of Their Activity as Oxygen Evolution Photoanodes. *ACS Applied Energy Mat.* **2018**, *1*, 5233-5244.
DOI: 10.1021/acsaem.8b00873 [\[Link\]](#)
- 56** Gossage, Z.T.; Hernandez-Burgos, K.; Moore, J.S.; **Rodríguez-López, J.*** Impact of Charge Transport Dynamics and Conditioning on Cycling Efficiency within Single Redox-Active Colloids. *ChemElectroChem*, **2018**, *5*, 3006-3013. (+)
DOI: 10.1002/celc.201800736 [\[Link\]](#)
+ **Invited Contribution to “Single-Entity Electrochemistry” Issue**
+ **Selected for Cover Art**
- 55** Baran, M.J.; Braten, M.N.; Montoto, E.C.; Gossage, Z.T.; Ma, L.; Chénard, E.; Moore, J.S.; **Rodríguez-López, J.**; Helms, B.A.* Designing Redox-Active Oligomers for Crossover-Free, Nonaqueous Redox-Flow Batteries with High Volumetric Energy Density. *Chem. Mater.* **2018**, *30*, 3861-3866.
DOI: 10.1021/acs.chemmater.8b01318 [\[Link\]](#)
- 54** Schorr, N.B.; *Jiang*, A.G.; **Rodríguez-López, J.*** Probing Graphene Interfacial Reactivity via Simultaneous and Co-Localized Raman-SECM Imaging and Interrogation. *Anal. Chem.* **2018**, *90*, 7848-7854.
DOI: 10.1021/acs.analchem.8b00730 [\[Link\]](#) (&, +)
+ **Selected for Cover Art**
- 53** Montoto, E.C.; Cao, Y.; Hernandez-Burgos, K.; Sevov, C.S.; Braten, M.N.; Helms, B.A.; Moore, J.S.*; **Rodríguez-López, J.*** Effect of Backbone Tether on the Electrochemical Properties of Soluble Cyclopropenium Redox-Active Polymers. *Macromolecules* **2018**, *51*, 3539-3546.

- DOI: 10.1021/acs.macromol.8b00574 [\[Link\]](#) (+)
+ **Selected for Cover Art**
- 52** Schorr, N.B.; Gossage, Z.T. **Rodríguez-López, J.*** Prospects for Single-Site Interrogation using In Situ Multimodal Electrochemical Scanning Probe Techniques. *Current Opinion on Electrochemistry* **2018**, 889-895.
DOI: 10.1016/j.coelec.2018.03.022 [\[Link\]](#) (+)
+ **Invited Contribution to “Surface Electrochemistry” Issue**
- 51** Krumov, M.; Simpson, B.H.; Counihan, M.; **Rodríguez-López, J.*** In Situ Quantification of Surface Intermediates and Correlation to Discharge Products on Hematite Photoanodes using a Combined Scanning Electrochemical Microscopy Approach. *Anal. Chem.* **2018**, 90, 3050-3057.
DOI: 10.1021/acs.analchem.7b04896 [\[Link\]](#) (&)
- 50** Hui, J.; Pahkira, S.; *Bhargava, R.*; Barton, Z.J.; Zhou, X.; *Chinderle, A.J.*; Oluwagbenga, O. I.; Mendoza-Cortes, J.L.*; **Rodríguez-López, J.*** Modulating Electrocatalysis on Graphene Heterostructures: Physically Impermeable yet Electronically Transparent Electrodes. *ACS Nano* **2018**, 12, 2980-2990.
DOI: 10.1021/acs.nano.8b00702 [\[Link\]](#) (&)
- 49** Burgess, M.;[‡] Hernandez-Burgos, K.;[‡] Schuh, J.K.; *Davila, J.*; Montoto, E.C.; Ewoldt, R.H.; **Rodríguez-López, J.*** Modulating the Reactivity of Solubilized Redox Active Polymers via Polyelectrolyte Dynamics. [‡] = Co-first author. *J. Am. Chem. Soc.* **2018**, 140, 2093-2104.
DOI: 10.1021/jacs.7b08353 [\[Link\]](#) (&)
- 48** Kromer, M.L.; Monzo, J.; Kolodziej, A.; Lawrence, M.; Gossage, Z.T.; Simpson, H.T.; Morandi, S.; Yanson, A.; **Rodríguez-López, J.***; Rodríguez, P.* High Throughput Preparation of Metal Oxide Nanocrystals by Cathodic Corrosion and their Use as Active Photocatalysts. *Langmuir* **2017**, 33, 13295-13302.
DOI: 10.1021/acs.langmuir.7b02465 [\[Link\]](#)
- 47** Hernandez-Burgos, K.; Barton, Z.J.; **Rodríguez-López, J.*** Finding Harmony Between Ions and Electrons: New Tools and Concepts for Emerging Energy Storage Materials. *Chem. Mater.* **2017**, 29, 8918-8931.
DOI: 10.1021/acs.chemmater.7b02243 [\[Link\]](#) (+)
+ **Invited Contribution to “Up-and-Coming” Series**
+ **Selected for Cover Art**
- 46** Gossage, Z.; Schorr, N.B.; Hernandez-Burgos, K.; Hui, J.; Simpson, B.; Montoto, E.C.; **Rodríguez-López, J.*** Interrogating Charge Storage on Redox Active Colloids via Combined Raman Spectroscopy and Scanning Electrochemical Microscopy. *Langmuir* **2017**, 33, 9455-9463.
DOI: 10.1021/acs.langmuir.7b0112 [\[Link\]](#) (+)
+ **Invited Contribution to Special Issue on “Fundamental Interfacial Science for Energy Applications”**
+ **Selected for Cover Art**

- 45 Iyer, V.A.; Schuh, J.K.; Montoto, E.C.; Nemani, V. P.; Qian, S.; Nagarjuna, G.; **Rodríguez-López, J.**; Ewoldt, R.H.; Smith, K.C.* Assessing the Impact of Electrolyte Conductivity and Viscosity on the Reactor Cost and Pressure Drop of Redox Active Polymer Flow Batteries. *J. Power Sources*. **2017**, *361*, 334-344.
DOI: 10.1016/j.jpowsour.2017.06.052 [\[Link\]](#) (&)
- 44 Montoto, E.C.; Gavvalapalli, N.; Moore, J.S.*; **Rodríguez-López, J.*** Redox Active Polymers for Non-Aqueous Redox Flow Batteries: Validation of a Size-Exclusion Approach. *J. Electrochem. Soc.* **2017**, *164*, A1688-A1694.
DOI: 10.1149/2.1511707jes [\[Link\]](#)
- 43 Barton, Z. J.; Hui, J.; Schorr, N.B.; **Rodríguez-López, J.*** Detecting Potassium Ion Gradients at Graphitic Battery Anodes. *Electrochim. Acta* **2017**, *241*, 98-105.
DOI: 10.1016/j.electacta.2017.04.105 [\[Link\]](#) (+)
+ Invited Contribution as selected speaker following the 67th meeting of the International Society of Electrochemistry in The Hague, Netherlands.
- 42 Barton, Z.J.; **Rodríguez-López, J.*** Fabrication and Demonstration of Mercury Disc-Well Probes for Stripping-Based Scanning Electrochemical Microscopy (SECM). *Anal. Chem.* **2017**, *89*, 2716-2723.
DOI: 10.1021/acs.analchem.6b04022 [\[Link\]](#)
- 41 Barton, Z.J.; **Rodríguez-López, J.*** Cyclic Voltammetry Probe Approach Curves (CV-PACs) with Alkali Amalgams at Mercury Sphere-Cap Scanning Electrochemical Microscopy Probes. *Anal. Chem.* **2017**, *89*, 2708-2715.
DOI: 10.1021/acs.analchem.6b04093 [\[Link\]](#)
- 40 Burgess, M.; Moore, J.S.; **Rodríguez-López, J.*** Redox Active Polymers as Soluble Nanomaterials for Energy Storage. *Acc. Chem. Res.* **2016**, *49*, 2649-2657.
DOI: 10.1021/acs.accounts.6b00341 [\[Link\]](#) (+)
**+ Invited Contribution for “Nanoelectrochemistry” Issue
+ Selected for Cover Art**
- 39 Burgess, M.;[‡] Chenard, E.;[‡] Hernandez-Burgos, K.;[‡] Gavvalapalli, N.; Assary, R.S.; Hui, J.; Moore, J.S.*; **Rodríguez-López, J.*** Impact of Backbone Tether Length and Structure on the Electrochemical Performance of Viologen Redox Active Polymers. *Chem. Mater.* **2016**, *28*, 7362-7374. [‡]Co-first author.
DOI: 10.1021/acs.chemmater.6b02825 [\[Link\]](#) (+)
+ Highlighted Paper on “Redox Flow Batteries” Editorial Note in ACS Energy Letters. DOI: 10.1021/acsenerylett.7b00361
- 38 Montoto, E.C.;[‡] Gavvalapalli, N.;[‡] Hui, J.; Burgess, M.; Sekerak, N.M.; Hernandez-Burgos, K.; Wei, T.; Kneer, M.; Grolman, J.M.; Cheng, K.J.; Lewis, J.A.; Moore, J.S.*; **Rodríguez-López, J.*** Redox Active Colloids as Discrete Energy Storage Carriers. *J. Am. Chem. Soc.* **2016**, *138*, 13230-13237.
DOI: 10.1021/jacs.6b06365 [\[Link\]](#) (&)
- 37 Gossage, Z.T.; Simpson, B.H.; Schorr, N.B.; **Rodríguez-López, J.*** Soft Surfaces for Fast Characterization and Positioning of Scanning Electrochemical Microscopy Nanoelectrode Tips. *Anal. Chem.* **2016**, *88*, 9897-9901.

DOI: 10.1021/acs.analchem.6b02213 [\[Link\]](#)

- 36** Zhou, X.; Gossage, Z.T.; Simpson, B.H.; Hui, J.; Barton, Z.J.; **Rodríguez-López, J.*** Electrochemical Imaging of Photoanodic Water Oxidation Enhancements on TiO₂ Thin Films Modified by Sub-Surface Al Nano-Dimers. *ACS Nano*, **2016**, *10*, 9346-9352.
DOI: 10.1021/acsnano.6b04004 [\[Link\]](#)
- 35** Hui, J.; Zhou, X.; *Bhargava, R.*; *Chinderle, A.*; *Zhang, J.*; **Rodríguez-López, J.*** Kinetic Modulation of Outer-Sphere Electron Transfer Reactions on Graphene Electrodes with a Sub-Surface Metal Substrate. *Electrochim. Acta* **2016**, *211*, 1016-1023.
DOI: 10.1016/j.electacta.2016.06.134 [\[Link\]](#) (&)
- 34** Plaza, M.;[‡] Huang, X.;[‡] Ko, J.Y.P.; Brock, J.D. Shen, M.; Simpson, B.H.; **Rodríguez-López, J.**[‡] Ritzert, N.L.; Abruna, H.D.*; Letchworth-Weaver, K.;[‡] Gunceler, D.; Arias, T.A.*; Schlom, D.G.* Structure of the Photo-Catalytically Active Surface of SrTiO₃. *J. Am. Chem. Soc.* **2016**, *138*, 7816-7819. [‡]Co-first author.
DOI: 10.1021/jacs.6b03338 [\[Link\]](#)
- 33** Burgess, M.; Hernandez-Burgos, K.; Cheng, K.J.; Moore, J.S.; **Rodríguez-López, J.*** Impact of Electrolyte Composition on the Reactivity of a Redox Active Polymer Studied Through Surface Interrogation and Ion-Sensitive Scanning Electrochemical Microscopy. *Analyst* **2016**, *141*, 3842-3850.
DOI: 10.1039/C6AN00203J [\[Link\]](#) (+)
+ **Invited Contribution to “Emerging Young Investigators” Issue**
- 32** Hui, J.; Burgess, M.; *Zhang, J.*; **Rodríguez-López, J.*** Layer Number Dependence of Li⁺ Intercalation on Few-Layer Graphene and Electrochemical Imaging of its Solid-Electrolyte Interphase Evolution. *ACS Nano* **2016**, *10*, 4248-4257.
DOI: 10.1021/acsnano.5b07692 [\[Link\]](#) (&)
- 31** Barton, Z.J.; **Rodríguez-López, J.*** Emerging Scanned Probe Approaches to the Measurement of Ionic Reactivity at Energy Storage Materials. *Anal. Bioanal. Chem.* **2016**, *408*, 2707-2715.
DOI: 10.1007/s00216-016-9373-7 [\[Link\]](#) (+)
+ **Invited Contribution to “Young Investigators in Analytical and Bioanalytical Science” Issue**
- 30** Simpson, B.H.; **Rodríguez-López, J.*** Electrochemical Imaging and Redox Interrogation of Surface Defects on Operating SrTiO₃ Photoelectrodes. *J. Am. Chem. Soc.* **2015**, *137*, 14865-14868.
DOI: 10.1021/jacs.5b10256 [\[Link\]](#) (+)
- 29** Burgess, M.;[‡] Hernandez-Burgos, K.; Simpson, B.H.; *Lichtenstein, T.*; *Avetian, S.*; Nagarajuna, G.; Cheng, K.J.; Moore, J.S.; **Rodríguez-López, J.*** Scanning Electrochemical Microscopy and Hydrodynamic Voltammetry Investigation of Charge Transfer Mechanisms on Redox Active Polymers. *J. Electrochem. Soc.* **2016**, *163*, H3006-H3013.
DOI: 10.1149/2.0021604jes [\[Link\]](#) (&, &, +)
+ **Invited Contribution to Special Issue Honoring Allen J. Bard**

+ Selected for the 2016 Norman Hackerman Young Author Award for Best Paper in JES by authors less than 31 years old (Burgess, Hernandez-Burgos)
+ Selected for Cover Art

- 28 Sevov, C.S.; Brooner, R.E.M.; Chenard, E.; Assary, R.S.; Moore, J.S.; **Rodríguez-López, J.**; Sanford, M.S.* Evolutionary Design of Low Molecular Weight Organic Anolytes for Applications in Nonaqueous Redox Flow Batteries. *J. Am. Chem. Soc.* **2015**, *137*, 14465–14472.
DOI: 10.1021/jacs.5b09572 [\[Link\]](#)
- 27 Simpson, B.H.; **Rodríguez-López, J.*** Emerging Techniques for the *In Situ* Analysis of Reaction Intermediates on Photo-Electrochemical Interfaces. *Anal. Methods* **2015**, *7*, 7029-7041.
DOI: 10.1039/C5AY00503E [\[Link\]](#) (+)
+ Invited Contribution to “Emerging Investigator” Issue
- 26 Duarte-Guevara, C.; Swaminathan, V.V.; Burgess, M.; Reddy Jr. B.; Salm, E.M.; Liu, Y.-S.; **Rodríguez-López, J.**; Bashir, R.* On-chip Metal/Polypyrrole Quasi-reference Electrodes for Robust ISFET Operation. *Analyst* **2015**, *140*, 3630-3641.
DOI: 10.1039/C5AN00085H [\[Link\]](#)
- 25 Simpson, B.H.; **Rodríguez-López, J.*** Redox Titrations via Surface Interrogation Scanning Electrochemical Microscopy at an Extended Semiconducting Surface for the Quantification of Photogenerated Adsorbed Intermediates. *Electrochim. Acta* **2015**, *179*, 74-83.
DOI: 10.1016/j.electacta.2015.04.128 [\[Link\]](#)
- 24 Cristarella, T.; Chinderle, A.; Hui, J.; **Rodríguez-López, J.*** Single Layer Graphene as a Stable and Transparent Electrode for Non-Aqueous Radical Annihilation Electrogenenerated Chemiluminescence. *Langmuir* **2015**, *31*, 3999-4007.
DOI: 10.1021/la5050317 [\[Link\]](#) (&)
- 23 Minguzzi, A.*; Battistel, D.; **Rodríguez-López, J.**; Vertova, A.; Rondinini, S.; Bard, A.J.; Daniele, S. Rapid Characterization of Oxygen Evolving Electrocatalyst Spot Arrays by the Substrate Generation/Tip Collection Mode of SECM with Decreased O₂ Diffusion Layer Overlap. *J. Phys. Chem. C* **2015**, *119*, 2941-2947.
DOI: 10.1021/jp510651f [\[Link\]](#)
- 22 Gavvalapalli, N.; Hui, J.; Cheng, K.; Lichtenstein, T.; Shen, M.; Moore, J.S.*; **Rodríguez-López, J.*** Impact of Redox Active Polymer Molecular Weight on the Electrochemical Properties and Transport Across Porous Separators in Non-Aqueous Solvents. *J. Am. Chem. Soc.* **2014**, *136*, 16309-16316.
DOI: 10.1021/ja508482e [\[Link\]](#) (&)
- 21 Barton, Z. J.; **Rodríguez-López, J.*** Lithium Ion Quantification Using Mercury Amalgams as *In Situ* Electrochemical Probes in Nonaqueous Media. *Anal. Chem.* **2014**, *86*, 10660-10667.
DOI: 10.1021/ac502517b [\[Link\]](#)

PUBLISHED ARTICLES WITH WORK PERFORMED BEFORE JOINING UIUC

- 20 Ritzert, N.L.; Li, W.; Tan, C.; Rodriguez-Calero, G.G.; **Rodríguez-López, J.**; Hernandez-Burgos, K.; Conte, S.; Parks, J.J.; Ralph, D.C.*; Abruña, H.D.* Single Layer Graphene as an Electrochemical Platform. *Faraday, Discuss.* **2014**, *172*, 27-45.
DOI: 10.1039/C4FD00060A [\[Link\]](#) (%)
- 19 Ritzert, N.L.; **Rodríguez-López, J.**; Tan, C.; Abruña, H.D.* Kinetics of Interfacial Electron Transfer at Single Layer Graphene Electrodes in Aqueous and Non-Aqueous Solutions. *Langmuir*, **2013**, *29*, 1683-1694.
DOI: 10.1021/la3042549 [\[Link\]](#) (%)
- 18 **Rodríguez-López, J.**; Videa-Vargas, M.* Study of the Ion Transfer of Quaternary Ammonium Ions by SWV. *J. Mex. Chem. Soc.* **2012**, *56*, 417-425.
ISSN 1870-249X [\[Link\]](#) (@)
- 17 **Rodríguez-López, J.**; Shen, M.; Nepomnyashchii, A.B.; Bard, A.J.* Scanning Electrochemical Microscopy Study of Ion Annihilation Electrogenerated Chemiluminescence of Rubrene and $[\text{Ru}(\text{bpy})_3]^{2+}$. *J. Am. Chem. Soc.* **2012**, *134*, 9240-9250.
DOI: 10.1021/ja301016n [\[Link\]](#) (#)
- 16 Zigah, D.; **Rodríguez-López, J.**; Bard, A.J.* Quantification of Photoelectrogenerated Hydroxyl Radical on TiO_2 by Surface Interrogation Scanning Electrochemical Microscopy. *Phys. Chem. Chem. Phys.* **2012**, *14*, 12764-12772.
DOI: 10.1039/C2CP40907K [\[Link\]](#) (#)
- 15 **Rodríguez-López, J.**; Ritzert, N.L.; Mann, J.A.; Tan, C.; Dichtel, W.R.*; Abruña, H.D.* Quantification of the Surface Diffusion of Tripodal Binding Motifs on Graphene Using Scanning Electrochemical Microscopy. *J. Am. Chem. Soc.* **2012**, *134*, 6224–6236.
DOI: 10.1021/ja2106724 [\[Link\]](#) (%)
- 14 Tan, C.; **Rodríguez-López, J.**; Parks, J.J.; Ritzert, N.L.; Ralph, D.C.; Abruña, H.D.* Reactivity of Monolayer Chemical Vapor Deposited Graphene Imperfections Studied Using Scanning Electrochemical Microscopy. *ACS Nano* **2012**, *6*, 3070–3079.
DOI: 10.1021/nn204746n [\[Link\]](#) (%)
- 13 Mann, J.A.; **Rodríguez-López, J.**; Abruña, H.D.*; Dichtel, W.R.* Multivalent Bonding Motifs for the Noncovalent Functionalization of Graphene. *J. Am. Chem. Soc.* **2011**, *133*, 17614–17617.
DOI: 10.1021/ja208239v [\[Link\]](#) (%)
- 12 **Rodríguez-López, J.**; Minguzzi, A.; Bard, A.J.* Reaction of Various Reductants with Oxide Films on Pt Electrodes as Studied by the Surface Interrogation Mode of Scanning Electrochemical Microscopy (SI-SECM). Possible Validity of a Marcus Relationship. *J. Phys. Chem. C.* **2010**, *114*, 18645-18655.
DOI: 10.1021/jp107259h [\[Link\]](#) (#)
- 11 Wang, Q.; **Rodríguez-López, J.**; Bard, A.J.* Evaluation of Chemical Reactions from Two Electrogenerated Species in Picoliter Volumes by Scanning Electrochemical Microscopy. *Chem. Phys. Chem.* **2010**, *11*, 2969-2978.
DOI: 10.1002/cphc.201000183 [\[Link\]](#) (#)

- 10 Shen, M.; **Rodríguez-López, J.**; Huang, J.; Liu, Q.; Zhu, X.-H.; Bard, A.J.* Electrochemistry and Electrogenerated Chemiluminescence of Dithienylbenzothiadiazole Differential Reactivity of Donor and Acceptor Groups and Simulations of Radical Cation – Anion and Dication – Radical Anion Annihilations. *J. Am. Chem. Soc.* **2010**, *132*, 13453-13461.
DOI: 10.1021/ja105282u [\[Link\]](#) (#)
- 9 Shen, M.; **Rodríguez-López, J.**; Lee, Y.-T.; Chen, C.-T.; Fan, F.F.-R.; Bard, A.J.* Electrochemistry and Electrogenerated Chemiluminescence of a Novel Donor-Acceptor FPhSPFN Red Fluorophore. *J. Phys. Chem. C* **2010**, *114*, 9772-9780.
DOI: 10.1021/jp911451v [\[Link\]](#) (#)
- 8 **Rodríguez-López, J.**; Bard, A.J.* Scanning Electrochemical Microscopy: Surface Interrogation of Adsorbed Hydrogen and the Open Circuit Catalytic Decomposition of Formic Acid at Platinum. *J. Am. Chem. Soc.* **2010**, *132*, 5121-5129.
DOI: 10.1021/ja9090319 [\[Link\]](#) (#)
- 7 Wang, Q.; **Rodríguez-López, J.**; Bard, A.J.* Reaction of Br₂ with Adsorbed CO on Pt Studied by the Surface Interrogation Mode of Scanning Electrochemical Microscopy. *J. Am. Chem. Soc.* **2009**, *131*, 17046-17047.
DOI: 10.1021/ja907626t [\[Link\]](#) (#)
- 6 Lin, C.-L.; **Rodríguez-López, J.**; Bard, A.J.* Micropipet Delivery-Substrate Collection Mode of Scanning Electrochemical Microscopy for the Imaging of Electrochemical Reactions and the Screening of Methanol Oxidation Electrocatalysts. *Anal. Chem.* **2009**, *81*, 8868-8877.
DOI: 10.1021/ac901434a [\[Link\]](#) (#)
- 5 Jung, C.; Sánchez-Sánchez, C.M.; Lin, C.-L.; **Rodríguez-López, J.**; Bard, A.J.* Electrocatalytic Activity of Pd-Co Bimetallic Mixtures for Formic Acid Oxidation Studied by Scanning Electrochemical Microscopy. *Anal. Chem.* **2009**, *81*, 7003-7008.
DOI: 10.1021/ac901096h [\[Link\]](#) (#)
- 4 **Rodríguez-López, J.**; Alpuche-Aviles, M.A.; Bard, A.J.* Interrogation of Surfaces for the Quantification of Adsorbed Species on Electrodes: Oxygen on Gold and Platinum in Neutral Media. *J. Am. Chem. Soc.* **2008**, *130*, 16985-16995.
DOI: 10.1021/ja8050553 [\[Link\]](#) (#)
- 3 Minguzzi A.; Alpuche-Aviles, M.A.; **Rodríguez López, J.**; Rondinini, S.; Bard, A.J.* Screening of Oxygen Evolution Electrocatalysts by Scanning Electrochemical Microscopy Using a Shielded Tip Approach. *Anal. Chem.* **2008**, *80*, 4055–4064.
DOI: 10.1021/ac8001287 [\[Link\]](#) (#)
- 2 Sánchez-Sánchez, C.M.; **Rodríguez-López, J.**; Bard, A.J.* Scanning Electrochemical Microscopy. 60. Quantitative Calibration of the SECM Substrate Generation/Tip Collection Mode and Its Use for the Study of the Oxygen Reduction Mechanism. *Anal. Chem.* **2008**, *80*, 3254-3260.
DOI: 10.1021/ac702453n [\[Link\]](#) (#)

- 1 **Rodríguez-López, J.**; Alpuche-Aviles, M.A.; Bard, A.J.* Selective Insulation with Poly(tetrafluoroethylene) of Substrate Electrodes for Electrochemical Background Reduction in Scanning Electrochemical Microscopy. *Anal. Chem.* **2008**, *80*, 1813-1818. DOI: 10.1021/ac7020294 [\[Link\]](#) (#)

Patents

- 1 Gavvalapalli, N.; Moore, J.S.; **Rodríguez-López, J.**; Cheng, K.; Shen, M.; Lichtenstein, T. *Redox Active Polymers and Colloidal Particles for Flow Batteries*. [US Patent US9982068B2, granted on May 29, 2018]. [\[Link\]](#)
- 2 Moore, J.S.; **Rodríguez-López, J.**; Gavvalapalli, N.; Montoto, E.C.; Hui, J. *Redox Active Colloidal Particles for Flow Batteries*. [US Patent 10,239,978, granted on March 26, 2019]. [\[Link\]](#)
- 3 Uribe-Romo, J.; Pour, G.; Fairchild, D.; **Rodríguez-López, J.** *Solid Solution Approach for Redox Active Metal Organic Frameworks with Tunable Redox Conductivity*. [US Patent US 11,964,992 B2, granted on April 23, 2024]. [\[Link\]](#)
- 4 Zhao, H.; Gossage, Z.; Guo, F.; Hatfield, K.; Martin, T.; Tian, Q; Gao, E.; Kumar, A.; **Rodríguez-López, J.** *Regenerating lead acid batteries*. [US20230352649A1, Filed and published as of November 27, 2023]. [\[Link\]](#)