

CURRICULUM VITAE

Mark E. Orazem

Current Position

Distinguished Professor
Department of Chemical Engineering
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Research Interests

Electrochemical Engineering: electrochemical impedance spectroscopy, corrosion (including cathodic protection), current distribution in electrochemical systems, energy devices (fuel cells and batteries), mathematical modeling.

Education

PhD Chemical Engineering, University of California, Berkeley, California, 1983.
MS Chemical Engineering, Kansas State University, Manhattan, Kansas, 1978.
BS Chemical Engineering, Kansas State University, Manhattan, Kansas, 1976.

Experience

- Department of Chemical Engineering, University of Florida, Gainesville, Florida.
 - Distinguished Professor, 2015–present.
 - University of Florida Term Professorship, 2018–2021
 - University of Florida Foundation Preeminence Term Professor, 2018–2021
 - Dr. and Mrs. Frederick C. Edie Professor of Chemical Engineering, 2018–2021
 - ExxonMobil Chemical Engineering Alumni Professor of Chemical Engineering, 2015–2018
 - University of Florida Research Foundation Professor, 1999–2002, 2014–2017.
 - Charles A. Stokes Professor of Chemical Engineering, 2000–2003, 2010–2013.
 - Professor, August 1992–2015.
 - Associate Professor, August 1988–August 1992.
- Beijing University of Chemical Technology, Beijing, China.
 - Adjunct Professor, 2014–2017; 2018–2021
- Institut National Polytechnique de Toulouse, Toulouse, France.
 - July 2006 (visiting professor)
- UPR 15 du CNRS, “Physique des Liquides et Electrochimie,” Université Pierre et Marie Curie, Paris, France.
 - January 2012–June 2012 (sabbatical).
 - July 2001–July 2002 (sabbatical).
 - July 1994–April 1995 (sabbatical).
 - July 1993 (visiting professor).
- Department of Chemical Engineering, University of Virginia, Charlottesville, Virginia.
 - Assistant Professor, September 1983–August 1988.

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Professional Honors and Societies

Honors

- 2022 *Electrochemical Society* Corrosion Division H.H. Uhlig Award.
- 2021 Herbert Wertheim College of Engineering Doctoral Dissertation Advisor/Mentoring Award.
- Fellow of *The International Society of Electrochemistry*, Elected 2019.
- 2019 Claude Gabrielli Award for Contributions to Electrochemical Impedance Spectroscopy, awarded by the Scientific Committee of the International Symposium on Electrochemical Impedance Spectroscopy.
- University of Florida Term Professorship, 2018–2021.
- University of Florida Foundation Preeminence Term Professorship, 2018–2021.
- Dr. and Mrs. Frederick C. Edie Chemical Engineering Professorship, University of Florida, 2018–2021.
- Editorial advisory board of *Current Opinion in Electrochemistry*.
- Lead organizer of the 68th Annual Meeting of the International Society of Electrochemistry held in Providence, Rhode Island, USA, August 27 – September, 1, 2017.
- Paper 92 listed by Web of Science as *Highly Cited*, meaning that, as of March/April 2017, this paper received enough citations to place it in the top 1% of the academic field of Chemistry based on a highly cited threshold for the field and publication year.
- Paper 70 listed as a 2006 Google Scholar Classic, meaning that, after a period of ten years, this paper was one of the ten most-cited articles for the field of Electrochemistry, with 706 citations as of May 2017. Paper 70 was also listed in September 2010 by Elsevier as one of the *Top 10 Cited* (articles published in the previous five years) in *Electrochimica Acta*.
- Distinguished Professorship, University of Florida, Awarded 2015.

- ExxonMobil Gator Chemical Engineering Alumni Professorship, University of Florida, 2015–2018.
- Appointed Adjunct Professor, Beijing University of Chemical Technology, 2014.
- University of Florida Research Foundation Professorship, 2014–2017, 1999–2002.
- The 2012 *Electrochemical Society* Henry B. Linford Award for Distinguished Teaching.
- Recipient of 2011/12 University of Florida Faculty Enhancement Opportunity (FEO) Award.
- Charles A. Stokes Chemical Engineering Professorship, University of Florida, 2010–2013, 2000–2003.
- Associate Editor of *Journal of The Electrochemical Society*, 2001–2011.
- Elected Officer of the *International Society of Electrochemistry*, Past-President 2013–2014, President 2011–2012, President-Elect 2009–2010, Vice-President 2006–2008, US Regional Representative 2004–2005.
- 2008 University of Florida Blue Key Distinguished Professor Award.
- 2006 Excellence in Teaching Award from the University of Florida student chapter of the American Institute of Chemical Engineers.
- Fellow of *The Electrochemical Society*, Elected 2006.
- Outstanding Service as a Distinguished Educator, BP Azerbaijan, 2005.
- Distinguished International Educator, College of Engineering, University of Florida, 2005.
- Organizer of the Sixth International Symposium on Electrochemical Impedance Spectroscopy, held in Cocoa Beach, Florida in May 2004.
- Associate Editor of *Corrosion*, 1997–2002.
- Invited speaker at the Gordon Conference on the Barrier Function of Mammalian Skin, Il Ciocco, Italy, April 18–23, 1999.
- Invited speaker at the Gordon Conference on Aqueous Corrosion, New London, New Hampshire, July 20–24, 1992, July 5–9, 1998.
- University of Florida TIP Award for Outstanding Undergraduate Teaching, 1993.
- Co-Author of papers 29 and 30 that received the 1993 Campbell Young Author Award of *NACE International*.
- Co-Author of papers 25 and 26 that received the 1992 Norman Hackerman Young Author Award of *The Electrochemical Society*.
- University of Florida College of Engineering Award for Outstanding Undergraduate Teaching, 1991–1992.

Plenary Speaker

18. 74th Annual Meeting of the International Society of Electrochemistry, Lyon, France. September 3–8, 2023.
17. Corrosion Electrochemchina 2018, Beijing, China, July 30–August 3, 2018.
16. Material Science for Corrosion Protection, Santiago, Chile, November 20–24, 2017.
15. 11th European Symposium on Electrochemical Engineering, Prague, Czech Republic, June 4–8, 2017.
14. Spring Meeting of the Canadian Section of the Electrochemical Society, Halifax, Nova Scotia, Canada, June 10, 2016.
13. 10th International Symposium on Electrochemical Micro & Nanosystem Technologies (EMNT2014), Okinawa, Japan, November 5–8, 2014.
12. 7th International Workshop on Impedance Spectroscopy, Chemnitz, Germany, September 24–26, 2014.
11. 9th International Symposium on Electrochemical Impedance Spectroscopy, EIS2013, Okinawa, Japan, June 16–21, 2013.

10. 19th Electrochemical and Electroanalytical Brazilian Symposium, Campos do Jordão, São Paulo, Brazil, April 1–5, 2013.
9. *24^{ème} Forum sur les Impedances Electrochimiques*, Paris, France, March 12, 2013.
8. XXVI Congreso de la Sociedad Mexicana de Electroquímica (and the 4th Meeting of the Mexican Section of The Electrochemical Society) (Conferencia Magisteriale), Mexico City, May 29–June 3, 2011.
7. INTERCORR 2008, the 28th Congresso Brasileiro de Corrosão, 2nd International Corrosion Meeting, May 12–16, 2008, Recife, Brazil.
6. 7th International Symposium on Electrochemical Impedance Spectroscopy, Argelès sur Mer, France, June 3–8, 2007.
5. EMCR 2006, Dourdan, France, June 18–23, 2006.
4. *14^{ème} Forum sur les Impedances Electrochimiques*, Paris, France, January 14, 2002.
3. Giornate dell'Elettrochimica Italiana 1994, Padova, Italy, October 11–14, 1994.
2. *8^{ème} Forum sur les Impedances Electrochimiques*, Paris, France, November 21, 1994.
1. 2nd International Symposium on Electrochemical Impedance Spectroscopy, Santa Barbara, California, July 12–17, 1992.

Honor Societies

- Member, *Omega Chi Epsilon* (Chemical Engineering honorary society).
- Member, *Phi Lambda Upsilon* (Chemistry honorary society).
- Member, *Tau Beta Pi* (Engineering honorary society).
- Member, *Sigma Xi* (Scientific honorary society).

Professional Societies

- *American Institute of Chemical Engineers*: Member of National Program Planning Committee, Area 1e: Electrochemical Fundamentals. Vice-chairman, 1987–1989, Chairman, 1989–1991.
- *Electrochemical Society*: Former member of Executive Committee for Energy Technology. Former representative of Physical Electrochemistry Division on Society Membership Committee. Member of Committee for the “Young Author Award” 1991, 1993, 1995, 1997. Member of Selection Committee for the H. B. Linford Award. Chair of Committee for the “Young Author Award” 1999 and 2000. Former member of the Publication Committee. Current member of the Industrial Electrolysis and Electrochemical Engineering Division Programming Committee. Former Member of the Education and Finance Committees. Former Member of editorial board and Associate Editor of the *Journal of The Electrochemical Society* (2001–2011). Former Chair of the Education Committee (2013–2017) and current ECS External Relations Representative (2013–present).
- *International Society of Electrochemistry*: member of selection committee for the Tacussel Prize, chair of selection committee for the Oronzio De Nora Foundation Young Author Prize. Elected US Regional Representative to the *International Society of Electrochemistry*, 2004–2006. Elected Vice President of the *International Society of Electrochemistry*, 2006–2008, President-Elect, 2009–2010, President, 2011–2012. Lead organizer of the 68th Annual Meeting of the International Society of Electrochemistry held in Providence, Rhode Island, USA, August 27 – September, 1, 2017.
- *International Union of Pure and Applied Chemistry*: Member of committee to develop the new International Union of Pure and Applied Chemistry (IUPAC) conventions for Electrochemical Impedance Spectroscopy: Terminology, Nomenclature, and Data Exchange Formats.
- American Chemical Society.

- *NACE International*: Member of Technical Committees T-5A-31: Fluid Flow Enhanced Corrosion, T-5A Corrosion in Chemical Processes, T-5: Corrosion Problems in the Process Industries, and T-3A-11: Impingement Erosion-Corrosion (Corrosion Inhibitors). With David Silverman, coordinated revision of NACE standards for test methods for flow-enhanced corrosion. Former member of NACE Research Committee. Former member of editorial board and Associate Editor of Corrosion.
- *American Association for the Advancement of Science (AAAS)*.

Major Academic Assignments

- Chair of Department of Chemical Engineering Diversity Committee, 2020–present.
- Member of College of Engineering Inclusion, Diversity, Equity, and Access (IDEA) Committee, 2020–present.
- Member of College of Engineering Safety Steering Committee, 2017–2020, 2023.
- Chair, College of Engineering Sabbatical Committee, 2016–2019.
- College of Engineering Operations Advisory Council (OAC). Member 2013–2015.
- Department of Chemistry Chemical Safety Internal Review Board. Member 2012–2015.
- College of Engineering Search Committee for Laboratory Safety Director. Member 2012–2013.
- University of Florida College of Engineering Faculty Council. Member 2006–2011.
- University of Florida Infrastructure Council. Chair 2010/11, Member 2008–2010.
- University of Florida Faculty Senate. Member 1992–1994, 2005–2011.
- Search Committee for the University of Florida Information Security Officer. Member 2009–2010.
- University of Florida Information Technology Briefing Group. Member 2009.
- University of Florida Information Technology Action Plan Committee. Member 2008–2009.
- Director and organizer, University of Florida/BP Engineering Development Program for the Caspian Sea Region, 2004–2009.
- College of Engineering Budget Cut Advisory Committee. Member 2008.
- Faculty coordinator for the Fuel Cell component of the NASA-supported program on “Hydrogen Research for Aviation and Space-Based Applications,” 2004–2008.
- University of Florida Council on Research and Scholarship, Member 2006–2007, 2008.
- Committee to write and implement the Constitution for the University of Florida College of Engineering. Member 2005–2006.
- College of Engineering Tenure and Promotion Committee. Member, 1995–1998.
- University of Florida Teaching Improvement Committee. Member 1992/93, 1995/96.

Current Editorial Boards

- Editorial advisory board of *Current Opinion in Electrochemistry*. Section editor for a dedicated issue on *Electrochemical Engineering* published as volume 20 (April 2020).

Publications

Books

5. M. E. Orazem and B. Tribollet, *Electrochemical Impedance Spectroscopy*, 2nd edition, Chinese translation, Chemical Industry Press, Beijing, China, 2022.
4. M. E. Orazem and B. Tribollet, *Electrochemical Impedance Spectroscopy*, 2nd edition, John Wiley & Sons, Hoboken, New Jersey, 2017, 768 pages.
3. M. E. Orazem and B. Tribollet, *Electrochemical Impedance Spectroscopy*, Chinese translation, Chemical Industry Press, Beijing, China, 2014, 400 pages.
2. M. E. Orazem, editor, *Underground Pipeline Corrosion: Detection, Analysis, and Prevention*, Woodhead Publishing Limited, Cambridge, UK, 2014, 338 pages.
1. M. E. Orazem and B. Tribollet, *Electrochemical Impedance Spectroscopy*, John Wiley & Sons, Hoboken, New Jersey, 2008, 554 pages.

Edited Proceedings and Special Journal Issues

10. M. E. Orazem, guest editor, “Electrochemical Engineering,” *Current Opinion in Electrochemistry*, **20** (2020), (117 pages). [link](#)
9. V. Vivier, M. Musiani, N. Pébère, and M. E. Orazem, guest editors, *Journal of Electroanalytical Chemistry: Special Issue in Honor of Dr. Bernard Tribollet*, **737** (2015), (242 pages). [link](#)
8. V. Lvovich, P. Vanýsek, and M. E. Orazem, editors, Impedance Techniques: Diagnostics and Sensing Applications, *ECS Transactions*, **41:28** (2012), (90 pages).
7. P. Vanýsek, D. C. Hansen, and M. E. Orazem, editors, Impedance Techniques: Diagnostics and Sensing Applications, *ECS Transactions*, **25:32** (2009), (91 pages).
6. P. Vanýsek, D. C. Hansen, and M. E. Orazem, editors, Impedance in Electrochemistry: From Analytical Applications to Mechanistic Speculation 2, *ECS Transactions*, **19:20** (2009), (155 pages).
5. M. E. Orazem, J. Fenton, and P. Pintauro, editors, Tutorials in Electrochemical Technology: Current Distribution, *ECS Transactions*, **19:19** (2009), (22 pages).
4. A. M. O. Brett, A. De Battisti, E. R. Gonzalez, C. Gutierrez, O. Hammerich, G. Inzelt, M. T. M. Koper, M. E. Orazem, and P. Schmuki, guest co-editors for a special issue of *Electrochimica Acta* dedicated to the 59th Meeting of the *International Society of Electrochemistry* (Seville, 2008), volume **54** (2009), 4945–5306 (361 pages).
3. M. E. Orazem, B. Tribollet, and P. Pintauro, editors, Tutorials in Electrochemical Technology: Impedance Spectroscopy, *ECS Transactions*, **13:13** (2008), (169 pages).
2. M. E. Orazem, guest Editor for special issue of *Electrochimica Acta* on Electrochemical Impedance Spectroscopy: A selection of papers from the 6th International Symposium, Cocoa Beach, FL, May 2004, volume **51** (2006), pages 1375–1904 (529 pages).
1. M. E. Orazem, editor, *Cathodic Protection: Theory and Applications*, NACE International, Houston, Texas, 1999. These are a series of review papers by leading experts covering major developments in the field.

Refereed Chapters in Books

7. R. Kong, A. Dizon, S. Moghaddam, and M. E. Orazem, “Development of Fully-Continuous Electrokinetic De-watering of Phosphatic Clay Suspensions,” **invited chapter**, in *Electrochemical Engineering: From Discovery to Product*, Volume XVIII of Advances in Electrochemical Science and Engineering, R. Alkire, P. N. Bartlett, and M. Koper, editors, John Wiley & Sons, Hoboken, New Jersey, 2019, 159–192. [link](#)
6. B. Tribollet, V. Vivier, and M. E. Orazem, “EIS Technique in Passivity Studies: Determination of the Dielectric Properties of Passive Films,” **invited chapter**, in *Reference Module in Chemistry, Molecular Sciences and Chemical Engineering, Encyclopedia of Interfacial Chemistry: Surface Science and Electrochemistry*, F. Di Quarto, editor, Elsevier, Amsterdam, 2017, 1–14.

5. C. Liu, A. Shankar, M. E. Orazem, and D. P. Riemer, "Numerical Simulations for Cathodic Protection of Pipelines," in *Underground Pipeline Corrosion: Detection, Analysis, and Prevention*, M. E. Orazem, editor, Woodhead Publishing Limited, Cambridge, UK, 2014, 85–126. [doi](#)
4. D. P. Riemer and M. E. Orazem, "Modeling Coating Flaws with Non-Linear Polarization Curves for Long Pipelines," in *Corrosion and Cathodic Protection Modeling and Simulation*, Volume 12 of Advances in Boundary Elements, R. A. Adey, editor, WIT Press, Southampton, 2005, 225–259.
3. P. Agarwal, M. E. Orazem, and L. H. García Rubio, "Application of the Kramers Kronig Relations in Electrochemical Impedance Spectroscopy," in *Electrochemical Impedance: Analysis and Interpretation*, ASTM STP 1188, J. Scully, D. Silverman, M. Kendig, Editors, American Society for Testing and Materials, Philadelphia, 1993, 115–139.
2. J. M. Esteban, M. Lowry, and M. E. Orazem, "Correction of Experimental Data for the Ohmic Potential Drop Corresponding to a Secondary Current Distribution on a Disk Electrode," in *The Measurement and Correction of Electrolyte Resistance in Electrochemical Tests*, ASTM STP 1056, L. L. Scribner and S. R. Taylor, Eds., American Society for Testing and Materials, Philadelphia, 1990, 127–141.
1. M. E. Orazem and J. Newman, "Photoelectrochemical Devices for Solar Energy Conversion," in *Modern Aspects of Electrochemistry*, Vol. 18, R. E. White, J. O'M. Bockris and B. E. Conway, editors, Plenum Press, New York, 1986, 61–112. (Also appeared as Lawrence Berkeley Laboratory Report, LBL 18766, January 1985).

Refereed Journal Publications

167. M. E. Orazem, and B. Ulgut, "On the Use of Drift Correction for Electrochemical Impedance Spectroscopy Measurements," *Electrochimica Acta*, (2023), in press.
166. V. Vivier and M. E. Orazem, "Impedance Analysis of Electrochemical Systems," *Chemical Reviews*, 122 (2022), 11131–11168. [doi](#)
165. C. You, A. Dizon, M. Gao, V. Vivier, and M. E. Orazem, "Experimental Observation of Ohmic Impedance," *Electrochimica Acta*, **413** (2022), 140177. [doi](#)
164. G. P. Scisco, M. E. Orazem, K. S. Jones, K. J. Ziegler, "On the Rate Capability of Supercapacitors Characterized by a Constant-Phase Element," *Journal of Power Sources*, **516** (2021), 230700. [doi](#)
163. A. Barroux, J. Delgado, M. E. Orazem, B. Tribollet, L. Laffont, and C. Blanc, "Electrochemical Impedance Spectroscopy Study of the Passive Film for Laser Beam Melted 17-4PH Stainless Steel," *Corrosion Science*, **191** (2021), 109750. [doi](#)
162. A. Dizon, C. You, and M. E. Orazem, "The Influence of Current and Potential Distribution on the Measurement of Dielectric Permittivity," *Electrochimica Acta*, **391** (2021), 138957. [doi](#)
161. O. Gharbi, M. T. T. Tran, M. E. Orazem, B. Tribollet, M. Turmine, and Vincent Vivier, "Impedance Response of a Thin Film on an Electrode: Deciphering the Influence of the Double Layer Capacitance," *ChemPhysChem*, **22** (2021), 1–9. [doi](#)
160. S. Wang, J. Zhang, O. Gharbi, V. Vivier, M. Gao, and M. E. Orazem, "Electrochemical Impedance Spectroscopy," *Nature Reviews Methods Primers*, **1**, 41 (2021), 1–21. [doi](#)
159. M. Gao and M. E. Orazem, "The Development of Advanced Mathematical Models for Continuous Glucose Sensors," *Electrochimica Acta*, **382** (2021), 138226. [doi](#)
158. G. P. Scisco, M. E. Orazem, K. S. Jones, K. J. Ziegler, "Resistivity of Mesopore-Confined Ionic Liquid Determined by Electrochemical Impedance Spectroscopy", *Electrochimica Acta*, **378** (2021), 138112. [doi](#)
157. C. You, A. Titov, B. H. Kim, and M. E. Orazem, "Impedance Measurements on QLED Devices: Analysis of High-Frequency Loop in Terms of Material Properties," **invited paper**, *Journal of Solid State Electrochemistry*, **24** (2020), 3083–3090. [doi](#)
156. H. Liao, W. Watson, A. Dizon, B. Tribollet, V. Vivier, and M. E. Orazem, "Physical Properties Obtained from Measurement Model Analysis of Impedance Measurements," *Electrochimica Acta*, **342** (2020), 136747. [doi](#)

155. M. E. Orazem, “Electrochemical Impedance Spectroscopy: The Journey to Physical Understanding,” **invited paper**, *Journal of Solid State Electrochemistry*, **24** (2020), 2151–2153. [doi](#)
154. A. Dizon and M. E. Orazem, “Advances and Challenges of Electrokinetic Dewatering of Clays and Soils,” **invited paper**, *Current Opinion in Electrochemistry*, **22** (2020), 17–24. [doi](#)
153. M. E. Orazem and B. Tribollet, “A Tutorial on Electrochemical Impedance Spectroscopy,” **invited paper**, *ChemTexts*, **6**, 12 (2020). [doi](#)
152. A. Dizon and M. E. Orazem, “On Experimental Determination of Cell Constants for Interdigitated Electrodes,” *Electrochimica Acta*, **337** (2020), 135732. [doi](#)
151. C. You, M. A. Zabara, M. E. Orazem, and B. Ulgut, “Application of the Kramers–Kronig Relations to Multi-Sine Electrochemical Impedance Measurements,” *Journal of the Electrochemical Society*, **167** (2020), 020515. [doi](#)
150. X. Tang, C. R. Ma, M. E. Orazem, C. You, and Y. Li, “Local Electrochemical Characteristics of Pure Iron under a Saline Droplet I: Effect of Droplet Size on Electrochemical Distribution,” *Electrochimica Acta*, 354 (2020), 136633. [doi](#)
149. X. Tang, C. R. Ma, M. E. Orazem, C. You, and Y. Li, “Local Electrochemical Characteristics of Pure Iron under a Saline Droplet II: Local Corrosion Kinetics,” *Electrochimica Acta*, 354 (2020), 136631. [doi](#)
148. C. L. Alexander and M. E. Orazem, “Indirect Impedance for Corrosion Detection of External Post-Tensioned Tendons: 2. Multiple Steel Strands,” *Corrosion Science*, **164** (2020), 108330. [doi](#)
147. C. L. Alexander and M. E. Orazem, “Indirect Electrochemical Impedance Spectroscopy for Corrosion Detection in External Post-Tensioned Tendons: 1. Proof of Concept,” *Corrosion Science*, **164** (2020), 108331. [doi](#)
146. A. Dizon and M. E. Orazem, “On the Impedance Response of Interdigitated Electrodes,” *Electrochimica Acta*, **327** (2019), 135000. [doi](#)
145. O. Gharbi, A. Dizon, M. E. Orazem, M. T.T. Tran, B. Tribollet, and V. Vivier, “From Frequency Dispersion to Ohmic Impedance: A New Insight on The High-Frequency Impedance Analysis of Electrochemical Systems,” *Electrochimica Acta*, **320** (2019), 134609. [doi](#)
144. A. Dizon and M. E. Orazem, “Mathematical Model and Optimization of Continuous Electro-Osmotic Dewatering,” *Electrochimica Acta*, **304** (2019), 42–53.
143. A. Dizon and M. E. Orazem, “Efficient Continuous Electrokinetic Dewatering of Phosphatic Clay Suspensions,” *Electrochimica Acta*, **298** (2019), 134–141. [doi](#)
142. K. Davis, A. Dizon, C. L. Alexander, and M. E. Orazem, “Influence of Geometry-Induced Frequency Dispersion on the Impedance of Rectangular Electrodes,” *Electrochimica Acta*, **283** (2018), 1820–1828. [doi](#)
141. M. Gao, M. S. Hazelbaker, R. Kong, and M. E. Orazem, “Mathematical Model for the Electrochemical Impedance Response of a Continuous Glucose Monitor,” *Electrochimica Acta*, **275** (2018), 119–132. [doi](#)
140. C. Peng, H. Lai, M. E. Orazem, and S. Moghaddam, “Microstructure of Clay Fabric in Electrokinetic Dewatering of Phosphatic Clay Suspensions,” *Applied Clay Science*, **158** (2018), 94–101. [doi](#)
139. C. L. Alexander, B. Tribollet, V. Vivier, and M. E. Orazem, “Contribution of Surface Distributions to Constant-Phase-Element (CPE) Behavior: 3. Adsorbed Intermediates,” *Electrochimica Acta*, **251** (2017), 99–108. [doi](#)
138. Y.-M. Chen, N. G. Rudawski, E. Lambers, and M. E. Orazem, “Application of Impedance Spectroscopy and Surface Analysis to Obtain Oxide Film Thickness,” *Journal of the Electrochemical Society*, **164** (2017), C563–C573. [doi](#)
137. M. S. Harding, B. Tribollet, V. Vivier, and M. E. Orazem, “The Influence of Homogeneous Reactions on the Impedance Response of a Rotating Disk Electrode,” *Journal of the Electrochemical Society*, **164** (2017), E3418–E3428. [doi](#)

136. A. S. Nguyen, N. Caussé, M. Musiani, M. E. Orazem, N. Pébère, B. Tribollet, and V. Vivier, “Determination of Water Uptake in Organic Coatings Deposited on 2024 Aluminium Alloy: Comparison between Impedance Measurements and Gravimetry,” *Progress in Organic Coatings*, **112** (2017), 93–100. [doi](#)
135. S. Chakri, I. Frateur, M. E. Orazem, E. Sutter, T.T.M. Tran, B. Tribollet, and V. Vivier, “Improved EIS Analysis of the Electrochemical Behaviour of Carbon Steel in Alkaline Solution,” *Electrochimica Acta*, **246** (2017), 924–930. [doi](#)
134. Y.-M. Chen, C. L. Alexander, C. Cleveland, and M. E. Orazem, “Influence of Geometry-Induced Frequency Dispersion on the Impedance of Ring Electrodes,” *Electrochimica Acta*, **235** (2017), 437–441. [doi](#)
133. M. T. T. Tran, B. Tribollet, V. Vivier, and M. E. Orazem, “On the Impedance Response of Reactions Influenced by Mass Transfer,” *Russian Journal of Electrochemistry*, **53** (2017), 932–940. [doi](#) Also published as “Импеданс Реакций, Контролируемых Массопереносом,” *Электрохимия*, **53** (2017), 1046–1055. [doi](#)
132. Y.-M. Chen, A. S. Nguyen, M. E. Orazem, B. Tribollet, N. Pébère, M. Musiani, and V. Vivier, “Identification of Resistivity Distributions in Dielectric Layers by Measurement Model Analysis of Impedance Spectroscopy,” *Electrochimica Acta*, **219** (2016), 312–320. [doi](#)
131. A. S. Nguyen, M. Musiani, M. E. Orazem, N. Pébère, B. Tribollet and V. Vivier, “Impedance Study of the Influence of Chromates on the Properties of Waterborne Coatings Deposited on 2024 Aluminium Alloy,” *Corrosion Science*, **109** (2016), 174–181. [doi](#)
130. C. L. Alexander, B. Tribollet, and M. E. Orazem, “Influence of Micrometric-Scale Electrode Heterogeneity on Electrochemical Impedance Spectroscopy,” *Electrochimica Acta*, **201** (2016), 374–379. [doi](#)
129. M. Benoit, C. Bataillon, B. Gwinner, F. Miserque, M. E. Orazem, C. M. Sánchez-Sánchez, B. Tribollet, and V. Vivier, “Comparison of Different Methods for Measuring the Passive Film Thickness on Metals,” *Electrochimica Acta*, **201** (2016), 340–347. [doi](#)
128. Y.-M. Chen and M. E. Orazem, “Impedance Analysis of ASTM A416 Tendon Steel Corrosion in Alkaline Simulated Pore Solutions,” *Corrosion Science*, **104** (2016), 26–35. [doi](#)
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2. M. E. Orazem, "Review of *Science, Engineering, and Ethics: State of the Art and Future Directions, Report on a AAAS Workshop and Symposium (February 1988)*, M. S. Frankel, editor," *Chemical Engineering Education*, **23** (1989), 67.
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Presentations

International Conferences

130. M. E. Orazem, "TBD," **Invited Plenary Lecture** to be presented at the 74th Annual Meeting of the International Society of Electrochemistry, Lyon, France, September 3–8, 2023.
129. C. You, S. Briggs, and M. E. Orazem, "Model Development Methodology for Localized Corrosion of Copper," presented at the 73rd Annual Meeting of the International Society of Electrochemistry, (**Conference held on-line in response to the pandemic**), September 12–16, 2022.
128. M. E. Orazem, "On The Origin of the Constant-Phase Element (CPE)," **Invited Keynote Lecture** presented at the 73rd Annual Meeting of the International Society of Electrochemistry, (**Conference held on-line in response to the pandemic**), September 12–16, 2022.
127. C. You, S. Briggs, and M. E. Orazem, "A Mathematical Model for Localized Corrosion of Copper Under a Droplet," presented at the 241st Meeting of the Electrochemical Society, Vancouver, Canada, May 29–June 2, 2022.
126. O. Gharbi, M. T. T. Tran, M. E. Orazem, B. Tribollet, M. Turmine, and V. Vivier, "On the Graphical Analysis of the Impedance Response of Passive Electrodes," presented at the 241st Meeting of the Electrochemical Society, Vancouver, Canada, May 29–June 2, 2022.
125. O. Gharbi, M. T. T. Tran, M. E. Orazem, B. Tribollet, M. Turmine, V. Vivier, "Deciphering Interfacial Capacitance of Passive Electrode: Contribution of the Double Layer," presented at the 12th International Symposium on Electrochemical Impedance Analysis (EIA), (**Conference held on-line in response to the pandemic**), November 29 – 30, 2021.
124. A. Barroux, J. Delgado, M. E. Orazem, B. Tribollet, L. Laffont, and C. Blanc, "Comparative Study by EIS of the Passive Films Formed on Laser Beam Melted and Conventional 17-4PH Stainless Steels," presented at EuroCorr, September 19–23, 2021 (**Conference held on-line in response to the pandemic**).
123. O. Gharbi, M. T. T. Tran, M. E. Orazem, B. Tribollet, M. Turmine, V. Vivier, "On the Impedance Response of a Passive Electrode: What Is the Influence of the Double Layer Capacitance," presented at the 72nd Annual Meeting of the International Society of Electrochemistry, Jeju Island, Korea (hybrid), August 29 – September 3, 2021.
122. M. Gao, C. You, A. Dizon, V. Vivier, M. E. Orazem, "Experimental Observation of Ohmic Impedance," presented at the 72nd Annual Meeting of the International Society of Electrochemistry, Jeju Island, Korea (hybrid), August 29 – September 3, 2021.
121. M. E. Orazem, "Teaching Impedance using a Python-Based Regression Program," **invited keynote lecture**, presented at the 71st Annual Meeting of the International Society of Electrochemistry, Belgrade, Serbia, August 30 – 4 September 4, 2020 (**Conference held on-line in response to the pandemic**).
120. S. Jacobs, C. You, and M. E. Orazem, "Transient and Impedance Response of a Rotating Disk Electrode in a Weak Acid," poster presented at the 71st Annual Meeting of the International Society of Electrochemistry, Belgrade, Serbia, August 30 – 4 September 4, 2020 (**Conference held on-line in response to the pandemic**).
119. C. You, A. Titov, B. Kim, and M. E. Orazem, "Impedance Measurements on QLED Devices: Analysis of High-Frequency Loop in Terms of Material Properties," poster presented at the 71st Annual Meeting of the International Society of Electrochemistry, Belgrade, Serbia, August 30 – 4 September 4, 2020 (**Conference held on-line in response to the pandemic**).
118. M. Gao, R. Kong, and M. E. Orazem, "Mathematical Model and Regression Analysis for Electrochemical Impedance Spectroscopy of Continuous Glucose Sensors," poster presented at the 71st Annual Meeting of the International Society of Electrochemistry, Belgrade, Serbia, August 30 – 4 September 4, 2020 (**Conference held on-line in response to the pandemic**).
117. M. E. Orazem, "Systematic Model Development for Impedance Response of $\text{LiCoO}_2\|\text{C}$ Batteries," submitted for presentation at the 237th Meeting of the Electrochemical Society, Montreal, Canada, May 5–14, 2020 (**Conference cancelled due to the pandemic**).

116. A. Dizon and M. E. Orazem, "On the Impedance Response of Interdigitated Electrodes," **invited keynote lecture**, presented at the 11th International Symposium on Electrochemical Impedance Spectroscopy, Lège-Cap-Ferret, France, June 2–7, 2019.
115. A. Dizon and M. E. Orazem, "Continuous Electro-Osmotic Dewatering of Phosphatic Clay Suspensions," **invited lecture**, presented at the 25th Topical meeting of the International Society of Electrochemistry on New Electrochemical Processes for Energy and the Environment, Toledo, Spain, May 12–15, 2019.
114. M. Gao, M. S. Hazelbaker, R. Kong, M. E. Orazem, "A Mathematical Model for Electrochemical Impedance Response of a Continuous Glucose Monitor," presented at AiMES 2018, ECS and SMEQ Joint International Meeting, Cancun Mexico, September 30–October 4, 2018.
113. M. E. Orazem and A. Dizon, "Mathematical Model and Optimization for Electrokinetic Dewatering of Phosphatic Clays," presented at the 69th Annual Meeting of the International Society of Electrochemistry, Bologna, Italy, September 2–7, 2018.
112. M. E. Orazem, "Systematic Development of Interpretation Models for Electrochemical Impedance Spectroscopy," **invited plenary lecture**, presented at Corrosion Electrochemchina 2018, Beijing, China, July 30–August 3, 2018.
111. M. E. Orazem and B. Tribollet, "Electrochemical Impedance Spectroscopy Fundamentals," **invited plenary lecture** presented in the workshop "Material Science for Corrosion Protection", Santiago, Chile, November 20–24, 2017.
110. M. Musiani, M. E. Orazem, N. Pébère, B. Tribollet, V. Vivier, "Modelling the Impedance of Anti-Corrosion Coatings," 11th International Symposium on Electrochemical Impedance Analysis November, Camogli, Italy, 6–10, 2017.
109. A. R. Dizon, R. Kong, and M. E. Orazem, "Electrokinetic Technologies for Dewatering Phosphatic Clay Suspensions," presented at the 68th Annual Meeting of the International Society of Electrochemistry, Providence, Rhode Island, August 27–September 1, 2017.
108. M. Gao, M. S. Harding, R. Kong, and M. E. Orazem, "The Development of a Mathematical Model for Electrochemical Impedance Response of Continuous Glucose Monitor," presented at the 68th Annual Meeting of the International Society of Electrochemistry, Providence, Rhode Island, August 27–September 1, 2017.
107. M. E. Orazem and B. Tribollet, "Teaching Electrochemical Impedance Spectroscopy, 2nd Edition," presented at the 68th Annual Meeting of the International Society of Electrochemistry, Providence, Rhode Island, August 27–September 1, 2017.
106. M. E. Orazem, "Electrokinetic Separations to Increase the Percent Solids of the Effluent from a Phosphate Mine," **invited plenary lecture** presented at the 11th European Symposium on Electrochemical Engineering, Prague, Czech Republic, June 4–8, 2017.
105. M. E. Orazem, B. Tribollet, V. Vivier, M. Musiani, N. Pébère, "Interpretation of CPE Parameters in Terms of Physically Meaningful System Properties," **invited keynote lecture** presented at the 11th European Symposium on Electrochemical Engineering, Prague, Czech Republic, June 4–8, 2017.
104. M. E. Orazem, "Models for the Impedance Response of Subcutaneous Glucose Sensors," **invited plenary lecture**, presented at the Spring Meeting of the Canadian Section of the Electrochemical Society, Halifax, Nova Scotia, Canada, June 10, 2016.
103. S. Chakri, M. Tran, E. Sutter, M. E. Orazem, B. Tribollet, and V. Vivier, "Characterization of Oxide Layer by EIS," 10th International Symposium on Electrochemical impedance Spectroscopy, A Toxa, Spain, June 19–24, 2016.
102. M. Benoit, C. Bataillon, B. Gwinner, F. Miserque, M. E. Orazem, C. M. Sánchez-Sánchez, B. Tribollet, V. Vivier, "Impedance Characterization of Nanometer Thin Films on Metals," ElecNano 7, Lille, France, May 23–25, 2016.
101. S. Erol and M. E. Orazem, "The Influence of Anomalous Diffusion on the Impedance Response of LiCoO₂—C Batteries," presented at the 66th Annual Meeting of the International Society of Electrochemistry, Taipei, Taiwan, October 4–9, 2015.

100. Y.-M. Chen and M. E. Orazem, "Analysis of Corrosion Behavior of ASTM A416 Steel by Electrochemical Impedance Spectroscopy," presented at the 66th Annual Meeting of the International Society of Electrochemistry, Taipei, Taiwan, October 4–9, 2015.
99. A. S. Nguyen, M. Musiani, M. E. Orazem, N. Pébère, B. Tribollet, and V. Vivier, "Distributions de Résistivité dans les Peintures: Analyse des Diagrammes d'Impédance en Conditions Séche et Humide," presented at the Journées d'Electrochimie, Rome, Italy, July 9–10, 2015.
98. C. L. Alexander, M. E. Orazem and B. Tribollet, Influence of Micrometric-Scale Electrode Heterogeneity on Electrochemical Impedance Spectroscopy, **invited lecture** presented at the 17th Topical Meeting of the International Society of Electrochemistry, Saint-Malo, France, May 31–June 3, 2015.
97. A. S. Nguyen, M. Muxsiani, M. E. Orazem, N. Pébère, B. Tribollet, and V. Vivier, "The Impedance Response of AA2024-T3 Protected by Chromated and Non-Chromated Waterborne Coatings", AETOC 2015, Ninth International Workshop on Application of Electrochemical Techniques to Organic Coatings, Sainte Marie de Ré, France, April 22–25, 2015.
96. M. E. Orazem, "On interpretation of the Constant Phase Element (CPE)," **invited lecture**, presented at the 7th Waseda Workshop on Electrochemistry, Tokyo, Japan, November 11, 2014.
95. M. E. Orazem, "Corrosion of Nanoscale Copper Structures used to Enhance Energy Transport for High-Performance Electronics," **invited plenary lecture**, presented at the 10th International Symposium on Electrochemical Micro & Nanosystem Technologies (EMNT2014), Okinawa, Japan, November 5–8, 2014.
94. M. E. Orazem and B. Tribollet, "*The Philosophy behind Electrochemical Impedance Spectroscopy*," **invited lecture**, presented at the Publishing Ceremony for M. E. Orazem and B. Tribollet, *Electrochemical Impedance Spectroscopy*, Chinese translation, Chemical Industry Press, Beijing, China, October 21, 2014.
93. B. Tribollet and M. E. Orazem, "The Physical Meaning of the Constant Phase Element," **invited lecture**, presented at the Publishing Ceremony for M. E. Orazem and B. Tribollet, *Electrochemical Impedance Spectroscopy*, Chinese translation, Chemical Industry Press, Beijing, China, October 21, 2014.
92. M. E. Orazem, Y. Huang, R. Kong, D. A. Horner, S. Moghaddam, D. Bloomquist, C. Cleveland, and H. Lai, "Development of Electrokinetic Dewatering for Phosphate Mine Tailings," **invited lecture**, presented at the 226th Meeting of The Electrochemical Society, Cancun, Mexico, October 5–10, 2014.
91. M. E. Orazem, "Challenges for Electrochemical Impedance Spectroscopy," **invited plenary lecture**, presented at the 7th International Workshop on Impedance Spectroscopy, Chemnitz, Germany, September 24–26, 2014.
90. M. E. Orazem, "Understanding the Error Structure of Electrochemical Impedance Spectroscopy Measurements," **invited tutorial lecture**, presented at the 7th International Workshop on Impedance Spectroscopy, Chemnitz, Germany, September 24–26, 2014.
89. M. E. Orazem, S.-L. Wu, M. S. Harding, B. Tribollet, and V. Vivier, "Frequency Dispersion caused by Coupled Faradaic and Charging Currents in Impedance Spectroscopy," presented at the 65th Annual Meeting of the *International Society of Electrochemistry*, Lausanne, Switzerland, August 31–September 5, 2014.
88. A. S. Nguyen, M. Musiani, M. E. Orazem, N. Pébère, Bernard Tribollet, and Vincent Vivier, "Determination of Organic Coatings Properties with Immersion Time from Constant-Phase-Element Parameters," presented at the 65th Annual Meeting of the *International Society of Electrochemistry*, Lausanne, Switzerland, August 31–September 5, 2014.
87. S.-L. Wu, M. S. Harding, M. E. Orazem, B. Tribollet, and V. Vivier, "Coupling of Faradaic and Charging Currents in Impedance Spectroscopy," **invited lecture**, presented at the 15th Topical Meeting of the *International Society of Electrochemistry*, Niagara Falls, Canada, April 27–30, 2014.
86. M. E. Orazem, "Conversion of CPE Parameters to Capacitance: Surface and Axial Distributions of Parameters," **invited lecture**, presented at the Electrochemistry Seminar, Norwegian University of Science and Technology, October 7, 2013.
85. M. E. Orazem, "Coupling Charging and Faradaic Currents: Modeling the Impedance of Systems Influenced by Mass Transfer," **invited lecture**, presented at the Electrochemistry Seminar, Norwegian University of Science and Technology, October 7, 2013.

84. M. Musiani, M. E. Orazem, N. Pébère, B. Tribollet, and V. Vivier, "A New Model for the Analysis of Water Uptake in Anti-Corrosion Coatings Exhibiting a CPE Behavior," presented at the 64th Annual Meeting of the *International Society of Electrochemistry*, Santiago de Querétaro, Mexico, September 8–13, 2013.
83. R. Kong and M. E. Orazem, "Semi-Continuous Electrokinetic Dewatering of Phosphate Mine Tailings," presented at the 64th Annual Meeting of the *International Society of Electrochemistry*, Santiago de Querétaro, Mexico, September 8–13, 2013.
82. M. E. Orazem and B. Tribollet, "Teaching Electrochemical Impedance Spectroscopy," presented at the 64th Annual Meeting of the *International Society of Electrochemistry*, Santiago de Querétaro, Mexico, September 8–13, 2013.
81. M. E. Orazem, "The Influence of Nonuniform Current and Potential Distributions on the Impedance Response of a Disk Electrode," **invited keynote lecture**, presented at the Second International Seminar, International Workshop on Green Energy Conversion, Kuomi, Japan, September 2–4, 2013.
80. M. Musiani, M. E. Orazem, N. Pébère, B. Tribollet, and V. Vivier, "Nouveau Modèle pour l'Évaluation de la Prise en Eau des Revêtements à l'Aide de la Spectroscopie d'Impédance Électrochimique," presented at the Journées d'Electrochimie, Paris France, July 8–11, 2013.
79. M. E. Orazem, "The Promise and Challenges of Impedance," **invited plenary lecture**, presented at the 9th International Symposium on Electrochemical Impedance Spectroscopy, EIS2013, Okinawa, Japan June 16–21, 2013.
78. C. Cleveland, M. E. Orazem, and S. Moghaddam, "Corrosion of Copper in De-Aerated Water by Impedance Spectroscopy," presented at the 223rd Meeting of *The Electrochemical Society*, Toronto, Ontario, Canada, May 12–16, 2013.
77. M. E. Orazem, A. Bunge, and E. White, "Estimation of Dielectric Constant from CPE Parameters for Human Skin," presented at the 223rd Meeting of *The Electrochemical Society*, Toronto, Ontario, Canada, May 12–16, 2013.
76. M. E. Orazem, B. Tribollet, and V. Vivier, "Influence of Current and Potential Distributions on The Impedance Response of a Rotating Disk Electrode," **invited lecture** presented at the 223rd Meeting of *The Electrochemical Society*, Toronto, Ontario, Canada, May 12–16, 2013.
75. K. N. Allahar, M. E. Orazem, and D. P. Butt, "EIS Response of a Contaminated Disk Electrode," presented at the 223rd Meeting of *The Electrochemical Society*, Toronto, Ontario, Canada, May 12–16, 2013.
74. V. Vivier, M. E. Orazem, N. Pébère, and B. Tribollet, "Local Electrochemical Impedance Spectroscopy: Correlation with Global Impedance Measurements," presented at the 223rd Meeting of *The Electrochemical Society*, Toronto, Ontario, Canada, May 12–16, 2013.
73. M. Musiani, M. E. Orazem, N. Pébère, B. Tribollet, and V. Vivier, "Evaluation of Water Uptake in Anti-Corrosion Coatings from Constant-Phase-Element Parameters," presented at the 8th International Workshop on Application of Electrochemical Techniques to Organic Coatings (AETOC), Emmetten, Switzerland, April 24–27, 2013.
72. M. E. Orazem, "Corrosion and Electrochemical Impedance Spectroscopy," **invited plenary lecture** presented at the 19th Electrochemical and Electroanalytical Brazilian Symposium, Campos do Jordão, São Paulo, Brazil, April 1–5, 2013.
71. M. E. Orazem, "The Influence of Coupled Faradaic and Charging Currents on Impedance Spectroscopy," **invited plenary lecture** presented at the *24^{ème} Forum sur les Impedances Electrochimiques*, Paris, France, March 12, 2013.
70. S. Amand, M. Musiani, M. E. Orazem, N. Pébère, B. Tribollet, and V. Vivier, "Constant-Phase-Element Behavior Caused by Inhomogeneous Electrolyte Uptake in Anti-Corrosion Coatings," keynote Lecture presented at the 10th Symposium on Electrochemical Methods in Corrosion Research, Maragogi, Brazil, November 18–23, 2012

69. A. Shankar, C. Liu, and M. E. Orazem, "Application of Mathematical Models for Evaluating Cathodic Protection Strategies for Complex Structures," presented at the 63rd Annual Meeting of the *International Society of Electrochemistry* in Prague, Czech Republic, August 19–24, 2012.
68. S. Marcelin, N. Pébère, M. E. Orazem, and S. Regnier, "Comportement Electrochimique d'un Acier Inoxydable Martensitique en Milieu Chlorure," poster presented at *the 23^{ème} Forum sur les Impedances Electrochimiques*, Paris, France, December 8, 2011.
67. S. Erol, M. E. Orazem, and R. Muller, "The Impedance Response of LiCoO₂ Batteries after Overcharge and Over-Discharge," presented at the 62nd Annual Meeting of the *International Society of Electrochemistry*, Niigata, Japan, September 11–16, 2011.
66. S. Amand, M. Musiani, N. Pébère, M. E. Orazem, B. Tribollet, and V. Vivier, "Analyse du Comportement CPE de la Partie Haute Fréquence des Spectres d'Impédance obtenus sur des Revêtements Sol-Gel Hybrides Déposés sur l'Alliage d'Aluminium 2024," presented at Journées d'Électrochimie, Grenoble, France, July 4–8, 2011.
65. M. E. Orazem, "Impedance Spectroscopy and its Application to Industrial Problems," **invited plenary lecture (conferencia magisteriale)**, presented at XXVI Congreso de la Sociedad Mexicana de Electroquímica (and the 4th Meeting of the Mexican Section of The Electrochemical Society), Mexico City, May 29–June 3, 2011.
64. K. Allahar, D. Butt, and M. E. Orazem, "Influence of Electrode Surface Condition on Constant Phase Element Characterization," presented at the 219th Meeting of *The Electrochemical Society*, Montréal, Canada, May 1–6, 2011.
63. B. Hirschorn, M. E. Orazem, B. Tribollet, V. Vivier, I. Frateur, and M. Musiani, "Constant-Phase Element (CPE) Behavior Caused by Resistivity Distributions in Films," **invited lecture** presented at the 61st Annual Meeting of the *International Society of Electrochemistry*, Nice, France, September 26–October 1, 2010.
62. I. Frateur, B. Hirschorn, M. Musiani, M. E. Orazem, B. Tribollet, and V. Vivier, "Relationships Between CPE Parameters and Capacitance," *8th International Symposium on Electrochemical Impedance Spectroscopy (EIS 2010)*, Carvoeiro, Algarve, Portugal, June 6–11, 2010.
61. I. Frateur, B. Hirschorn, M. Musiani, M. E. Orazem, B. Tribollet, and V. Vivier, "A Physical Model for A CPE Characteristic of a Coating," *8th International Symposium on Electrochemical Impedance Spectroscopy (EIS 2010)*, Carvoeiro, Algarve, Portugal, June 6–11, 2010.
60. M. Musiani, M. E. Orazem, B. Tribollet, and V. Vivier, "Impedance of Blocking Electrodes Having Parallel Cylindrical Pores with Distributed Radii," *8th International Symposium on Electrochemical Impedance Spectroscopy (EIS 2010)*, Carvoeiro, Algarve, Portugal, June 6–11, 2010.
59. Z. Stoynov, C. Brett, and M. E. Orazem, "Advanced Techniques for Impedance Data Handling," *8th International Symposium on Electrochemical Impedance Spectroscopy (EIS 2010)*, Carvoeiro, Algarve, Portugal, June 6–11, 2010.
58. S. Wu, M. E. Orazem, B. Tribollet, and V. Vivier, "Impedance Response of a Rotating Disk Electrode below the Mass-Transfer-Limited Current," presented at the 217th Meeting of *The Electrochemical Society*, Vancouver, BC, Canada, April 25–30, 2010.
57. B. Hirschorn, M. E. Orazem, B. Tribollet, V. Vivier, I. Frateur, and M. Musiani, "On Time-Constant Distributions Associated with the Constant-Phase Element," presented at the 217th Meeting of *The Electrochemical Society*, Vancouver, BC, Canada, April 25–30, 2010.
56. I. Frateur, B. Hirschorn, M. E. Orazem, B. Tribollet, V. Vivier, and M. Musiani, "Détermination de la Capacité et de l'Épaisseur d'un Film à Partir des Paramètres CPE," poster presented at *the 22^{ème} Forum sur les Impedances Electrochimiques*, Paris, France, January 18, 2010.
55. B. Tribollet, B. Hirschorn, M. E. Orazem, I. Frateur, M. Musiani, and V. Vivier, "The Influence of Heterogeneities on Impedance Response," **invited lecture** at the *Second Symposium on Fundamentals of Electrodeposition for Future Nanoelectronic Applications*, Schloß Reisingburg, Germany, October 14, 2009.

54. M. E. Orazem, "Perspective on the *International Society of Electrochemistry*," **invited lecture** at the *Second Symposium on Fundamentals of Electrodeposition for Future Nanoelectronic Applications*, Schloß Reisingburg, Germany, October 14, 2009.
53. M. Keddami, M. E. Orazem, N. Portail, B. Tribollet and V. Vivier, "On the Simultaneous Measurements of Two Components of the AC-Current Density for Localized Electrochemical Impedance Spectroscopy," presented at the 216th Meeting of *The Electrochemical Society*, Vienna, Austria, October 7, 2009.
52. B. Tribollet, B. Hirschorn, M. E. Orazem, I. Frateur and V. Vivier, "On the Relations Between Constant Phase Elements and Capacitance," presented at the 216th Meeting of *The Electrochemical Society*, Vienna, Austria, October 7, 2009.
51. M. E. Orazem, "Application of Impedance Spectroscopy to Characterize PEM Fuel Cells," **invited lecture** at the *International Symposium on Diagnostic Tools for Fuel Cell Technologies*, Trondheim, Norway, June 23–24, 2009.
50. S-L. Wu, M. E. Orazem, B. Tribollet, and V. Vivier, "Influence des Intermédiaires Adsorbés sur l'Impédance Ohmique Locale (Influence of Adsorbed Intermediates on the Local Ohmic Impedance)," poster presented at the *21^{ème} Forum sur les Impedances Electrochimiques*, Paris, France, December 15, 2008.
49. M. E. Orazem, "Applications of Mathematical Models to Cathodic Protection of Pipelines and Aboveground Storage Tanks," **invited plenary lecture** presented at *INTERCORR 2008, the 28th Congresso Brasileiro de Corrosão, 2nd International Corrosion Meeting*, Recife, Brazil, May 12–16, 2008.
48. I. Frateur, M. E. Orazem, N. Pébère, B. Tribollet, V. Vivier, "Mesures d'Impedance Electrochimique Locale: Influence de la Geometrie de l'Electrode (Local Impedance Measurements: Influence of Electrode Geometry)," presented at *la Cinquième Rencontre Nationale d'Electrochimie (RNE 05) sous le thème Electrochimie et ses Applications Industrielles et Environnementales*, Agadir, Morocco, March 28–29, 2008.
47. V. Huang, K. Ogle, M. E. Orazem, "Mathematical Models for Cathodic Delamination of Coated Metals," presented at the 58th Annual Meeting of the *International Society of Electrochemistry*, Banff, Canada, September 9–14, 2007.
46. M. E. Orazem and S. K. Roy, "On Modeling the Impedance Response of PEM Fuel Cells," Invited lecture, presented at the *International Conference on Polymer Batteries Fuel Cells-PABFC-2007* on the occasion of Professor Scrosati's 70th birthday, Rome, Italy, June 11–15, 2007.
45. M. E. Orazem, "An Integrated Approach to Impedance Spectroscopy," **invited plenary lecture** presented at the *7th International Symposium on Electrochemical Impedance Spectroscopy*, Argelès sur Mer, France, June 3–8, 2007.
44. I. Frateur, V. M-W. Huang, M. E. Orazem, N. Pébère, B. Tribollet, and V. Vivier, "La Partie Imaginaire de la Chute Ohmique," poster presented at the *19^{ème} Forum sur les Impedances Electrochimiques*, Paris, France, December 11, 2006.
43. S. K. Roy and M. E. Orazem, "Interpretation of Low-Frequency Inductive Loops in PEM Fuel Cell Impedance Data," presented at the 210th meeting of *The Electrochemical Society*, Cancun, Mexico, October 29–November 3, 2006.
42. M. E. Orazem, J. P. McKinney, C. Chu, O. Moghissi, D. P. Riemer, and D. D'Zurko, "Evaluation of ECDA Indications for Assessing Pipeline Integrity," presented at the 210th meeting of *The Electrochemical Society*, Cancun, Mexico, October 29–November 3, 2006.
41. M. E. Orazem, V. Huang, V. Vivier, B. Tribollet and N. Pébère, "The Apparent CPE Behavior of a Disk Electrode with Faradaic Reactions," presented at the 210th meeting of *The Electrochemical Society*, Cancun, Mexico, October 29–November 3, 2006.
40. D. P. Riemer, J. P. McKinney, O. Moghissi, C. Chu, D. D'Zurko, and M. E. Orazem, "Models of Close-Interval Potential Surveys for Buried Pipelines," **invited lecture** presented at the 57th Annual Meeting of the *International Society of Electrochemistry*, Edinburgh, Scotland, August 27–September 1, 2006.

39. I. Frateur, M. E. Orazem, B. Tribollet, and V. Vivier, "Characterization of an Oxide Film by EIS and LEIS," presented at the 57th Annual Meeting of the ISE *International Society of Electrochemistry*, Edinburgh, Scotland, August 27–September 1, 2006.
38. I. Frateur, G. G. O. Cordeiro, M. Musiani, M. E. Orazem, and B. Tribollet, "Estimation of Oxide Layer Capacitance from High Frequency EIS Results," presented at *EMCR 2006*, Dourdan, France, June 18–23, 2006.
37. J. P. McKinney, M. E. Orazem, O. Moghissi, D. P. Riemer, and D. D'Zurko, "The Use of Mathematical Models to Explore Methods to Assess the Condition of Buried Pipelines," poster presented at *EMCR 2006*, Dourdan, France, June 18–23, 2006.
36. M. E. Orazem, "The Role of Current and Potential Distributions on CPE Behavior," **invited plenary lecture**, presented at *EMCR 2006*, Dourdan, France, June 18–23, 2006.
35. M. E. Orazem, "Interpretation of Impedance Spectroscopy," **invited keynote lecture** presented at *EuroCorr 2005*, Lisbon, Portugal, September 4–8, 2005.
34. C. Qiu and M. E. Orazem, "Estimation of Pipeline Coating Condition by Computer-Assisted Interpretation of Survey Data," presented at the 54th Annual Meeting of the *International Society of Electrochemistry*, August 31–September 5, 2003, São Pedro, Brazil.
33. D. P. Riemer and M. E. Orazem, "Mathematical Models for Evaluating Cathodic Protection Strategies for Aboveground Storage Tanks," **invited keynote lecture**, presented at the 54th Annual Meeting of the *International Society of Electrochemistry*, August 31–September 5, 2003, São Pedro, Brazil.
32. P. K. Shukla, M. E. Orazem, and O. D. Crisalle, "On the Measurement Model Paradigm for Identification of the Error Structure of Impedance Measurements," **invited keynote lecture**, presented at *EMCR 2003*, Ysermonde, Belgium, May 4–9, 2003.
31. P. K. Shukla and M. E. Orazem, "Hydrodynamics and Mass-Transfer-Limited Current Distribution for a Submerged Stationary Hemispherical Electrode under Jet Impingement," presented at *EMCR 2003*, Ysermonde, Belgium, May 4–9, 2003.
30. M. E. Orazem and O. D. Crisalle, "On the Propagation of Errors from the Time Domain to the Frequency Domain," presented at the 203rd Meeting of *The Electrochemical Society*, Paris, France, April 27–May 2, 2003.
29. M. E. Orazem, S. L. Carson, O. D. Crisalle, and L. H. García-Rubio, "On the Error Structure of Impedance Measurements: Instrument Simulations," **invited plenary lecture** presented by M. E. Orazem at the *14^{ème} Forum sur les Impedances Electrochimiques*, Paris, France, January 14, 2002.
28. J. C. Cardoso Filho and M. E. Orazem, "Investigação Electroquímica da Corrosão em Oleoduto na Presença de Gás Carbônico," *XXI CONBRASCORR*, São Paulo, Brazil, August 20–22, 2001.
27. P. K. Shukla, M. A. Membrino, and M. E. Orazem, "Nested Design Analysis of Impedance Spectroscopy Data for Excised Human Skin," (poster) presented at the *5th International Symposium on Electrochemical Impedance Spectroscopy*, Marilleva, Italy, June 17–22, 2001.
26. K. E. Jeffers and M. E. Orazem, "Application of Electrochemical Impedance Spectroscopy to Characterize the Time-Dependent Corrosion of Steel in Simulated Soil Environments," presented at the *5th International Symposium on Electrochemical Impedance Spectroscopy*, Marilleva, Italy, June 17–22, 2001.
25. P. Shukla and M. E. Orazem, "On the Error Structure of Impedance Measurements and its Implication for Interpretation of Measurements," **invited keynote lecture** presented at the *5th International Symposium on Electrochemical Impedance Spectroscopy*, Marilleva, Italy, June 17–22, 2001.
24. J. C. Cardoso Filho, B. Tribollet, and M. E. Orazem, "Application of a Submerged Impinging Jet for Corrosion Studies: Development of Models for the Impedance Response," presented at *EMCR 2000*, Budapest, Hungary, May 28–31 2000.
23. J. C. Cardoso Filho and M. E. Orazem, "Application of a Submerged Impinging Jet to Investigate the Influence of Temperature, Dissolved CO₂, and Fluid Velocity on Corrosion of Pipeline-Grade Steel in Brine," presented at *EMCR 2000*, Budapest, Hungary, May 28–31 2000.

22. J. C. Cardoso Filho, M. A. Membrino, and M. E. Orazem, "Application of Impedance Spectroscopy to Monitor Transient Systems," presented at the 196th Meeting of *The Electrochemical Society*, Toronto, Canada, May 14–19, 2000.
21. S. L. Carson, M. E. Orazem, O. D. Crisalle, and L. H. García-Rubio, "On the Error Structure of Impedance Measurements and its Implication for Interpretation of Measurements," presented at the 196th Meeting of *The Electrochemical Society*, Toronto, Canada, May 14–19, 2000.
20. S. L. Carson, M. E. Orazem, O. D. Crisalle, L. H. García-Rubio, "Influence of Instrumentation on the Error Structure of Impedance Measurement," presented at the 50th Annual Meeting of the *International Society of Electrochemistry*, Pavia, Italy, September 5–10, 1999.
19. I. Frateur, C. Deslouis, M. E. Orazem, and B. Tribollet, "Modeling of the Cast Iron/Drinking Water System by Electrochemical Impedance Spectroscopy," presented at the *4th International Symposium on Electrochemical Impedance Spectroscopy*, Rio de Janeiro, Brazil, August 2–7, 1998.
18. S. S. Philbrick, M. A. Membrino, M. E. Orazem, "Characterization of Relaxation Phenomena in Human Skin Using Coupled Optical And Electrochemical Impedance Spectroscopy," **invited keynote lecture** presented at the *4th International Symposium on Electrochemical Impedance Spectroscopy*, Rio de Janeiro, Brazil, August 2–7, 1998.
17. M. E. Orazem, M. Durbha, C. Deslouis, H. Takenouti, and B. Tribollet, "Influence of Surface Phenomena on the Impedance Response of a Rotating Disk Electrode," presented at the *4th International Symposium on Electrochemical Impedance Spectroscopy*, Rio de Janeiro, Brazil, August 2–7, 1998.
16. M. A. Membrino, S. Philbrick, M. E. Orazem, E. Scott, and J. B. Phipps, "Complementary Spectroscopic Techniques For Characterization of Ion Transport Through Skin," presented at the 1997 Joint International Meeting of *The Electrochemical Society* and the *International Society of Electrochemistry*, Paris, France, August 31–September 5, 1997.
15. M. E. Orazem, P. T. Wojcik, I. Frateur, and L. H. García-Rubio, "Application of Measurement Models for Interpretation of Impedance Spectra for Corrosion," **invited keynote lecture** presented at *EMCR 97*, Trento, Italy, August 25–29, 1997.
14. M. E. Orazem, C. Deslouis, and B. Tribollet, "Comparison of Impedance Models for Mass Transfer to a Disk Electrode," **invited lecture** presented at the 191st Meeting of *The Electrochemical Society*, Montréal, Canada, May 6, 1997.
13. M. E. Orazem and L. H. García-Rubio, "The Influence of Error Structure on the Interpretation of Impedance Spectra," **invited lecture** presented at the 191st Meeting of *The Electrochemical Society*, Montréal, Canada, May 8, 1997.
12. M. Durbha, M. E. Orazem, C. Deslouis, H. Takenouti, and B. Tribollet, "The Influence of Current Distribution on the Reduction of Ferricyanide on a Pt Disk Electrode below the Mass-Transfer Limited Current," presented at the 191st Meeting of *The Electrochemical Society*, Montréal, Canada, May 6, 1997.
11. M. A. Membrino, M. E. Orazem, E. Scott, and J. B. Phipps, "Electrochemical Impedance Measurements For Characterization of Ion Transport Pathways In Skin," presented at the *Symposium on Transdermal Administration: A Case Study, Iontophoresis*, Paris, France, March 3–4, 1997.
10. P. Agarwal, M. E. Orazem, and L. García-Rubio, "The Influence of Error Structure on Interpretation of Impedance Spectra," presented at the *3rd International Symposium on Electrochemical Impedance Spectroscopy*, Ysermonde, Belgium, May 7–12, 1995.
9. P. T. Wojcik, P. Agarwal, and M. E. Orazem, "A Method for Maintaining a Constant Potential Variation during Galvanostatic Regulation of Electrochemical Impedance Measurements," presented at the *3rd International Symposium on Electrochemical Impedance Spectroscopy*, Ysermonde, Belgium, May 7–12, 1995.
8. M. E. Orazem, P. Agarwal, and L. H. García-Rubio, "The Influence of the Error Structure on Interpretation of Impedance Spectra," **invited plenary lecture** presented at the *8ème Forum sur les Impedances Electrochimiques*, Paris, France, November 21, 1994.

7. M. E. Orazem, “Development of Mathematical Models for Cathodic Protection of Coated Pipelines with Discrete Coating Holidays,” **invited lecture** presented at *Giornate dell’Elettrochimica Italiana 1994*, Padova, Italy, October 11–14, 1994.
6. M. E. Orazem and L. H. García-Rubio, “Applications of Impedance Spectroscopy to Corrosion Research,” **invited keynote lecture** presented at the *5th International Symposium on Electrochemical Methods in Corrosion Research*, Sesimbra, Portugal, September 5–8, 1994.
5. A. N. Jansen, P. T. Wojcik, and M. E. Orazem “Impedance Techniques for Identification of Deep Level States in Electronic Materials,” **invited lecture** presented at the 182nd Meeting of *The Electrochemical Society*, Toronto, Canada, October 11 16, 1992.
4. M. E. Orazem, “Identification of Deep-Level Electronic Defects by Photoelectrochemical A.C. Impedance Spectroscopy,” **invited lecture** presented at the *Mini-symposium on Electrochemistry of Semiconductors and Electroactive Polymer Materials*, the Institutt for Teknisk Elektrokjemi, the Norwegian Institute of Technology (NTH), Trondheim, Norway, May 29–30, 1989.
3. M. E. Orazem, “Mathematical Modeling of Charge and Mass Transport at the Semiconducting Electrode-Electrolyte Interface,” **invited lecture** presented at the *Mini-symposium on Electrochemistry of Semiconductors and Electroactive Polymer Materials*, the Institutt for Teknisk Elektrokjemi, the Norwegian Institute of Technology (NTH), Trondheim, Norway, May 29–30, 1989.
2. D. B. Bonham and M. E. Orazem, “Applications of Mathematical Models of Photoelectrochemical A. C. Impedance Spectroscopy for Identification of Deep-Level Electronic Defects in Semiconductors,” presented at the *1st International Symposium on Electrochemical Impedance Spectroscopy*, Bombannes, France, May 26, 1989.
1. L. E. Erickson, G. T. MacLean, M. E. Orazem, and L. T. Fan, “Oxygen Transfer in Cultures with Two Liquid Phases,” presented at the *5th International Fermentation Symposium*, Berlin, June 1976.

National Conferences

178. K. P. O’Sullivan, J. L. Baker, B. Philip, M. E. Orazem, K. J. Otto, C. R. Butson, “In Vivo Application of Electrical Rejuvenation Pulses to Chronically Implanted Neural Macroelectrodes in Nonhuman Primates for Regulation of Interface Properties,” 11th International IEEE EMBS Conference on Neural Engineering, Baltimore, MD, April 25–27, 2023.
177. K. P. O’Sullivan, J. L. Baker, B. Philip, M. E. Orazem, K. J. Otto, C. R. Butson, “In Vivo Application of Electrical Rejuvenation Pulses to Chronically Implanted Neural Macroelectrodes in Nonhuman Primates for Regulation of Interface Properties,” poster presentation, Neuroscience 2022, San Diego, November 12–16, 2022.
176. M. E. Orazem, “The Journey from Numerical Simulations to Impedance Analysis,” **Corrosion Division H. H. Uhlig Award Address** presented at the 242nd meeting of the Electrochemical Society, Atlanta, Georgia, October 9–13, 2022.
175. C. You, S. Briggs, and M. E. Orazem, “An Advanced Model for Long-Term Localized Corrosion of Copper,” presented at the 242nd meeting of the Electrochemical Society, Atlanta, Georgia, October 9–13, 2022.
174. S. Jacobs, M. Miller, F. Batmanghelich, and M. E. Orazem, “Numerical Model of an Enzymatic Glucose Sensor with a Blocking Layer on the Electrode,” presented at the 242nd meeting of the Electrochemical Society, Atlanta, Georgia, October 9–13, 2022.
173. K. Otto, M. E. Orazem, W. Grill, S. Cogan, and D. R. Kipke, “Engineering the Neuronal Response to Electrical Microstimulation,” poster presented at the Gordon Conference on Neuroelectronic Interfaces, Ventura, California, March 13–18, 2022.
172. S. Jacobs and M. E. Orazem, “Transient Response of a Continuous Glucose Monitor,” presented at the 240th Meeting of the Electrochemical Society, Orlando, Florida, October 10–14, 2021.
171. C. You, S. Briggs, and M. E. Orazem, “A Mathematical Model for Localized Corrosion of Copper Under a Droplet,” presented at the 240th Meeting of the Electrochemical Society, Orlando, Florida, October 10–14, 2021.

170. A. Dizon and M. E. Orazem, "Process for Continuous Electro-Osmotic Dewatering of Phosphatic Clay Suspensions," **invited keynote lecture** presented at the 240th Meeting of the Electrochemical Society, Orlando, Florida, October 10–14, 2021.
169. M. Gao, C. You, A. Dizon, V. Vivier, M. E. Orazem, "Influence of Ohmic Impedance on Impedance Spectroscopy," presented at the 240th Meeting of the Electrochemical Society, Orlando, Florida, October 10–14, 2021.
168. G. P. Scisco, M. E. Orazem, K. S. Jones, K. J. Ziegler, "Constant Phase Element Analysis of Ordered Carbon Electrodes Via Electrochemical Impedance Spectroscopy and Cyclic Voltammetry," presented at the 239th Meeting of the Electrochemical Society, Digital Meeting, May 30–June 3, 2021.
167. M. E. Orazem, panelist, "Current Approaches to Modeling Corrosion of Steel in Earth Materials," Laboratory and Field Geotechnical Characterization for Improved Steel Corrosion Modeling, a virtual workshop organized to inform the National Academies of Sciences, Engineering, and Medicine Committee on corrosion of buried steel at new and in-service infrastructure, March 9-10, 2021.
166. M. E. Orazem, "Systematic Model Development for Impedance Response of $\text{LiCoO}_2\|\text{C}$ Batteries," presented at the 238th Meeting of the Electrochemical Society, Honolulu, HI, October 3–9, 2020 (**Conference held on-line in response to the pandemic**).
165. H. Liao, W. Watson, A. Dizon, V. Vivier, B. Tribollet, and M. E. Orazem, "Physical Properties Obtained from Measurement Model Analysis of Impedance Measurements," presented at the 238th Meeting of the Electrochemical Society, Honolulu, HI, October 3–9, 2020 (**Conference held on-line in response to the pandemic**).
164. W. Watson and M. E. Orazem, "Python-Based Program for Error Structure Analysis and Regression of Impedance Data," presented at the 238th Meeting of the Electrochemical Society, Honolulu, HI, October 3–9, 2020 (**Conference held on-line in response to the pandemic**).
163. G. P. Scisco, M. E. Orazem, K. S. Jones, K. J. Ziegler, "Resistivity of Mesopore Confined Solvent Free Ionic Liquid Determined By Electrochemical Impedance Spectroscopy," presented at the 238th Meeting of the Electrochemical Society, Honolulu, HI, October 3–9, 2020 (**Conference held on-line in response to the pandemic**).
162. G. P. Scisco, M. E. Orazem, K. S. Jones, K. J. Ziegler, "Resistivity of Mesopore Confined Solvent Free Ionic Liquid Determined By Electrochemical Impedance Spectroscopy," presented at NanoFlorida 2020, Miami, Florida, September 25, 2020 (**Conference held on-line in response to the pandemic**).
161. M. E. Orazem, "Systematic Model Development for Electrochemical Impedance Spectroscopy," **invited tutorial lecture** presented at the 2019 Annual Meeting of the American Institute of Chemical Engineers, Orlando, FL, November 10–15, 2019.
160. M. E. Orazem, panelist, "Elevating Your Career for Graduate Students and Young Professionals: Men as Advocates for Diversity and Inclusion in Academia," the 2019 Annual Meeting of the American Institute of Chemical Engineers, Orlando, FL, November 10–15, 2019.
159. A. Dizon and M. E. Orazem, "Efficient Continuous Electrokinetic Dewatering of Phosphatic Clay Suspensions," presented at the 2019 Annual Meeting of the American Institute of Chemical Engineers, Orlando, FL, November 10–15, 2019.
158. M. Gao, R. Kong, and M. E. Orazem, "The Electrochemical Impedance Response of a Continuous Glucose Monitor," presented at the 2019 Annual Meeting of the American Institute of Chemical Engineers, Orlando, FL, November 10–15, 2019.
157. A. Dizon and M. E. Orazem, "The Influence of Geometry-Induced Frequency Dispersion on the Impedance Response of Interdigitated Electrodes," presented at the 236th Meeting of the Electrochemical Society, Atlanta, GA, October 13–17, 2019.
156. C. You, M. Zabara, B. Ulgut, and M. E. Orazem, "Application of the Kramers–Kronig Relations to Multi-Sine Electrochemical Impedance Spectroscopy," presented at the 236th Meeting of the Electrochemical Society, Atlanta, GA, October 13–17, 2019.

155. M. E. Orazem, "On Teaching Electrochemical Impedance Spectroscopy," **invited lecture** presented at the 236th Meeting of the Electrochemical Society, Atlanta, GA, October 13–17, 2019.
154. A. Dizon and M. E. Orazem, "Mathematical Model and Optimization of Continuous Electro-Osmotic Dewatering," presented at the 236th Meeting of the Electrochemical Society, Atlanta, GA, October 13–17, 2019.
153. M. Gao, R. Kong, and M. E. Orazem, "Behind Modeling Electrochemical Impedance Response of a Continuous Glucose Monitor," presented at the 236th Meeting of the Electrochemical Society, Atlanta, GA, October 13–17, 2019.
152. O. Gharbi, M. E. Orazem, M. T.T. Tran, B. Tribollet, and V. Vivier, "Ohmic Impedance: Myth or Reality?," presented at the 236th Meeting of the Electrochemical Society, Atlanta, GA, October 13–17, 2019.
151. A. Dizon and M. E. Orazem, "Continuous Electrokinetic Dewatering of Phosphatic Clay," **invited lecture**, presented at the 42nd Annual International Phosphate Fertilizer & Sulfuric Acid Technology Conference, Clearwater Beach, FL, June 8–9, 2018.
150. A. Dizon and M. E. Orazem, "Progress in the Development of Prototypes for Phosphatic Clay Electrokinetic Dewatering," presented at the 233rd Meeting of the Electrochemical Society, Seattle, WA, May 13–17, 2018.
149. C. L. Alexander and M. E. Orazem, "An Indirect Impedance Technique to Detect Corrosion in Structural Bridge Tendons," Paper #18-10861, presented at Corrosion/2018, Phoenix, AZ, April 15-19, 2018.
148. M. E. Orazem and D. P. Riemer, "Impedance-Based Characterization of Raw Materials Used in Electrochemical Manufacturing," presented at the 232nd Meeting of the Electrochemical Society, National Harbor, MD, October 1–5, 2017.
147. C. L. Alexander and M. E. Orazem, "Indirect Impedance Measurement to Assess Corrosion of Tendons," presented at the 232nd Meeting of the Electrochemical Society, National Harbor, MD, October 1–5, 2017.
146. M. S. Harding, B. Tribollet, and M. E. Orazem, "The Influence of Homogeneous Reactions on the Impedance Response of a Rotating Disk Electrode," presented at the Pacific Rim Meeting on Electrochemical and Solid-State Science, Honolulu, Hawaii, October 2–7, 2016.
145. C. L. Alexander and M. E. Orazem, "The Ohmic Impedance Contribution to the Indirect Impedance Measurement," presented at the Pacific Rim Meeting on Electrochemical and Solid-State Science, Honolulu, Hawaii, October 2–7, 2016.
144. M. E. Orazem, B. Tribollet, V. Vivier, M. Musiani, and N. Pébère, "On Interpretation of Constant-Phase Elements," presented at the Pacific Rim Meeting on Electrochemical and Solid-State Science, Honolulu, Hawaii, October 2–7, 2016.
143. M. E. Orazem, R. Kong, Y. Huang, A. Dizon, S. Moghaddam, and D. Bloomquist, "Electrokinetic Separations to Increase the Percent Solids of the Effluent from a Phosphate Mine," **invited lecture** presented at the Pacific Rim Meeting on Electrochemical and Solid-State Science, Honolulu, Hawaii, October 2–7, 2016.
142. S.-L. Wu, M. E. Orazem, B. Tribollet, and V. Vivier, "The Influence of Coupled Faradaic and Charging Currents on Impedance Spectroscopy," presented at the 229th Meeting of the Electrochemical Society, San Diego, California, May 29–June 2, 2016.
141. M. S. Harding, M. E. Orazem, and B. Tribollet, "Mathematical Models for the Impedance Response of Subcutaneous Glucose Sensors," presented at the 229th Meeting of the Electrochemical Society, San Diego, California, May 29–June 2, 2016.
140. C. L. Alexander, B. Tribollet, and M. E. Orazem, "Frequency Dispersion Associated with Surface Heterogeneity of Faradaic Reactions Coupled by an Adsorbed Intermediate," presented at the 229th Meeting of the Electrochemical Society, San Diego, California, May 29–June 2, 2016.
139. C. L. Alexander, B. Tribollet, and M. E. Orazem, "Contribution of Surface Roughness to Constant-Phase Element (CPE) Behavior," presented at the 228th Meeting of the Electrochemical Society, Phoenix, Arizona, October 11–16, 2015.

138. M. E. Orazem and A. L. Bunge, "On the Dielectric Properties of Human Skin," presented at the 228th Meeting of the Electrochemical Society, Phoenix, Arizona, October 11–16, 2015.
137. M. E. Orazem, R. Kong, Y. Huang, H. Lai, D. A. Horner, S. Moghaddam, D. Bloomquist, P. Kucera, Y. C. Guan, and B. Baylor, "A Prototype for improving the Percent Solids of a Phosphate Mine's Clay Effluent," presented at 29th Annual SME Regional Phosphate Conference, Lakeland, Florida, October 8–9, 2014.
136. C. Cleveland, M. E. Orazem, and S. Moghaddam, "Corrosion of Copper in De-Aerated Water," presented at the 225th Meeting of *The Electrochemical Society*, Orlando, Florida, May 11–16, 2014.
135. Y. M. Chen, C. Alexander, and M. E. Orazem, "Corrosion Behavior of ASTM A416 Steel in Simulated Pore Solution," presented at the 225th Meeting of *The Electrochemical Society*, Orlando, Florida, May 11–16, 2014.
134. H. Lai, R. Kong, S. Moghaddam, M. E. Orazem, Y. Huang, D. Yu, and D. Bloomquist, "Clay Fabric in Electrokinetic Dewatering," presented at the 225th Meeting of *The Electrochemical Society*, Orlando, Florida, May 11–16, 2014.
133. Y. Huang, M. E. Orazem, R. Kong, D. Yu, H. Lai, S. Moghaddam, D. Bloomquist, and C. Cleveland, "Laboratory-Scale Apparatus for Semi-Continuous Electrokinetic Dewatering of Phosphatic Clay Suspensions," presented at the 225th Meeting of *The Electrochemical Society*, Orlando, Florida, May 11–16, 2014.
132. C. Alexander, Y. M. Chen, and M. E. Orazem, "An Indirect Impedance Technique to Determine Reinforcing Steel Properties," presented at the 225th Meeting of *The Electrochemical Society*, Orlando, Florida, May 11–16, 2014.
131. R. Kong, M. E. Orazem, Y. Huang, D. Yu, H. Lai, S. Moghaddam, and D. Bloomquist, "Evolutionary Development for Electrokinetic Dewatering of Phosphate Mine Tailings," presented at the 225th Meeting of *The Electrochemical Society*, Orlando, Florida, May 11–16, 2014.
130. M. E. Orazem and S. Erol, "Evaluation of Energy Storage Materials by Impedance Spectroscopy," **invited lecture**, presented at the Materials Research Society Fall 2013 Meeting, Boston, Massachusetts, December 1–6, 2013.
129. S. Erol and M. E. Orazem, "A Process Model for Electrochemical Impedance Spectroscopy of LiCoO₂ Batteries," poster presented at the 224th Meeting of *The Electrochemical Society*, San Francisco, California, October 27–November 1, 2013.
128. A. Alaoui Mouayd, M. E. Orazem, E. Sutter, B. Tribollet, and A. Koltsov, "Study of pickling and over-pickling mechanisms of silicon high alloyed steel grade by Electrochemical Impedance Spectroscopy," presented at the 224th Meeting of *The Electrochemical Society*, San Francisco, California, October 27–November 1, 2013.
127. S.-L. Wu, M. E. Orazem, B. Tribollet, and V. Vivier, "The Influence of Coupled Faradaic and Charging Currents on Impedance Spectroscopy," presented at the 224th Meeting of *The Electrochemical Society*, San Francisco, California, October 27–November 1, 2013.
126. M. E. Orazem, B. Tribollet, I. Frateur, M. Musiani, and V. Vivier, "Tutorial: The Power Law Model for Interpretation of CPE Parameters," **invited lecture**, presented at the 224th Meeting of *The Electrochemical Society*, San Francisco, California, October 27–November 1, 2013.
125. K. N. Allahar, D. P. Butt, M. E. Orazem, M. Shaltry, and M. Simpson, "Electrochemical Impedance Spectroscopy of Uranium Chloride in Molten LiCl-KCl Eutectic," presented at TMS 2013, San Antonio, Texas, March 3–7, 2013.
124. M. E. Orazem, "Application of the Kramers–Kronig Relations to Impedance Spectroscopy," **invited lecture** presented at PRiME 2012, the 222nd Meeting of *The Electrochemical Society*, Honolulu, Hawaii, October 7–12, 2012.
123. Y. C. Chang and M. E. Orazem, "Mathematical Models for Under-Deposit Corrosion," presented at PRiME 2012, the 222nd Meeting of *The Electrochemical Society*, Honolulu, Hawaii, October 7–12, 2012.
122. B. Tribollet, I. Frateur, M. Musiani, M. E. Orazem, and V. Vivier, "CPE Behavior of Oxide Layer Impedance," presented at PRiME 2012, the 222nd Meeting of *The Electrochemical Society*, Honolulu, Hawaii, October 7–12, 2012.

121. M. E. Orazem, "Application of Impedance Spectroscopy to Characterize PEM Fuel Cells," **invited lecture** presented at PRiME 2012, the 222nd Meeting of *The Electrochemical Society*, Honolulu, Hawaii, October 7–12, 2012.
120. M. E. Orazem, "Henry B. Linford Award for Distinguished Teaching of the Electrochemical Society: Electrochemical Impedance Spectroscopy," **invited Award lecture** presented at the 221st Meeting of *The Electrochemical Society*, Seattle, Washington, May 6–10, 2012.
119. M. E. Orazem, B. Tribollet, V. Vivier, S. Marcelin, N. Pébère, A. L. Bunge, E. A. White, D. P. Riemer, I. Frateur, and M. Musiani, "Interpretation of Dielectric Properties for Materials showing Constant-Phase Element (CPE) Impedance Response," presented at the 221st Meeting of *The Electrochemical Society*, Seattle, Washington, May 6–10, 2012.
118. S. Marcelin, N. Pébère, S. Regnier, and M. E. Orazem, "Electrochemical Behavior of a Martensitic Stainless Steel in a Chloride Solution," presented at the 220th Meeting of *The Electrochemical Society*, Boston, MA, October 9–14, 2011.
117. S. Amand, M. Musiani, M. E. Orazem, N. Pébère, B. Tribollet, and V. Vivier, "Frequency Dispersion in EIS due to Resistivity Distribution in a Layer: Application to Hybrid Sol-Gel Coatings on 2024 Aluminum Alloy," presented at the 220th Meeting of *The Electrochemical Society*, Boston, MA, October 9–14, 2011.
116. S. Erol, M. E. Orazem, and R. Muller, "Influence of Overcharge and Over-discharge on the Impedance Response of LiCoO₂ Batteries," presented at the 220th Meeting of *The Electrochemical Society*, Boston, MA, October 9–14, 2011.
115. E. A. White, M. E. Orazem, A. L. Bunge, "Single-Frequency LCR Databridge Impedance Measurements as Surrogate Measures for the Integrity of Human Skin," presented at the 220th Meeting of *The Electrochemical Society*, Boston, MA, October 9–14, 2011.
114. M. E. Orazem, and D. P. Riemer, "Mathematical Models for Cathodic Protection of Pipelines," **invited lecture** presented at the 8th Spring Meeting of the *International Society of Electrochemistry* (on Advances in Corrosion Science for Lifetime Prediction and Sustainability), Columbus, Ohio, May 5, 2010.
113. M. E. Orazem and D. P. Riemer, "Current Distributions associated with Cathodic Protection of Pipelines," presented at the 215th Meeting of *The Electrochemical Society*, San Francisco, California, May 24–29, 2009.
112. C. Blanc, M. E. Orazem, N. Pébère, B. Tribollet, and V. Vivier, "Influence of the Steady State Radial Current on the Local Ohmic Impedance," presented at the 215th Meeting of *The Electrochemical Society*, San Francisco, California, May 24–29, 2009.
111. J. P. McKinney and M. E. Orazem, "Electrokinetic Methods for Dewatering of Phosphatic Clay Slurries," presented at the 215th Meeting of *The Electrochemical Society*, San Francisco, California, May 24–29, 2009.
110. O. C. Moghissi, J. P. McKinney, M. E. Orazem, and D. D'Zurko, "Predicting Coating Holiday Size Using ECDA Survey Data," presented at *Corrosion/2009*, Atlanta, Georgia, March 22–26, 2009.
109. M. E. Orazem and B. Tribollet, "The Influence of Nonuniform Current and Potential Distributions on the Impedance Response of a Disk Electrode," **invited lecture** at the 214th Meeting of *The Electrochemical Society*, Honolulu, Hawaii, October 12–17, 2008.
108. K. Nisancioglu and M. E. Orazem, "Applications of Potential Theory in Cathodic Protection," **invited lecture** at the 214th Meeting of *The Electrochemical Society*, Honolulu, Hawaii, October 12–17, 2008.
107. B. Hirschorn, I. Ibrahim, M. E. Orazem, H. Takenouti, and B. Tribollet, "Effect of Large Perturbation Amplitudes on the Impedance Response of an Electrochemical System," presented at the 213th Meeting of *The Electrochemical Society*, Phoenix, Arizona, May 18–23, 2008.
106. S.-L. Wu, V. Huang, M. E. Orazem, V. Vivier, and B. Tribollet, "The Influence of Nonuniform Current and Potential Distributions on the Impedance Response of a Disk Electrode," presented at the 213th Meeting of *The Electrochemical Society*, Phoenix, Arizona, May 18–23, 2008.
105. S. K. Roy and M. E. Orazem, "Guidelines for Evaluation of Error Structure for Impedance Response of PEM Fuel Cells," presented at the 213th Meeting of *The Electrochemical Society*, Phoenix, Arizona, May 18–23, 2008.

104. M. E. Orazem, "Computer Simulations for Cathodic Protection of Pipelines and Cathodic Delamination," **invited keynote lecture** presented at the 212th Meeting of *The Electrochemical Society*, Washington DC, October 7–12, 2007.
103. S. Roy and M. E. Orazem, "Stochastic Analysis of Flooding in PEM Fuel Cells by Electrochemical Impedance Spectroscopy," presented at the 212th Meeting of *The Electrochemical Society*, Washington DC, October 7–12, 2007.
102. V. Vivier, I. Frateur, V. Huang, M. E. Orazem, N. Pébère, and B. Tribollet, "Local Electrochemical Impedance Spectroscopy: Theoretical and Experimental Considerations on Measurable Quantities," presented at the 211th Meeting of *The Electrochemical Society*, Chicago, Illinois, May 6–10, 2007.
101. S. K. Roy and M. E. Orazem, "Interpretation of Low-Frequency Inductive Loops in PEM Fuel Cell Impedance Data in Terms of Reactions Influencing the Life-Time of Fuel Cell Performance," *NHA Annual Hydrogen Conference*, San Antonio, Texas, March 19–22, 2007.
100. J. R. Smith, M. E. Orazem, and E. D. Wachsman, "Use of a Measurement Model Technique for the Evaluation of Convolved Processes Occurring in SOFC Cathodes," poster presented at the *31st International Cocoa Beach Conference on Advanced Ceramics and Composites*, January 21–26, 2007.
99. M. E. Orazem and B. Tribollet, "Educational Needs for Electrochemical Impedance Spectroscopy," presented at the 209th Meeting of *The Electrochemical Society*, Denver, Colorado, May 7–12, 2006.
98. S. K. Roy and M. E. Orazem, "Application of Measurement Models to Impedance Data of PEMFC," presented at the 209th Meeting of *The Electrochemical Society*, Denver, Colorado, May 7–12, 2006.
97. V. Huang, K. Ogle and M. E. Orazem, "A Mathematical Model for Cathodic Delamination of Coated Zinc including a kinetic pH-Porosity Relationship," presented at the 209th Meeting of *The Electrochemical Society*, Denver, Colorado, May 7–12, 2006.
96. J. D. Beach, A. L. Bunge, and M. E. Orazem, "Evidence That Pores Are the Primary Conductive Pathway in Human Skin," presented at the 209th Meeting of *The Electrochemical Society*, Denver, Colorado, May 7–12, 2006.
95. I. Frateur, M. E. Orazem, B. Tribollet, and V. Vivier, "Estimation of Oxide Layer Capacitance from EIS and LEIS Results," presented at the 209th Meeting of *The Electrochemical Society*, Denver, Colorado, May 7–12, 2006.
94. V. Huang, B. Tribollet, V. Vivier, N. Pébère, and M. E. Orazem, "Mathematical Model for Impedance Response of a Blocking Disk Electrode," presented at the 209th Meeting of *The Electrochemical Society*, Denver, Colorado, May 7–12, 2006.
93. J. P. McKinney, M. E. Orazem, O. Moghissi, "Evaluation of the Utility of ECDA Indications for Assessing Pipeline Integrity," poster presented at *Corrosion/2006*, San Diego, California, March 12–16, 2006.
92. J. P. McKinney, M. E. Orazem, O. Moghissi, and D. D'Zurko, "Development of ECDA Criteria for Prioritization of Indications," presented at *Corrosion/2006*, San Diego, California, March 12–16, 2006.
91. J. Smith, E. Wachsman, M. E. Orazem, and K. Duncan, "Evaluation of Time Constants Governing the Cathodic Reaction in SOFCs," presented at the 208th Meeting of *The Electrochemical Society*, Los Angeles, California, October 16–21, 2005.
90. V. Huang, K. Ogle and M. E. Orazem, "A Mathematical Model for Cathodic Delamination of Coated Zinc," presented at the 208th Meeting of *The Electrochemical Society*, Los Angeles, California, October 16–21, 2005.
89. M. E. Orazem, N. Pébère, and B. Tribollet, A New Look at Graphical Representation of Impedance Data with Application to Corrosion in Saline Solutions, **invited lecture** presented at the 206th Meeting of *The Electrochemical Society*, Honolulu, Hawaii, October 3–8, 2004.
88. K. N. Allahar, M. E. Orazem, D. P. Butt, H. A. Chin, and W. Ogden, Application of Measurement Models to High Impedance Data of Steels in Used Oil, presented at the *6th International Symposium on Electrochemical Impedance Spectroscopy*, Cocoa Beach, Florida, May 16–21, 2004.

87. J.-B. Jorcin, M. E. Orazem, N. Pébère, and B. Tribollet, CPE Analysis by Local Electrochemical Impedance Spectroscopy, **keynote lecture**, presented at the *6th International Symposium on Electrochemical Impedance Spectroscopy*, Cocoa Beach, Florida, May 16–21, 2004.
86. P. Shukla, G. Nellisen, and M. E. Orazem, “EIS on a Stationary Hemispherical Nickel-270 Electrode,” presented at the *6th International Symposium on Electrochemical Impedance Spectroscopy*, Cocoa Beach, Florida, May 16–21, 2004.
85. M. E. Orazem, D. P. Riemer, C. Qiu, and K. Allahar, “Computer Simulations for Cathodic Protection of Pipelines,” **invited lecture** presented at *Corrosion/2004*, New Orleans, March 28–April 1, 2004.
84. C. Qiu and M. E. Orazem, “Assessment of Pipeline Condition Using Heterogeneous Input Data,” presented at the 204th Meeting of *The Electrochemical Society*, Orlando, Florida, October 12–16, 2003.
83. P. K. Shukla and M. E. Orazem, “Current Distribution for Submerged Stationary Hemispherical Electrode under Jet impingement,” **invited lecture** presented at the 204th Meeting of *The Electrochemical Society*, Orlando, Florida, October 12–16, 2003.
82. K. Allahar, K. Ogle, and M. E. Orazem, “A Mathematical Model for the Cathodic Delamination Process of Coatings on Zinc,” presented at the 202nd Meeting of *The Electrochemical Society*, Salt Lake City, Utah, October 20–25, 2002.
81. M. E. Orazem and B. Tribollet, “Error Analysis for Interpretation of Impedance Data using Mathematical Models,” presented at the 201st Meeting of *The Electrochemical Society*, Philadelphia, Pennsylvania, May 12–17, 2002.
80. M. Membrino, P. Shukla, and M. E. Orazem, “Application of Electrochemical Impedance Spectroscopy to Characterize Skin with Application to Transdermal Delivery of Therapeutic Drugs,” presented at the 200th Meeting of *The Electrochemical Society* and the 52nd Annual Meeting of the *International Society of Electrochemistry*, San Francisco, California, September 2–7, 2001.
79. D. Riemer and M. E. Orazem, “Modeling Cathodic Protection for Pipeline Networks,” presented at the 199th Meeting of *The Electrochemical Society*, Washington, DC, March 25–30, 2001.
78. J. C. Cardoso Filho and M. E. Orazem, “Application of a Submerged Impinging Jet to Investigate the Influence of Temperature, Dissolved CO₂, and Fluid Velocity on Corrosion of Pipeline-Grade Steel in Brine,” paper 01-058 presented at *Corrosion/2001*, Houston, Texas, March 11–16, 2001.
77. M. E. Orazem, J. C. Cardoso Filho, and B. Tribollet, “The Influence of Submerged Impinging Jet Flow on Viscous Colloidal Gels formed by Corrosion of Steel,” presented at the Annual Meeting of the *American Institute of Chemical Engineers*, Los Angeles, California, November 14, 2000.
76. K. Allahar and M. E. Orazem, “Development of Quasipotential Transformation Models of the Steady-State Electrochemistry in a Pit with Multiple Heterogeneous Reactions,” presented at the 197th Meeting of *The Electrochemical Society*, Phoenix, Arizona, May 14–19, 2000. October 25, 2000.
75. K. Jeffers and M. E. Orazem, “Application of Electrochemical Impedance Spectroscopy to Characterize the Time-Dependent Corrosion of Steel in Simulated Soil Environments,” presented at the 197th Meeting of *The Electrochemical Society*, Phoenix, Arizona, May 14–19, 2000. October 25, 2000.
74. M. E. Orazem, “Cathodic Protection Performance Simulations: An Industry-University Collaboration,” *51st Annual Pipeline Conference & Cybernetics Symposium*, April 18–20, 2000, New Orleans, Louisiana.
73. D. P. Riemer and M. E. Orazem, “Application of Boundary Element Models to Predict the Effectiveness of Coupons for Assessing Cathodic Protection of Buried Structures,” presented at *Corrosion/2000*, Orlando, Florida, March 26–31, 2000.
72. M. E. Orazem and K. Jeffers, “Application of Impedance Spectroscopy to Monitor Temporal Evolution of Corrosion” presented at the Annual Meeting of the *American Institute of Chemical Engineers*, Dallas, Texas, October 31–November 5, 1999.
71. P. T. Wojcik, J. C. Cardoso Filho, and M. E. Orazem, “Applications of Impinging Jets to Study Corrosion under High-Shear Flows,” **invited lecture** presented at the 196th Meeting of *The Electrochemical Society*, Honolulu, Hawaii, October 17–22, 1999.

70. K. Allahar, D. S. Dunn, M. E. Orazem, N. Sridhar, M. Lencka, and A. Anderko, "Modeling and Experimental Investigation of Corrosion in Crevices and Under Disbonded Coatings," presented at the 196th Meeting of *The Electrochemical Society*, Honolulu, Hawaii, October 17–22, 1999.
69. M. E. Orazem, "Tutorial: Application of Mathematical Models for Interpretation of Impedance Spectra," **invited lecture** presented at 195th Meeting of *The Electrochemical Society*, Seattle, Washington, May 2–7, 1999.
68. D. P. Riemer and M. E. Orazem, "Models for Cathodic Protection of Multiple Pipelines with Coating Holidays," presented at *Corrosion/99*, April 25–30, 1999.
67. D. P. Riemer and M. E. Orazem, "Development of Mathematical Models for Cathodic Protection of Multiple Pipelines in a Right-of-Way," *1998 International Gas Research Conference*, San Diego, November 8–11, 1998.
66. M. Durbha, M. E. Orazem, C. Deslouis, H. Takenouti, and B. Tribollet, "Influence of Current and Potential Distribution on the Faradaic Impedance below the Mass-Transfer-Limited Current for a Rotating Disk Electrode," presented at the 193rd Meeting of *The Electrochemical Society*, San Diego, May 3–8, 1998.
65. S. S. Philbrick, M. A. Membrino, and M. E. Orazem, "Characterization of Transdermal Delivery in-vitro using Optical and Electrochemical Impedance Spectroscopy," presented at the 193rd Meeting of *The Electrochemical Society*, San Diego, May 3–8, 1998.
64. M. E. Orazem, "A Tutorial on Impedance Spectroscopy," **invited lecture** presented at *Corrosion/98*, San Diego, California, March 22–27, 1998.
63. M. Durbha, S. L. Carson, A. H. Kalajian, M. J. Lazzara, M. E. Orazem, and L. H. García-Rubio, "Common Features of Electrochemical and Mechanical Spectroscopy Measurements," presented at the Annual Meeting of the *American Institute of Chemical Engineers*, Los Angeles, California, November 16–21, 1997.
62. S. L. Carson and M. E. Orazem, "Development of Rotational Electrophoretic Spectroscopy for Particle Shape and Charge Heterogeneity," presented at the Annual Meeting of the *American Institute of Chemical Engineers*, Los Angeles, California, November 16–21, 1997.
61. P. T. Wojcik, E. Charrière, and M. E. Orazem, "Experimental Study of the Erosion-Corrosion of Copper and Copper-Nickel Alloys at the Corrosion Potential and at Anodic Potentials," presented at *the Tri-Service Conference on Corrosion*, November 17–21, 1997.
60. M. E. Orazem and S. Tait, "Enhanced Interpretation of Impedance Data for Coated Specimens, presented at the *3rd Workshop on Quantitative Methods for Predicting Coating Performance*, Carderock, Maryland, October 20–21, 1997.
59. P. T. Wojcik and M. E. Orazem, "Experimental Study of the Erosion-Corrosion of Copper and Copper-Nickel Alloys Using a Submerged Impinging Jet," paper 97-435 presented at *Corrosion/97*, New Orleans, Louisiana, March 9–14, 1997.
58. P. T. Wojcik and M. E. Orazem, "Variable-Amplitude Galvanostatically Modulated Impedance Spectroscopy as a Non-Invasive Tool for Assessing Reactivity at the Corrosion Potential," paper 97-282 presented at *Corrosion/97*, New Orleans, Louisiana, March 9–14, 1997.
57. S. Carson and M. E. Orazem, "Time-Dependent Polarization of Pipeline Steel in High Moisture Content Soil Environments," Paper 112a presented at the Annual Meeting of the *American Institute of Chemical Engineers*, Chicago, Illinois, November 13, 1996.
56. P. T. Wojcik and M. E. Orazem, "Evaluation of Corrosion under Controlled Flow by Variable-Amplitude Galvanostatically Modulated Impedance Spectroscopy and Video Microscopy," presented at the 190th Meeting of *The Electrochemical Society*, San Antonio, Texas, October 10, 1996.
55. L. García-Rubio, M. E. Orazem, and O. D. Crisalle, "Chemometrics Techniques and Particle Characterization," presented at the *5th World Congress of Chemical Engineering*, San Diego, California, July 14–18, 1996.
54. M. Durbha, M. E. Orazem, and L. García-Rubio, "Propagation of Spectroscopy Errors through the Kramers Kronig Relations," presented at the 189th Meeting of *The Electrochemical Society*, Los Angeles, California, May 8, 1996.

53. P. T. Wojcik, P. Agarwal, and M. E. Orazem, "Variable-Amplitude Galvanostatically Modulated Impedance Spectroscopy as a Non-Invasive Tool for Assessing Reactivity at the Corrosion Potential," presented at the *2nd Workshop on Quantitative Methods for Predicting Coating Performance*, Annapolis, Maryland, November 1–3, 1995.
52. M. E. Orazem, "Fundamental Issues for Electrochemical Separations," **invited keynote lecture** presented at *Electro-Separations 2020*, an NSF-EPRI workshop on Electrochemical Separations, Arlington, Virginia, October 9–11, 1995.
51. R. M. Degerstedt, K. J. Kennelley, M. E. Orazem, and J. M. Esteban, "Traditional Cathodic Protection Design Methods for Coated Pipelines and the Necessity of Computer Modeling," presented at *Corrosion/95*, Orlando, Florida, March 26–31, 1995.
50. M. E. Orazem, J. M. Esteban, K. J. Kennelley, and R. M. Degerstedt, "Mathematical Models for Cathodic Protection of an Underground Pipeline with Coating Holidays," presented at *Corrosion/95*, Orlando, Florida, March 26–31, 1995.
49. J. M. Esteban, M. E. Orazem, K. J. Kennelley, and R. M. Degerstedt, "Case Studies of Parallel Anode CP Systems for Pipelines using Two and Three-Dimensional BEM Computer Simulations," presented at *Corrosion/95*, Orlando, Florida, March 26–31, 1995.
48. K. J. Kennelley, M. E. Orazem, J. M. Esteban, and R. M. Degerstedt, "Full-Scale Laboratory Evaluation of Parallel Anode CP Systems for Coated Pipelines with Comparison to 2 and 3-D Models," presented at *Corrosion/95*, Orlando, Florida, March 26–31, 1995.
47. M. E. Orazem, Pankaj Agarwal, and L. H. García-Rubio, "Assessment of the Error Structure of Impedance Spectroscopy Data through use of Measurement Models as a Filter," presented at the Annual Meeting of the *American Institute of Chemical Engineers*, San Francisco, California, November 13–18, 1994.
46. M. E. Orazem, J. M. Esteban, K. J. Kennelley, and R. M. Degerstedt, "Development of Mathematical Models for Cathodic Protection of Coated Pipelines with Discrete Coating Holidays," presented at the Annual Meeting of the *American Institute of Chemical Engineers*, San Francisco, California, November 13–18, 1994.
45. M. E. Orazem and L. H. García-Rubio, "Identification of Models for Impedance Spectroscopy," **invited lecture** presented at the Annual Meeting of the *American Institute of Chemical Engineers*, San Francisco, California, November 13–18, 1994.
44. M. E. Orazem, P. Agarwal, C. Deslouis, and B. Tribollet, "Application of Measurement Models to Electrohydrodynamical Impedance Spectroscopy," presented at the 185th Meeting of *The Electrochemical Society*, San Francisco, California, May 23, 1994.
43. M. E. Orazem and P. T. Wojcik, "Application of Impedance Spectroscopy to Characterization of Semiconducting Superlattice Structures," presented at the 185th Meeting of *The Electrochemical Society*, San Francisco, California, May 23, 1994.
42. O. C. Moghissi and M. E. Orazem, "The Effect of Convective Diffusion on Chemical and Electrochemical Processes Occurring on Copper Electrodes in Aerated Brines," presented at *Corrosion/94*, Baltimore, Maryland, March 2, 1994.
41. M. E. Orazem, P. Agarwal, and L. H. García Rubio, "Applications of Measurement Models to Electrochemical Impedance Spectroscopy," presented at the Annual Meeting of the *American Institute of Chemical Engineers*, St. Louis, Missouri, November 12, 1993.
40. L. H. García Rubio, M. E. Orazem, and P. Agarwal, "Error Identification in Spectroscopy Models: Applications to Impedance Spectroscopy," presented at the Annual Meeting of the *American Institute of Chemical Engineers*, St. Louis, Missouri, November 12, 1993.
39. P. Agarwal, M. E. Orazem, and L. H. García Rubio, "Evaluation of Electrochemical Impedance Data with Measurement Models: Determination of the Error Structure and Consistency with the Kramers Kronig Relations," presented at the 184th Meeting of *The Electrochemical Society*, New Orleans, Louisiana, October 10–15, 1993.

38. M. E. Orazem, P. Agarwal, L. H. García Rubio, "Critical Issues in Electrochemical Impedance Spectroscopy," **invited lecture** presented at *Corrosion/93*, New Orleans, Louisiana, March 1993.
37. P. Agarwal, M. E. Orazem, and L. H. García Rubio, "Application of Measurement Models to Electrochemical Impedance Spectroscopy," presented at the *2nd International Symposium on Electrochemical Impedance Spectroscopy*, Santa Barbara, California, July 12–17, 1992.
36. M. E. Orazem, "Development of Physico Chemical Models for Electrochemical Impedance Spectroscopy," **invited plenary lecture** presented at the *2nd International Symposium on Electrochemical Impedance Spectroscopy*, Santa Barbara, California, July 12–17, 1992.
35. P. Agarwal, O. C. Moghissi, M. E. Orazem, and L. H. García Rubio, "Application of Measurement Models to Electrochemical Impedance Spectroscopy," presented at *Corrosion/92*, Nashville, Tennessee, April 27–May 1, 1992.
34. M. E. Orazem, K. J. Kennelley, and L. Bone, "Current and Potential Distribution on a Coated Pipeline with Holidays: 2. A Comparison of the Effects of Discrete and Distributed Holidays," presented at *Corrosion/92*, Nashville, Tennessee, April 27–May 1, 1992.
33. K. J. Kennelley, L. Bone, and M. E. Orazem, "Current and Potential Distribution on a Coated Pipeline with Holidays: 1. Model and Experimental Verification," presented at *Corrosion/92*, Nashville, Tennessee, April 27–May 1, 1992.
32. P. Agarwal, M. E. Orazem, and L. H. García-Rubio, "Application of the Kramers Kronig Relations to Electrochemical Impedance Spectroscopy," presented at the *ASTM International Symposium on Electrochemical Impedance: Analysis and Interpretation*, San Diego, California, November 3–4, 1991.
31. M. E. Orazem, "Mathematical Modeling for Photoelectrochemical Applications," **invited lecture** presented at the 180th Meeting of *The Electrochemical Society*, Phoenix, Arizona, October 13–18, 1991.
30. P. Agarwal, M. E. Orazem, and A. Hiser, "Application of Electrochemical Impedance Spectroscopy to Metal Hydrides," presented at the 180th Meeting of *The Electrochemical Society*, Phoenix, Arizona, October 13–18, 1991.
29. O. Moghissi and M. E. Orazem, "A Mathematical Model for the Impedance Response of Copper in Alkaline Chloride Solutions," presented at the 179th Meeting of *The Electrochemical Society*, Washington, D.C., May 5–10, 1991.
28. A. N. Jansen and M. E. Orazem, "Application of Photon-Enhanced Impedance Spectroscopy (PEIS) to Semiconductors," presented at the 179th Meeting of *The Electrochemical Society*, Washington, D.C., May 5–10, 1991.
27. M. E. Orazem, J. M. Esteban, and O. C. Moghissi, "Practical Applications of the Kramers–Kronig Relations," presented at *Corrosion/91*, Cincinnati, Ohio, March 11–15, 1991.
26. J. M. Esteban and M. E. Orazem, "On the Use of the Kramers Kronig Relations to Test the Consistency of Impedance Data," presented at the Annual Meeting of the *American Institute of Chemical Engineers*, Chicago, Illinois, November 16, 1990.
25. M. E. Orazem, "Characterization of Semiconductors by Coupling Impedance Spectroscopy with Sub-Bandgap Illumination," presented at the Annual Meeting of the *American Institute of Chemical Engineers*, Chicago, Illinois, November 15, 1990.
24. O. C. Moghissi and M. E. Orazem, "An Electrochemical Impedance Study on the Corrosion of Copper and its Aluminum Alloys in Alkaline Chloride Solutions," 1990 NACE Research in Progress Symposium, *Corrosion/90*, Las Vegas, Nevada, April 23–27, 1990.
23. C. B. Diem and M. E. Orazem, "The Use of Scanning Ellipsometry to Investigate the Influence of Velocity on the Corrosion of Copper in Alkaline Chloride Solutions," *Corrosion 90*, Las Vegas, Nevada, April 23–27, 1990.
22. M. E. Orazem and J. M. Esteban, "A Chemical Engineer's Perspective on the Photoelectrochemical Etching of Semiconductors," **invited lecture** presented at the Annual Meeting of the *American Institute of Chemical Engineers*, San Francisco, California, November 5–10, 1989.

21. C. B. Diem and M. E. Orazem, "The Influence of Velocity of the Corrosion of Copper in Alkaline Chloride Solutions," 176th Meeting of *The Electrochemical Society*, Hollywood, Florida, October 15–20, 1989.
20. C. B. Diem, B. Newman, and M. E. Orazem, "The Influence of Small Machining Errors on the Primary Current Distribution at a Recessed Electrode," 176th Meeting of *The Electrochemical Society*, Hollywood, Florida, October 15–20, 1989.
19. M. E. Orazem, "Identification of Deep-Level Electronic Defects in III-V Semiconductors by Photoelectrochemical A. C. Impedance Spectroscopy of Semiconductors," **invited lecture** presented at the 18th Annual Symposium of the *American Vacuum Society*, Clearwater Beach, Florida, February 8, 1989.
18. D. B. Bonham and M. E. Orazem, "The Influence of Deep-Level Electronic Defects on Photoelectrochemical A. C. Impedance Spectroscopy of Semiconductors," presented at the Annual Meeting of the *American Institute of Chemical Engineers*, Washington, D.C., December 1, 1988.
17. D. B. Bonham and M. E. Orazem, "The Influence of Deep-Level Electronic Defects on Characterization Methods involving Mott-Schottky Theory," presented at the 174th Meeting of *The Electrochemical Society*, Chicago, Illinois, October 12, 1988.
16. D. B. Bonham and M. E. Orazem, "Identification of Deep-Level Electronic Defects by Photoelectrochemical A. C. Impedance Spectroscopy," **invited lecture** presented at the 174th Meeting of *The Electrochemical Society*, Chicago, Illinois, October 11, 1988.
15. J. M. Esteban, M. Lowry, and M. E. Orazem, "Correction of Experimental Data for the Ohmic Potential Drop Corresponding to a Secondary Current Distribution on a Disk Electrode," **invited lecture** presented at the *ASTM Symposium on Ohmic Electrolyte Resistance Measurement and Compensation*, Baltimore, Maryland, May 19, 1988.
14. C. B. Diem and M. E. Orazem, "A Scanning Ellipsometer to Evaluate the Influence of Fluid Velocity on Corrosion," presented at the T-5A Workshop on Fluid Flow Enhanced Corrosion, *Corrosion/88*, Saint Louis, Missouri, March 23, 1988.
13. D. B. Bonham and M. E. Orazem, "In-Situ Characterization of Surface States with Application to Photoelectrochemical Semiconductor Processing," presented at the Spring Meeting of the *American Institute of Chemical Engineers*, Houston, Texas, March 30, 1987.
12. G. Hickey and M. E. Orazem, "An Experimental Technique for Evaluating Film Persistency," presented at *Corrosion/87*, San Francisco, California, March 13, 1987.
11. M. E. Orazem, "A Mathematical Model for the Photoelectrochemical Etching of Semiconductors," presented at the 79th Annual Meeting of the *American Institute of Chemical Engineers*, Miami Beach, Florida, November 5, 1986.
10. E. C. Gan and M. E. Orazem, "A Mathematical Model for the Corrosion of Iron in Sulfuric Acid," presented at the 169th Meeting of *The Electrochemical Society*, Boston, Massachusetts, May 7, 1986.
9. M. E. Orazem and M. G. Miller, "Current Distribution and Formation of a Salt Film on an Iron Disk below the Passivation Potential," presented at the 169th Meeting of *The Electrochemical Society*, Boston, Massachusetts, May 7, 1986.
8. M. Kazeminy and M. E. Orazem, "The Influence of Electrolytic Mass Transfer on Photoelectrochemical Processes," presented at the *1st Engineering Foundation Conference on the Processing of Electronic Materials*, Santa Barbara, California, February 24, 1986.
7. M. E. Orazem, "Electron and Hole Transport in Degenerate Semiconductors," presented at the 77th Annual Meeting of the *American Institute of Chemical Engineers*, San Francisco, California, November 28, 1984.
6. M. E. Orazem, "Primary Resistance of a Test Specimen for Crack-Propagation Measurements," presented at the 166th Meeting of *The Electrochemical Society*, New Orleans, Louisiana, October 12, 1984.
5. M. E. Orazem and J. Newman, "Theoretical Analysis of Liquid-Junction Photovoltaic Cells," presented at the 159th Meeting of *The Electrochemical Society*, Minneapolis, Minnesota, May 14, 1981.

4. M. E. Orazem, L. T. Fan, and L. E. Erickson, "Characterization of Two-Directional Dispersed Phase Flow Through Time-Series Analysis," presented at the 72nd Annual Meeting of the *American Institute of Chemical Engineers*, San Francisco, California, November 26, 1979.
3. L. E. Erickson, C. S. Ho, and M. E. Orazem, "Oxygen Transfer in One and Two-Stage Air-Lift Towers," presented at the *Engineering Foundation Conference on Mass Transfer and Scale-Up of Fermentations*, Hennicker, New Hampshire, July 1977.
2. M. E. Orazem, "Oxygen Transfer in One and Two-Stage Air-Lift Towers," presented at the *7th Annual Biochemical Engineering Symposium*, Ames, Iowa, May 21, 1977.
1. M. E. Orazem, "Effect of Column Height on Oxygen Transfer in Air-Lift Fermentors," presented at the *6th Annual Biochemical Engineering Symposium*, Kansas City, April 11, 1976.

Local Presentations

1. E. D. San Antonio, S. B. Thourson, M. E. Orazem, K. J. Otto, "Decreasing Counter-Ion Molecular Weight to Optimize Conductive Polymer Properties For Neural Electrodes," 2021 Virtual Florida Undergraduate Research Conference (FURC 2021), Gainesville, Florida, February 26–27, 2021

Invited Lectures

80. Department of Chemical Engineering, University of New Hampshire, Durham, New Hampshire, February 22, 2023.
79. Department of Department of Energy, Environmental, & Chemical Engineering, Washington University in St. Louis, St. Louis, Missouri, April 29, 2022
78. Department of Chemical Engineering, University of Utah, Salt Lake City, Utah, January 24, 2022
77. Department of Chemical Engineering, Kansas State University, Manhattan, Kansas, February 2, 2021.
76. Department of Chemistry, Utah State University, Logan, Utah, October 21, 2020.
75. Department of Physical Chemistry, University of Seville, Seville, Spain, May 2019.
74. College of Mechanical and Electronic Engineering, China University of Petroleum, Qingdao, China, August, 2018.
73. Department of Chemical & Petroleum Engineering, University of Calgary, Calgary, Canada, October 30, 2017.
72. Department of Chemical & Biological Engineering, The University of New Mexico, Albuquerque, New Mexico, November 2015.
71. Fuel Cell Program, Los Alamos National Lab, Los Alamos, New Mexico, November 2015.
70. Department of Department of Engineering Science and Ocean Engineering, National Taiwan University, Taipei, Taiwan October 2015.
69. Department of Chemical Engineering, University of Florida, March 2015.
68. AIChE Senior Dinner, University of Florida, April 2014.
67. Student Chapter of the Electrochemical Society, University of Florida, April 2012.
66. Student Chapter of the Electrochemical Society, University of Florida, April 2011.
65. AIChE Senior Dinner, University of Florida, April 2011.
64. Sandia National Labs, Albuquerque, New Mexico, March 2011.
63. Department of Chemistry, University of Mississippi, Oxford, Mississippi, February, 2011.
62. Sandia National Labs, Albuquerque, New Mexico, December 2010.
61. Department of Chemistry, University of Florida, September 2010.

60. Center for Study of Matter at Extreme Conditions, College of Engineering and Computing, Florida International University, Miami, Florida, October 2009.
59. Student Chapter of *The Electrochemical Society*, University of Florida, September 2009.
58. Laboratoire Interfaces et Systemes Electrochimiques, Université Pierre et Marie Curie, Paris, France, June 2009
57. Department of Chemical Engineering, University of Florida, April 2009.
56. SouthWest Research Institute, San Antonio, Texas, October 2007.
55. Argonne National Laboratories, Argonne, Illinois, December 2006.
54. Department of Mechanical Engineering, University of Hawaii, Honolulu, Hawaii, November 2006.
53. Institut National Polytechnique de Toulouse, Toulouse, France, (2 lectures) July 2006.
52. Departamento de Química, Universidade de Coimbra, Coimbra Portugal, September 2005.
51. Georgia Institute of Technology, School of Chemical and Biomolecular Engineering, 2003.
50. Laboratoire Liquides Ioniques et Interfaces Chargées, Université Paris et Marie Curie, Paris, France, December 2001.
49. Laboratoire Physique des Liquides et Electrochimie, Université Paris et Marie Curie, Paris, France, 22 October, 2001.
48. Biomedical Engineering Program, University of Florida, April 2000.
47. Colorado School of Mines, Department of Chemical Engineering, April 2000.
46. Department of Aerospace Engineering, Mechanics & Engineering Science, University of Florida, April 2000.
45. National Institute of Standards and Technology, Gaithersburg, Maryland, February 2000.
44. Naval Research Labs, Chemistry Division, Washington DC, February 2000.
43. Florida State University, Department of Chemical Engineering, January 2000.
42. University of California, San Francisco, Department of Pharmacy, 1998.
41. ALZA Corporation, Palo Alto, California, 1998.
40. IRSID, Maizieres-les-Metz, France, 1997.
39. Southwest Research Institute, San Antonio, Texas, 1997.
38. École Polytechnique Fédérale de Lausanne, Lausanne, Switzerland, 1996.
37. Department of Chemical Engineering, University of Florida, Gainesville, Florida, 1996.
36. Department of Chemical Engineering, University of South Carolina, Columbia, South Carolina, 1995.
35. École Polytechnique Fédérale de Lausanne, Lausanne, Switzerland, 1995.
34. Physique des Liquides et Electrochim., Laboratoire Propre du CNRS, Université Pierre et Marie Curie, Paris, France, 1995.
33. École Nationale Supérieure de Chimie, Toulouse, France, 1995.
32. ALZA Corporation, Palo Alto, California, 1994.
31. ARCO Oil and Gas, Plano, Texas, 1994.
30. ALZA Corporation, Minneapolis, Minnesota, 1993.
29. Institutt for Teknisk Elektrokjemi, the Norwegian Institute of Technology (NTH), Trondheim, Norway, 1993.

28. Physique des Liquides et Electrochim., Laboratoire Propre du CNRS, Universite Pierre et Marie Curie, Paris, France, 1993.
27. NIST, Gaithersburg, Maryland, 1992.
26. ALZA Corporation, Palo Alto, California, 1992.
25. ARCO Oil and Gas, Plano, Texas, 1992.
24. ARCO Oil and Gas, Plano, Texas, 1991.
23. Gates Energy Products, Gainesville, Florida, 1991.
22. Department of Chemical Engineering, University of South Florida, Tampa, Florida, 1991.
21. Gates Energy Products, Gainesville, Florida, 1990.
20. ARCO Oil and Gas, Plano, Texas, 1990.
19. Monsanto, Pensacola, Florida, 1990.
18. Institutt for Teknisk Elektrokjemi, the Norwegian Institute of Technology (NTH), Trondheim, Norway, 1990 (three lectures).
17. Physique des Liquides et Electrochim., Laboratoire Propre du CNRS, Universite Pierre et Marie Curie, Paris, France, 1990.
16. Raychem Corporation, Menlo Park, California, 1989.
15. Department of Chemical Engineering, Case Western Reserve University, Cleveland, Ohio, 1989.
14. Hydro Aluminium, Suundals ra, Norway, 1989.
13. Department of Chemistry, Tel Aviv University, Tel Aviv, Israel, 1989.
12. Rockwell Science Center, Thousand Oaks, California, 1989.
11. SRI, International, Menlo Park, California, 1989.
10. Department of Chemical Engineering, Tulane University, New Orleans, Louisiana, 1989.
9. Department of Chemical Engineering and Applied Chemistry, Columbia University, New York, New York, 1988.
8. Department of Chemical Engineering, Texas A&M University, College Station, Texas, 1988.
7. Department of Chemical Engineering, University of Florida, Gainesville, Florida, 1988.
6. AT&T Bell Laboratories, Murray Hill, New Jersey, 1987.
5. Department of Chemical Engineering, Johns Hopkins University, Baltimore, Maryland, 1987.
4. Department of Chemical Engineering, University of Florida, Gainesville, Florida, 1987.
3. Department of Chemical Engineering, Virginia Polytechnic Institute and State University, Blacksburg, Virginia, 1986.
2. Department of Chemical Engineering, University of Houston, Houston, Texas, 1985.
1. Department of Chemical Engineering, Kansas State University, Manhattan, Kansas, 1980.

Service on Organizing Committees for International Conferences

19. Member, 29th ISE Topical Meeting on Energy and Water: Electrochemistry in Securing the Sustainable Society Development, Mikulov, Czech Republic, April 18–21, 2021.
18. Member, EMCR 2018, The 12th Conference on Electrochemical Methods in Corrosion Research, Cambridge, UK, 22 to 27 July 2018.
17. Co-Chair, 68th Annual Meeting of the International Society of Electrochemistry, Providence, Rhode Island, August 27–September 1, 2017.
16. Member, 65th Annual Meeting of the International Society of Electrochemistry, Lausanne, Switzerland, August 31–September 5, 2014.
15. Member, 10th International Symposium on Electrochemical Micro & Nanosystem Technologies (EMNT2014), Okinawa, Japan, November 5–8, 2014.
14. Member, 64th Annual Meeting of the *International Society of Electrochemistry*, Santiago de Querétaro, Mexico, September 8–13, 2013.
13. Member, 63rd Annual Meeting of the *International Society of Electrochemistry*, Prague, Czech Republic, August 19–24, 2012.
12. Member, 11th Spring Meeting of the *International Society of Electrochemistry*, Washington DC, USA, May 23–25, 2012.
11. Member, 10th Spring Meeting of the *International Society of Electrochemistry*, Perth, Australia, April 16–19, 2012.
10. Member, 62nd Annual Meeting of the *International Society of Electrochemistry*, Niigata, Japan, September 11–16, 2011.
9. Member, 9th Spring Meeting of the *International Society of Electrochemistry*, Turku, Finland, May 8–11, 2011.
8. Member, *8th International Symposium on Electrochemical Impedance Spectroscopy*, Algarve, Portugal, June 6–11, 2010.
7. Member, 8th Spring Meeting of the *International Society of Electrochemistry* (on Advances in Corrosion Science for Lifetime Prediction and Sustainability), Columbus, Ohio, May 5, 2010.
6. Member, *7th International Symposium on Electrochemical Impedance Spectroscopy*, Argelès sur Mer, France, June 3–8, 2007.
5. Chair, *6th International Symposium on Electrochemical Impedance Spectroscopy*, Cocoa Beach, Florida, May 16–21, 2004.
4. Member, *5th International Symposium on Electrochemical Impedance Spectroscopy*, Marilleva, Italy, June 17–22, 2001.
3. Member, *4th International Symposium on Electrochemical Impedance Spectroscopy*, Rio de Janeiro, Brazil, August, 1998.
2. Member, *Frumkin Centenary Symposium on Fundamental Aspects of Electrochemistry*, Moscow, Russia, August, 1995.
1. Member, *2nd International Symposium on Electrochemical Impedance Spectroscopy*, Santa Barbara, California, July 12–17, 1992.

Theses and Dissertations Directed*Current Students (alphabetical order)*

4. Yunhan Chuai, master's student
3. Cynthia Ezech, doctoral student
2. Jie Min (Jammy) Goh, master's student
1. Samuel Jacobs, doctoral student

Doctoral Degree

33. Chen You, *Experiments and Mathematical Models for Electrochemical Systems*, Ph.D. dissertation, University of Florida, August 2022.
32. Ming Gao, *A Mathematical Model for the Electrochemical Impedance Response of a Continuous Glucose Sensor*, Ph.D. dissertation, University of Florida, August 2020.
31. Arthur Dizon, *Efficient Continuous Electrokinetic Dewatering and Impedance Response of Interdigitated Electrodes*, Ph.D. dissertation, University of Florida, August 2018.
30. Morgan S. Harding, *Mathematical Models for Impedance Spectroscopy*, Ph.D. dissertation, University of Florida, May 2017.
29. Christopher L. Alexander, *Impedance Spectroscopy: The Influence of Surface Heterogeneity and Application to Corrosion Monitoring of Bridge Tendons*, Ph.D. dissertation, University of Florida, May 2017.
28. Christopher Cleveland, *Corrosion of Copper in Deaerated Deionized Water and Geometry-Induced Frequency Dispersion of the Ring Electrode*, Ph.D. dissertation, University of Florida, May 2017.
27. Yu-Min Chen, *Analysis of ASTM A416 Tendon Steel Corrosion in Alkaline Simulated Pore Solutions*, Ph.D. dissertation, University of Florida, August 2016.
26. Rui Kong, *Continuous Electrokinetic Dewatering of Phosphatic Clay Suspensions*, Ph.D. dissertation, University of Florida, May 2015.
25. Salim Erol, *Electrochemical Impedance Spectroscopy Analysis and Modeling of Lithium Cobalt Oxide/Carbon Batteries*, Ph.D. dissertation, University of Florida, May 2015.
24. Ya-Chiao Chang, *Mathematical Models for Under-Deposit Corrosion in Aerated and De-Aerated Solutions*, Ph.D. dissertation, University of Florida, December 2013.
23. Erick A. White, *Characterization of the Skin Barrier to Chemical Permeation by Impedance Spectroscopy*, Ph.D. dissertation, Colorado School of Mines, September 2011 (co-advised with Prof. Annette L. Bunge, Colorado School of Mines, Department of Chemical Engineering).
22. Erin Patrick, *Design, Fabrication, and Characterization of Microelectrodes for Brain-Machine Interfaces*, Ph.D. dissertation, University of Florida, August 2010 (co-advised with Prof. Toshi Nishida, University of Florida, Department of Electrical Engineering).
21. Bryan Hirschorn, *Distributed Time-Constant Impedance Responses Interpreted in Terms of Physically Meaningful Properties*, Ph.D. dissertation, University of Florida, August 2010.
20. Shao-ling Wu, *Influence of Electrode Geometry on Local and Global Impedance Response*, Ph.D. dissertation, University of Florida, August 2010.
19. J. Patrick McKinney, *Design of Electrolytic Dewatering Systems for Phosphatic Clay Suspensions*, Ph.D. dissertation, University of Florida, May 2010.
18. Sunil K. Roy, *Use of Impedance Spectroscopy to Investigate Factors That Influence the Performance and Durability of Proton Exchange Membrane (PEM) Fuel Cells*, Ph.D. dissertation, University of Florida, August 2008.
17. Vicky Mei-Wen Huang, *Fundamental Approach to Practical Corrosion Problems*, Ph.D. dissertation, University of Florida, May 2007.
16. Nelliann Pérez-Garcia, *Enhanced Interpretation Models for Impedance of Lithium Ion Batteries*, Ph.D. dissertation, University of Florida, May 2006.
15. Pavan Shukla, *Stationary Hemispherical Electrode under Submerged Jet Impingement and Validation of the Measurement Model Concept for Impedance Spectroscopy*, Ph.D. dissertation, University of Florida, August 2004.
14. Chenchen Qui, *Model for Interpretation of Pipeline Survey Data*, Ph.D. dissertation, University of Florida, December 2003.

13. Kerry Allahar, *Mathematical Modeling of Disbonded Coating and Cathodic Delamination Systems*, Ph.D. dissertation, University of Florida, December 2003.
12. Michael A. Membrino, *Transdermal Delivery of Therapeutic Compounds by Iontophoresis*, Ph.D. dissertation, University of Florida, May 2002.
11. Douglas Riemer, *Modeling Cathodic Protection for Pipeline Networks*, Ph.D. dissertation, University of Florida, December 2000.
10. Steven L. Carson, *Application of Complex Spectroscopic Techniques to the Characterization of particles in Suspension*, Ph.D. dissertation, University of Florida, May 1999.
9. Madhav Durbha, *Influence of Current Distributions on the Interpretation of the Impedance Spectra Collected For Rotating Disk Electrode*, Ph.D. dissertation, University of Florida, August 1998.
8. Paul T. Wojcik, *The Electrochemical Behavior of Copper and Copper Nickel Alloys in Synthetic Seawater*, Ph.D. dissertation, University of Florida, August 1997.
7. Pankaj Agarwal, *Applications of Measurement Models to Impedance Spectroscopy*, Ph.D. dissertation, University of Florida, December 1994.
6. Oliver C. Moghissi, *The Electrochemical Behavior of Copper in Chloride Solutions*, Ph.D. dissertation, University of Florida, May 1993.
5. Andrew N. Jansen, *Deep-Level Impedance Spectroscopy of Electronic Materials*, Ph.D. dissertation, University of Florida, December 1992.
4. Matthew Esteban, *Transient Electrochemical Phenomena: Applications of the Kramers–Kronig Relations and Photoelectrochemical Etching of GaAs*, Ph.D. dissertation, University of Florida, December 1991.
3. Conrad B. Diem, *The Influence of Velocity on the Corrosion of Copper in Alkaline Chloride Solutions*, Ph.D. dissertation, University of Virginia, May 1990.
2. David Bivings Bonham, *A Mathematical Model for Identification of Deep-Level Electronic Defects in Semiconductors by Photoelectrochemical A.C. Impedance Spectroscopy*, Ph.D. dissertation, University of Virginia, May 1988.
1. Abhay B. Bulsari, *Mathematical Modeling of MOCVD in Horizontal CVD Reactors*, Ph.D. dissertation, University of Virginia, January 1988.

Masters of Science Degree

27. Hangqi Liao, *Application of the Measurement Model to Extract the Capacitance of Electrochemical Systems*, M.S. thesis, University of Florida, May 2020.
26. Liuruidong Zou, *Application of Lissajous Plots to Identify Non-Stationary Behavior in Impedance Spectroscopy*, M.S. thesis, University of Florida, May 2020.
25. Chen You, *Evaluation of the Gerischer Impedance Assumptions*, M.S. thesis, University of Florida, May 2018.
24. Pei-Han (Betty) Chiu, *Settling of Supernatant from Semicontinuous Electrokinetic Processing of Phosphatic Clay Suspensions*, M.S. thesis, University of Florida, August 2012.
23. Alok Shankar, *Cathodic Protection Modelling of Buried Structures*, M.S. thesis, University of Florida, May 2012.
22. Chao (Gilbert) Liu, *Cathodic Protection for On- and Off-Shore Structures*, M.S. thesis, University of Florida, May 2012.
21. Yu-Min Chen, *Influence of CO₂ on Corrosion of Steel in Saline Electrolytes*, M.S. thesis, University of Florida, December 2011.
20. Salim Erol, *Electrochemical Impedance Analysis of Lithium Cobalt Oxide Batteries*, M.S. thesis, University of Florida, August 2011.

19. Rui Kong, *Semi-continuous Electrokinetic Dewatering of Clay Suspensions*, M.S. thesis, University of Florida, August 2011.
18. J. Patrick McKinney, *Evaluation of the Utility of ECDA Indications for Assessing Pipeline Integrity*, M.S. thesis, University of Florida, May 2006.
17. Nelliann Pérez-Garcia, *Transdermal Drug Delivery by Iontophoresis: Study of the Stratum Corneum Reservoir Capacity*, M.S. thesis, University of Florida, August 2003.
16. Kenneth Jeffers, *Electrochemical Impedance Spectroscopy for the Characterization of Corrosion and Cathodic Protection of Buried Pipelines*, M.S. thesis, University of Florida, August 1999.
15. Steven Philbrick, *Characterization of Transdermal Delivery in Vitro using Optical and Electrochemical Impedance Spectroscopy*, M.S. thesis, University of Florida, May 1998.
14. Juleh Minoo, *Critical Issues on Electrochemical Impedance Spectroscopy Measurements on Skin*, M.S. thesis, University of Florida, December 1995.
13. Steven Carson, *Cathodic Protection Requirements as a Function of Soil Type*, M.S. thesis, University of Florida, August 1995.
12. Paul T. Wojcik, *Thermally Stimulated Impedance Spectroscopy*, M.S. thesis, University of Florida, August 1992.
11. Andrew N. Jansen, *Mathematical Modeling of MOCVD: Effect of Reactor Geometry and Operating Parameters*, M.S. thesis, University of Virginia, August 1989.
10. Oliver C. Moghissi, *An Electrochemical Study of Copper and Copper-Aluminum Alloys in Saline Solutions*, M.S. thesis, University of Virginia, August 1989.
9. Frank L. Smolko, *Impedance Method for Characterization of Deep-Level States in Semiconductor Materials*, M.S. thesis, University of Virginia, May 1988.
8. Marc M. Lowry, *The Corrosion of Iron in Acidic Chloride Solutions*, M.S. thesis, University of Virginia, January 1988.
7. Matthew R. Esteban, *Evaluation of Inhibitor Film Persistency in Air-Saturated Acidic Chloride Solutions*, M.S. thesis, University of Virginia, January 1988.
6. Muhammad Kazeminy, *Mathematical Modeling of Mass-Transfer Effects in a Photoelectrochemical System*, M.S. thesis, University of Virginia, May 1986.
5. Lucinda A. Joyce, *The Influence of Hydrogen Sulfide on the Corrosion of Iron in Acidic Chloride Solutions*, M.S. thesis, University of Virginia, May 1986.
4. Gregory S. Hickey, *An Experimental Technique for the Study of the Persistency of Films*, M.S. thesis, University of Virginia, May 1986.
3. E. C. Gan, *A Mathematical Model for the Corrosion of Iron in Sulfuric Acid*, M.S. thesis, University of Virginia, May 1986.
2. Brian K. Faillon, *A Mathematical Model of the Active-Passive Transition of Iron in Sulfuric Acid*, M.S. thesis, University of Virginia, May 1986.
1. Michael G. Miller, *The Influence of Fluid Velocity on the Corrosion of Iron in Sulfuric Acid*, M.S. thesis, University of Virginia, May 1985.

Masters of Engineering Degree

3. Matthew Wendling, "Measurement Model Application to and Internal Resistance Prediction from Impedance Spectroscopy Data of NiMH Storage Cells," M.E. report, University of Florida, December 1999.
2. Nhan T. Ha, "The Effect of Additives and Chloride Ions on the Kinetics and Morphology of Copper Deposition in Plated-Through-Hole Boards," M.E. report, University of Virginia, January 1988.
1. Donna Grubb-Hewlett, "Degenerate Semiconductors: Band Theory, the Effects of Degeneracy, and Modeling" M.E. report, University of Virginia, May 1985.

Masters of Science (Non-Thesis) Degree

4. Vishnuvardhan (Vishnu) Pinjala, University of Florida, May 2012.
3. Darshit P Shah, University of Florida, May 2012.
2. Yan (Sophia) Yu, University of Florida, May 2012.
1. Michael Matlock, University of Florida, May 2006.

External Member of International Dissertation Committees

7. External Examiner, doctoral defense of Mengnan Guo, Department of Chemistry, Western University, London, Ontario, Canada, October, 2020. Dissertation title: *The Electrochemical and Corrosion Study of Copper for Nuclear Waste Containers under Deep Geological Disposal Conditions.*
6. External Examiner, doctoral defense of Kathlyne Nelson, Department of Physics and Atmospheric Science, Dalhousie University, Halifax, Canada, September, 2017. Dissertation title: *Studies of the Effects of High Voltage on the Performance and Impedance of Lithium-Ion Batteries.*
5. Chief Opponent, doctoral defense of Morten Tjelta, Department of Chemistry, Norwegian University of Science and Technology (NTNU), Trondheim, Norway, October 2013. Dissertation title: *Electrochemical and Photoelectrochemical Characterization of Porous Semiconducting Electrodes.*
4. External Member of the Jury, doctoral defense of Jean-Baptiste Jorcin, Department of Materials Science, Institut National Polytechnique de Toulouse, Toulouse, France, March 2007. Dissertation title: *Spectroscopie d'Impedance Electrochimique Locale: Caracterisation de la Delamination des Peintures et de la Corrosion des Alliages Al-Cu.*
3. Chief Opponent, doctoral defense of Els Van Gheem, Department of Materials Science, Vrije Universiteit Brussel Pleinlaan, Brussels, Belgium, June 2005. Dissertation title: *A New Methodology for Electrochemical Impedance Spectroscopy in the Presence of Nonlinear Distortions and Non-Stationary Behaviour: Application to Pitting Corrosion of Aluminium.*
2. Reporter, doctoral defense of Geneviève Baril, Department of Materials Science, Institut National Polytechnique de Toulouse, Toulouse, France, November 2001. Dissertation title: *Etude par Spectroscopie d'Impedance Electrochimique des Mecanismes de Corrosion des Alliages de magnesium AM50, AZ91 et du Magnesium Pur en Milieu Na₂SO₄.*
1. Reporter, doctoral defense of René Antaño Lopez, Laboratoire Interfaces et Systèmes Electrochimiques, Université Pierre et Marie Curie, Paris, France, November 2001. Dissertation title: *Sur Une Nouvelle Methode de Caracterisation des Processus Faradiques a Partir de Leur Couplage avec La Capacite de la Double Couche.*

Research Contracts and Grants

82. National Institute of Health, "Engineering the Neuronal Response to Electrical Microstimulation," 8/1/2022–7/31/2026, \$749,758 (\$4,967,768 total).
81. Nuclear Waste Management Organization, "A Model for Localized Corrosion of Copper Under a Droplet," 8/1/20–7/31/23, \$218,198.
80. Medtronic Diabetes, "Models for impedance of Enzyme Based Electrochemical Biosensors," 11/1/18–12/31/22, \$372,000.
79. Nanophotonica, "OR-DRPD-UFLIPS-G-2018: Impedance Spectroscopy for Evaluating Failure Mechanisms in Quantum Light Emitting Diodes," PI, 9/1/18–8/31/20, \$114,048.
78. UFLIPS, "OR-DRPD-UFLIPS-G-2018: Impedance Spectroscopy for Evaluating Failure Mechanisms in Quantum Light Emitting Diodes," PI, 9/1/18–8/31/20, \$50,000.
77. Medtronic Diabetes, "Models for impedance of Enzyme Based Electrochemical Biosensors," 11/1/14–10/31/18, \$358,553.
76. Florida Department of Transportation, "Impedance-Based Detection of Corrosion in Post-Tensioned Cables: Phase 2 From Concept to Application", PI, 12/14/14–1/1/17, \$308,233.

75. Florida Department of Transportation, "Impedance-Based Detection of Corrosion in Post-Tensioned Cables: Phase 1b. Sensor Development", PI, 3/1/14–10/1/14, \$90,856.
74. Mosaic Fertilizer, LLC, "Prototype for Continuous Electrokinetic Dewatering of Phosphatic Clay Suspensions," PI, with co-PI Saeed Moghaddam and David Bloomquist, 7/1/12–6/30/16, \$1,503,644.
73. Florida Department of Transportation, "Impedance-Based Detection of Corrosion in Post-Tensioned Cables: Phase 1. Sensor Development", PI with co-PI David Bloomquist, 4/1/12–3/1/14, \$315,450.
72. BP America Inc., "Modeling Underdeposit Corrosion in Oil and Gas Pipelines," 5/1/12–12/31/13, \$83,150.
71. DARPA, "Thermohydraulic and Material Characterization of Nanostructured Wicks," Co-PI with PI Saeed Moghaddam, 2/7/12–2/28/14, \$299,732.
70. BP America Inc., "Modeling Underdeposit Corrosion in Oil and Gas Pipelines," 5/1/09–4/30/12, \$337,423.
69. Sandia National Laboratories, "Impedance Investigation of Lithium Batteries," 9/10/11–9/9/12, \$45,000.
68. Planar Systems, Inc., "ARPA-E BEEST: Solid State Lithium Battery–Solid-State All Inorganic Rechargeable Lithium Batteries," 7/1/10–6/30/12, \$58,302.
67. Sandia National Laboratories, "Impedance Investigation of Lithium Batteries," 9/10/10–9/9/11, \$55,000.
66. Mosaic Fertilizer, LLC, "Electrokinetic Concepts for Dewatering Clay Suspensions," 12/2/10–12/31/11, \$100,000.
65. Sandia National Laboratories, "Impedance Investigation of Lithium Batteries," 3/31/10–9/9/10, \$58,632
64. Exxon-Mobil, unrestricted gift, 8/10/09, \$60,000.
63. Mosaic Fertilizer, LLC, "Advanced Concepts for Phosphate Mining and Phosphate Processing," 5/1/09–4/30/10, \$100,000.
62. Mosaic Fertilizer, LLC, "Advanced Concepts for Phosphate Mining and Phosphate Processing," 5/1/08–4/30/09, \$40,000.
61. BP Azerbaijan, "University of Florida/BP Engineering Development Program for the Caspian Sea Region," 8/1/08–7/31/09, \$49,895.
60. BP Azerbaijan, "University of Florida/BP Engineering Development Program for the Caspian Sea Region," 5/1/07–4/30/08, \$121,088.
59. Argonne National Labs, "Investigation of Electrochemical Steps in a Low-Temperature Thermo-Chemical Process for Generating Hydrogen," 11/1/06–10/31/07, \$104,690.
58. NASA, "A Test Bed for Impedance Measurements on PEM Fuel Cells," 4/30/05–4/30/08, \$75,000.
57. NASA, "Interpretation Models for PEMFC Membrane Electrode Assemblies," 9/30/05–4/30/08, \$80,000.
56. BP Azerbaijan, "University of Florida/BP Engineering Development Program for the Caspian Sea Region," 5/1/06–4/30/07, \$118,821.
55. BP Azerbaijan, "University of Florida/BP Engineering Development Program for the Caspian Sea Region," 5/1/05–4/30/06, \$91,969.
54. NASA, "A Test Bed for Impedance Measurements on PEM Fuel Cells," 9/30/04–9/29/05, \$91,982.
53. NASA, "Interpretation Models for PEMFC Membrane Electrode Assemblies," 9/30/04–9/29/05, \$74,461.
52. NASA, "Development of Interpretation Models for Impedance Spectroscopy of Lithium-Ion Battery Systems," Graduate Student fellowship Application for Nelliann Pérez-García, 7/1/04–6/30/05, \$24,000.
51. BP Azerbaijan, "University of Florida/BP Engineering Development Program for the Caspian Sea Region," 8/1/04–7/31/05, \$82,093.
50. CC Technologies, "Use of CP3D to Evaluate Criteria for Pipeline Integrity," 2004, \$100,000.

49. Pratt & Whitney, "Quantitative Assessment of the Corrosion of Bearing Alloys and a Corrosion Rate Monitor Under Simulated Applications at Sea: A Feasibility Study" (co-PI with Darryl Butt (PI)), 6/1/03–12/31/03, \$106,000.
48. Pratt & Whitney, "Quantitative Assessment of the Corrosion of Bearing Alloys and a Corrosion Rate Monitor Under Simulated Applications at Sea: A Feasibility Study" (co-PI with Darryl Butt (PI) and Gerhard E. Fuchs, 10/15/03–5/31/04, \$90,000.
47. NSF, "Graduate Student Support for the 6th International Symposium on Impedance Spectroscopy," 4/1/04–3/31/05, \$12,000.
46. ARCELOR Group, (IRSID) France, "Model for Delamination of Paint from Galvanized Steel," 1/1/03–12/31/06, \$249,603.
45. International Union of Pure and Applied Chemistry (IUPAC), "Electrochemical Impedance Spectroscopy: Terminology, Nomenclature, and Data Exchange Formats," (with Zdravko Stoyanov, Bulgaria; Christopher Brett, Portugal; and Jörg Vogelsang, Germany), 1/1/02–12/31/04, \$3,800.
44. IRSID, USINOR Group, France, "Modeling the Delamination of Paint from Galvanized Steel," 11/1/01–4/30/02, \$17,609.
43. Pipeline Research Committee International, "Model for Interpretation of Pipeline Survey Data," 1/1/01–6/30/02, \$154,000.
42. ARCO Exploration and Production Technology, "Impinging Jet Studies of CO₂ Corrosion," 12/1/98–5/31/99, \$30,000.
41. S.C. Johnson, "Development of Statistical Tools for Enhanced Interpretation of Electrochemical Impedance Measurements on Coated Specimens," \$173,767, 7/1/98–6/30/01
40. Southwest Research Institute, "Quasipotential Models for Crevices," 12/1/97–11/30/00, \$162,159.
39. Alza Corporation, unrestricted gift, 1998, \$10,000.
38. S.C. Johnson, Graduate Student Fellowship, 8/1/97–7/31/98, \$10,000.
37. Alza Corporation, unrestricted gift, 1997, \$26,000.
36. S.C. Johnson, Graduate Student Fellowship, 8/1/96–7/31/97, \$10,000.
35. Office of Naval Research, "New Theories for Erosion-Corrosion," 10/1/96–8/31/98, \$54,000.
34. American Gas Association, "Development of User-Friendly Models for Design of CP Systems for Buried Pipelines," 12/1/95–10/30/00, \$473,302.
33. National Science Foundation, "Engineering Research Center for Particle Science and Technology," 9/1/97–8/31/98, \$18,000.
32. National Science Foundation, "Engineering Research Center for Particle Science and Technology," 9/1/96–8/31/97, \$29,140 (+\$13,540 cost sharing).
31. National Science Foundation, "Engineering Research Center for Particle Science and Technology," 9/1/95–8/31/96, \$29,140 (+\$13,540 cost sharing).
30. Alza Corporation, unrestricted gift, 1996, \$20,000.
29. National Science Foundation, "Transfer Function Methods for Electrochemical Systems," (US-France Research Collaboration Grant), 9/95–6/99, \$18,000.
28. National Science Foundation, "Engineering Research Center for Particle Science and Technology," 9/1/94–8/31/95, \$29,140 (+\$13,540 cost sharing).
27. Alza Corporation, unrestricted gift, 1995, \$15,000.
26. Alza Corporation, unrestricted gift, 1994, \$30,000.

25. Office of Naval Research, "New Theories for Erosion-Corrosion," 10/1/93–9/30/96, \$396,792.
24. Office of Naval Research, "New Theories for Erosion-Corrosion, ASSERT supplement," 10/1/93–9/30/96, \$105,000.
23. Alyeska, "Cathodic Protection Modeling for TAPS: Phase II," 3/1/93–12/31/94, \$75,000.
22. American Gas Association, "The Influence of Soil Type on Cathodic Protection Requirements," 11/1/92–10/31/94, \$160,000.
21. Office of Naval Research, "New Theories for Erosion-Corrosion," 10/1/92–9/30/93, \$79,999.
20. NATO Grant for Collaborative Research, (in collaboration with Georg Hagen, PI, Institutt for Teknisk Elektrokjemi, the Norwegian Institute of Technology, Trondheim, Norway), 4/1/92 165,000BF (\$6,000).
19. Alyeska, "Cathodic Protection Modeling for TAPS: Addition to Phase I," 3/15/92–12/31/92, \$25,000.
18. Alyeska, "Cathodic Protection Modeling for TAPS: Phase II," 3/15/92–12/31/92, \$60,000.
17. Gates Energy Systems, unrestricted gift, 1992, \$18,000.
16. Office of Naval Research, "The Influence of Cathodic Protection on Erosion-Corrosion of Metals and Model Alloys," 2/28/91–3/31/92, \$82,000.
15. Alyeska, "Cathodic Protection Modeling for TAPS," 7/22/91–3/15/92, \$60,000.
14. Gates Energy Systems, "Electrochemical Impedance Spectroscopy of Metal Hydrides for Battery Applications," 2/1/89–12/31/90, \$16,500.
13. Gates Energy Systems, "Electrochemical Impedance Spectroscopy of Metal Hydrides for Battery Applications," 11/14/89–6/30/90, \$5,000.
12. DARPA, "Compound Semiconductor Heterostructures for Wave-Guided Optical Source Detectors," (awarded as part of a University of Florida block grant), 8/31/89–9/30/90, \$58,200.
11. DARPA, "Compound Semiconductor Heterostructures for Wave-Guided Optical Source Detectors," (equipment monies awarded as part of a University of Florida block grant), 7/1/88–9/30/89, \$75,000.
10. DARPA, "Compound Semiconductor Heterostructures for Wave-Guided Optical Source Detectors," (awarded as part of a University of Florida block grant), 7/1/88–9/30/89, \$21,689.
9. NASA, "Stress Effects in Multilayers: Flow Effects on Interfacial Stress and Junction Abruptness," (co-principal investigator with W. A. Jesser), 12/1/87–2/1/88, \$128,199.
8. National Science Foundation, "Photoelectrochemical Processing of Semiconducting Materials" (grant was transferred from the University of Virginia to the University of Florida, August 1, 1988) 7/1/87–6/30/87, \$67,630; 7/1/88–12/31/89, \$75,000.
7. Office of Naval Research, "The Influence of Cathodic Protection on Erosion-Corrosion of Metals and Model Alloys," closed at the University of Virginia and reopened as a grant at the University of Florida, March 1, 1989. 12/1/86–2/28/91, \$337,497.
6. NASA, "Stress Effects in Multilayers: Flow Effects on Interfacial Stress and Junction Abruptness," (contributing investigator with W. A. Jesser as principal investigator), 12/1/86–11/30/87, \$56,401.
5. Virginia Center for Innovative Technology, Institute of Materials Science and Engineering, "Influence of Fluid Flow on Corrosion Inhibition," \$10,000, 3/1/86–7/31/87.
4. Dow Chemical, U.S.A., "Influence of Fluid Flow on Corrosion Inhibition," 3/1/85–2/28/87, \$5,000.
3. Virginia Center for Innovative Technology, Institute of Materials Science and Engineering, "Improved Interpretation of MOCVD Experiments," 6/1/86–5/31/87, \$15,000.
2. Dow Chemical, U.S.A., "Experimental Characterization of Corrosion," 1/1/85–12/31/85, \$20,000.
1. Virginia Center for Innovative Technology, Institute of Materials Science and Engineering, "Characterization of Corrosion Inhibition by Ethylene-Amine-Based Compounds," 1/1/85–12/31/85, \$10,000.

Short Courses for Professional Societies and Universities

70. Instructor, Short Course on Advanced Impedance Spectroscopy, *The Electrochemical Society*, Atlanta, Georgia, October 9, 2022.
69. Instructor, Electrochemical Measurements Workshop, (with D. Scherson and H. White), Case Western Reserve University, Cleveland, Ohio, August 17, 2022 (delivered on-line).
68. Instructor, Short Course on Basic Impedance Spectroscopy, *The Electrochemical Society*, Vancouver, Canada, May 29, 2022. (delivered on-line).
67. Instructor, Short Course on Advanced Impedance Spectroscopy, *The Electrochemical Society*, Orlando, Florida, October 10–11, 2021. (delivered on-line).
66. Instructor, Electrochemical Measurements Workshop, (with D. Scherson and H. White), Case Western Reserve University, Cleveland, Ohio, August 18, 2021 (delivered on-line).
65. Instructor, Electrochemical Measurements Workshop, (with D. Scherson and H. White), Case Western Reserve University, Cleveland, Ohio, August, 2020 (delivered on-line).
64. Instructor, Short Course on Advanced Impedance Spectroscopy, *The Electrochemical Society*, Atlanta, Georgia, October 13, 2019.
63. Instructor, Electrochemical Measurements Workshop, (with D. Scherson and H. White), Case Western Reserve University, Cleveland, Ohio, August, 2019.
62. Instructor, Short Course on Advanced Impedance Spectroscopy, Pontificia Universidad Católica de Chile, Santiago, Chile, March 18-19, 2019.
61. Instructor, Short Course on Basic Impedance Spectroscopy, *The Electrochemical Society*, AiMES 2018, Cancun, Mexico, September 30, 2018.
60. Tutorial Instructor, Impedance Spectroscopy for the Diagnostic of Electrochemical Energy Storage/Conversion Systems, 69th Annual Meeting of the *International Society of Electrochemistry*, Bologna, Italy, September 2, 2018.
59. Instructor, Electrochemical Measurements Workshop, (with D. Scherson and H. White), Case Western Reserve University, Cleveland, Ohio, August, 2018.
58. Instructor, Short Course on Advanced Impedance Spectroscopy, *The Electrochemical Society*, Seattle, Washington, May 13, 2018.
57. Instructor, Electrochemical Impedance Spectroscopy to Probe Interfacial Reactions, 2018 Spring Meeting of the Materials Research Society, Phoenix, Arizona, April 2, 2018.
56. Instructor, Tutorial on Electrochemical Impedance Spectroscopy, ECS Calgary Student Chapter, University of Calgary, Calgary, Canada, October 31, 2017.
55. Instructor, Short Course on Basic Impedance Spectroscopy, *The Electrochemical Society*, National Harbor, Washington DC, October 1, 2017.
54. Instructor, Electrochemical Measurements Workshop, (with D. Scherson and H. White), Case Western Reserve University, Cleveland, Ohio, August, 2017.
53. Instructor, Short Course on Basic Impedance Spectroscopy, *The Electrochemical Society*, Honolulu, Hawaii, October 2, 2016.
52. Instructor, Electrochemical Measurements Workshop, (with D. Scherson and H. White), Case Western Reserve University, Cleveland, Ohio, August, 2016.
51. Instructor, Short Course on Advanced Impedance Spectroscopy, *The Electrochemical Society*, San Diego, California, May 29, 2016.
50. Instructor, Short Course on Impedance Spectroscopy, *The Electrochemical Society Twin Cities Section*, Minneapolis, Minnesota, April 29, 2016.

49. Instructor, Short Course on Advanced Impedance Spectroscopy, *The Electrochemical Society*, Phoenix, Arizona, October 11, 2015.
48. Short Course on Impedance Spectroscopy, Università degli Studi di Palermo, Palermo, Italy, May 4-6, 2015.
47. Instructor, Short Course on Basic Impedance Spectroscopy, *The Electrochemical Society*, Cancun, Mexico, October 5, 2014.
46. Instructor, Short Course on Advanced Impedance Spectroscopy, *The Electrochemical Society*, Orlando, Florida, May 11, 2014.
45. Instructor, Short Course on Advanced Impedance Spectroscopy, *The Electrochemical Society*, San Francisco, California, October 27, 2013.
44. Instructor, Electrochemical Measurements Workshop, (with D. Scherson and H. White), Case Western Reserve University, Cleveland, Ohio, August, 2013.
43. Instructor, Lectures on Advanced Impedance Spectroscopy, Waseda University, Tokyo, Japan, June 13-14, 2013.
42. Instructor, Short Course on Basic Impedance Spectroscopy, *The Electrochemical Society*, Toronto, Ontario, Canada, May 12, 2013.
41. Instructor, Short Course on Advanced Impedance Spectroscopy, *The Electrochemical Society*, Honolulu, Hawaii, October 7, 2012.
40. Instructor, Electrochemical Measurements Workshop, (with D. Scherson and H. White), Case Western Reserve University, Cleveland, Ohio, August, 2012.
39. External Evaluation Committee Member for the University of Yamanashi doctoral program "Green Energy Conversion Science and Technology," Kofu, Japan, 2012-2018.
38. Instructor, Short Course on Basic Impedance Spectroscopy, *The Electrochemical Society*, Seattle, Washington, May 6, 2012.
37. Instructor, Short Course on Advanced Impedance Spectroscopy, *The Electrochemical Society*, Boston, Massachusetts, October 9, 2011.
36. Instructor, Electrochemical Measurements Workshop, (with D. Scherson and H. White), Case Western Reserve University, Cleveland, Ohio, August, 2011.
35. Instructor, Short course on impedance spectroscopy, Rocky Mountain Section of the Materials Research Society, Boulder, Colorado, July 19-20, 2011.
34. Instructor, Short course on impedance spectroscopy, (with B. Tribollet, and V. Vivier), Institut Carnot CIRI-MAT, Toulouse, France, June 20-24, 2011.
33. Instructor, Short course on impedance spectroscopy, (with B. Tribollet, V. Vivier, and G. Galicia), Sociedad Mexicana de Electroquímica, Mexico City, Mexico, May 29-June 3, 2011.
32. Instructor, Short course on impedance spectroscopy, Gentex Corporation, Zeeland, Michigan, May 17-18, 2011.
31. Instructor, Short Course on Basic Impedance Spectroscopy, *The Electrochemical Society*, Montréal, Canada, May, 2011.
30. Instructor, Electrochemical Measurements Workshop, (with D. Scherson and H. White), Case Western Reserve University, Cleveland, Ohio, August, 2010.
29. Instructor, Short Course on Advanced Impedance Spectroscopy, *The Electrochemical Society*, Vancouver, Canada, May, 2010.
28. Instructor, Short Course on Electrochemical Impedance Analysis for Fuel Cells, *Electrochemical Society* sponsored short course at the Fuel Cell Seminar, Palm Springs, California, November, 2009.

27. Instructor, Short Course on Basic Impedance Spectroscopy, *The Electrochemical Society*, Vienna, Austria, October, 2009.
26. Instructor, Short Course on Electrochemical Impedance Analysis, Eastman Chemical, July, 2009.
25. Instructor, Short Course on Advanced Impedance Spectroscopy, *The Electrochemical Society*, San Francisco, California, May, 2009.
24. Instructor, Short Course on Basic Impedance Spectroscopy, *The Electrochemical Society*, Honolulu, Hawaii, October, 2008.
23. Instructor, Electrochemical Measurements Workshop, (with D. Scherson and H. White), Case Western Reserve University, Cleveland, Ohio, August, 2008.
22. Instructor, Short Course on Advanced Impedance Spectroscopy, *The Electrochemical Society*, Phoenix, Arizona, May, 2008.
21. Instructor, Short Course on Electrochemical Impedance Analysis, *Electrochemical Society* sponsored short course at the Fuel Cell Seminar, San Antonio, Texas, October, 2007.
20. Instructor, Short Course on Basic Impedance Spectroscopy, *The Electrochemical Society*, Washington DC, October, 2007.
19. Instructor, Electrochemical Measurements Workshop, (with D. Scherson and H. White), Case Western Reserve University, Cleveland, Ohio, August, 2007.
18. Instructor, Short Course on Advanced Impedance Spectroscopy, *The Electrochemical Society*, Chicago, Illinois, May, 2007.
17. Instructor, Short Course on Basic Impedance Analysis, *Electrochemical Society* sponsored short course at the Fuel Cell Seminar, Honolulu, Hawaii, November, 2006.
16. Instructor, Short Course on Basic Impedance Spectroscopy, *The Electrochemical Society*, Cancun, Mexico, October, 2006.
15. Impedance expert, Colorado School of Mines, 2005-2009
14. Instructor, Short Course on Advanced Impedance Spectroscopy, *The Electrochemical Society*, Denver Colorado, May, 2006.
13. Instructor, with Pankaj Agarwal, Short Course on Basic Impedance Spectroscopy, *The Electrochemical Society*, Los Angeles, October, 2005.
12. Instructor, Series of three Short Courses on Corrosion and on Electrochemical Impedance Spectroscopy, the San Francisco Bay Area Section of *The Electrochemical Society*, Pleasanton, California, May 2005.
11. Instructor, Short Course on Electrochemical Impedance Analysis, *The Electrochemical Society*, Quebec City, Canada, May 2005.
10. Instructor, Short Course on Electrochemical Impedance Analysis, *The Electrochemical Society*, Honolulu, Hawaii, October 2004.
9. Instructor, Short Course on Electrochemical Impedance Analysis, the Twins Cities Section of *The Electrochemical Society*, Minneapolis, Minnesota, April 22, 2004.
8. Instructor, Short Course on Electrochemical Impedance Analysis, *The Electrochemical Society*, Orlando, Florida, October 2003.
7. Instructor, Short Course on Electrochemical Impedance Analysis, *The Electrochemical Society*, Paris, France, May 2003.
6. Instructor, Short Course on Electrochemical Impedance Analysis, *The Electrochemical Society*, Philadelphia, Pennsylvania, May 2002.

5. Instructor, Short Course on Electrochemical Impedance Analysis, *The Electrochemical Society*, San Francisco, California, September 2001.
4. Member, Academic Review Panel, OLI Systems, 2000-2003.
3. Instructor, Short Course on Electrochemical Impedance Analysis, *The Electrochemical Society*, Toronto, Canada, May 2000.
2. Co-Instructor, Short Course on Electrochemical Impedance Analysis, Twin Cities Section of *The Electrochemical Society*, 1996.
1. Co-Instructor, Short Course on Electrochemical Impedance Spectroscopy, University of Virginia, Charlottesville, Virginia, 1990.

Consultation with Industry and Universities

28. Consultation on corrosion of copper in anoxic water, Svensk Kärnbränslehantering AB, Swedish Nuclear Fuel and Waste Management Company, Solna, Sweden, 2016–2017.
27. Consultation on applications of impedance spectroscopy, Medtronic Diabetes, Northridge, California, 2014–2017.
26. Consultation on applications of impedance spectroscopy, Medtronic, Minneapolis, Minnesota, 2014–2016.
25. Consultation on impedance-based corrosion sensing, Eastman Chemical, Kingsport, Tennessee 2013–2014.
24. External evaluation committee member for the University of Yamanashi doctoral program “Green Energy Conversion Science and Technology,” Kofu, Japan, 2012–2018.
23. Short course and consultation on impedance spectroscopy, General Motors Technical Center, Warren, Michigan.
22. Consultation on AC corrosion, BP America, 2012–2014.
21. Instructor, Short course on impedance spectroscopy, Gentex Corporation, Zeeland, Michigan, May 17–18, 2011.
20. Consultation on impedance spectroscopy, BD Technologies, Research Triangle Park, North Carolina, October, 2010–February 2012.
19. Consultation on impedance spectroscopy, Saint-Gobain High Performance Materials, Northboro, Massachusetts, August 2010.
18. Panelist, DOE site visit team, EPSCoR NM Implementation Program: Materials for Energy Conversion, University of New Mexico, Albuquerque, New Mexico, May, 2010.
17. Instructor, short course on electrochemical impedance analysis, Eastman Chemical, Kingsport, Tennessee, July, 2009.
16. Consultation on cathodic protection of off-shore structures, BP America, June, 2009.
15. Consultation on impedance spectroscopy and corrosion, ExxonMobil, Clinton, New Jersey, October, 2008.
14. Instructor, training sessions on fluid mechanics, BP Exploration Caspian Sea, Baku, Azerbaijan, March 2008.
13. Instructor, short course on electrochemical impedance analysis, Battery Company, September, 2007.
12. Instructor, training sessions on fluid mechanics, BP Exploration Caspian Sea, Baku, Azerbaijan, February 2007.
11. Expert witness, electronic chip packaging corrosion failure litigation, Palo Alto, California, 2004–2005.
10. Instructor, short course on electrochemical impedance analysis, Roche Diagnostics, Indianapolis, Indiana, August 2003.
9. Instructor, training sessions on corrosion, BP Exploration Caspian Sea, Baku, Azerbaijan, December 2003.
8. Instructor, training sessions on transport processes and unit operations, BP Exploration Caspian Sea, Baku, Azerbaijan, July 2003, December 2003, March 2004, August 2004, December 2004, March 2005.

7. Member, academic review panel, OLI Systems, Parsippany, New Jersey, 2000–2003.
6. Instructor, corrosion tutorial, Laque Corrosion Services, Wrightsville Beach, NC, 1997.
5. Impedance analysis for therapeutic drug delivery systems, ALZA Corporation, Palo Alto, California, 1992–1998.
4. Corrosion studies, ARCO Oil and Gas Company, Plano, Texas, 1990–1996.
3. Impedance analysis, Gates Energy Products, Gainesville, Florida, 1990–1993.
2. Process simulations, Quadrex Transform Service Company, Gainesville, Florida, 1990.
1. Instructor, corrosion tutorial, Rohm and Haas, Spring House, Pennsylvania, 1990.