

Hang Ren

Department of Chemistry, The University of Texas
102 East 24th Street, Austin, TX, USA 78712
512-471-1593, hren@utexas.edu
<http://ren.cm.utexas.edu/>

EDUCATION

B.Sc. hon. (Chemistry), Sun Yat-Sen University, Guangzhou, China 2011
Advisor: Dr. Cheng-Yong Su
Ph.D. (Chemistry), University of Michigan, Ann Arbor, MI 2016
Advisor: Dr. Mark E. Meyerhoff

PROFESSIONAL APPOINTMENTS

Assistant Professor 2021 –present
Department of Chemistry, University of Texas at Austin
Assistant Professor 2018 – 2021
Department of Chemistry and Biochemistry, Miami University
Postdoctoral Associate 2016 – 2018
Department of Chemistry, University of Utah. Advisor: Dr. Henry S. White

HONORS & AWARDS

2023 Sloan Research Fellowship
2023 NSF CAREER Award
2022 NIH Maximizing Investigators' Research Award (MIRA)
2022 DARPA Director's Award
2022 Scialog Fellow: Negative Emissions Science (NES). Research Corporation for Science Advancement (RCSA).
2022 UT Austin CNS Catalyst Award
2020 DARPA Young Faculty Award
2020 ACS PRF Doctoral New Investigator Award
2019 MUACC Travel Award
2019 Dean's Summer Research Award, Miami University
2018 James W. and Carolyn L. Taylor MUACC Travel Award
2016 Outstanding Reviewer for Sensors & Actuators: B.
2015 George Ashworth Analytical Chemistry Fellowship
2014 Baxter Young Investigator Awards
2013 Rackham Travel Grant Awards
2010 First prize in National Undergraduate Chemistry Laboratory Tournament, China
2010 National Scholarship (top 0.2% in China)
2007-09 First-Class Scholarship, Sun Yat-Sen University

RESEARCH INTEREST

Nanoelectrochemistry, Single entity electrochemistry. Scanning electrochemical probe microscopy. Electrocatalysis. Electrochemical sensors. Electrochemical nucleation and phase transition.

PUBLICATIONS ([Google Scholar](#))

Independent work:

21. Lee, H.; Matthews, K. C.; Zhan, X.; Warner, J. H.; Ren, H. *; Precision Synthesis of Bimetallic Nanoparticles via Nanofluidics in Nanopipettes, *ACS Nano*, **2023**, *accepted*. DOI: [10.1021/acsnano.3c06011](https://doi.org/10.1021/acsnano.3c06011)
20. Mondaca-Medina, E.; García Carrillo, R.; Lee, H.; Wang, Y.; Zhang, He; Ren, H. *; Nanoelectrochemistry in Electrochemical Phase Transition Reactions, *Chem. Sci.*, **2023**, *14*, 7611-7619. DOI: [10.1039/D3SC01857A](https://doi.org/10.1039/D3SC01857A)
19. Al-Zubeidi, A.; Wang Y.; Lin, J.; Flatebo, C.; Landes, C.; Ren, H. *; Link, S.*; d-band Holes React at the Tips of Gold Nanorods, *J. Phys. Chem. Lett.*, **2023**, *14*, 23, 5297–5304. DOI: [10.1021/acs.jpcllett.3c00997](https://doi.org/10.1021/acs.jpcllett.3c00997)
18. Wang, Y.; Li, M.; Ren, H.*, Interfacial Structure and Energy Determine the Heterogeneity in the Electrochemical Metal Dissolution Activity at Grain Boundary, *Chem. Mater.*, **2023**, *35*, (11), 4243–4249, DOI: [10.1021/acs.chemmater.3c00220](https://doi.org/10.1021/acs.chemmater.3c00220) (Front Cover)
17. Ryu, C.H.; Lee, H.; Lee, H.; Ren, H.*, Learning from the Heterogeneity at Electrochemical Interfaces, *J. Phys. Chem. Lett.*, **2022**, *13* (33), 7838–7846, DOI: [10.1021/acs.jpcllett.2c02009](https://doi.org/10.1021/acs.jpcllett.2c02009). (Perspective)
16. Li, M.; Wang, Y.; Gordon, E., Ren, H.*, Mapping the Kinetics of Hydrogen Evolution Reaction on Ag via Pseudo-Single-Crystal Scanning Electrochemical Cell Microscopy, *Chinese J. Catal.* **2022**, *43* (12), 3170-3176. (invited) DOI: [10.1016/S1872-2067\(22\)64158-5](https://doi.org/10.1016/S1872-2067(22)64158-5)
15. Li, M.; Wang, Y.; Blount, B.; Gordon, E.; Muñoz-Castañeda, J. A.; Ye, Z.; Ren, H., Stochastic Local Breakdown of Oxide Film on Ni from Identical-Location Imaging: One Single Site at a Time. *Nano Lett.* **2022**, *22* (15), 6313–6319. DOI: [10.1021/acs.nanolett.2c02018](https://doi.org/10.1021/acs.nanolett.2c02018)
14. Wang, Y.; Li, M.; Gordon, E.; Ye, Z.; Ren, H.*, Nanoscale Colocalized Electrochemical and Structural Mapping of Metal Dissolution Reaction, *Anal. Chem.* **2022**, *94* (25), 9058–9064. DOI: [10.1021/acs.analchem.2c01283](https://doi.org/10.1021/acs.analchem.2c01283)
13. Wang, Y.; Li, M.; Ren, H.*, Voltammetric Mapping of Hydrogen Evolution Reaction on Pt Locally via Scanning Electrochemical Cell Microscopy. *ACS Measurement Science Au*, **2022**, *2* (4), 304–308. DOI: [10.1021/acsmeasuresciau.2c00012](https://doi.org/10.1021/acsmeasuresciau.2c00012)
12. Li, M.; Ye, K.-H.; Qiu, W.; Wang, Y.; Ren, H.*, Heterogeneity between and within Single Hematite Nanorods as Electrocatalysts for Oxygen Evolution Reaction. *J. Am. Chem. Soc.*, **2022**, *144* (12) 5247–5252 DOI: [10.1021/jacs.2c00506](https://doi.org/10.1021/jacs.2c00506)
11. Blount, B.; Juarez, G.; Wang, Y.; Ren, H.*, iR Drop in Scanning Electrochemical Cell Microscopy. *Faraday Discuss.*, **2022**, *233*, 149 - 162. DOI: [10.1039/D1FD00046B](https://doi.org/10.1039/D1FD00046B)
10. Zheng, H.; Li, M.; Chen, J.; Quan, A.; Ye, K.; Ren, H.; Hu, S.; Cao, Y., Strain tuned efficient heterostructure photoelectrodes. *Chin. Chem. Lett.* **2022**, *33* (3), 1450-1454. DOI: [10.1016/j.cclet.2021.08.062](https://doi.org/10.1016/j.cclet.2021.08.062)
9. Ren, H.*; Edwards, M. A. *, Stochasticity in Single-Entity Electrochemistry. *Curr. Opin. Electrochem.* **2021**, *25*, 100632. DOI: [10.1016/j.coelec.2020.08.014](https://doi.org/10.1016/j.coelec.2020.08.014)
8. Liu, Y.; Jin, C.; Liu, Y.; Ruiz, K. H.; Ren, H.; Fan, Y.; White, H. S.; Chen, Q., Visualization and Quantification of Electrochemical H₂ Bubble Nucleation at Pt, Au, and MoS₂ Substrates. *ACS Sensors* **2021**, *6* (2), 355–363. DOI: [10.1021/acssensors.0c00913](https://doi.org/10.1021/acssensors.0c00913)
7. Allegrezza, M. L.; Watuthanthrige, N. D. A.; Wang, Y.; Garcia, G. A.; Ren, H.; Konkolewicz, D.*; Substituent Effects in Iniferter Photo-Polymerization. Can Bond Homolysis Be Enhanced by Electronics? *Polymer Chemistry*, **2020**, *11*, 6129-6133. DOI: [10.1039/D0PY01086C](https://doi.org/10.1039/D0PY01086C)
6. Blount, B.; Kilner, K.; Hu, H.; Gohmann, D.; Gordon, E.; Wang, Y.; Ren, H.*, Electrochemically Induced Nucleation of Nanoscopic Ionic Solid. *J. Phys. Chem. C* **2020**, *124* (31), 17413–17417. DOI: [10.1021/acs.jpcc.0c05009](https://doi.org/10.1021/acs.jpcc.0c05009)
5. Ying, Y.-L.; Wang, J.; Leach, A. R.; Jiang, Y.; Gao, R.; Xu, C.; Edwards, M.; Pendergast, A. D.; Ren, H.; Weatherly Connor, K. T.; Wang, W.; Actis, P.; Mao, L.; White, H. S.; Long, Y.-T.,

Single-Entity Electrochemistry at Confined Sensing Interfaces. *SCIENCE CHINA Chemistry* **2020**, 63 (5), 1674-7291. DOI: [10.1007/s11426-020-9716-2](https://doi.org/10.1007/s11426-020-9716-2)

4. Wang, Y.; Gordon, E.; Ren, H.*, Mapping the Potential of Zero Charge and Electrocatalytic Activity of Metal–Electrolyte Interface via a Grain-by-Grain Approach. *Anal. Chem.* **2020**, 92 (3), 2859-2865. DOI: [10.1021/acs.analchem.9b05502](https://doi.org/10.1021/acs.analchem.9b05502)
3. Wang, Y.; Gordon, E.; Ren, H.*, Mapping the Nucleation of H₂ Bubble on a Polycrystalline Pt via Scanning Electrochemical Cell Microscopy. *J. Phys. Chem. Lett.* **2019**, 10 (14) 3887-3892. DOI: [10.1021/acs.jpcclett.9b01414](https://doi.org/10.1021/acs.jpcclett.9b01414)
2. Edwards, M. A. *; White, H. S.; Ren, H.*, Voltammetric Determination of the Stochastic Formation Rate and Geometry of Individual H₂, N₂, and O₂ Bubble Nuclei. *ACS Nano* **2019**, 13 (6), 6330-6340. DOI: [10.1021/acsnano.9b01015](https://doi.org/10.1021/acsnano.9b01015)
1. Zhao, X.; Ren, H.; Luo, L., Gas Bubbles in Electrochemical Gas Evolution Reactions. *Langmuir* **2019** 35 (16), 5392-5408. DOI: [10.1021/acs.langmuir.9b00119](https://doi.org/10.1021/acs.langmuir.9b00119)

PhD and postdoc work:

23. Robinson, D. A.; Edwards, M. A.; Liu, Y.; Ren, H.; White, H. S., Effect of Viscosity on the Collision Dynamics and Oxidation of Individual Ag Nanoparticles. *J. Phys. Chem. C* **2020**, 124 (16), 9068–9076. DOI: 10.1021/acs.jpcc.0c01447
22. Qiu, Y.; Ren, H.; Edwards, M. A.; Gao, R.; Barman, K.; White, H. S., Electrochemical Generation of Individual Nanobubbles Comprising H₂, D₂, and HD. *Langmuir* **2020**, 36 (22), 6073–6078. DOI: 10.1021/acs.langmuir.0c00232
21. Ren, H.; Edwards, M. A.; Wang, Y.; White, H. S. *, Electrochemically Controlled Nucleation of Single CO₂ Nanobubbles via Formate Oxidation at Pt Nanoelectrodes. *J. Phys. Chem. Lett.* **2020**, 11 (4), 1291-1296. DOI: 10.1021/acs.jpcclett.9b03898
20. Zhang, Y.; Robinson, D.; McKelvey, K.; Ren, H.; White, H. S.; Edwards, M. A. A High-Pressure System for Studying Oxygen Reduction During Pt Nanoparticle Collisions. *J. Electrochem. Soc.* **2020**, 167, 166507 DOI: 10.1149/1945-7111/abcde2
19. Terry Weatherly, C. K.; Ren, H.; Edwards, M. A.; Wang, L.; White, H. S., Coupled Electron- and Phase-Transfer Reactions at a Three-Phase Interface. *J. Am. Chem. Soc.* **2019**, 141 (45), 18091-18098. DOI: 10.1021/jacs.9b07283
18. Hunt, A. P.; Batka, A. E.; Hosseinzadeh, M.; Gregory, J. D.; Haque, H. K.; Ren, H.; Meyerhoff, M. E.; Lehnert, N., "Nitric Oxide Generation on Demand for Biomedical Applications via Electrocatalytic Nitrite Reduction by Copper BMPA- and BEPA-Carboxylate Complexes." *ACS Catal.* **2019**, 9 (9), 7746-7758. DOI: 10.1021/acscatal.9b01520
17. McCabe, M. M.; Hala, P.; Rojas-Pena, A.; Lautner-Csorba, O.; Major, T. C.; Ren, H.; Bartlett, R. H.; Brisbois, E. J.; Meyerhoff, M. E., "Enhancing Analytical Accuracy of Intravascular Electrochemical Oxygen Sensors via Nitric Oxide Release Using S-Nitroso-N-Acetyl-Penicillamine (SNAP) Impregnated Catheter Tubing." *Talanta* **2019**, 205, 12077. DOI: 10.1016/j.talanta.2019.06.077
16. Tan, C.; Fleming, A. M.; Ren, H.; Burrows, C. J.; White, H. S., "γ-Hemolysin Nanopore is Sensitive to Guanine-to-Inosine Substitutions in Double-Stranded DNA at the Single-Molecule Level." *J. Am. Chem. Soc.* **2018** 140 (43), 14224–14234 DOI: 10.1021/jacs.8b08153
15. Edwards, M. A.; Robinson, D. A.; Ren, H.; Cheyne, C. G.; Tan, C. S.; White, H. S. "Nanoscale Electrochemical Kinetics & Dynamics: The Challenges and Opportunities of Single-Entity Measurements." *Faraday Discuss.* **2018** 210 (0), 9-28. DOI: 10.1039/C8FD00134K
14. Robinson, D. A.; Edwards, M. A.; Ren, H.; White, H. S., "Effects of Instrumental Filters on Electrochemical Measurement of Single-Nanoparticle Collision Dynamics." *ChemElectroChem* **2018**, 5, 3059. DOI: 10.1002/celec.201800696

13. Soto, A.; German, S. R.; Edwards, M. A.; Ren, H.; White, H. S., "The Nucleation Rate of Single O₂ Nanobubbles at Pt Nanoelectrodes." *Langmuir* **2018**, *34* (25), 7309-7318. DOI: 10.1021/acs.langmuir.8b01372
12. Ren, H.; Cheyne, C.; Fleming, A. M.; Burrows, C. J.; White, H. S., "Titration of a Single Captured Molecule in a Protein Nanoreactor Reveals Protonation/Deprotonation Mechanism of a C:C Mismatch in Nano-Confinement." *J. Am. Chem. Soc.* **2018**, *140* (15), 5153–5160. DOI: 10.1021/jacs.8b00593
11. Zeng, T.; Fleming, A. M.; Ding, Y.; Ren, H.; White, H. S.; Burrows, C. J., "Nanopore Analysis of the 5-Guanidinohydantoin to Iminoallantoin Isomerization in Duplex DNA" *J. Org. Chem* **2018**, *83* (7), 3973-3978. DOI: 10.1021/acs.joc.8b00317
10. German, S. R.; Edwards M. A.; Ren, H.; White, H. S., "Critical Nuclei Size, Rate, and Activation Energy of H₂ Gas Nucleation." *J. Am. Chem. Soc.* **2018** *140* (11), 4047–4053. DOI: 10.1021/jacs.7b13457
9. Ren, H.; German, S. R.; Edwards, M. A.; Chen, Q.; White, H. S., "Electrochemical Generation of Individual O₂ Nanobubbles via H₂O₂ Oxidation." *J. Phys. Chem. Lett.* **2017**, *8*(11), 2450–2454. DOI: 10.1021/acs.jpcllett.7b00882
8. Yu, Q.; Zajda, J.; Brisbois, E. J.; Ren, H., Toomasian, J.; Rojas-Pena, A.; Bartlett, R. H.; Hunt, A.; Lehnert, N.; Meyerhoff, M. E. et. al., "Portable Nitric Oxide (NO) Generator Based on Electrochemical Reduction of Nitrite for Potential Applications in Inhaled NO Therapy and Cardiopulmonary Bypass Surgery." *Mol. Pharmaceutics* **2017**, *14* (11), 3762–3771. DOI: 10.1021/acs.molpharmaceut.7b00514
7. Ren, H.; Bull, J. L.; Meyerhoff, M. E., "Transport of Nitric Oxide (NO) in Various Biomedical Grade Polyurethanes: Measurements and Modeling Impact on NO Release Properties of Medical Devices." *ACS Biomater. Sci. Eng.* **2016**, *2* (9), 1483–1492. DOI: 10.1021/acs.jpcllett.7b00882
6. Ren, H.; Wu, J.; Colletta, A.; Meyerhoff, M. E.; Xi, C., "Efficient Eradication of Mature *Pseudomonas Aeruginosa* Biofilm via Controlled Delivery of Nitric Oxide Combined with Antimicrobial Peptide and Antibiotics. *Frontiers in Microbiology*, **2016**, *7* (1260). DOI: 10.3389/fmicb.2016.01260
5. Lee, W. §; Ren, H.§; Wu, J; Xi, C.; Meyerhoff, M. E., "Electrochemically Modulated Nitric Oxide Release from Flexible Silicone Rubber Patch: Antimicrobial Activity for Potential Wound Healing Applications." *ACS Biomater. Sci. Eng.* **2016**, *2* (9), 1432–1435.
4. Ren, H.; Coughlin, M. A.; Major, T. C.; Aiello, S.; Rojas, A. P.; Bartlett, R. H.; Meyerhoff, M. E. "Improved *In Vivo* Performance of Amperometric Oxygen (PO₂) Sensing Catheters via Electrochemical Nitric Oxide Generation/Release." *Anal. Chem.* **2015**, *87* (16), 8867–8872. DOI: 10.1021/acs.analchem.5b01590
3. Zheng, Z.; Ren, H.; Meyerhoff, M. E., "Highly Sensitive Amperometric Pt-Nafion Gas Phase Nitric Oxide (NO) Sensors: Performance and Application in Characterizing NO-Releasing Biomaterials." *Anal. Chim. Acta* **2015**, *887* (16), 186–191. DOI: 10.1016/j.aca.2015.06.016
2. Ren, H.; Colletta, A.; Koley, D.; Wu, J.; Xi, C.; Major, T.; Bartlett, R. H; Meyerhoff, M. E., "Thromboresistant/Anti-Biofilm Catheters via Electrochemically Modulated Nitric Oxide Release." *Bioelectrochemistry* **2015**, *104*, 10–16. DOI: 10.1016/j.bioelechem.2014.12.003
1. Ren, H.; Wu, J.; Xi, C.; Lehnert, N.; Major, T.; Bartlett, R. H.; Meyerhoff, M. E., "Electrochemically Modulated Nitric Oxide (NO) Releasing Biomedical Devices via Copper(II)-Tri(2-pyridylmethyl)amine Mediated Reduction of Nitrite." *ACS Appl. Mater. Interfaces* **2014**, *6* (6), 3779–3783. DOI: 10.1021/am406066a

PATENT

1. "Gas Delivery Devices", US Patent, (US2017021655)
2. "Nitric Oxide Delivery Devices", US Patent, (US 20140294672)
3. "Nitric Oxide Generation Formulations and Kits", US Patent, (US20190054038A1)

ORAL AND POSTER PRESENTATIONS

1. Ren, H., Ryu, C.H., 11th SECM workshop, Montreal, Quebec, Canada, Sept 25 -27, 2023
2. Ren, H., Wang, Y., Li, M., Understanding and Controlling Electro-dissolution and Electrodeposition using Nanopipettes, ACS National Meeting, San Francisco, Aug 13, 2023.
3. Ren, H., Learning from the heterogeneity at the electrochemical interfaces, ACS National Meeting, Indianapolis, March 29, 2023. (Invited)
4. Ren, H., Nanoelectrochemistry on the Initiation of Metal Dissolution Reaction, Pittcon, Philadelphia, PA, March 20, 2023.
5. Ren, H., Revealing the Heterogeneity in Metal Dissolution Reaction via Colocalized Electrochemical and Structural Imaging, Austin Community College, Austin, TX, Feb 16, 2023.
6. Ren, H., Wang, Y., Blount, B., Li, M., Revealing the Heterogeneity in Metal Dissolution Reaction via Colocalized Electrochemical and Structural Imaging, Eastern Analytical Symposium, Plainsboro, NJ, Nov 14, 2022.
7. Ren, H., Nanoscale Electrochemical Mapping, Scialog® – Negative Emissions Science, Tucson, Arizona, Nov 9, 2022.
8. Ren, H., Wang, Y., Blount, B., Nanoelectrochemistry of Metal Dissolution and Corrosion Initiation, Gordon Research Conference on Electrochemistry, Ventura, CA, Poster, 09/11/2022 - 09/16/2022
9. Ren, H., Nanoelectrochemistry on the Initiation of Metal Dissolution Reaction, ACS National Meeting, Chicago, Aug 22, 2022 (Invited talk).
10. Ren, H., Nanoelectrochemistry on the Initiation of Metal Dissolution Reaction, ACS National Meeting, San Diego, March 21, 2022 (Invited talk).
11. Ren, H., Ren, H., Imaging the Heterogeneity at Complex Electrochemical Interfaces, ACS National Meeting, San Diego, CA March 20, 2022
12. Ren, H., “Stochasticity and Heterogeneity at Nanoelectrochemical Interfaces”, Nanopore Weekly Meeting Jan 24, 2022 (virtual)
13. Ren, H., “Heterogeneity at the electrode/electrolyte interface”, Invited, University of Akron, September 28, 2021 (cancelled).
14. Ren, H., Wang, Y., “Heterogeneity at the electrode/electrolyte interface”, Invited IBAC seminar, University of Utah, Spring 2021 (virtual). June 18, 2021
15. Ren, H., Wang, Y., and Gordon, E., “Mapping the local potential of zero charge at the electrode/electrolyte interface”, ACS Spring 2021 (virtual)
16. Ren, H., Wang, Y., and Gordon, E., “Mapping the Heterogeneity at the Electrode/Electrolyte Nano-Interfaces” Pittcon 2021 (Invited talk).
17. Ren, H., “Nanoscale electrochemical mapping of the electrode/electrolyte interface”, University of Massachusetts Lowell, March 17, 2021. (virtual)
18. Ren, H., “Nanoscale revelation of corrosion initiation”, DARPA Young Faculty Award Event, Poster, Feb 4, 2021.
19. Ren, H., “Nanoscale Electrochemical Mapping of the Electrode/Electrolyte Interface”, University of Louisville, Jan 29, 2021.
20. Ren, H., “Nanoscale revelation of corrosion initiation”, DARPA Functional Materials Review Meeting, Jan 21, 2021.
21. Ren, H., “Stochasticity and Heterogeneity in Nanoscale Electrochemistry.”, UT Austin, Dec 8, 2020.
22. Ren, H., “Mapping the Potential of Zero Charge Using Scanning Electrochemical Cell Microscopy”, NanoScientific Symposium, October 2020 (Remote Oral Presentation).
23. Ren, H., “Electrochemical Nucleation of Single Entities”, ACS National Meeting, August 2020. (Remote Oral Presentation)

24. Ren, H. "Functional Nanoscale Mapping using Scanning Electrochemical Probe Technique", Gordon Research Conference Electrochemistry, Ventura, CA, January 2020. (Poster and Oral Presentation)
25. Ren, H. "Functional Nanoscale Mapping using Scanning Electrochemical Probe Technique", MUACC 2019, Indianapolis, IN, Nov 2019 (Oral Presentation)
26. Ren, H. "Functional Nanoscale Mapping using Scanning Electrochemical Probe Technique", Northern Kentucky University, Oct 16, 2019 (Oral Presentation, Invited)
27. Ren, H. "Functional Nanoscale Mapping using Scanning Electrochemical Probe Technique", Ball State University, Oct 4, 2019 (Oral Presentation, Invited)
28. Ren, H. "Functional Imaging via Scanning Electrochemical Probe Microscopy". Potter's Lodge Meeting, 2019, Minnow Creek Conference Center, NY, Sept 5, 2019. (Oral Presentation, Invited)
29. Ren, H. "Single Entity Electrochemistry in the Noise". Pittcon 2019, Philadelphia, PA, Mar 21, 2019. (Oral Presentation)
30. Ren, H. "Nanopore Electrode for Single Entity Electrochemistry". MUACC 2018, East Lansing, MI, Nov 2018. (Oral Presentation)
31. **Ren, H;** Edwards, M. A.; White, H. S. "Electrochemistry of Individual Nanobubbles", 256th ACS National Meeting in Boston, MA, August 2018. (Oral Presentation, Invited)
32. **Ren, H;** Edwards, M. A.; White, H. S. "Electrochemistry at the Three-Phase Interface", 256th ACS National Meeting in Boston, MA, August 2018. (Oral Presentation)
33. **Ren, H;** Edwards, M. A.; White, H. S. "Nanoscale Electrochemistry at the Three-Phase Interface" Electrochemistry at Nano-interfaces: Faraday Discussion, Bath, UK, June 2018. (Poster Presentation)
34. **Ren, H;** White, H. S. "Electrochemistry of Nanobubbles" Gordon Research Conference, Electrochemistry, Ventura, CA, January 2018. (Oral and Poster Presentations)
35. **Ren, H;** White, H. S. "α-Hemolysin as a Nanoreactor for Hours-Long Monitoring of Single Molecule Reactions", 254th ACS National Meeting in Washington, DC, August 2017. (Oral Presentation)
36. Ren, H.; Meyerhoff, M. E. "Electrochemically Modulated Delivery of Nitric Oxide (NO) for Biomedical Applications: From Improved Intravascular Catheters and Chemical Sensors to Inhaled NO Therapy", CERM 2016, 47th Central Regional Meeting of the ACS, Covington, KY, May 2016. (Oral Presentation, Invited)
37. Ren, H.; Meyerhoff, M. E. "Electrochemical Nitric Oxide from Aqueous Nitrite via Copper(II)-Ligand Catalysts: From Antibiofilm Studies to NO Inhalation Therapy", Gordon Research Conference, Electrochemistry, Ventura, CA, January 2016. (Poster Presentation)
38. Ren, H.; Meyerhoff, M. E. "Anti-biofilm Studies Using Catheters with Controllable Electrochemical Nitric Oxide Release", Pacificchem, Honolulu, HI, December 2015. (Poster Presentation)
39. Ren, H.; Meyerhoff, M. E. "Improving Biocompatibility of Intravascular Oxygen Sensing Catheters via Electrochemically Modulated Nitric Oxide Release", PittCon, New Orleans, LA, March 2015. (Oral Presentation, Invited)
40. Ren, H.; Wu, J.; Xi, C.; Lehnert, N.; Major, T.; Bartlett, R. H.; Meyerhoff, M. E. "Electrochemically Modulated Nitric Oxide (NO) Releasing Biomedical Devices via Copper(II)-Tri(2-pyridylmethyl)amine Mediated Reduction of Nitrite." BMES Annual Meeting 2014, San Antonio, TX, October 2014. (Oral Presentation)
41. Ren, H.; Meyerhoff, M. E. "Thromboresistant/Anti-Biofilm Catheters via Electrochemically Modulated Nitric Oxide Release" Baxter Young Investigator Award, September 2014. (Oral Presentation)
42. Ren, H.; Wu, J.; Xi, C.; Meyerhoff, M. E. "Electrochemically Modulated Nitric Oxide (NO) Releasing Biomedical Devices with Improved Biocompatibility." Gordon Research Symposium, Bioinspired Materials, June 2014 (Poster Presentation)

GRANTS AND CONTRACTS

Current Support:

1. Sloan Research Fellowship
Total Award: \$75,000. Role: Sole PI Period: 09/15/23-09/14/25
2. Welch Research Grant, "Single-Entity Electrocatalysis at Structurally Well-Defined Nanoparticles." F-2158-20230405
Total Award: \$300,000. Role: Sole PI Period: 06/01/23-05/31/26
3. NSF CAREER Award, "CAREER: Developing Nanoscale Scanning Electrochemical Probe Systems to Reveal the Electrical Double Layer at Electrocatalytic Interfaces." CHE-2240113
Total Award: \$625,000. Role: Sole PI Period: 03/01/23-02/28/28
4. SciaLog: Negative Emission Science (NES) Award, "Robust scalable multifunctional electrode for CO₂ reduction and C-C coupling in seawater." #29149
Total Award: \$55,000. Role: PI Period: 02/01/23-01/31/24
5. NIH Maximizing Investigators' Research Award (MIRA), "Spatially and temporarily resolved precision delivery for quantitative biological studies." 1R35GM147172-01
Total Award: \$1,914,330 Role: Sole PI Period: 08/16/22-07/31/27

Completed Project:

External

1. DARPA Director's Award, "Nanoscale revelation of the nucleation of corrosion." W911NF-20-1-0304
Total Award: \$215,555 Role: Sole PI Period: 08/01/22-07/31/23
2. DARPA Young Faculty Award (YFA), "Nanoscale revelation of the nucleation of corrosion." W911NF-20-1-0304
Total Award: \$930,087 Role: Sole PI Period: 08/01/20-07/31/22
3. ACS Petroleum Research Fund, "Mapping the Kinetics for Solid Nucleation via Nanoscale Electrochemical Imaging." PRF# 61155-DNI5
Total Award: \$110,000 Role: Sole PI Period: 08/01/20-07/31/23

Internal

1. UT Austin CNS Catalyst Grant, College of Natural Sciences.
Total Award: \$50,000 Role: PI Period: 06/01/22-05/31/23
2. Miami University Tech Fee Award, "Low Noise Electrochemical Devices for Single Molecule Measurement."
Total Award: \$31,872 Role: PI Period: 01/01/19-08/31/19
3. Miami University Tech Fee Award. "Trace Metals Analysis using Digital Microscopes."
Total Award: \$4,782 Role: co-PI Period: 01/01/19-08/31/19
4. Miami University CAS Summer Research Grant
Total Award: \$5,000 Role: PI Period: 5/30/19-8/20/19
5. Miami University CFR Faculty Research Grants, "Electrochemically Controlled Synthesis of Catalytic Metal Particles"
Total Award: \$29,000 Role: PI Period: 1/1/19-12/31/20

COURSES TAUGHT

Title	Enrollment	Credit	Terms
UT Austin			
CH 381 M Adv. Anal. Chem.	12	3	2022 Fall
CH 456 Analytical Chemistry	23	3	2023 Spring

CH 381 M Adv. Anal. Chem.	17	3	2022 Fall
CH 381 M Adv. Anal. Chem.	17	3	2021 Fall
Miami University			
CHM 460/760A Electrochemistry	15	3	2021 Spring
CHM 454/554 Instrumental Analysis	18	3	2020 Fall
CHM 780 Analytical, Inorg. and Phys. Chem. Seminar	10	3	2020 Fall
CHM 142 General Chemistry II	68	3	2020 Spring
CHM 780 Analytical, Inorg. and Phys. Chem. Seminar	14	3	2019 Fall
CHM 454/554 Instrumental Analysis	18	3	2019 Fall
CHM 460/760A Electrochemistry: Energy	20	3	2019 Spring
CHM 454/554 Instrumental Analysis	17	3	2018 Fall

INNOVATIONS IN TEACHING

Qualitative Analysis in Gen Chem Lab through Digital Microscopy Detection of Precipitates (General Chemistry Lab)	2019
Single Entity Measurement for Special Project in Upper-Level Analytical Chemistry Lab	2019

PROFESSIONAL DEVELOPMENT

New Faculty Grant Planning and Support Program (GPS) Phase I and II	2019
Cottrell Foundation New Faculty Workshop, Washington D.C.	2018
Certified Mentor, Undergrad Research Development Program, University of Utah	2017

MENTORING

Postdoc

Heekwon Lee (2022-present), Tamilselvi Gurusamy (2022-present), He Zhang (2022-present), Md Maksudur Rahman (2022-present).

PhD Students

Yufei Wang (2019-present), Elias Mondaca (2022-present), Hyein Lee (2022-present), Changhyun Ryu (2022-present), Debasree Mandal (2022-present), Roberto Garcia-Carrillo (2023-present), Yang Tao (2023-present), Sam Wenzel (2023-present).

Previous Postdoc

Mingyang Li (2019-2022)

Previous Graduate students

Brandon Blount (2019-2022), Drew Gohmann (2019-2021), Emma Gordon (2018-2021), Lei Pan (2019-2023)

Previous Undergraduate

Jesus A Munoz-Castaneda (2021-2022), Nick Mazurowski (2022 REU), Jack Seaquist (2022 CREATE summer), Samantha (Sammy) E Koplos (2021-2022), Hannah Newell (2019-2021), Huy Bai (2019-2020), Hao Hu (2019-2020), Echo Devries (2019 REU, *Chemistry PhD at Iowa State Univ.*), Keith Kilner (2018-2019 transferred to *Northwestern Univ.*), Yitong Wang (2018-2019, *Chemistry PhD at Carnegie Mellon Univ.*)

Doctoral Thesis Committee

Raul Antonio Marquez Montes, Jason A Weeks, Xuening Zhou, Kenta Kawashima, Austin G Paul-Orecchio, Caitlin M Benway-Trejo

MEMBERSHIP

American Chemical Society (ACS)	2014 - present
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Electrochemical Society (ECS)	2017 - present
Society for Electroanalytical Chemistry (SEAC)	2018 - present

SERVICE

Profession

Advisory Board, the Society of Electroanalytical Chemistry	2022-present
Member-at-large, the Physical and Analytical Electrochemistry Division, Electrochemical Society	2022-present
Symposium Chair of ACS National Meeting: "Advances in Electrochemistry"	2020-present
Manuscript reviewer (since 2016): Journal of the American Chemical Society, Nature Communication, ACS Nano, Nano Letters, Chemical Science, Chemical Communication, The Journal of Physical Chemistry Letter, Journal of Physical Chemistry C, Analytical Chemistry, ACS Sensors, Physical Chemistry Chemical Physics, Journal of Materials Chemistry B, Sensors & Actuators B, Applied Surface Science, Analyst, Analytical Methods, Natural Sciences.	2016-present
Proposal Reviewer DOE, ACS PRF, DOD-ARO.	2020-present

University

Advisory Board for the Center for Electrochemistry	2022-present
Louis Stokes Alliances for Minority Participation (LSAMP) advisory Committee	2020-2021
Instrumentation Laboratory Advisory Committee	2019-2021
Department Chair Search Committee	2020

Department

Co-Chair of Graduate Admission Committee	2022-present
DEI Task Force Committee	2022-2023
Department Safety Committee	2022
Qualifying Exam/Graduate Program Committee	2021-2022
Equipment & Supplies Committee (Miami)	2020-2021
Graduate Student Admission Committee (Miami)	2018-2021
Graduate Student Recruitment Committee (Miami)	2018-2021
Faculty Search Committee (Miami)	2019-2020
General Chemistry Committee (Miami)	2020
Department Chair Search Committee	2020

ORGANIZATIONS AND ACTIVITIES

- Volunteer for the Biomedical Engineering Society Annual Meeting, San Antonio, TX, 2014
- Volunteer for the 16th Asian Games, Guangzhou, China, 2010

LANGUAGES

English, Chinese, and Teochew.