Seyyedamirhossein (Amir) Hosseini

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EDUCATION & TRAINING

2020 – 2023 **University of Utah**
NSF Postdoctoral Researcher Fellow in Center for Synthetic Organic Electrochemistry (CSOE) and the Chemistry Department at the University of Utah
Advisor: Prof. Henry S. White

2016 – 2020 **Indiana University Bloomington**
Doctor of Philosophy (Ph. D) in Chemistry
Advisor: Dennis G. Peters and Stephen C. Jacobson

2015 – 2016 **Ball State University**
Master of Science (M. Sc.) in Chemistry
Advisor: Zhihai Li

2010 – 2012 **University of Birjand (Iran)**
Master of Science (M. Sc.) in Chemistry
Advisor: Hosseini Farsi

2006 – 2010 **University of Birjand (Iran)**
Bachelor of Science (B. Sc.) in Chemistry and Physics

PROFESSIONAL APPOINTMENTS

2006 – Present University of South Carolina (Columbia Campus)
Assistant Professor, Department of Chemistry and Biochemistry

The Hosseini Research Group develops an electroanalytical toolbox for in-depth analysis of electrochemical reactions and the interplay of organic electrosynthesis and surface chemistry, focusing on three main projects: (1) analysis of the microenvironment of heterogeneous electrocatalysis, (2) engineering the electrode–solvent interface for electroorganic reactions, and (3) development of novel electrosynthetic methodologies. The ultimate goal of our research is to provide a detailed understanding of electroorganic reactions at the molecular level and bridge molecular knowledge to practical synthetic applications, thereby addressing emerging challenges in sustainability by leveraging targeted electrosynthesis and electrocatalysis concepts.

PUBLICATIONS

21 published and three manuscripts under review || h-index = 9
(§ = co-first author, † = undergraduate mentee, * = corresponding author)

At University of South Carolina

Under review

- Stewart, S. A.; Stewart, M. O.; † **Hosseini, S**.* Electrochemical Behavior of Functionalized Nitroarenes: Tuning Polymerization with Supporting Electrolytes. *ChemElectroChem*.
- Koczaja, A.;† LeBarron, C. T.; Stewart, M. O.;† Reidell, A. R.; **Hosseini, S**.* Silver-Silver Chloride Reference Electrode: Preparation and Performance in Nitrogen-Containing Organic Solvents. *ACS Electrochem.*
- Reidell, A.; LeBarron, C.; **Hosseini, S**.* Mechanistic Understanding of Electroorganic Methods for Remediation of Organic Waste. *Curr. Opin. Electrochem*.

Published

- LeBarron, C.;† Pavithra; **Hosseini, S**.* Recent Insights into Electrochemical Sensing of Per- and Polyfluoroalkyl Substances. *ECS Sens. Plus*, **2025**, *4*, 033601.
- Reidell, A.; Pazder, K.; LeBarron, C.;† Stewart, S.;† **Hosseini, S**.* Modified Working Electrode for Organic Electrosynthesis. *ACS Org. Inorg. Au* **2024**, *4*, 579 – 603.
- Janusz, J.; Beeler, J. A.; **Hosseini, S**.; Tanwar, M.; Zeng, R.; Wang, H.; Abruna, H.; Neurock, M.; White, H.* The Electrochemical Peroxydisulfate-Oxalate Autocatalytic Reaction. *J. Am. Chem. Soc*. **2024**, *146*, 25088-25100.
- **Hosseini, S**.; Solymosi, G.; White, H. S.* Investigation of the Electrocatalytic Reduction of Peroxydisulfate Using Scanning Electrochemical Microscopy. *Anal. Chem*. **2024**, *96*, 8424-8431.
- McKenzie, E. C. R.;§ **Hosseini, S**.;§ Tanwar, M.; Neurock, M.; Minteer, S. D.; Jacobson, J. C.; Peters, D. G.* Homogeneous Electron Transfer to Bromophenols through Catalytic EC' Mechanism. *J. Phys. Chem. C* **2023**, *127*, 17335 – 17344
- Moghiminia, S.; Farsi, H.; Zubkov, T.; **Hosseini, S**.; Behforouz, M.; Mahdizadeh, F. F.; Barekati, N. S.; Moghadam, N. G.; Irandoost, E.; Estes, J.; Li, Z.* Revealing Electronic Structure of Nanostructured Cobalt Titanate via a Combination of Optical and Electrochemical Approaches Toward Water Splitting and CO_2 Reduction. *J. Chem. Technol. Biotechnol*., **2023**, *98*, 2257 – 2265.

Before University of South Carolina

- **Hosseini, S**.; Beeler, J. A.; Sanford, M. S.; White, H. S.* Electroorganic Synthesis in Aqueous Solution via Generation of Strongly Oxidizing and Reducing Intermediates. *Faraday Discuss*. **2023**, *247*, 192 – 205.
- **Hosseini, S**.; Janusz, J. N.; Tanwar, M.; Pendergast, A. D.; Neurock, M.; White, H. S.* Oxidation by Reduction: Efficient and Selective Oxidation of Alcohols by the Electrocatalytic Reduction of Peroxydisulfate. *J. Am. Chem. Soc*. **2022**, *144*, 21103–21115.
- Rudman, K. K.; Thapa, B.; Tapash, A.; Mubarak, M. S.; Raghavachari, K.; **Hosseini, S**.;* Minteer, S. D. * Mechanistic Studies of the Electrocatalytic Carbon–Bromine Cleavage and Hydrogen Atom Incorporation form 1,1,1,3,3,3-Hexaflouroisopropanol. *J. Electrochem. Soc*. **2022**, 169, 115502.
- Rudman, K. K.;§ **Hosseini, S**.;§ Chatterjee, K.; Johnson, B.; Skrabalak, S. E.* Sonoelectrosynthesis of Monodisperse Metal Nanoparticles. *Nanoscale*, **2022**, *14*, 6471.
- Mckenzie, E. C. R.;§ **Hosseini, S.;§** Petro, A. G. C.; Rudman, K. K.; Gerroll. B. H. R.; Mubarak, M. S.; Baker, L. A.; Little, R. D.* Versatile Tools for Understanding Electrosynthetic Mechanisms. *Chem. Rev*. **2022**, *122*, 3292.
- Barnes, J. T.; Adams, R.; Wagoner, E. R.; **Hosseini, S**.; Peters, D. G.* Nickel(I) Salen-Catalyzed Reduction of 1,1,2-trichloro-1,2,2-Trifluoroethane (CFC-113): CO_2-Mediated Carbon–Fluorine Bond Cleavage. *J. Electroanal. Chem*. **2020**, *862*, 114002.
- **Hosseini, S**.; Bishnu, T.; Medeiros, M. J.; Pasciak, E. M.; Pence, M.A.; Twum, E. B.; Karty, J. A.; Gazo, X.; Mubarak, M. S.; Raghavachari, K.; Peters, D. G.* Electrosynthesis of a Biaurone by Controlled Dimerization of Flavone: Mechanistic Insight and Large-Scale Application. *J. Org. Chem*. **2020**, *85*, 10685.
- Farsi, H.; Moghiminia, S.; Raygan, M.; Dana, E.; **Hosseini, S**.; Behforooz, M.; Zubkov, T.; Lightcap, I. V.; Li, Z.* Nanostructured Tungsten-Derived Copper for Hydrogen Evolution Reaction and Electroreduction of CO_2 in Sodium Hydroxide Solutions. *J. Phys. Chem. C*. **2019**, *123*, 25941.
- **Hosseini, S**.; Bawel, S. A.; Mubarak, M. S.; Peters, D. G.* Rapid and High-Yield Electrosynthesis of Benzisoxazole and Some Derivatives. *ChemElectroChem*. **2019**, *6*, 4318. (Invited paper for special issue of Organic Electrosynthesis).
- **Hosseini, S**.; Alsiraey, N.; Zubkov, T.; Trent, C.; Tye, J.; Bodappa, N.; Li, Z.* Variable Growth and Characterizations of Monolayer Protected Gold Nanoclusters Based on Molar Ratio of Gold and Capping Ligands. *Langmuir*, **2018**, *34*, 15517.
- **Hosseini, S**.; Farsi, H.; Li, Z. Peters, D, G.* Nickel Tungstate ($NiWO_4$) Nanoparticles/Graphene Composites: Preparation and Photoelectrochemical Applications. *Semicond. Sci. Technol*. **2018**, *33*, 55008–55016.
- **Hosseini, S**.; Madden, C.; Hihath, J.; Guo, S.; Zang, L.; Li, Z.* Single-Molecule Charge Transport and Electrochemical Gating in Redox-Active Perylene Diimide Junctions. *J. Phys. Chem. C*. **2016**, *120*, 22646.

- Zelati, A.; Amirabadizadeh, A.*; **Hosseini, S**. A Facile Approach to Synthesize Dysprosium Oxide Nanoparticles. *Int. J. Ind. Chem*. **2014**, *5*, 69.
- Farsi, H.;* Moghiminia, S.; Roohi, A.; **Hosseini, S**. Preparation, Characterization and Electrochemical Behaviors of Bi_2O_3 Nanoparticles Dispersed in Silica Matrix. *Electrochim. Acta* **2014**, *148*, 93.
- Farsi, H.;* **Hosseini, S**. The Electrochemical Behaviors of Methylene Blue on the Surface of Nanostructured $NiWO_4$ Prepared by Coprecipitation Method. *J. Solid State Electrochem*. **2013**, *17*, 2079.

RESEARCH FUNDING

Ongoing Research Support

USC ASPIRE
Title: "Cross-Correlated Microscopy for Fundamental Material Studies in Organic Electrosynthesis"
Funder: University of South Carolina (USC) Office of Vice President of Research – ASPIRE Program
Amount awarded: $15,000
Duration: June 2025–September 2026
Role: Principal Investigator (PI)

USC Magellan Mini
Title: "Controlling the Shape of Electrodeposited Nanoparticles Using Reverse Micelle Techniques and Scanning Electrochemical Cell Microscopy (SECCM)"
Funder: University of South Carolina (USC) Office of Vice President of Research – ASPIRE Program
Amount awarded: $1,000
Duration: June 2025–September 2026
Role: Principal Investigator (PI) and Mentor (to Abbigail Koczaja)

STUDENT MENTORING AT THE UNIVERSITY OF SOUTH CAROLINA

Current Graduate Students

1) **Alexander C. Reidell** *2023 – Present*
2) **Pavithra** *2024 – Present*
3) **Christopher T. LeBarron** *2025 – Present*
   College of Arts and Sciences Graduate Admission Fellowship
4) **Skylar A. Stewart** *2025 – Present*

Current Undergraduate Research Students

1) **Abbigail Koczaja** *2024 – Present*
   University South Carolina – USC Honors College Research Grant Summer 2025 || Victor Laurie Junior Year Scholarship (2025) || USC Magellan Mini (Spring 2025)
2) **Mustafa Alahmari** *2024 – Present*
3) **Meredith Stewart** *2024 – Present*
4) **Finleigh Callahan** *2024 – Present*
5) **Natalia Redshaw** 2025 – *Present*
6) **Liesl Walters** 2025 – *Present*

Undergraduate Research Alumni

1) **Christopher T. LeBarron** *2023 – 2025*
   University South Carolina – USC Honors College Research Grant Summer 2024 and Spring 2025 || Joseph W. and Julia L. Bouknight Scholarship (2023 – 2024) || United States Submarine Veterans Charitable Foundation (2023 – 2025) || Outstanding Senior Award (2025) || President's Award (2025)
2) **Skylar A. Stewart** *2023 – 2025*
   University South Carolina – USC Honors College Research Grant (Summer 2024) || Betty R. Fundenberg Undergraduate Biomedical Research Award (2023-2024)

3) **Isabella Newmoyer** *2024 – 2025*
University South Carolina – USC Honors College Research Grant Spring 2025

High School Research Students

1) Jacob M. DiMaria *Summer 2025*
2) Fatimah Al-Shami Al-Saedi *Summer 2024*

PRESENTATIONS & INVITED TALKS

- **Hosseini, S.** Electrooxidation of Alkenes in Water Using a Graphite Anode Decorated with Ruthenium Oxide Nanoparticles. *Invited Oral Presentation*, Session: Advances in Electrochemistry and Bioelectrochemistry, Southeastern Regional Meeting American Chemical Society (SERMACS) Annual Meeting, **October 2025**, Orlanod, FL.
- **Hosseini, S.** Development of a Stable Ag-AgCl Reference Electrode for Electroorganic Reactions in Non-Aqueous Solvents. *Invited Oral Presentation*, Session: Advances in Organic and Biological, 248th Electrochemical Society (ECS) Meeting, **October 2025**, Chicago, IL
- **Hosseini, S.** Scanning Electrochemical Cell Microscopy (SECCM) to Form Metal Nanoparticle with Controlled Size. *Invited Oral Presentation*, Session: Advance in Electrochemistry American Chemical Society (ACS) Fall Meeting, **August 2025**, Washington DC.
- **Hosseini, S.** Kinetic Analysis of Multistep Reaction with Scanning Electrochemical Microscopy. Invited Oral Presentation, Session: Advances in Electrochemical Systems, Southeastern Regional Meeting American Chemical Society (SERMACS) Annual Meeting, **October 2024**, Atlanta, GA.
- **Hosseini, S.**; Beeler, J. A.; White, H. S. Electroorganic Synthesis in Aqueous Solution via Generation of Strongly Oxidizing and Reducing Intermediates. Invited Oral Presentaion, Electrosynthesis Faraday Discussion, The Royal Society of Chemistry (RSC), **July 2023**, Edinburgh, UK.
- **Hosseini, S.** White, H. S. Electroorganic Synthesis in Aqueous Solution via Generation of Strongly Oxidizing and Reducing Intermediates. *Poster Presentation*, Electrochemistry Gordon Research Conference (GRC), **January 2024**, Ventura, CA.
- **Hosseini, S.** White, H. S. Reductive Oxidation of Alcohol and Mechanistic Studies via Scanning Electrochemical Microscopy (SECM). *Invited Oral Presentation*, University of Illinois Urbana-Champaign (UIUC), **April 2022**, Champaign, IL.
- **Hosseini, S.** White, H. S. Reduction by Oxidation: Application of Oxalate for Sustainable Electrosynthesis of Small Molecules. *Invited Oral Presentation*, Ball State University (BSU), **December 2022**, Muncie, IN.
- **Hosseini, S**.; Janusz, J. N.; Tanwar, M.; Pendergast, A. D.; Neurock, M.; White, H. S. Reductive Oxidation: Alcohol Oxidation at Reductive Potential. *Poster Presentation*, Gordon Research Conference (GRC) in Electrochemistry, **September 2022**, Ventura, CA.
- **Hosseini, S**.; Peters, D. G. Photoelectrosynthsis of FDCA and Study of Band-Gap Effect on the Reaction Yield, *Oral Presentation*, 235th Electrochemical Society (ECS) Meeting, **May 2019**, Dallas, TX .
- **Hosseini, S.**; Peters, D. G. Electrosynthesis of 2,1-Benzisoxazole from *o*-Nitrobenzaldehyde. *Oral Presentation*, 233rd Electrochemical Society (ECS) Meeting, **June 2018**, Seattle, WA.
- **Hosseini, S.**; Li, Z.; Farsi, H. Effect of Doping in Energy-Band Modification of Nickel Tungstate. *Oral Presentation*, Central Regional Meeting of ACS (CERM), **April 2016**, Covington, KY.
- **Hosseini, S.**; Li, Z. Application of Tungstate as Novel Compounds for Solar Energy Harvesting. *Oral Presentation*, 228th Electrochemical Society (ECS) Meeting, **May 2015**, Phoenix, AZ.

FELLOWSHIPS

- **Dissertation Research Fellowship** May 2020 – December 2020
An annual fellowship awarded by Indiana University's College of Arts and Sciences to one graduate student for outstanding academics, a strong publication record, and exceptional mentorship. It includes full tuition and a ten-month stipend.
- **Herman T. Briscoe Teaching Fellowship, Indiana University** January 2019 – May 2019

Awarded to one graduate student who have shown a unique ability in teaching; allows teaching a course, independently, for over a semester.

- **Graduate Merit Fellowship** January 2015 – May 2016
  An award given by College of Natural Sciences Fellowship Committee at the Ball State University, Indiana, in recognition of graduate academic excellence and outstanding research achievements. The fellowship cover entirety of master studies.

AWARDS

- **Outstanding Postdoctoral Research Award** May 2022
  Awarded to a postdoctoral research fellow in recognition of outstanding research accomplishments, mentoring, and service to the community within College of Science (COS) at University of Utah.
- **Associate Instructor Award** May 2018
  Awarded by the Department of Chemistry at Indiana University to one graduate student who has demonstrated exceptional teaching ability. This recognition includes the opportunity to independently teach a full-semester course.
- **Electrochemical Society Travel Award** May 2018
  An award provided by the Electrochemical Society (ECS) to support the oral presentation of ten-graduate students nationwide at an ECS meeting.
- **Outstanding Researcher Award** March 2012
  Awarded to one graduate student at the University of Birjand, Iran, in recognition of outstanding research achievement and significant contributions to the advancement of fundamental science.
- **Aspire Travel Award** May 2015
  Provided by the college of arts and science at Ball State University for one graduate student to present at a national conference.

TEACHING EXPERENCE AT UNIVERSITY OF SOUTH CAROLINA

- **CHEM 724 - Advanced Analytical Chemistry** Fall 2023, 2024, 2025
  Graduate-level course providing a survey of instrumental techniques and advanced aspects of chemical instrumentation such as digital and analog circuitry, signal-to-noise processing, and statistical analysis.

- **CHEM 621 - Instrumental Analysis** Spring 2025
  Upper-level analytical course for senior undergraduate students covering principles of instrumentation.

- **CHEM 399- Undergraduate Research Initiative (URI)** Fall 2023, 2024, 2025
  Freshman-level course introduces students to principles of research in STEM fields and provides an opportunity for undergraduate students to conduct independent research.

SERVICE

Professional

- Board of director, Society of Electroanalytical Chemistry (SEAC) May 2025 – May 2030
- Member-at-large of the Electrochemical Society Division (ECS) of Organic and Biological Electrochemistry (OBE) September 2024 – Present
- Guest Editor for Focus Issue on Proton-Coupled Electron Transfer Research and Teaching: In Honors of Diane K. Smith August 2024 – July 2025
- ACS Spring 2024 Meeting Session Chair and Organizer for Symposium on “Advances in Electrochemistry January 2024 – March 2024
- Guest Editor for Special Issue on Electroanalytical Chemistry for Wiley–VCH Electroanalysis
- October 2023 – December 2024
- ACS Division of Analytical Chemistry Educational Committee March 2021–Present
- Electrochemical Society (ECS), OBE Award Selection Committee January 2024 – Present

Departmental

- GSRC Water Purification System, Chair August 2023 – Present

- Graduate Education and Research — August 2023 – Present
- Safety — August 2023 – Present
- Senior Awards, Judging Committee — April 2025
- Faculty Co-lead of Undergraduate Research Initiative (CHEM 399) — September 2023 – Present
- Utah Chemistry, Department of Chemistry, DEI Committee — January 2021 – May 2023
- Indiana University, Department of Chemistry, DEI Committee — January 2019 – September 2019
- The Electrochemical Society (ECS) Committee of Membership — January 2019 – December 2020
- Utah Chemistry Department Diversity, Curie Club — September 2022 – May 2023

University

- Fulbright mentor, University of South Carolina — May 2025– Present
- Magellan Scholar Awards, selection committee, USC — February 2025 – May 2025
- Discover USC, Judging committee, USC — May 2025
- Representative to the Graduate and Professional Student Governor, IUB — March 2019–May 2020
- Co-Chair of Preparing Future Faculty Conference (PFFC), IUB — January 2017– May 2018

Community

- Founder and Faculty lead, ELECTRO Outreach program — April 2025 – Present
- Student Poster Session Judge, Pittcon, — 2023 & 2024
- Indiana Science Olympiad State Tournament — January 2019 – March 2019
- Science Fest, IUB — September 2017 – December 2019

PROFESSIONAL ORGANIZATION

- American Chemical Society (ACS) — 2017 – Present
- Electrochemical Society (ECS) — 2016 – Present
- Society of Electroanalytical Chemistry (SEAC) — 2021 – Present
- International Society of Electrochemistry (ISE) — 2022 – Present