

**Mohammadreza “Reza” Nazemi, Ph.D.**  
**Postdoctoral Associate**

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**Yale University**

School of Engineering and Applied Science

Department of Chemical and Environmental Engineering

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## EDUCATION

**Georgia Institute of Technology**, Atlanta, GA Aug. 2015–May 2020

**Ph.D.** in Mechanical Engineering

**Certificate:** Technology Innovation through TI:GER program in Scheller College of Business

**Thesis:** Investigation of (photo) electrocatalytic conversion of N<sub>2</sub> to NH<sub>3</sub> using hybrid plasmonic nanostructures

**Advisor:** Prof. Mostafa El-Sayed (School of Chemistry and Biochemistry)

**Michigan Technological University**, Houghton, MI Sep. 2013–Aug. 2015

**M.S.** in Mechanical Engineering

**Thesis:** Modeling and analysis of Reactivity Controlled Compression Ignition (RCCI) combustion

**Advisor:** Prof. Mahdi Shahbakhti

**Sharif University of Technology**, Tehran, Iran Sep. 2009–Jun. 2013

**B.S.** in Aerospace Engineering

**Thesis:** Modeling of noise intensity based upon its connection with traffic volume in a regional airport

**Advisor:** Prof. Mohammad Bagher Malaek

## RESEARCH SUMMARY

The scientific thrusts of my research are built upon **1**) materials chemistry for the synthesis of a range of heterogeneous (photo) electrocatalysts including plasmonic, hybrid plasmonic-semiconductor, and hybrid plasmonic-transition metal nanostructures, **2**) (photo) electrochemistry and novel cell design to study the redox processes in the (photo) electrochemical energy conversion systems, and **3**) *operando* spectroscopy and microscopy techniques to study active sites and reaction mechanisms, leading to the rational design of more efficient (photo) electrocatalysts for value-added chemicals production.

## RESEARCH EXPERIENCE

**Postdoctoral Associate, Yale University**, New Haven, CT (Sep. 2021-To present)

**PI:** Prof. Jaehong Kim (Department of Chemical and Environmental Engineering)

- Designing electrochemical cells to treat reverse osmosis concentrate (ROC) from industrial and municipal wastewater.
- Understanding the mechanism for electrode deactivation during electrochemical reclamation of ROC.

**Postdoctoral Fellow, Georgia Institute of Technology**, Atlanta, GA (Jun. 2020-Aug. 2021)

**PIs:** Profs. Mostafa El-Sayed and Thomas Orlando (School of Chemistry and Biochemistry)

- Fabricated membrane-electrode assemblies for gas-phase electrochemical ammonia synthesis prototype.
- Performed feasibility analysis of renewable ammonia synthesis and its competitiveness in different scenarios and markets.

**Graduate Research Assistant, Georgia Institute of Technology**, Atlanta, GA (Aug. 2015–May 2020)

(Photo) Electrochemical Nitrogen Fixation for Ammonia Synthesis (Renew. Fertilizer/Fuel)

- Benchmarked the (photo)electrocatalytic activity of nitrogen reduction reaction (NRR) under ambient conditions using in-house plasmonic and hybrid plasmonic nanostructures in a fuel cell type electrochemical cell (gas-phase) and an H-cell system (liquid-phase).
- Developed a spectroelectrochemical setup to probe electrochemical reactions at the electrode/electrolyte interface using ultrasensitive *operando* surface-enhanced Raman spectroscopy (SERS) technique.
- Developed an optical setup to explore the structural reorganization in assembled and surface passivated plasmonic nanoparticles and their hybrid analogs *via* femtosecond pulsed laser.

Project Leader-Fuel the World (FTW)-TI:GER Program

- Recipient of the TI:GER (Technology Innovation: Generating Economic Results) Fellowship from the Scheller College of Business at Georgia Tech to work on the commercialization of my Ph.D. dissertation technology in the multidisciplinary team consisting of three MBA students (Georgia Tech) and two JD students (Emory University) with following objectives:
  - Gained skills and entrepreneurial perspective to facilitate the commercialization and diffusion of my Ph.D. technology.
  - Developed market, industry, and intellectual property analyses to understand both technical and market relevance.

- Developed business models and commercial plans and deploy innovation frameworks to launch a new venture.

#### Membrane-based Electrolysis System for Water Splitting

- Developed a multi-ion exchange membrane water splitting system for hydrogen production using acid-base electrolytes.

#### Conversion of Salinity Gradient Energy into Useful forms of Energy (Renew. Electricity/Hydrogen)

- Developed a thermodynamic model for reverse electrodialysis (RED) power generation to evaluate electricity and hydrogen gas production in ion mixing processes (salinity gradient energy).

#### Graduate Research Assistant, Michigan Technological University, Houghton, MI

(Sep. 2013-Jul. 2015)

#### Reactivity Controlled Compression Ignition (RCCI) Engine Combustion

- Developed a 3D/CFD combustion model utilizing CONVERGE™ CFD software to investigate the effects of varying premixed fuel injection ratio, diesel injection timing, diesel spray angle, diesel injection pressure, and multiple injectors on the performance and emissions characteristics of the RCCI engine.

#### Homogeneous Charge Compression Ignition (HCCI) Engine Combustion

- Developed an accurate and computationally efficient thermo-kinetic model to study the effect of variable valve timing (VVT) on the performance of an HCCI engine.

## AWARDS, HONORS, AND ACHIEVEMENTS

- American Chemical Society (ACS) Physical Chemistry (PHYS) Division Young Investigator Award (please visit this [link](#)) May 2021
- Georgia Research Alliance (GRA) phase I grant (Funding Awarded: \$50,000 to explore the commercialization potential of ammonia electrosynthesis) (Highlighted in the Georgia Tech College of Sciences [News](#)) May 2020
- Top proposal winner for “Amazon Catalyst at ECS” program (Funding Awarded: \$25,000 + \$1,500 travel award) (Highlighted in the ECS [News](#)) Oct. 2018
- Technology Innovation: Generating Economic Results (TI:GER) class of 2020 Fellow at Georgia Tech (Funding Awarded: \$15,200, plus a certificate in Technology Innovation) May 2018
- Georgia Tech-Oak Ridge National Lab (ORNL) Seed Grant Award (Funding Awarded: \$4,000 for purchasing small equipment items, materials, supplies, and travel directly related to the proposed research project) Apr. 2020
- I-Corps Site at Georgia Tech grant (Funding Awarded: \$3,000 for early customer discovery of the commercial potential of my Ph.D. research) Jun. 2019
- First place winner in Career, Research, and Innovation Development (CRIDC) innovation competition-Georgia Tech Venture Lab (\$1,000 Monetary Award) (please visit this [link](#)) Jan. 2020
- Georgia Tech Faces of Inclusive Excellence (please visit this [link](#)) (The program recognizes faculty, staff, and students whose accomplishments in research, teaching, leadership and/or service endeavors have earned special awards or recognition during the academic year.) Jun. 2019
- Technology Showcase external participant at the 2021 ARPA-E Energy Innovation Summit (“Technology Showcase participants include ARPA-E-funded project teams as well as a highly selective group of researchers and technologists from other companies and organizations.”) May 2021
- Selected participant of the NSF’s Alliances for Graduate Education and the Professoriate (AGEP) Research University Alliance (RUA) 2021 Faculty Job Search Bootcamp May 2021
- 2020-2021 cohort of the Future Faculty Mentoring Program-Education Division of American Institute of Chemical Engineers (AIChE) Sep. 2020
- 2020-2021 selected coach in the American Association of Chemistry Teachers (AACT)/American Chemical Society (ACS) Science Coaches Program (will serve as a coach to support AACT teacher members in their efforts in the classroom to increase student engagement) Sep. 2020
- Participant of the American Chemical Society (ACS) postdoc to faculty (P2F) workshop Aug. 2020
- Electrochemical Society (ECS) Energy Technology Division Travel Grant Award Sep. 2020 & 2021

- Scholarship to participate in the “Gordon Research Conference, Carbon Capture, Utilization, and Storage, New London, NH. (\$1,200 Monetary Award) Jun. 2017
- Second place in the student paper and presentation competition-ASME Power & Energy 2016, Charlotte, NC. (\$2,000 Monetary Award) Jun. 2016
- Selected participant of the “Future Combustion Research to Mitigate Carbon Emissions” workshop. College Park, MD. Apr. 2017
- Georgia Tech student government association (SGA) and college of engineering Travel Grant Awards. (\$500 Travel Award) Sep. 2016
- Selected participant of the Combustion Energy Frontier Research Center (CEFRC) summer school at Princeton University. Jun. 2014
- Michigan Tech Graduate Student Government (GSG) Travel Grants award. (\$250 Travel Award) Sep. 2014

## PUBLICATIONS

### Invention Disclosures and Patents

1. **M. Nazemi**, M.A. El-Sayed “Systems and Methods for Forming Nitrogen-Based Compounds”, *U.S. Patent Application 16/788,656*. (This technology is available for license by Georgia Tech Office of Technology Licensing. [Link](#))

### Books

1. **M. Nazemi**, M.A. El-Sayed, “Photo-Electrochemical Ammonia Synthesis: Nanocatalyst Discovery, Reactor Design, and Advanced Spectroscopy” *CRC Press*, 2021 <https://doi.org/10.1201/9781003141808>.

### Peer-Reviewed Journal Papers (\* Corresponding author)

1. **M. Nazemi\***, M. A. El-Sayed, “Managing the Nitrogen Cycle *via* Plasmonic (Photo)Electrocatalysis: Towards Circular Economy” *Accepted in Accounts of Chemical Research* (10.1021/acs.accounts.1c00446), 2021. (will be featured on the front cover)
2. **M. Nazemi**, S. R. Panikkanvalappil, C.-K. Liao, M.A. Mahmoud, M. A. El-Sayed, “Role of Femtosecond Pulsed Laser-Induced Atomic Redistribution in Bimetallic Au-Pd Nanorods on Optoelectronic and Catalytic Properties” *ACS Nano*, 15, 10241–10252, 2021.
3. **M. Nazemi**, P. Ou, A. Alabbady, L. Soule, A. Liu, J. Song, T. A. Sulchek, M. Liu, M. A. El-Sayed, “Electrosynthesis of Ammonia using Porous Bimetallic Pd-Ag Nanocatalysts in Liquid- and Gas-Phase Systems” *ACS Catalysis*, 10, 10197–10206, 2020.
4. **M. Nazemi\***, L. Soule, M. Liu, M. A. El-Sayed, “Ambient Ammonia Electrosynthesis from Nitrogen and Water by Incorporating Palladium in Bimetallic Gold-Silver Nanocages” *Journal of The Electrochemical Society*, 167(5), p. 054511, 2020.  
(Focus issue on “Heterogeneous Functional Materials for Energy Conversion and Storage”)  
**Note: This work was funded by “Amazon Catalyst at ECS” program, for which M. Nazemi was the awardee (PI) and corresponding author of this manuscript.**
5. **M. Nazemi**, M. A. El-Sayed, “Plasmon-Enhanced Photo (electro) chemical Nitrogen Fixation under Ambient Conditions Using Visible Light Responsive Hybrid Hollow Au–Ag<sub>2</sub>O Nanocages” *Nano Energy*, vol. 63, 103886, 2019.
6. **M. Nazemi**, M. A. El-Sayed, “The Role of Oxidation of Silver in Bimetallic Gold–Silver Nanocages on Electrocatalytic Activity of Nitrogen Reduction Reaction,” *The Journal of Physical Chemistry C*, 123, 18, 11422–11427, 2019. (Invited special issue article)
7. **M. Nazemi**, M. A. El-Sayed, “Electrochemical Synthesis of Ammonia from N<sub>2</sub> and H<sub>2</sub>O under Ambient Conditions Using Pore-Size-Controlled Hollow Gold Nanocatalysts with Tunable Plasmonic Properties” *The Journal of Physical Chemistry Letters*, vol. 9, pp. 5160–5166, 2018.
8. **M. Nazemi**, S. R. Panikkanvalappil, M. A. El-Sayed, “Enhancing the Rate of Electrochemical Nitrogen Reduction Reaction for Ammonia Synthesis under Ambient Conditions Using Hollow Gold Nanocages” *Nano Energy*, vol. 49, pp. 316–323, 2018.  
(Among the most cited Nano Energy articles published since 2018 (Last update: Aug. 2021); Featured in [Science Trends](#))
9. **M. Nazemi**, J. Padgett, M.C. Hatzell, “Acid/Base Multi-Ion Exchange Membrane-Based Electrolysis System for Water Splitting” *Energy Technology*, 5(8), pp.1191–1194, 2017.
10. **M. Nazemi**, J. Zhang, M.C. Hatzell, “Harvesting Natural Salinity Gradient Energy for Hydrogen Production through Reverse Electrodialysis (RED) Power Generation”, *Journal of Electrochemical Energy Conversion and Storage*, vol. 14, p. 020702, 2017.

11. **M. Nazemi**, M. Shahbakhti, “Modeling and Analysis of Fuel Injection Parameters for Combustion and Performance of an RCCI Engine”, *Applied Energy*, Vol. 165, pages 135-150, **2016**.
12. **M. Nazemi**, H. Saigaonkar, M. Shahbakhti, “Thermo-kinetic Modeling of Variable Valve Timing Effects on HCCI Engine Combustion”, *Int. Journal of Automotive Engineering and Technologies*, Vol. 4, Issue 1, pp. 54 – 62, **2015**.

### Refereed Conference Papers

1. **M. Nazemi**, J. Zhang, M.C. Hatzell, “Harvesting Natural Salinity Gradient Energy for Hydrogen Production through RED Power Generation”, *Proceedings of the ASME 2016 Power and Energy Conference*, June 26-30, **2016**, Charlotte, NC, USA.  
(Highlighted in [Energy-Tech E-Newsletter](#))
2. H. Saigaonkar, **M. Nazemi**, M. Shahbakhti, “Sequential Model for Residual Affected HCCI with variable valve Timing”, *2015 SAE World Congress*, SAE Paper No. 2015-01-1748, Apr. 21-23, **2015**, Detroit, MI, USA.
3. **M. Nazemi**, H. Saigaonkar, M. Shahbakhti, “Thermo-kinetic Modeling of Variable Valve Timing Effects on HCCI Engine Combustion”, *Int. Conference on Advanced Technology & Sciences*, 6 pages, August 12-15, **2014**, Antalya, Turkey.

### Invited Presentations

1. **M. Nazemi**, M.A. El-Sayed. “The role of femtosecond pulsed lase induced atomic redistribution in bimetallic Au-Pd nanorods on optoelectronic and catalytic properties” (Invited award talk) ACS Fall 2021, August 22-26, **2021**.
2. **M. Nazemi**, M.A. El-Sayed. “(Amazon Catalyst at ECS Grant Winner) Enhancing the Rate of Electrocatalytic Conversion of N<sub>2</sub> to NH<sub>3</sub> Using Bimetallic Au-Pd Nanoparticles” (Invited award talk) Meeting Abstracts. The Electrochemical Society, October 13-17, **2019**, Atlanta, GA.

### Technical Presentations (refereed abstract & oral/poster presentation)

1. **M. Nazemi**, M.A. El-Sayed. “Discovering Hybrid Plasmonic Nanocatalysts for Solar-Chemical Energy Conversion Via Femtosecond Pulsed Laser-Induced Atomic Redistribution in Bimetallic Au-Pd Nanorods” Meeting Abstracts. *The Electrochemical Society*, October 10-14, **2021** (fully digital).
2. **M. Nazemi**, M.A. El-Sayed. “The role of femtosecond pulsed lase induced atomic redistribution in bimetallic Au-Pd nanorods on optoelectronic and catalytic properties” ACS Fall 2021, August 22 - 26, **2021**, Atlanta, GA.
3. **M. Nazemi**, M.A. El-Sayed. “Mechanistic understanding of electrochemical nitrogen reduction reaction on hybrid plasmonic nanostructures using *operando* surface-enhanced Raman spectroscopy” ACS Spring 2021, April 5-30, **2021**. ([Link to online video of the talk](#))
4. **M. Nazemi**, M.A. El-Sayed. “Electrochemical Reduction of N<sub>2</sub> to NH<sub>3</sub> Using Porous Bimetallic Pd-Ag Nanoparticles in Liquid and Gas Phase Systems” Virtual AIChE Annual Meeting, November 16-20, **2020**.
5. **M. Nazemi**. “Electro-Synthesis of Value-Added Chemicals *via* Designing New Catalysts, Systems, and Processes” Virtual AIChE Annual Meeting, November 16-20, **2020**. (Meet the Faculty Candidates Poster Session)
6. **M. Nazemi**. “Electrochemical Production of Ammonia *via* Designing New Catalysts and Processes” Virtual AIChE Annual Meeting, November 16-20, **2020**. (Electrochemical Fundamentals: Faculty Candidate Session) ([Link to YouTube video of the talk](#))
7. **M. Nazemi**, M.A. El-Sayed. “Photoelectrochemical Nitrogen Fixation for Ammonia Synthesis Using Hybrid Plasmonic Nanostructures” Meeting Abstracts. *The Electrochemical Society*, October 4-9, **2020**, Honolulu, Hawaii. (presented virtually due to COVID-19) ([Link to online video of the talk](#))
8. **M. Nazemi**, M.A. El-Sayed. “Enhancing the rate of electrochemical nitrogen reduction reaction for ammonia synthesis under ambient conditions by incorporating Pd in bimetallic Au-Ag nanocages” *259th ACS National Meeting & Exposition*, March 22-26, **2020**, Philadelphia, PA. (Cancelled due to COVID-19 and presented at the ACS virtual poster session)
9. **M. Nazemi**, M.A. El-Sayed. “Green Ammonia Production from Air and Water using Plasmonic Nanocages: A Medium for Renewable Energy Storage” *Career, Research, and Innovation Development Conference (CRIDC)*, January **2020**, Georgia Tech, Atlanta.
10. **M. Nazemi**, M.A. El-Sayed. “Green Ammonia Synthesis from Air, Water, and Electricity using Hybrid Plasmonic Nanostructures” *Ammonia Energy Conference*, November 12-14, **2019**, Orlando, FL.
11. **M. Nazemi**, M.A. El-Sayed. “Plasmon-Enhanced Photofixation of Dinitrogen for Ammonia Synthesis Using Visible Light Responsive Hybrid Hollow Au-Ag<sub>2</sub>O Nanocages” Meeting Abstracts. *The Electrochemical Society*, October 13-17, **2019**, Atlanta, GA.
12. **M. Nazemi**, M.A. El-Sayed. “Evaluation of (Photo) Electrocatalytic Conversion of N<sub>2</sub> to NH<sub>3</sub> under Ambient Conditions Using

- Hybrid Hollow Plasmonic Nanostructures” *Gordon Research Conference, Nanomaterials for Applications in Energy Technology*. February 24-March 1, **2019**, Ventura, CA.
13. **M. Nazemi**, M.A. El-Sayed, “Renewable Ammonia Production from Air, Water, and Electricity using Plasmonic Nanocages” *Career, Research, and Innovation Development Conference (CRIDC)*, February **2019**, Georgia Tech, Atlanta.
  14. **M. Nazemi**, M. Shahbakhti, “Development of a New Generation of Combustion Engines to Reduce CO<sub>2</sub> Emissions” *Gordon Research Conference, Carbon Capture, Utilization, and Storage*. June 11-16, **2017**, New London, NH.
  15. **M. Nazemi**, A. Agles, K. Dobson, and M. C. Hatzell, “Evaluating the Potential for Hydrogen Production with Donnan-Driven Multi-Ion Exchange Membrane Based Systems” Meeting Abstracts. *The Electrochemical Society*, October 1-5, **2017**, National Harbor, MD.
  16. **M. Nazemi**, J. Padgett, M.C. Hatzell, “Hydrogen Production through a Multi-Ion Exchange Membrane Based Electrolysis System” Meeting Abstracts. *The Electrochemical Society*, October 2-7, **2016**, Honolulu, Hawaii.
  17. **M. Nazemi**, S. Polat, M. Shahbakhti, “Advanced combustion model of RCCI Engines” *CONVERGE User Group Meeting*, September 23-25, **2014**, Madison, WI, USA.

## GRANT WRITING EXPERIENCE

- Co-authored a successfully funded research proposal for the US National Science Foundation (NSF) (Grant No. 1904351) on my Ph.D. dissertation topic. PI: Mostafa A. El-Sayed  
\$430,346- ([https://nsf.gov/awardsearch/showAward?AWD\\_ID=1904351&HistoricalAwards=false](https://nsf.gov/awardsearch/showAward?AWD_ID=1904351&HistoricalAwards=false))
- Wrote a successful proposal on “Sustainable and Decentralized Production of Ammonia from Air, Water, and Electricity using Plasmonic Nanocages” for Georgia Research Alliance phase I grant. \$50,000 (June 2020)
- Wrote a successful proposal on “Using Nanotechnology for Electrosynthesis of Nitrogen-based Fertilizer under Ambient Conditions” for Amazon Catalyst at ECS grant program. \$25,000 (Oct. 2018)
- Wrote a successful proposal on “Hollow Plasmonic Nanostructures for (Photo)Electrochemical Nitrogen Fixation under Ambient Conditions” for the Technological Innovation: Generating Economic Results (TI:GER) fellowship in Scheller College of Business at Georgia Tech. \$15,200 (May 2018)
- Wrote a successful proposal as a User-PI on “Probing the Mechanical Stability of Hybrid Hollow Plasmonic Nanostructures in Electrochemical Energy Conversion Systems Using Operando Atomic Force Microscopy” for access to the User Nanoscience Research Program at the Center for Nanophase Materials Sciences (CNMS) at Oak Ridge National Laboratory (ORNL). (Access period: Aug. 2020–July 2022)

## MENTORING AND TEACHING EXPERIENCES

- **Undergraduate Research Mentor-Georgia Tech**

Mentored an undergraduate student (Abdulaziz Alabbady) in Materials Science and Engineering-Georgia Tech (*recipient of the King Abdullah University of Science and Technology (KAUST) Gifted Student Program*) on a project on gas-phase photo-electrochemical ammonia production using plasmonic-based nanoparticles. Jan. 2019–Aug. 2021

Mentored an undergraduate student (Jalen Borne-Junior in Chemistry and Biochemistry) to study the mechanical stability of hybrid plasmonic nanostructures in electrochemical energy conversion systems using *operando* atomic force microscopy. Aug 2020-Aug. 2021

Mentored three undergraduate students (James Padgett, Avery Agles, and Kelsey Dobson) under Georgia Tech PURA (President’s Undergraduate Research Award) on a project to evaluate conversion of salinity gradient energy into electricity and hydrogen. Results have been disseminated through journal publications and conference presentations. May 2016–July 2017
- **Graduate Teaching Assistant in Electrochem Storage-Georgia Tech** Aug. 2018–Dec. 2018
 

Instructor: Prof. Paul Kohl

Developed five 50-minute lectures for graduate and senior-level undergraduate students on various electrochemistry topics. Held office hours and recitations for the exams.
- **Graduate Teaching Assistant in Energy-Thermal-Fluids-1 (ETF 1)-Michigan Tech** Jan. 2015–May 2015
 

Instructor: Prof. Mahdi Shahbakhti

Gave problem-solving lectures and created and graded homework and quizzes.

- **Coach of Thermodynamics and Statics at Engineering Learning Center (ELC)-Michigan Tech** Jan. 2014–May 2014  
Director: Dr. Aneeet Narendranath  
Taught and helped undergraduate students with their homework and exam problems.

## LEADERSHIP & VOLUNTEER EXPERIENCES

- **American Chemical Society (ACS) Science Coaches program** Oct. 2021-to present  
Serving as a coach to Ms. Amalia Klapper ([arw528@gmail.com](mailto:arw528@gmail.com)), a chemistry and science teacher at ELLIS Preparatory Academy in the Bronx, New York.  
Served as a coach to Ms. Dianna Kennen ([dkennen@rockdale.k12.ga.us](mailto:dkennen@rockdale.k12.ga.us)), a chemistry teacher at Rockdale Magnet School for Science and Technology in Conyers, GA with the hope to increase student engagement and excitement about chemistry.
- **Individual Membership Committee student member-The Electrochemical Society** Jun. 2020-to present  
Reviewing and coordinating short- and long-range plans for retaining existing members and institutional member representatives.  
Recruiting new members and institutional member representatives of the Society.
- **Session chair of the Ammonia Synthesis: Next Generation Technology at the Ammonia Energy Conference, Orlando, FL** Nov. 12-14, 2019  
Chaired a session and organized all invited speakers' presentations.
- **President-Electrochemical Society (ECS) student chapter-Georgia Tech** Aug. 2019-Aug. 2020  
Scheduled and organized electrochemistry-related events and outreach activities within and outside of Georgia Tech.  
Co-organized the ECS Georgia Section conference took place at the Georgia Institute of Technology in September 2019.  
Led a group of engineers that focuses on K-12 outreach in proton exchange membrane (PEM) fuel cell technology.
- **Vice President-Electrochemical Society (ECS) student chapter-Georgia Tech** Sep. 2017-Jul. 2019  
Contributed to developing a schedule of events for ECS local conference on April 2018 at Georgia Tech and various STEM outreach activities.
- **Facilitator for the NH<sub>3</sub> Energy Implementation Conference, Pittsburgh, PA** Nov. 2018  
Organized all invited speakers' presentations and helped moderators to write a summary report.
- **Technology Chair-American Society for Engineering Education (ASEE) student chapter-Georgia Tech** Aug. 2017-May 2018  
Contributed to the organization of on-campus events to highlight research and new teaching methods in STEM education.
- **Reviewer for Undergraduate Proposals for President's Undergraduate Research Awards (PURA) fund-Georgia Tech** Jan. 2017-to present  
Evaluated and scored 6 undergraduate research proposals in Mechanical Engineering major every semester.
- **Engineers for a sustainable World Education Outreach-Atlanta, GA** Jan. 2017-May 2017  
Tutored students at Henry W. Grady High School in Atlanta to help prepare under-represented minority high school students with their exams and classes.
- **Judge for Capstone Design Expo-Georgia Tech** Spring 2017, 2018  
Judged Capstone design projects of senior undergraduate students in Mechanical Engineering at Georgia Tech.

## EDITORIAL ACTIVITY

**Reviewer**

ACS Applied Materials and Interfaces  
ACS Applied Energy Materials  
Journal of Physical Chemistry  
Applied Energy  
Journal of Power Sources  
ACS Sustainable Chemistry and Engineering  
Journal of the Electrochemical Society  
iScience  
Energy Conversion and Management  
Applied Thermal Engineering  
Chemical Engineering Science  
Journal of Corrosion Science  
SAE World Congress (2015, 2016)  
ASME Power and Energy conference (2016, 2017)

**PROFESSIONAL MEMBERSHIP**

Electrochemical Society (ECS)  
American Chemical Society (ACS)  
American Institute of Chemical Engineers (AIChE)  
American Society of Mechanical Engineers (ASME)  
NH<sub>3</sub> Fuel Association  
American Society for Engineering Education (ASEE)  
Society of Automotive Engineers (SAE)

**REFERENCES****Prof. Mostafa A. El-Sayed**

Regents' Professor Emeritus  
Director, Laser Dynamics Laboratory  
School of Chemistry and Biochemistry  
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**Prof. Meilin Liu**

Regents' Professor and Hightower Chair in Materials Science and Engineering, and Associate Chair  
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**Prof. Jaehong Kim**

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**Prof. Jonathan Giuliano**

Executive Director and Academic Director of TI:GER  
Professor of the Practice of Strategy & Innovation  
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**Prof. Mahdi Shahbakhti**

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