

# Sahar Pishgar

---

**Contact Information** University of Michigan  
930 N. University Avenue, Chemistry Building, Room 4708  
Ann Arbor, MI 48109-1055  
Cell: (+1) 502-759-7519  
E-mail: [spishgar@umich.edu](mailto:spishgar@umich.edu)

## Education

- **University of Louisville (UofL)**, Department of Physics and Astronomy, Louisville, USA, 2017-2021, Ph.D.
- **University of Louisville**, Louisville, USA, 2015- 2017, M.Sc. in Physics, GPA: 3.96
- **Sharif University of Technology (SUT)**, Tehran, Iran 2012-2015, M.Sc. in Physics
- **Sharif University of Technology**, Tehran, Iran 2007-2012, B.Sc. in Physics

## Research Experience

**Postdoctoral Research Fellow**, University of Michigan, Ann Arbor, MI, USA, 2021- present.  
Advisor: Stephen Maldonado

- Investigation of charge transfer reactions at semiconductor/electrolyte contacts using semiconductor nanoelectrodes
- Demonstration of new strategies in quantitative electroanalysis of semiconductor electrodes

**Graduate Researcher**, Conn Center for Renewable Energy Research, University of Louisville, KY. 2015-2021

Advisors: Joshua Spurgeon and Gamini Sumanasekera

- Investigation of n-GaAs photoanode corrosion in acidic media with various thin Ir co-catalyst layers
- Investigation of the photocorrosion of GaP and GaSbP III-V photoanodes in acid with *in-situ* UV/vis spectroscopy
- Characterization and implementation of a III-V GaSb<sub>x</sub>P<sub>(1-x)</sub> alloy semiconductor for efficient solar-driven water-splitting
- Photoelectrochemical reduction of CO<sub>2</sub> to HCOOH on silicon photocathodes with reduced SnO<sub>2</sub> porous nanowire catalysts
- Synergistic plasma-assisted electrochemical reduction of nitrogen to ammonia
- Investigation of optical and vibrational features of Phosphorene

**Graduate Researcher**, Department of Physics, Sharif University of Technology, Nanoparticles and coating lab ([NCL](#)), Tehran, Iran 2013-2015.

Advisor: Nima Taghavinia

- M.Sc. Thesis: Flexible dye sensitized solar cells based on titanium mesh as the substrate”,
- Electrophoretic deposition of Mesoporous TiO<sub>2</sub> Nanoparticles on stainless steel mesh”

## Honors and Awards

- **Dissertation Completion award**, University of Louisville, Graduate School, Spring 2021
- Graduate Teaching Assistantship, University of Louisville, Department of Chemistry, 2018-present
- Graduate Research Assistantship, Conn Center for Renewable Energy Research, University of Louisville, Fall 2017
- Graduate Teaching Assistantship, University of Louisville, Department of Physics and Astronomy. 2015- 2017
- **Graduate Network in Arts and Sciences, Research Fund**, Spring 2019 and Fall 2018
- **Graduate Student Council Research Grant**, University of Louisville, Spring 2017.
- Member of Graduate Teaching Assistant Academy, University of Louisville
- **Fellowship**, Sharif University of Technology, 2012-2015, M.Sc. student in physics.
- **Fellowship**, Sharif University of Technology, 2007-2012, B.Sc. student in physics.
- **Ranked 49<sup>th</sup>** among almost 13000 participants in the nationwide university entrance exam in the field of Physics for M.Sc. degree, Iran 2012.
- **Ranked 1<sup>st</sup>** in nationwide Azad University entrance exam in field of physics, Iran 2007.

## Student Leadership Experiences

- Vice president of Iranian Student Organization, University of Louisville. 2017-2019
- Supervising undergrad and graduate students at solar fuels group, Conn Center, 2017-2019

## Publications ([Google Scholars](#))

- In-situ analytical techniques for the investigation of material stability and interface dynamics in electrocatalytic and photoelectrochemical applications, **Sahar Pishgar**, Saumya Gulati, Jacob M. Strain, Ying Liang, Matthew C. Mulvehill, and Joshua M. Spurgeon. *Small Methods*, 2021.
- Investigation of n-GaAs photoanode corrosion in acidic media with various thin Ir co-catalyst layers, **Sahar Pishgar**, Saumya Gulati, Gamini Sumanasekera, and Joshua M. Spurgeon. *ACS Appl. Energy Materials*, 2021. [Submitted]
- Intense Pulse Light Annealing of Perovskite Photovoltaics Using Gradient Flashes. Amir H. Ghahremani, **Sahar Pishgar**, Jitendra Bahadur, and Thad Druffel. *ACS Appl. Energy Materials*, 2020.
- Pulsed electrochemical carbon monoxide reduction on oxide-derived copper catalyst Jacob M Strain, Saumya Gulati, **Sahar Pishgar**, Joshua M Spurgeon. *ChemSusChem*, 2020.
- Investigation of the photocorrosion of n-GaP photoanodes in acid with in-situ UV-Vis spectroscopy, **S Pishgar**, J Strain, S Gulati, G Sumanasekera, G Gupta, J Spurgeon. *Journal of Materials Chemistry A*, 2019.
- Photocatalytic hydrogen evolution on Si photocathodes modified with bis (thiosemicarbazonato) nickel (ii)/Nafion. Saumya Gulati, Oleksandr Hietsoi, Caleb A Calvary, Jacob M Strain, **Sahar Pishgar**, Henry C Brun, Craig A Grapperhaus, Robert M Buchanan, Joshua M Spurgeon, *Chemical Communications*, 2019.

- A study on the material characteristics of low temperature cured SnO<sub>2</sub> films for perovskite solar cells under high humidity. Jitendra Bahadur, Amir H Ghahremani, Blake Martin, **Sahar Pishgar**, Thad Druffel, Mahendra K Sunkara, Kaushik Pa, Journal of Materials Science: Materials in Electronics, 2019.
- Synergistic plasma-assisted electrochemical reduction of nitrogen to ammonia. **S Pishgar**, S Kumari, ME Schwarting, WF Paxton, JM Spurgeon, Chemical Communications, 2018.
- Photoelectrochemical reduction of CO<sub>2</sub> to HCOOH on silicon photocathodes with reduced SnO<sub>2</sub> porous nanowire catalysts. KR Rao, **S Pishgar**, J Strain, B Kumar, V Atla, S Kumari, JM Spurgeon, Journal of Materials Chemistry A, 2018.

## Presentations

- Materials Research Society Fall/Spring Virtual Meeting, 2020.
- Materials Research Society Spring Meeting, Phoenix, AZ, 2019.
- Graduate Students Regional Research Conference, Louisville, KY, 2019.
- Graduate Network in Arts and Sciences conference, Louisville, KY, 2019.

## Workshops Attended

- Hands-On Photovoltaic Experience (HOPE), National Renewable Energy Laboratory, Golden, CO, 2020.

## Skills

- **Microscopy: Optical, SEM, EDS**
- **Spectroscopy: XPS, UPS, Raman, Photoluminescence (PL), UV-Vis**
- **Electrical: 4-point probe, Hall effect measurement**
- **Deposition: Atomic layer deposition (ALD), Thermal evaporator, Electrodeposition**
- **Photo-electrochemistry**

## Computer Skills

- Programming language: MATLAB
- Microsoft Office (Excel, Word, PowerPoint)
- Origin-pro
- SolidWorks

## Highlights of Qualification

- Creative and Innovative quick learner
- Strong in meeting deadlines
- Excellent public speaking, communication skills and teamwork attitude
- Flexible and adaptive to any environment
- **Lab work experiences: 8 years of experience in Nanoparticles and Coating Lab (SUT) and Conn Center for Renewable Energy Research (UofL)**
- Ability to manage multiple projects and tasks simultaneously