

OSAMAH ALGHAZWAT

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Google Scholar: <https://scholar.google.com/citations?user=rfHvfs4AAAAJ&hl=en>

PROFILE

Material chemist (Polymeric Photo-responsive chemistry) with 7 years of experience in academic research. Studied several different photo-responsive and nonphotic-responsive Polymeric and organic systems employing a variety of synthetic and physiochemical methods. Demonstrated Polymer chemistry, and Photochemical industry.

Skilled in the design, synthesis, purification, characterization, and physiochemical study of both photo-responsive and non-photo-responsive organic and polymeric materials

- Extensive background in synthetic Polymer Physiochemical methods (Polymers, hydrogels, organic molecules).
- Strong publication record in peer-reviewed journals.
- Excellent communication, teamwork, and writing skills developed through collaborative work.

EDUCATIONAL QUALIFICATIONS

Ph.D. in Polymeric/photo chemistry, Florida Institute of Technology, USA **May 2021**

- Dissertation: Metastable state photoacid and Ultrasound Responsiveness Carbon Monoxide Releasing Polymer Micelles. GPA: 4.0

M.Sc. in Chemical Sciences, Mut'ah University, Jordan **Aug 2014**

- Dissertation: Synthesis, Characterization, and Solar Cell Fabrication of Dithieno [3,2-b:2',3'-d]thiophene cyanoacrylic as dye sensitizer. GPA 3.7/4.0

B. Sc. in Chemical Technology, Tafila Technical University, Jordan **June 2010**

RESEARCH EXPERIENCE

Chemist, Research associate (Postdoc), Florida Institute of Technology, USA **May 2021 to Aug 2023**

- Developed a novel material, which can capture CO₂ from air and release the CO₂ on demand with solar light.
- Enhanced the solubility of the photoacids in water that can be used to release carbon dioxide.
- Designed, synthesized Metastable state photo acids for control of pH and proton chemistry with light.
- Lead research & development projects as assigned and is responsible for recommending initiation of projects, or their abandonment.
- Under minimum direction, initiates, plans, and executes the technical portion of projects.
- Operates, or directs the operation of, laboratory equipment or apparatus in the performance of tests or experiments.
- Prepares interim and final reports on projects as required including presentation of specific conclusions and recommendations on all phases of the assignment.

Ph.D. Research Assistant, Florida Institute of Technology, USA **Aug 2017 to May 2021**

- Developed novel photoacids that can be activated by near IR light.
- Developed photo-responsive material that can be switched on /off by different wavelengths of light.
- Metastable state photo acids and their polymers for control of pH and proton chemistry with light.
- Expertise in photo-physiochemical studies of photoacids in solutions.
- Developed organic photo-carbon monoxide releasing materials (Photo-CORMs) for incorporation into scaffolds for vascular tissue engineering.

Research Assistant, Mut'ah University, Jordan**Feb 2011 to Aug 2014**

- Developed dyes-sensitized solar cells: conducting dyes, fabrication, and characterization of solar devices.
- Expertise in organic synthesis and characterization.

TEACHING EXPERIENCE

Assistant Professor. Mu'tah university**Oct 2024 - Present**

- Taught Polymer chemistry, Physical chemistry, Colloids and surfaces of chemistry & industrial chemistry. Weekly preparation of quizzes. Holding office hours weekly to undergraduate students. Assisted in course development and improvements in summer. Proctoring mid and final-semester exams. Assisted in the grading of examination papers.

Assistant Professor. American International University/Kuwait**Aug 2023 to Sep2024**

- Taught Organic chemistry 230 &240. Weekly preparation of quizzes. Holding office hours weekly to undergraduate students. Assisted in course development and improvements in summer. Proctoring mid and final-semester exams. Assisted in the grading of examination papers.

Lecturer, Eastern Florida State College, USA**Jan 2022 to Dec2022**

- Taught general chemistry 101 &102. Weekly preparation of quizzes. Holding office hours weekly to undergraduate students. Assisted in course development and improvements in summer. Proctoring mid and final-semester exams. Assisted in the grading of examination papers.

Graduate Teaching Assistant, Tafila Technical University, Jordan**Feb 2014 to Jun 2015**

- Taught Physical and Instrumental analysis chemistry laboratory courses for 3rd-year undergraduate students. Mentored undergraduate research students. Assisted examination work, grading, and year-end honors selection of graduating class. Assisted in the development of a computer-assisted grading system.

Teacher at Ministry of Education, Jordan.**Aug 2010 to Jun 2014.**

- Teaching Chemistry 11th,12th Grades

TECHNICAL SKILLS

- Synthesis of functional polymers with different methods (radical, anionic, and ring-opening polymerization)
- Preparation of nanoparticles with encapsulated molecules.
- Expertise in the design, synthesis, separation, purification, and characterization of organic compounds.
- Experienced in multi-step synthesis, multi-gramscale synthesis, optimization of chemical processes, handling air-sensitive reagents, and using Schlenktechniques.
- Experienced in design, synthesis, separation, purification, and characterization of photo-responsive organic materials (chromophores, fluorescent dyes); photo-polymerization.
- Experienced in the Synthesis and characterization of monomers, polymers, and hydrogels.
- Experienced in the preparation of polymer thin films and bilayers using drop coating and spin coating methods.
- Characterized, and measured mechanical strength and swelling behavior of polymers and hydrogels.
- Hands-on experience in photo-physiochemical studies. (Kinetics, stability, quantum yield) in organic materials in solutions and polymer thin films. (In-situ and ex-situ measurements)

Instrumentation:

NMR spectroscopy, FT/AT-IR, LC-MS, Chromatographic techniques, UV-Visible spectroscopy, Fluorescence spectroscopy, Programmable spin-coating system, Tensile strength tester, Quantum meter, pH meter, UV reactor, LED lights, Electrochemical potentiostat, Optical polarizing spectroscopy. Transition Electron Microscope (TEM), Zeiss microscope (fluorescence imaging), and Dynamic scattering light (DSL).

Software: Microsoft Office, Adobe, MestReNova, Chemdraw, Scifinder.

PUBLICATIONS

- **Alghazwat, Osamah**, Adnan Elgattar, Thaaer Khalil, Zhuozhi Wang, and Yi Liao. "Red-light responsive metastable-state photoacid." *Dyes and Pigments* 171 (2019): 107719.
- Elgattar, Adnan, Kenyatta S. Washington, Somayeh Talebzadeh, Almutasim Alwagdani, Thaaer Khalil, **Osamah Alghazwat**, Sultan Alshammri, Hemant Pal, Chris Bashur, and Yi Liao. "Poly (butyl cyanoacrylate) nanoparticle containing an organic photoCORM." *Photochemical & Photobiological Sciences* 18, no. 11 (2019): 2666-2672.
- **Alghazwat, Osamah**, Adnan Elgattar, Yi Liao, and Hajar Alharithy. "A reversible photoacid switched by different wavelengths of light." *ChemPhotoChem* (2020). <https://doi.org/10.1002/cptc.202000256>
- **Alghazwat, Osamah**, Somayeh Talebzadeh, Jeremiah Oyer, Alicja Copik, and Yi Liao. "Ultrasound responsive carbon monoxide releasing micelle." *Ultrasonics Sonochemistry* 72 (2021): 105427.
- Elgattar, Adnan, **Osamah Alghazwat**, Alan B. Brown, Vyacheslav S. Bryantsev, Vera Bocharova, and Yi Liao. "Photoreaction of Indazole Metastable-State Photoacid." *Journal of Photochemistry and Photobiology A: Chemistry* (2023): 114599.
- Al-Taweel, S., Al-Trawneh, S., Al-Dmour, H., **Al-Ghzawat, O.**, Alhalasah, W., & Mousa, M. (2023). Effect of thiophene rings rigidity on dye-sensitized solar cell performance. Dithienothiophene versus terthiophene as π -donor moiety. *Heliyon*, 9(10).
- Shiri, Changizi, Jennifer, vasant; **Osamah alghazwat**, yi, liao; chris, bashur. Carbon Monoxide release from ultrasound sensitive microbubbles improves endothelial cell growth, *Journal of Biomedical material research part A*, 2024. Article ID: JBMA37629.
- **Alghazwat O**, Elgattar A, Liao Y. Photoacid for releasing carbon dioxide from sorbent. *Photochem Photobiol Sci*. 2023 Sep 11. doi: 10.1007/s43630-023-00472-8. Epub ahead of print. PMID: 37695489.
- **Alghazwat, Osamah**, Melyse Laud, and Yi Liao. 2024. "Thermally Enhanced Acidity for Regeneration of Carbon Dioxide Sorbent" *Energies* 17, no. 17: 4279. <https://doi.org/10.3390/en17174279>
- **Osamah Alghazwat**, Thaaer Khalil, Reza Behjatmanesh-Ardakani, Enhancing Photoacidity in Indazole-Metastable-State Photoacids: The Role of Nitro Substituents, 2025, **submitting**

CONFERENCES

- **Alghazwat, Osamah**, Thaaer Khalil, Adnan Elgattar, and Yi Liao. "NIR-responsive metastable-state photoacid." In Abstracts of Papers of the American Chemical Society, vol. 257. 1155 16TH ST, NW, WASHINGTON, DC 20036 USA: AMER CHEMICAL SOC, **2019**. (Poster).
- **Alghazwat,Osamah**, Talebzadeh,Somayeh, and Liao,Yi. "Ultrasound Responsive Carbon Monoxide Releasing Micelle", American gas transmitter symposium 2020, Twitter poster event, University of Oregon,gaso**2020**/CO.
- **Alghazwat, Osamah**, Adnan Elgattar, Yi Liao," Photoacid for releasing carbon dioxide from sorbent, FAME ACS, University of Florida, Tampa, Florida, USA **2023**.

AWARDS & ACHIEVEMENTS

- Recipient of the "Outstanding Graduate Student of the Year 2021" award, Florida Institute of Technology, USA.
- Florida Institute of Technology Doctoral Graduate Research Assistant Tuition Scholarship, 2017 to 2021.
- National Science Foundation Research Assistant Scholarship, 2017 to 2021.

AFFILIATIONS

- Member of American Chemical Society. 2019 to present

REFERENCES

- **Dr. Yi Liao Department of Chemistry**
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