

Güliz Ersoy Özmen, PhD

Organic and Medicinal Chemist

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Profile

Highly skilled, innovative and passionate organic chemist, specializing in NIR dyes, heterocycles, small molecule and fluorophore synthesis. Has 10+ year research experience in synthesis, purification, NMR characterization, absorbance and fluorescence spectroscopy. Experienced in multi-step organic synthesis, spectroscopy, analytical method development, molecular modeling, docking, and structure-property optimization. Strong publication record, cross-functional collaboration experience, and teaching background. Seeking roles in research, medicinal chemistry, or analytical chemistry.

RESEARCH EXPERIENCE

Postdoctoral Research Fellow, University of Oklahoma Health Sciences Center, Oklahoma City, OK, USA

August 2025- Present

Doctor of Philosophy in Chemistry (Organic and Medicinal Chemistry), Georgia State University (GSU), Atlanta, USA

Advisor: Prof. Maged Henary

August 2021 – August 2025

Design and synthesis of NIR fluorophores, cyanine dyes and hemicyanine dyes for biomedical applications

- Synthesis of bioimaging agents for passive and activatable targeting, pH active probes and theragnostic agents

Master of Science in Organic Chemistry, GSU, Atlanta, USA

Advisor: Prof. Maged Henary

August 2019 – July 2021

Master of Science in Analytical Chemistry, Middle East Technical University (METU), Ankara, Türkiye

August 2017 – August 2019

Bachelor of Science in Chemistry, METU, Ankara, Türkiye

August 2011-June 2017

Related Skills

Synthetic Chemistry:

- Small molecule and near infrared dye synthesis for biological applications such as pH sensitive fluorophores, tissue targeting approaches, fluorescence and optoacoustic imaging probes
- Microwave synthesis
- Coupling reactions
- Peptide synthesis
- Small molecule/ Dye-peptide conjugation
- Purification with column chromatography, HPLC and LC-MS

Analytical Chemistry

- Characterization of small molecules using ^1H , ^{13}C and ^{19}F NMR (Bruker Avance 400 & 600, TOPSPIN)
- HPLC (Schimadzu)
- FT-IR (Nicolet iS 10, Thermo Fisher Scientific, OMNIC)
- GC (GC- 2010, SHIMADZU, Chromeleon)
- Double Beam UV-Visible Spectrophotometer (Perkin Elmer Lambda 35, UV WinLab)

- Fluorescence Spectrophotometer (Shimadzu RF-5301PC)
- Quantum yield spectrometer
- Odyssey Imaging System (Fluorescence)
- Conventional chromatography (TLC, Paper, Column, Ion Exchange, Chromatotron)
- pH analysis with pH meter and titrations
- Peptide synthesizer (CEM Liberty Blue Microwave peptide synthesizer)
- ICP-MS
- AAS
- TGA
- Ball Mill (for single layer graphene oxide and carbon nanotubes)

Computational Chemistry

- Docking with Auto Dock Vina (dye- peptide and small molecule protein interactions, analyzing binding pockets and energies)
- Gaussian 16W (optimization, TD-DFT, HOMO LUMO energy state calculations, dipole moment calculation, oscillator strength calculations)
- Spartan (HOMO LUMO energy state calculations, TD-DFT, molecular mechanics)

Lab Skills

- Growing and maintaining healthy and cancerous cells
- Managing chemical inventory and waste

PUBLICATIONS

Published

- **Guliz Ersoy Ozmen**, Maged Henary, Roadmap for Designing Donor-Acceptor Fluorophores in UV-vis and NIR Regions: Synthesis, Optical Properties and Applications, *Biomolecules*,15(1), 119 **2025**, <https://doi.org/10.3390/biom15010119>.
- Homan Kang, Seung Hun Park, **Guliz Ersoy Ozmen**, Jason Dinh, Vy Nguyen, Haoran Wang, Sung Ahn, Atsushi Yamashita, Wesley R. Stiles, Satoshi Kashiwagi, Kai Bao, Maged Henary, and Hak Soo Choi. Cartilage Targeting Fluorophores for Early Detection of Arthritis in NIR-II Window. *Chem*, **2025**, DOI: [10.1016/j.chempr.2025.102481](https://doi.org/10.1016/j.chempr.2025.102481).
- **Guliz Ersoy Ozmen**, Z. Gul, M. Henary, Opinion on Cyanine Dye Conjugates for Biomedical Applications, *Determinations in Nanomedicine and Nanotechnology*, 3, 2, 2832-4439 **2024**.
- S. Casa; **Guliz Ersoy Ozmen**, M. Henary, (Z)-3-(Dicyanomethylene)-4-((5-fluoro-3,3-dimethyl-1-(3-phenylpropyl)-3H-indol-1-ium-2-yl) methylene)-2-(((E)-5-fluoro-3,3-dimethyl-1-(3-phenylpropyl) indolin-2-ylidene) methyl) cyclobut-1-en-1-olate. *Molbank*, **2023**, M1576, <https://doi.org/10.3390/M1576>.
- Z. Essam, **Guliz Ersoy Ozmen**, Setiawan, D.; Hamid, R. R.; Abd El-aal, R.; Aneja, R.; Hamelberg, D.; Henary, M., Donor Acceptor Fluorophores: Synthesis, Optical Properties, TD-DFT and Cytotoxicity Studies. *Organic & Biomolecular Chemistry* **2021**, <https://doi.org/10.1039/d0ob02313b>.

Under Preparation

- **Guliz Ersoy Ozmen**, Bill MacCuaig, Shahir Sarasiya, Lacey McNally, Maged Henary, Exploring pH Sensitive Hemicyanine Dyes for Optoacoustic Imaging, (under preparation)
- Bill MacCuaig, Tuyen N. Tran, **Guliz Ersoy Ozmen**, Maged Henary, Lacey McNally, Hemicyanine Dyes with Modified Donor Units for Photoacoustic Imaging Applications. (Under preparation)

Teaching Experience

Classes TA for:

- Chem 1151 - Survey of Chemistry I Lecture and Laboratory
- Chem 1152 - Survey of Chemistry II Laboratory
- Chem 1212 - Principles of Chemistry I Laboratory
- Chem 2100 - Intermediate Organic Chemistry Laboratory I
- Chem 2410 - Organic Chemistry II Lecture
- Chem 3110 -Intermediate Organic Chemistry Laboratory II
- CHEM 4050 - Introduction to Fourier-Transform NMR Spectroscopy
- CHEM 4330 - Advanced Synthesis

Classes tutored:

- General chemistry
- Organic chemistry
- Biochemistry

Classes taught:

- CHEM 1211L - Principles of Chemistry I Laboratory (2023-2025, Instructor)

PRESENTATION AND CONFERENCES

- **G. Ersoy Ozmen**, Maged Henary, Oral Talk: Lighting Up Cartilage Tissue with Fluorescent Molecules, **GSU Graduate Conference 2025**
- **G. Ersoy Ozmen**, H. Kang, S. H. Park, J. Dinh, H. Wang, W. Hur, V. Nguyen, S. Ahn, A. Yamashita, W. Stiles, H. Choi, M. Henary, Poster Presentation: Positively Charged NIR Fluorophores for Cartilage Targeting, **Biological Stain Conference 2024**
- **G. Ersoy Ozmen**, B. MacCuaig, L. McNally, M. Henary, Poster presentation: Tailored Hemicyanine Dyes as Potential Optoacoustic Imaging Probes, **SERMACS 2024**
- **G. Ersoy Ozmen**, Henary, M.*, Oral Talk: Red Shifted Donor Acceptor Fluorophores as Potential Theranostic Agents for Breast Cancer, **Chemistry Graduate Research Symposium 2023**
- **G. Ersoy Ozmen**, Henary, M.*, Poster Presentation: Red Shifted Donor Acceptor Fluorophores as Potential Theranostic Agents for Breast Cancer, **Chemistry Graduate Research Symposium 2023**
- **G. Ersoy Ozmen**, Setiawan D., Hamid R., Aneja R., Hamelberg D., Henary M., Cytotoxicity of Red Shifted Donor Acceptor Fluorophores Against Triple Negative Breast Cancer Cells, **GSU Graduate Conference, 2022**
- **G. Ersoy Ozmen**, Setiawan D., Hamid R., Aneja R., Hamelberg D., Henary M., Modified Donor Acceptor Fluorophores as Potential pH Sensitive Probes, **Biological Stain Conference, 2022**

- Essam, Z.; **Ozmen, G. E.**; Setiawan, D.; Hamid, R. R.; Abd El-aal, R.; Aneja, R.; Hamelberg, D.; Henary, M., Donor Acceptor Fluorophores: Synthesis, Optical Properties, TD-DFT and Cytotoxicity Studies, **GSU Chemistry Graduate Student Symposium, 2021**
- **Ozmen, G.E.**; Essam, Z.; Setiawan, D.; Hamid, R. R.; Abd El-aal, R.; Aneja, R.; Hamelberg, D.; Henary, M., Red Shifted Donor Acceptor Fluorophores as Potential Agents for Biomedical Applications, **Southeastern Regional ACS Meeting, 2021**

WORK EXPERIENCE

Instructor, Chem 1211, Principles of Chemistry I Lab

Department of Chemistry, Georgia State University

January 2024-August 2025

Graduate Teaching and Research Assistant

Department of Chemistry, Georgia State University

August 2019-December 2023

Research and Development Chemist

Nanografi NanoTechnology, Ankara, Türkiye

January 2018-August 2019

Service – Teaching based

- Junior Reviewer at Journal of Enzyme Inhibition and Medicinal Chemistry journal
- Junior Reviewer at Biotechnic and Histochemistry journal
- Participating as judge at undergraduate research conferences

During my time in GSU I had the opportunity to coordinate and be a part of several teaching-based activities. I've served as a judge at Louis Stokes Alliance for Minority Participation (LSAMP) conference in 2023 and 2024 which is an undergraduate fellowship for minority students to promote research activities. I've also participated as a judge at Georgia State University Research Conference (GSURC) in 2024. At these research conferences I had the chance to evaluate more than 25 poster presentations.

- Activity director for Science Olympiad

I've participated 2024 GSU Atlanta Regional Science Olympiads as an activity director for dynamic planet event. In this event I worked together with other instructors to plan and organize dynamic planet module. I directed and monitored the participating students during the event.

- Chemistry Graduate Student Association Event Coordinator and Vice President

Since 2022 I became a member of Chemistry Graduate Student Association (CGSA) as an event coordinator. My responsibility as an event coordinator is to organize the four flagship events of CGSA which are graduate student welcome event, spring research symposium and two town hall meetings. In addition to these I have also planned engaging social events for graduate students such as movie nights and holiday events. I've coordinated the venue, decorations, IT support and helped with placing food orders.

- CDC Panel Moderator

I organized with CGSA a career panel where we invited three speakers with different backgrounds from Center of Disease Control (CDC). I've coordinated the schedule of the event with the speakers and moderated the panel. I planned the venue and ensured that the panel showcased future career pathways available to STEM graduate students.

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