

Michael Christopher Rosko

Postdoctoral Researcher, Inorganic Chemistry



CONTACT

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ABOUT ME

PhD in Chemistry with expertise in inorganic and physical chemistry. Strong background in research methodologies and data analysis. Proficient in spectroscopy and analytical instrumentation. Seeking roles as a Research Scientist or Semiconductor Engineer to apply academic experiences and further R&D initiatives.

RESEARCH AND WORK EXPERIENCE

North Carolina State University | Raleigh, NC

Postdoctoral Researcher | February 2024 – Present

- Calibration and re-installation of instrumentation for visible and infrared ultrafast transient absorption spectroscopy.
- Mentored 12 incoming graduate and undergraduate students in spectroscopic and/or synthetic techniques.

Graduate Research Assistant | August 2019 – February 2024

- Designed and characterized 20+ novel Cu(I) complexes using spectroscopy and electrochemistry.
- Processed large data sets to understand photophysical decay pathways of chromophores.
- Maintained and troubleshot 15 different laboratory instruments and entered detailed dialogues with vendors for vital repairs.
- Synthesized 35+ organic ligands and precursors to enhance metal complexes for solar energy conversion.

Teaching Assistant | August 2019 – February 2020

- Familiarized 100+ undergraduates across two semesters to understanding chemical safety.
- Directed recitation sessions for up to 30 students at a time to discuss lecture material and bridge the knowledge gap between students and the professor.

Marist College | Poughkeepsie, NY

Undergraduate Researcher | January 2018 – May 2019

- Devised four series of organic chromophores for applications as conducting polymers.
- Performed routine photophysical analysis on over 20 molecules in a wide range of solvents to discern the underlying excited state structure.

Teaching Assistant | August 2016 – May 2019

- Operated as a peer-mentor in 3 different chemical disciplines alongside the course instructor to bridge the knowledge gap between professor and student.

PUBLICATIONS

Long Excited-State Lifetimes in Three-Coordinate Copper(I) Complexes via Triplet-Triplet Energy Transfer to Pyrene-Decorated Isocyanides. *J. Am. Chem. Soc.* **2024**, Submitted.

Enhanced Visible Light Absorption in Heteroleptic Cuprous Phenanthrolines. *Inorg. Chem.* **2024**, *63*, 1692–1701.

Smart Dope: A Self-Driving Fluidic Lab for Accelerated Development of Doped Perovskite Quantum Dots. *Adv. Energy Mat.* **2023**, 2302303.

Sterically Encumbered Heteroleptic Copper(I) β -Diketiminato Complexes with Extended Excited-State Lifetimes. *Inorg. Chem.* **2023**, *62*, 16759–16769.

Employing Long-Range Inductive Effects to Modulate Metal-to-Ligand Charge Transfer Photoluminescence in Homoleptic Cu(I) Complexes. *Inorg. Chem.* **2023**, *62*, 3248–3259.

Long-Lived Photoluminescence of Molecular Group 14 Compounds through Thermally Activated Delayed Fluorescence. *Inorg. Chem.* **2022**, *61*, 7338–7348.

A Unified Approach to Decarboxylative Halogenation of (Hetero)aryl Carboxylic Acids. *J. Am. Chem. Soc.* **2022**, *144*, 8296–8305.

Next Generation Cuprous Phenanthroline MLCT Photosensitizer Featuring Cyclohexyl Substituents. *Inorg. Chem.* **2021**, *60*, 8394–8403.

EDUCATION

PhD in Chemistry

North Carolina State University, Raleigh, NC | August 2019 – February 2024 | GPA 3.86

Principal Investigator: Prof. Felix N. Castellano

Dissertation Title: *Photophysical Investigation of Cuprous bis-Phenanthroline Chromophores*

BS in Biochemistry, Biology Minor

Marist College, Poughkeepsie, NY | August 2015 – February 2019 | GPA 3.59

AWARDS & HONORS

- Robert A. Osteryoung Awards for Excellence in Research | 2024
- Charlie Moreland Graduate Fellowship | 2019 – 2022
- ACS Organic Division's Undergraduate Award | 2019
- Dr. J. Richard LaPietra Summer Research Fellowship | 2018

SKILLS

Measurement Techniques

- UV-Vis spectroscopy
- Transient absorption spectroscopy
- Fluorescence spectroscopy
- Electrochemistry
- NMR spectroscopy
- Infrared spectroscopy

Synthesis

- Organic and inorganic synthesis
- Schlenk and glovebox technique
- Purification (TLC, recrystallization, autocolumn)

Troubleshooting

- Vendor communication
- Hardware/ software maintenance
- Standard Operating Procedure (SOP) design
- Root-Cause Analysis (RCA)

Software

- Microsoft Office
- MNova
- ChemDraw
- Origin
- FlashPrint 3D Printing
- Gaussian/ GaussView

Soft Skills

- Project management
- Teamwork and collaboration
- Mentorship and training experience