

## Micah D. Brown, Ph.D.

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Office Location: Polk Science, Rm. 215

## Education

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### Doctor of Philosophy in Analytical Chemistry 2013-2018

University of North Carolina at Chapel Hill, Chapel Hill, NC

*Dissertation:* "Strategies to Improve Electrochemical Detection of Nitric Oxide in Biological Environments"

*Advisor:* Prof. Mark H. Schoenfish

*Relevant coursework:* Electroanalytical Chemistry, Bioanalytical Chemistry, Microfabrication, Separations, Surface Chemistry, Electronics

### Bachelor of Science in Chemistry 2009-2013

University of Rochester, Rochester, NY

*Distinctions:* *summa cum laude*, Phi Beta Kappa Society inductee, Dr. E. W. and Maude V. Flagg Awards

*Minor:* Mathematics

## Teaching Experience

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### Assistant Professor of Chemistry 2023-present

Florida Southern College, Lakeland, FL

*Courses:* Principles of Chemistry I (Fall 2023), Principles of Chemistry I Lab (Fall 2023)

*Responsibilities:* creating syllabi, lectures, exams, and homework assignments; holding office hours and study sessions; managing TAs and lab preparation; overseeing lab experiments; providing critical feedback to students through grading and mentorship; structuring curricula with department faculty; administering virtual course content.

### Visiting Assistant Professor of Chemistry 2020-2023

Elon University, Elon, NC

*Courses:* Environmental Chemistry (Spring 2023), General Chemistry I (Fall 2022, 2021, 2020; Spring 2021), General Chemistry II (Spring 2022), General Chemistry Lab I (Fall 2021), Organic Chemistry Lab I (Fall 2022, 2021), Organic Chemistry Lab II (Spring 2023, 2022).

*Responsibilities:* creating syllabi, lectures, exams, and homework assignments; holding office hours and study sessions; managing TAs and lab preparation; overseeing lab experiments; providing critical feedback to students through grading and mentorship; structuring curricula with department faculty; administering virtual course content.

### Research Mentor 2014-2018

University of North Carolina at Chapel Hill, Chapel Hill, NC

*Responsibilities:* Planning experiments, assigning readings, reviewing laboratory notebooks, and assessing research progress. Leading workshop activities for poster design and practice talks.

*Mentees:* Brian Tran (graduate rotation - Fall 2018), Nick Glenn (REU undergraduate - Summer 2017), Sara Maloney (graduate rotation - Fall 2016), Allie Piselli (undergraduate research assistant – Spring 2015, Fall 2014).

### Teaching Assistant

*Responsibilities:* preparing lectures, overseeing experiments, grading laboratory reports, and leading workshops.

University of North Carolina at Chapel Hill, Chapel Hill, NC

**2013-2015**

*Courses:* Analytical Chemistry Lab (Spring 2015, Fall 2013), Graduate Electronics Lab (Fall 2014), department tutor (Spring 2014).

University of Rochester, Rochester, NY

**2011-2012**

*Courses:* Quantum Chemistry Recitation (Fall 2012), Advanced Organic Chemistry Lab II (Spring 2012), Organic Chemistry Lab I (Fall 2011).

## Research Experience

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### Postdoctoral Researcher 2019-2020

Duke University, Durham, NC

- Investigated the mechanism of facet-selectivity in anisotropic formation of gold nanorods using electrochemical techniques and microscopy.
- Researched electrochemical deposition of iridium on silver substrates with XPS surface characterization for the purpose of water-splitting catalysis.

## Graduate Research Assistant

2013-2018

University of North Carolina at Chapel Hill, Chapel Hill, NC

- Developed electrochemical sensors for selective measurement of nitric oxide, carbon monoxide, and hydrogen sulfide using microfabrication, electroanalytical, and cell culturing techniques.
- Oversaw training and project management of lab personnel, including undergraduate research assistants and first-year graduate students.

## Laboratory Chemist

2010-2012

Pall Corporation, Cortland, NY

- Recurring summer internship in the R&D department. Performed routine quantitative analysis for various projects (metal electrodeposition, superhydrophobic coatings, air filtration efficacy).

## Publications

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Brown, M.; Wiley, B. J. Bromide Causes Facet-Selective Atomic Addition in Gold Nanorod Syntheses. *Chemistry of Materials* **2020**, 32, 6410.

Kim, M. J.; Cruz, M.; Chen, Z.; Brown, M.; Fichthorn, K.; Wiley, B. J., Isotropic Iodide Adsorption Causes Anisotropic Growth of Copper Microplates. *Chemistry of Materials* **2021**, 33, 881.

Yang, F.; Kim, M. J.; Brown, M.; Wiley, B. J. Alkaline Water Electrolysis at 25 A cm<sup>-2</sup> with a Microfibrous Flow-through Electrode. *Advanced Energy Materials* **2020**, 10, 2001174.

Hall, J. R.; Rouillard, K. R.; Suchyta, D. J.; Brown, M. D.; Ahonen, M. J. R.; Schoenfisch, M. H., Mode of Nitric Oxide Delivery Affects Antibacterial Action. *ACS Biomaterials Science and Engineering* **2020**, 6, 433.

Brown, M. D.; Schoenfisch, M. H., Electrochemical Nitric Oxide Sensors: Principles of Design and Characterization. *Chemical Reviews* **2019**, 199, 11551.

Brown, M. D.; Schoenfisch, M. H., Selective and Sensocompatible Electrochemical Nitric Oxide Sensor with a Bilaminar Design. *ACS Sensors* **2019**, 4, 1766.

Kim, M. J.<sup>†</sup>; Brown, M.<sup>†</sup>; Wiley, B. J., Electrochemical Investigations of Metal Nanostructure Growth with Single Crystals. *Nanoscale* **2019**, 11, 21709.

Brown, M. D.<sup>†</sup>; Hall, J. R.<sup>†</sup>; Schoenfisch M. H., A Direct and Selective Electrochemical Hydrogen Sulfide Sensor. *Analytica Chimica Acta* **2019**, 1045, 67.

Brown, M. D.; Schoenfisch, M. H. Catalytic Selectivity of Metallophthalocyanines for Electrochemical Nitric Oxide Sensing. *Electrochimica Acta* **2018**, 273, 98.

Soto, R. J.; Hall, J. R.; Brown, M. D.; Taylor, J. B.; Schoenfisch, M. H., In Vivo Chemical Sensors: Role of Biocompatibility on Performance and Utility. *Analytical Chemistry* **2017**, 89, 276.

Brown, M. D.; Schoenfisch, M. H. Nitric Oxide Permselectivity in Electropolymerized Films for Sensing Applications. *ACS Sensors* **2016**, 1, 1453.

Frost, J. R.; Vitali, F.; Jacob, N. T.; Brown, M. D.; Fasan, R. Macrocyclization of Organo-Peptide Hybrids through a Dual Bio-orthogonal Ligation: Insights from Structure-Reactivity Studies. *ChemBioChem* **2012**, 14, 147.

<sup>†</sup>co-first authorship

## Conference Presentations

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"Probing Stimulated Macrophages with a Selective and Robust Electrochemical Nitric Oxide Sensor," Gordon Research Conference in Bioanalytical Sensors, *poster presentation*. Providence, RI, **2018**.

"Probing the Selectivity of Metallophthalocyanine Electrocatalysts for Nitric Oxide Detection," American Chemical Society National Meeting, *seminar presentation*. Washington, D.C., **2017**.

"Nitric Oxide Permselectivity in Non-Conducting Electropolymerized Films for Sensing Applications," Gordon Research Conference in Bioanalytical Sensors, *poster presentation*. Providence, RI, **2016**.

## Proficiencies and Affiliations

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*Instrumentation:* bi-/multi-potentiostat, scanning electrochemical microscope, GC-MS, ICP-MS, XPS, SEM, DSC, <sup>1</sup>H NMR, FT-IR, UV-Vis, Raman, PVD sputterer, particle size analyzer, stylus profiler, oxygen plasma.

*Techniques:* electrochemistry, microfabrication, materials characterization, nanoparticle synthesis, cell culture, clean room, pedagogy.

*Software:* Sakai, Blackboard, Moodle, Python, Mathcad, LabVIEW, R, Avogadro, ImageJ, Microsoft Office Suite.

*Professional Memberships:* American Chemical Society, The Electrochemical Society.

**Micah D. Brown, Ph.D.**

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**Professional References**

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Dr. Kathy Matera: Chair of the Chemistry Department at Elon University.

Professor of Chemistry  
kmatera@elon.edu  
(336) 278-6226

2625 Campus Box  
Elon, NC 27244

Dr. Anthony Rizzuto: current teaching colleague at Elon University.

Assistant Professor of Chemistry  
arizzuto@elon.edu  
(336) 278-5761

2625 Campus Box  
Elon, NC 27244

Dr. Benjamin Wiley: principal investigator at Duke University during postdoctoral appointment.

Professor of Chemistry  
benjamin.wiley@duke.edu  
(919) 668-3066

2214 French Family Science Center  
Durham, NC 27708

Dr. Mark Schoenfisch: principal investigator at the University of North Carolina at Chapel Hill during candidacy.

Distinguished Professor  
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Chapel Hill, NC 27599