

TABITHA M. COOK
FORMERLY TABITHA M. CALLAWAY

EDUCATION

PhD in Inorganic Chemistry, 2016

University of Tennessee, Knoxville, TN

Bachelor of Sciences Degree in Chemistry, ACS Certified, 2011

Berry College, Rome, GA

PUBLICATIONS

Morton, L. A.; Miao, M.; **Callaway, T. M.**; Chen, T.; Chen, S.-J.; Tuinman, A. A.; Yu, X.; Lu, Z.; Xue, Z.-L. "Reactions of d⁰ tungsten alkylidyne complexes with O₂ or H₂O. Formation of an oxo siloxy complex through unusual silyl migrations" *Chem. Commun.*, **2013**, 49, 9555.

Sharma, B.; **Callaway, T. M.**; Lamb, A. C.; Steren, C. A.; Chen, S.-J.; Xue, Z.-L. "Reactions of group 4 amide guanidates with dioxygen or water. Studies of the formation of oxo products" *Inorg. Chem.* **2013**, 52, 11409.

Lamb, A. C.; Wang, Z.; **Cook, T. M.**; Sharma, B.; Chen, S.-J.; Lu, Z.; Steren, C. A.; Lin, Z.; Xue, Z.-L. "Preparation of all N-coordinated zirconium amide amidinates and studies of their reactions with dioxygen and water" *Polyhedron*, **2016**, 103, 2.

Abbott, J. K. C.; Smith, B. A.; **Cook, T. M.**; Xue, Z. L., Chapter 10 - Synthesis of Organometallic Compounds. In *Modern Inorganic Synthetic Chemistry (Second Edition)*, Elsevier: Amsterdam, 2017; pp 247.

Xue, Z.-L.; **Cook T. M.**; Lamb A. C. "Trends in NMR chemical shifts of d⁰ transition metal compounds" *J. Organomet. Chem.* **2017**, 846, 1.

PRESENTATIONS

"Studies of the reaction between (Me₃CO)₃W≡CCMe₃ and water" **T. M. Callaway**, S. C. Gibson, Z.-L. Xue
248th ACS National Meeting & Exposition, San Francisco, CA, United States, August 10-14, **2014**, oral.

"Synthesis and characterization of heptacoordinate amidinate complexes" **T. Callaway**, Z.-L. Xue, 250th ACS
National Meeting & Exposition, Boston, MA, United States, August 16-20, **2015**, oral.

EMPLOYMENT AND EXPERIENCE

Laboratory Preparatory for General Chemistry, Berry College, August 2008-May 2011

Advisors: Kaitlin Cash, Amanda Hardage

- Prepare and standardize solutions for the labs
- Train new preparatory workers and share experiences with them
- Set-up the lab for students (equipment, apparatuses, etc.)

Research Assistant, Berry College, May 2009-May 2011

Advisor: Kenneth Martin

- Grew, solved, and analyzed crystal structures of phenol and phenolate complexes

Warner Robins Police Department Forensics Laboratory Internship, May 2010-July 2010

Advisors: Shelley Belknap and Captain John Lanneau

- Catalogued evidence
- Developed fingerprints by chemical and physical means
 - Cyanoacrylate fuming, Iodine fuming, powder and tape
- Compared fingerprints gathered to those in AFIS database
- Used GC to determine blood-alcohol level in samples

Research Assistant, University of Tennessee, Knoxville 2011-2016

Advisor: Zi-Ling (Ben) Xue

- Synthesis and characterization of air-sensitive Group 4 and 6 d^0 complexes
- Studies of the reactions of air-sensitive Group 4 and 6 d^0 complexes with O_2 and H_2O
- Studies of the reaction of a tungsten alkylidyne complex with H_2O via MS and NMR
- Synthesis and characterization of heptacoordinated zirconium and hafnium trisamidinate chloride and trisamidinate alkyl complexes
- NMR kinetic studies of the thermolysis of a zirconium ethyl heptacoordinated complex
- Use of DART-MS, single crystal diffraction, and multiple NMR spectroscopies to characterize all complexes

TEACHING

Teaching assistant, Berry College, 2008-2011

- General Chemistry 1 Laboratory, CHM 108: Fall 2008, Fall 2009, Fall 2010
- General Chemistry 2 Laboratory, CHM 109: Spring 2009, Spring 2010, Spring 2011

Teaching assistant, University of Tennessee, Knoxville August 2011-May 2016

- TA General Chemistry 1, CHEM 120: Fall 2011, Fall 2012
 - Head TA for General Chemistry 1: Fall 2014, Fall 2015
- TA General Chemistry 2, CHEM 130: Spring 2012, Fall 2013
 - Head TA for General Chemistry 2: Spring 2016
- TA Group Theory, CHEM 550 (graduate level): Fall 2012, Fall 2013
 - Grade homework/tests, office hours
- TA Advanced Inorganic Chemistry Laboratory, CHEM 439: Spring 2013, Spring 2014, Spring 2015
 - Prep lab chemicals, demonstrate proper use of lab equipment, monitor safety, read/grade student lab reports

Undergraduate Research Mentor, University of Tennessee, Knoxville, Summer 2014, Summer 2015

- Aid to professor in the mentoring of undergraduate students
- Development of research projects
- Education about safe/effective laboratory skills in air-sensitive synthesis
- Education about instrumental techniques

Visiting Professor, Berry College, 2016-present

- General Chemistry 1, CHM 108: Fall 2016, Fall 2017: Lecture only; Spring 2017: Laboratory and Lecture
- Organic Chemistry Laboratory, CHM 223: Fall 2016
- Inorganic Chemistry, CHM 405: Spring 2017: Laboratory and Lecture

PROFESSIONAL AFFILIATIONS

American Chemistry Society Berry College Chapter

Treasurer 2010

University of Tennessee Association of Chemistry Graduate Students

Safety Officer 2013

American Chemistry Society Member

2010-present