

**TABITHA M. COOK**  
**FORMERLY TABITHA M. CALLAWAY**

**EDUCATION**

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**PhD in Inorganic Chemistry**, 2016

University of Tennessee, Knoxville, TN

**Bachelor of Sciences Degree in Chemistry, ACS Certified**, 2011

Berry College, Rome, GA

**PUBLICATIONS**

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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 d<sup>0</sup> tungsten alkylidyne complexes with O<sub>2</sub> or H<sub>2</sub>O. 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 d<sup>0</sup> transition metal compounds" *J. Organomet. Chem.* **2017**, 846, 1.

**PRESENTATIONS**

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"Studies of the reaction between (Me<sub>3</sub>CO)<sub>3</sub>W≡CCMe<sub>3</sub> 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**

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**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<sup>0</sup> complexes
- Studies of the reactions of air-sensitive Group 4 and 6 d<sup>0</sup> complexes with O<sub>2</sub> and H<sub>2</sub>O
- Studies of the reaction of a tungsten alkylidyne complex with H<sub>2</sub>O 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

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**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**

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***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