Kortney Melancon

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**SUMMARY**

Ph.D. candidate trained in computational and synthetic chemistry, with strong communication skills developed from extensive teaching/research experience and demonstrated ability to work independently or as part of a team. Special expertise in the following areas:

* Experimental Design
* Critical Literature Review
* Computational Chemistry
* Organometallic Chemistry
* Drug Discovery & Ligand-Protein Modeling
* Catalysis

**EDUCATION**

University of North Texas Denton, TX

Ph.D., Chemistry (Computational, Inorganic) December 2020 (Expected)

Graduate research advisor: Dr. Tom Cundari

Texas State University San Marcos, TX

B.Sc., Chemistry (Minor in Physics) May 2016

Undergraduate research advisor: Dr. Todd W. Hudnall

**Research and technical experience**

**Cundari Research Group** Denton, TX

Research Assistant August 2016 – December 2020

* Molecular modeling and quantum mechanical studies of organic and organometallic systems
* C–C and C–H bond activation in small molecules
* Designed, developed and executed protocol to describe organocatalytic ability of a series NHC-derived models
* Presented results at departmental seminars and national scientific conferences

**Reata Pharmaceuticals** Denton, TX

Researcher October 2019 – December 2020

* Drug design and protein modeling using docking, molecular dynamics, quantum mechanics/molecular mechanics approaches
* Natural and synthesized regulators of human cellular response to oxidative and inflammatory stress

**Hudnall Research Group**  San Marcos, TX

Research Assistant November 2013 – May 2016

* Synthesis and characterization of π-acidic carbenes as platforms to stabilize reactive main group species in a variety of oxidation states
* Characterized compounds by multinuclear NMR and EPR spectroscopy, X-ray diffraction, cyclic voltammetry, and IR spectroscopy

**PUBLICATIONS AND PAPERS**

**Journal Publications**

* B. M. Otten,\* **K.M. Melancon,**\* M.A. Omary, “All that glitters is not gold: A computational study of covalent vs. metallphilic bonding in bimetallic complexes of d10 metal centers,” Comments Inorg. Chem., **2018**, 38 (1), 1-35. DOI: 10.1080/02603594.2018.147315 (\*First author contribution)
* **K.M. Melancon**, M.B. Gildner, T.W. Hudnall, “Synthesis, spectroscopic characterization, and redox reactivity of a cyclic (alkyl) amino carbene-derived arsamethine cyanine dye,” *Chem. Eur. J.*, **2018**, *24*, 1-6. DOI: 10.1002/chem.201802393

***Journal Papers in Preparation***

* **K.M. Melancon**, T.R. Cundari, “Modulating NHC-backbone configurations for applications in organocatalytic umpolung reactions,” *Organic & Biomolecular Chemistry*, submitted **2020**.
* M.N. Ericson\*, L.M. Harris\*, B. Sanders, S. Tekarli, A. Rawashdeh, R. McDougald, B.M. Otten, **K.M. Melancon**, O. Elbjeirami, B. McNicholas, M.A. Omary, H.B. Gray. “Metallo-organometallic Chemistry and Photophysics: Metalloaromaticity and Tunable Monochrome/White Visible and Near-infrared Emission in Novel Metallo2cenes”, manuscript in preparation **2019**. (\*First author contribution)

***Highlighted Presentations***

* **K.M. Melancon**, T.R. Cundari, “Computational investigations of a proposed self-supported NHC-derived polymeric catalyst” *257th ACS National Meeting & Exposition*, San Diego, CA, August **2019**. (Sci-Mix)
* **K.M. Melancon**, B.M. Otten, M.A. Omary, “To Be or Not To Be: d-d Bonding Studies in Heterobimetallic Complexes.” *255th ACS National Meeting & Exposition*, New Orleans, LA, March **2018**. (oral)
* **K.M. Melancon**, B.M. Otten, M.A. Omary, “A New Bond on the Rise: d-d Bonding in Heterometallic Complexes” *50th Annual ACS Meeting-in-Miniature*, Texas Christian University, Fort Worth, TX, May **2017**. (oral)
* **K.M. Melancon**, T.W. Hudnall, “Synthesis and Characterization of Carbene-Stabilized Arsenic(I) Cations,” *Gulf Coast Undergraduate Research Symposium*, Rice University, Houston, TX, October **2015**. (oral)
* **K.M. Melancon**, A.J. Torres, T.W. Hudnall, “Synthesis and Characterization of Carbene-Stabilized Arsenic(I) Cations,” *250th ACS National Meeting & Exposition*, Boston, MA, August **2015**. (poster)

**TEACHING EXPERIENCE**

**University of North Texas** Denton, TX

Teaching Assistant, *Organic Chemistry Laboratory* August 2017 – May 2019

* Presented laboratory lectures throughout the semester
* Graded assigned laboratory reports, quizzes, homework and held weekly office hours for 60 students
* Consistently achieved 4.5+/5.0 on student approval reviews

Departmental Tutor, *Chemistry Resource Center* January 2018 – May 2018

* Provided tutoring for undergraduate students at UNT in all undergraduate courses in chemistry

Teaching Assistant, *Organic Chemistry & General Chemistry Lecture* January 2017 – July 2017

* Collaborated on curriculum and exam development, met with students upon request, and graded all written work, including final examinations and semester capstone reports

Teaching Assistant, *General Chemistry Laboratory* August 2016 – May 2017

* Presented laboratory lectures throughout the semester
* Graded assigned laboratory reports, quizzes, homework and held weekly office hours for 60 students
* Consistently achieved 4.5+/5.0 on student approval reviews

**Texas State University** San Marcos, TX

Undergraduate Student Mentor, *Hudnall Research Laboratory* June 2014 – August 2016

* Assisted research advisor in training and development of newly admitted research undergraduates in laboratory safety protocols, Schlenk line techniques, glovebox practices, and synthesis
* Assisted research advisor with incoming chemical shipments and inventory management

Teaching Assistant, *Physical Chemistry Laboratory* January 2016 – May 2016

* Improved past laboratory experimental procedures to reflect the use of newly acquired instruments and new protocols
* Graded assigned laboratory reports and held weekly office hours
* Assisted faculty with administrative tasks and curriculum development

Teaching Assistant, *Organic Chemistry & General Chemistry Laboratory* August 2013 – December 2015

* Presented laboratory lectures throughout the semester
* Graded assigned laboratory reports, quizzes, homework and held weekly office hours for 60 students

Learning Assistant, *Mechanics & Electromagnetism* January 2015 – May 2015

* Through guidance of weekly preparations sessions and a pedagogy course
* Facilitated discussions among groups of students in a variety of classroom settings that encouraged active student engagement in scientific discussions and collaborative efforts in homework assignments

**awards**

Toulouse Graduate School Tuition Grant (recurring) August 2016 – December 2020

Graduate Seminar Day – 1st Place Presentation, University of North Texas May 2019

College of Science Travel Grant August 2018 & March 2017

Toulouse Graduate School Travel Grant August 2018 & March 2017

Outstanding Presentation in Inorganic Chemistry, GCURS at Rice University October 2015

**professional Service**

***Symposium Judge***

* Departmental graduate symposium, University of North Texas

***Peer-reviewed articles for***

* Green Chemistry – Royal Society of Chemistry

***Affiliations***

* Association for Women in Science, Science Outreach Program (in conjunction with McKenna Children’s Museum and the American Society for Biochemistry and Molecular Biology), American Chemical Society (ACS Ambassador Program, Student Member)

**skills and certifications**

* Gaussian modeling software (ab initio, DFT methods)
* Molecular Operating Environment (MOE) software (QM/MM, MD, docking, ligand-protein interactions)
* Machine Learning with Python
* AMBER Molecular Dynamics Package
* GAMESS (MCSCF, CASSCF)
* Chimera, VMD, Chemcraft
* Organic, inorganic, organometallic synthesis
* Air-free synthesis using traditional Schlenk line techniques and glovebox practices
* Multinuclear NMR characterization
* Photoluminescence spectroscopy, UV/Visible absorption spectroscopy, IR spectroscopy

**REeferences**

**Dr. Thomas Cundari**

Regents Professor of Chemistry

University of North Texas

Department of Chemistry

Denton, Texas 76201

[Thomas.Cundari@unt.edu](mailto:Thomas.Cundari@unt.edu)

**Dr. LeGrande Slaughter**

Departmental Chair

Professor of Chemistry

University of North Texas

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**Dr. Todd W. Hudnall**

Associate Professor of Chemistry

Texas State University

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