

Andy A. Thomas, PhD

Texas A&M University
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Appointment

August 2020 – **Texas A&M University**
Assistant Professor, Department of Chemistry

Education

August 2011 – **University of Illinois at Urbana-Champaign**
May 2017 **Ph. D. in Chemistry**
Thesis: *Pre-transmetalation intermediates in the Suzuki-Miyaura reaction revealed: The missing link*
Advisor: Prof. Scott E. Denmark

May 2010 – **University of North Carolina at Charlotte**
August 2011 **Masters of Science in Chemistry**
Thesis: *Investigations of Mixed Organocuprates*
Advisor: Prof. Craig A. Ogle

August 2006 – **University of North Carolina at Charlotte**
May 2010 **Bachelors of Science in Chemistry**
Thesis: *Investigations of Lithium Tetramethylcuprate*
Advisor: Prof. Craig A. Ogle

Research Experience

June 2017 – **Massachusetts Institute of Technology**
June 2020 NIH Postdoctoral Fellow (Advisor: Prof. Stephen L. Buchwald)

August 2011 – **University of Illinois at Urbana-Champaign**
May 2017 Graduate Research Assistant (Advisor: Prof. Scott E. Denmark)

May 2008 – **University of North Carolina at Charlotte**
August 2011 Graduate / Undergraduate Research Assistant (Advisor: Prof. Craig A. Ogle)

Publications at TAMU (Independent)

(Undergraduate co-authors are underlined>)

In Preparation

26. Piña, J.; Aguirre, L. S.; Crockett, M. C.; Litwiller, L.; Ly, H.; **Thomas, A. A.***, Development of a Direct and Highly Selective Deprotonation Capture Sequence for the Synthesis of 4-Substituted Tetrahydroquinolines. *Manuscript in preparation.*

Submitted

25. Gonzalez, R.; Hsu, H.-H.; **Thomas, A. A.***, Improved Synthesis of Lithium Dendrites for the Synthesis of (Trimethylsilyl)methylolithium [**Submitted**]
24. Arriaga, D. K.; Kang, S.; **Thomas, A. A.***, Solvent Effects on the Rate of Olefin Ozonolysis: Development of a Homogeneous Flow Ozonolysis Protocol. [**Submitted**]

23. Wu, D.; Martin, R. T.; Piña, J.; Kwon, J.; Crockett, M. P.; **Thomas, A. A.**; Gutierrez, O.; Park, H. H.; Hedrick, J. L.; Campos*, L. M., A Generalized Approach to Activate CO₂ for Carbonation Polymerization and Functional Transformations. [**Submitted**]

Published

22. Arriaga, D. K.; **Thomas, A. A.***, Constructive Ozonolysis: Capturing Primary Ozonides. ChemRxiv [**Preprint**]. October 10, 2022. *Nat. Chem.* DOI: 10.1038/s41557-023-01247-5.
21. Crockett, M. P.; Piña, J.; Gogoi, A. R.; Lalis, R. F.; Nguyen, A. V.; Gutierrez, O.; **Thomas, A.A.***, Breaking the tert-Butyllithium Contact Ion Pair: A Gateway to Alternate Selectivity in Lithiation Reactions. *J. Am. Chem. Soc.* **2023**, *145*, 10743-10755.
20. Crockett, M. P.; Aguirre, L. S.; Jimenez, L. B.; Hsu, H.-H.; **Thomas, A. A.***, Preparation of Highly Reactive Lithium Metal Dendrites for the Synthesis of Organolithium Reagents. *J. Am. Chem. Soc.* **2022**, *144*, 16631-16637.
(Highlighted in C&EN News and Science Magazine)
19. Arriaga, D. K.; **Thomas, A. A.***, Antibiotics the easy way. *Nat Synth.* **2022** (News & Views)

Patents at TAMU (Independent)

18. Crockett, M. P.; Aguirre, L. S.; Jimenez, L. B.; Hsu, H.-H.; **Thomas, A. A.*** Phosphine Urea Ligands for Transition Metal Catalyzed Cross-Coupling Reactions. US Provisional Patent Filing 63/390,753; TAMU-6091
17. Litwiller, L; **Thomas, A. A.*** Preparation of Highly Reactive Lithium Metal Dendrites. US Provisional Patent Filing 63/386,756; TAMU-6063

Publications Prior to TAMU (Mentored)

16. Zhukhovitskiy, A.V.; Kobylanskiy, I.J.; **Thomas, A.A.**; Evans, A.M.; Delaney, C.P.; Flanders, N.C.; Denmark, S.E.; Dichtel, W.R.; Toste, F.D.* A Dinuclear Mechanism Implicated in Controlled Carbene Polymerization. *J. Am. Chem. Soc.* **2019**, *141*, 6473-6478.
15. **Thomas, A.A.**; Speck, K.; Kevlishvili, I.; Lu, Z.; Liu, P.*; Buchwald, S.L.* Mechanistically Guided Design of Ligands That Significantly Improve the Efficiency of CuH-Catalyzed Hydroamination Reactions. *J. Am. Chem. Soc.* **2018**, *140*, 13976-13984.
14. **Thomas, A.A.**; Zahrt, A.F.; Delaney, C.P.; Denmark, S.E.* Elucidating the Role of the Boronic Esters in the Suzuki-Miyaura Reaction: Structural, Kinetic, and Computational Investigations. *J. Am. Chem. Soc.* **2018**, *140*, 4401-4416.
13. **Thomas, A. A.**; Denmark, S. E.* Ernest L. Eliel, a Physical Organic Chemist with the Right Tool for the Job: Rapid Injection Nuclear Magnetic Resonance. In *Stereochemistry and Global Connectivity: The Legacy of Ernest Eliel*; Cheng, H. N., Ed.; ACS Symposium Series; American Chemical Society: Washington, DC, 2017; Vol. 2, pp 105-134.
12. **Thomas, A.A.**; Wang, H.; Zahrt, A.F.; Denmark, S.E.* Structural, Kinetic, and Computational Characterization of the Elusive Arylpalladium(II)boronate Complexes in the Suzuki-Miyaura Reaction. *J. Am. Chem. Soc.* **2017**, *139*, 3805-3821.
11. **Thomas, A.A.**; Denmark, S.E.* Pre-transmetalation intermediates in the Suzuki-Miyaura reaction revealed: The missing link. *Science*, **2016**, *352*, 329-332.
10. Dale, J.E.; Vermeulen, N.A.; **Thomas, A.A.**; Barnes, J.C.; Juríček, M.; Blackburn, A.K.; Strutt, N.L.; Sarjeant, A.A.; Stern, C.L.; Denmark, S.E.; Stoddart, J.F.* ExCage. *J. Am. Chem. Soc.* **2014**, *136*, 10669-10682.

9. Bertz, S.H.*; Cope, S.K.; Hardin, R.A.; Murphy, M.D.; Ogle, C.A.*; Smith, D.T.; **Thomas, A.A.**; Whaley, T.N. Complexes of the Gilman Reagent with Double Bonds across the π - σ Continuum. *Organometallics*. **2012**, *31*, 7827-7838.
8. Bertz, S.H.*; Browder, K.L.; Hardin, R.A.; Murphy M.D., Ogle, C.A.*; **Thomas, A.A.** Ligand Exchange in Mixed Organocuprate(I) π -Complexes. *Organometallics*. **2012**, *31*, 7809-7811.
7. Bertz, S.H.*; Hardin, R.A., Murphy, M.D., Ogle, C.A.*; Richter, J.D., **Thomas, A.A.** Rapid Injection NMR Reveals η^3 ' π -Allyl' Cu^{III} Intermediates in Addition Reactions of Organocuprate Reagents. *J. Am. Chem. Soc.* **2012**. *134*, 9557-9560.
6. Bertz, S.H.*; Hardin, H.A.; Murphy, M.D.; Ogle, C.A.*; Richter, J.D.; **Thomas, A.A.** Minimization of Organocuprate Complexity through Self-Organization: Remarkable Orientation Effect in Mixed Cuprate π Complexes. *Angew. Chem. Int. Ed.* **2012**, *51*, 2681-2685.
5. Bertz, S.H.*; Moazami, Y.; Murphy, M.D.; Ogle, C.A.*; Richter, J.D.; **Thomas, A.A.** Complexes of Gilman Reagents with C-S and C-N Double Bonds: σ or π Bonding? *J. Am. Chem. Soc.* **2010**, *132*, 9549-9551.
4. Bertz, S. H.*; Murphy, M.D.; Ogle, C.A.*; **Thomas, A.A.** Organocuprate(III) chemistry: synthesis and reactivity of amido, cyano, phosphido and thiolato ate complexes of copper(III). *Chem. Commun.* **2010**, *46*, 1255-1256.
3. Bartholomew, E.R.; Bertz, S.H.*; Cope, S.K.; Murphy, M.D.; Ogle, C.A.*; **Thomas, A.A.** Serendipity strikes again—efficient preparation of lithium tetramethylcuprate(III) via rapid injection NMR. *Chem. Commun.* **2010**, *46*, 1253-1254.
2. Monroe, T.B.; **Thomas A.A.**; Jones, D.S.*; Ogle, C.A.* Bis(2-naphthylmethyl)diphenylsilane. *Acta Cryst.* **2010**, E66, o132.
1. Burnham, L.E.; Kachla, R.M.; **Thomas A.A.**; Jones, D.S.*; Ogle, C.A.* Tetrakis(4-tert-butylbenzyl)silane. *Acta Cryst.* **2010**, E66, o2442.

Awards, Honors and Selected Service

Texas A&M University

- 2023 NIH-NIGMS MIRA Award (R35GM151018)
- 2023 ACS-PRF Doctoral New Investigator Grant (66745-DNI1)
- 2023 NSF-CAREER Award (CAREER-228881)
- 2022 Science of Synthesis Early Career Advisory Board Elect
- 2021 Welch Foundation Research Grant (A-2081-20210327)
- 2021 Ralph E. Powe Junior Faculty Enhancement Award (ORAU)

Massachusetts Institute of Technology

- 2018 Kaufman Teaching Program Certificate
- 2017 Ruth L. Kirschstein NIH Postdoctoral Fellowship (3 years of funding)

University of Illinois at Urbana-Champaign

- 2018 Reaxys PhD Prize Finalist
- 2016 Eli Lilly Graduate Fellowship
- 2015 Division of Organic Chemistry ACS Travel Award
- 2015 R.C. Fuson Travel Award
- 2015 Pines Travel Award
- 2014 C.S. Marvel Fellowship

- 2013 Dr. Harold R. Snyder Fellowship
2012 Dow Chemical Fellowship
University of North Carolina at Charlotte
2010 Research Award, Carolina-Piedmont Section of the ACS
2010 McKernan Research Scholarship Award, Carolina Chemical Club
2009 Second Place, Undergraduate Research Competition at UNC–Charlotte
2008 Third Place, Undergraduate Research Competition at UNC–Charlotte

Invited Presentations (Independent)

23. Texas Synthesis Conference TexSyn, College Station, TX, June 2024
Mechanistic Insights Facilitate the Development of New Bond Forming Processes
Thomas, A.A.
22. University of California at Los Angeles, Los Angeles, CA, March 2024
Mechanistic Insights Facilitate the Development of New Bond Forming Processes
Thomas, A.A.
21. Emerging Trends in Catalysis & Synthesis – IC-ETCS, Kharagpur, India, March 2024
Mechanistic Insights Facilitate the Development of New Bond Forming Processes
Thomas, A.A.
20. Catalysis and Chemical Engineering, Boston, MA, February 2024
Mechanistic Insights Facilitate the Development of New Bond Forming Processes
Thomas, A.A.
19. Cope Scholar Symposium ACS SWRM, Oklahoma City, OK, November 2023
Mechanistic Insights Facilitate the Development of New Bond Forming Processes
Thomas, A.A.
18. Vanderbilt University, Memphis, TN, November 2022
Mechanistic Insights Facilitate the Development of New Bond Forming Processes
Thomas, A.A.
17. University of North Carolina at Wilmington, Wilmington, NC, October 2022
Mechanistic Insights Facilitate the Development of New Bond Forming Processes
Thomas, A.A.
16. California Northridge, Northridge, CA, March 2022
Mechanistic Insights Facilitate the Development of New Bond Forming Processes
Thomas, A.A.
15. Texas State University, San Marcos, TX, February 2022
Mechanistic Insights Facilitate the Development of New Bond Forming Processes
Thomas, A.A.

Contributed Presentations (Independent)

14. Organic Reactions and Processes Gordon, Bryan, RI, July 2023
Constructive Ozonolysis: Capturing Primary Ozonides
Thomas, A.A.
13. ACS National Meeting, Indianapolis, IN, March 2023
Constructive Ozonolysis: Capturing Primary Ozonides
Thomas, A.A.
12. ACS National Meeting, Indianapolis, IN, March 2023
Mechanistic Insights Facilitate the Development of New Bond Forming Processes
Thomas, A.A.

11. Stereochemistry Gordon, Newport, RI, July 2022
Exploring New Avenues for Organolithium Reagents
Thomas, A.A.
10. FloHet, Gainesville, FL, February 2022
Exploring New Avenues for Organolithium Reagents
Thomas, A.A.
9. ACS Southwest Regional Meeting, Austin, TX, October 2021
Exploring New Avenues for Organolithium Reagents
Thomas, A.A.

Workshops (Independent)

8. NSF Early Career Workshop, Arlington, VA, June 2022

Contributed Presentations (Mentored)

7. Merck, Rahway, NJ, October 2016
Unraveling the Transmetalation Event in the Suzuki-Miyaura Reaction.
Thomas, A.A.; Denmark, S.E.
6. ACS Graduate Research Symposium, Bryn Mawr, PA, July 2016
Unraveling the Transmetalation Event in the Suzuki-Miyaura Reaction Thomas, A.A.; Denmark, S.E.
5. University of North Carolina at Charlotte, Charlotte, NC, February 2016
Unraveling the Transmetalation Event in the Suzuki-Miyaura Reaction
Thomas, A.A.; Denmark, S.E.
4. Allerton Conference, University of Illinois at Urbana Champaign, November 2015
Unraveling the Transmetalation Event in the Suzuki-Miyaura Reaction
Thomas, A.A.; Denmark, S.E.
3. ACS National Meeting, Anaheim, CA, March 2011
Mixed cuprates: It knows where to go!
Thomas, A.A.; Ogle, C.A.
2. ACS National Meeting, Boston, MA, August 2010
Lithium dimethylcuprate and thiocarbonyl compounds: Observation, Characterization and Reactions of π -complexes.
Thomas, A.A.; Ogle, C.A.
1. Southeast Regional Meeting ACS, San Juan, Puerto Rico, October 2009.
Preparation of Lithium Tetramethylcuprate(III)
Thomas, A.A.; Ogle, C.A.

Teaching Experience

Texas A&M University

- 2023 – Fall CHEM227 Organic Chemistry (Undergraduate Level)
2023 – Spring CHEM647 Organic Spectroscopy (Graduate Level)
2022 – Fall CHEM610 Organic Reactions (Graduate Level)
2022 – Spring CHEM647 Organic Spectroscopy (Graduate Level)
2021 – Fall CHEM610 Organic Reactions (Graduate Level)
2020 – Fall CHEM610 Organic Reactions (Graduate Level)

Graduate Student Committee Service

Kaleb Reid	Sam Kempel	Lupita Aguirre
Arpan Paikar	Ashley Braaksma	Deeptha Chattapadyay
Connor Allen	Danniel Arriaga	Levi Litwiller
Siddhesh Borkar	Nico Havenner	Bailey Jameson
Jeanette Piña	Evan Fox	Han-Hsiang Hsu
Shao-Jiun Yang	Achyut Gogoi	Krista Schoonover
Cassandra Youshaw	Jake Nicholson	Jacob Grygus
An Tran	Autumn Andras	Shuai Yin

University of Illinois at Urbana Champaign

2012 – Fall CHEM 534 Organic Synthesis Course

2012 – Spring CHEM 437 Advanced Undergraduate Organic lab

2011 – Fall CHEM 233 Elementary Undergraduate Organic lab

Research Group

Post-Doctoral Associates	Status	Placement
Md Raja Sk	Start April 2023	NA
Michael Crockett	Former	Snapdragon, MA
Graduate Students		
Danniel Arriaga	Current (G3)	NA
Jeanette Piña	Current (G3)	NA
Lupita Aguirre	Current (G3)	NA
Seokmin Kang	Current (G3)	NA
Han-Hsiang Hsu	Current (G2)	NA
Cheng-Chun Chen	Current (G1)	NA
Dillion Chen	Current (G1)	NA
Levi Litwiller	Former (MS)	Dept. of Environmental Management Indianapolis
Leonel Jimenez	Former	Graduate Student UCD
Undergraduate Students		
Hai Ly	Current	NA
Alex Sung	Current	NA
Alexis Lugo	Current	NA
Jasmine Torres	Current	NA
Ryan Grove	Current	NA
Raquel Gonzalez	Current	NA
Andrew Nguyen	Former	Amgen, MA
Miguel Garcia	Former	Exxon Mobile, TX
Desirée Young	Former	Framergy, TX
Jonathan Cobb	Former	Unknown