

# Jesse D. Carrick, Ph.D.

TN Tech Department of Chemistry  
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## Academic Experience

- Tennessee Tech University Cookeville, TN 8/2021–current  
**Professor of Chemistry**
  - **Teaching:** CHEM 3010/3020 (Organic Chemistry I/II Lecture/Laboratory), CHEM 6210 (Advanced Organic Chemistry)
  - **Research:** Synthesis of novel complexants for minor actinide separations, natural product total synthesis, and synthetic methodology
  - **Service:** **University:** Faculty Compensation, Workload, and Evaluation task force; Center for Advancement of Faculty Excellence; Sick Bank  
**College:** CAS Faculty Research Award Selection Committee  
**Department:** Graduate Student Executive; NMR user; New Science Building; Tenure-track search committees (chair). Ext. seminar coordinator (2012–2014)
- Tennessee Tech University Cookeville, TN 8/2016–7/2021  
**Associate Professor of Chemistry (Tenured)**
- Tennessee Tech University Cookeville, TN 8/2011–7/2016  
**Assistant Professor of Chemistry**

## Professional Experience

- Union College Schenectady, NY 9/2010–8/2011  
**Visiting Assistant Professor of Chemistry**
  - Served as the instructor of record for Organic Chemistry I Lecture/Laboratory and General Chemistry I laboratory while engaged in natural product total synthesis research with undergraduate students from diverse backgrounds
- Albany Molecular Research, Inc. Albany, NY 1/2009–5/2010  
**Senior Research Scientist, Chemical Development (Process)**
  - Developed the process parameters for the convergent coupling of two critical intermediates of a multi-step linear API process
  - Supervised the critical stages of an NCSS campaign exceeding the API deliverable (99% chemical and chiral purity) to the customer ahead of schedule and under budget

## Academic Training

- **Ph.D., Organic Chemistry-2008**, The University of Alabama, Tuscaloosa, AL, Advisor: Prof. Michael P. Jennings, Dissertation title: *Progress towards the formal synthesis of (-)-clavosolide a*
- **M.S., Organic Chemistry-2005**, Indiana University, Bloomington, IN, Advisor: Prof. David R. Williams, Thesis title: *Progress towards the total synthesis of the potent antitumor antibiotic amphinolide c*
- **B.S., ACS-Certified Chemistry-2002 (Cum Laude)**, Middle Tennessee State University, Murfreesboro, TN, Advisor: Prof. Norma K. Dunlap, Senior thesis: *Progress towards the synthesis of two linear peptidomimetics of D-Ala-D-Ala*
- **A.S., Honors Scholar Emphasis-2000 (Magna Cum Laude)**, Motlow State Community College, Lynchburg, TN

**Publications (TN Tech Undergraduate and Graduate Students)**

- 1) Fletcher, L. S.; **Tedder, M. L.**; **Olayiwola, S. O.**; Carrick, J. D.\* A Hydrolytically Stable Complexant for Minor An Separation from Ln in Process Relevant Diluents. *Chemical Communications* **2024**, *60*, 5642–5645. DOI: <https://doi.org/10.1039/D4CC00983E>
- 2) **Edirin, O. J.**; Carrick, J. D.\* Synthesis of Fused [1,2,3]-Triazoloheteroarenes via Intramolecular Azo Annulation of *N*-Tosylhydrazones Catalyzed by 1,8-Diazabicyclo[5.4.0]undec-7-ene. *Journal of Organic Chemistry* **2024**, *89*, 7201–7209. DOI: <https://doi.org/10.1021/acs.joc.4c00627>
- 3) **Tedder, M. L.**; Carrick, J. D.\* A Synthetic Strategy for the Preparation of Alkoxy-Functionalized Bis-1,2,4-triazinyl-pyridines. *Journal of Heterocyclic Chemistry* **2024**, Early View. DOI: <https://doi.org/10.1002/jhet.4828>
- 4) **Agyei, E. A.**; Carrick, J. D.\* Synthetic Approach to the Construction of Unsymmetric Pyridyl-1,2,4-Triazine Complexants. *Tetrahedron* **2024**, *155*, 133872. DOI: <https://doi.org/10.1016/j.tet.2024.133872>
- 5) Fletcher, L. S.; **Tedder, M. L.**; **Olayiwola, S. O.**; Joyner, N. A.; Mason, M. M.; Oliver, A. G.; Ensor, D. D.; Dixon, D. A.; Carrick, J. D.\* Next Generation 3,3'-AlkoxyBTPs as Complexants for Minor Actinide Separation from Lanthanides: A Comprehensive Separations, Spectroscopic, and DFT Study. *Inorganic Chemistry* **2024**, *63*, 4819–4827. DOI: <https://doi.org/10.1021/acs.inorgchem.3c02061>
- 6) Fletcher, L. S.; Tedder, M. L.; Olayiwola, S. O.; Ensor, D. D.; Carrick, J. D.\* Separation of  $^{241}\text{Am}^{3+}$  from  $^{154}\text{Eu}^{3+}$  from Simulated Spent Nuclear Fuel in Trifluoromethylphenyl Sulfone using 3,3'-butyloxy-bis-1,2,4-triazinyl-2,6-pyridine as a Potent Receptor. *Solvent Extraction and Ion Exchange* **2024**, *42*, 105–117. DOI: <https://doi.org/10.1080/07366299.2024.2320094>
- 7) **Agyei, E. A.** and Carrick, J. D.\* Metal-Free, Oxidative Condensation of Heteroaryl- and Aryl Carbaldehydes towards Functionalized Carbonitriles. *Chemistry Select* **2023**, *8*, e202300866. DOI: [doi/10.1002/slct.202300866](https://doi.org/10.1002/slct.202300866)
- 8) **Dzeagu, F. O.** and Carrick, J. D.\* Synthetic Access to Unsymmetric 1,3,4-oxadiazolyl Complexant Scaffolds via Intramolecular Oxidative Annulation of Arylhydrazones with Heteroaryl Carbaldehydes. *Journal of Organic Chemistry* **2023**, *88*, 419–432. DOI: [doi.org/10.1021/acs.joc.2c02421](https://doi.org/10.1021/acs.joc.2c02421)
- 9) **Gulledge, Z. Z.**; **Pinson, C. C.**; **Stovall, A. M.**; **Dzeagu, F. O.**; Carrick, J. D.\* Chemoselective, Osmium-Free, Dihydroxylation / Oxidative Cleavage of Heteroaryl Isoprenes by a Contemporary Malaprade Reaction. *Organic and Biomolecular Chemistry* **2022**, *20*, 7916–7922. DOI: [10.1039/D2OB01643E](https://doi.org/10.1039/D2OB01643E)
- 10) **Gulledge, Z. Z.**; Duda, D. P.; Dixon, D. A.; Carrick, J. D.\* Microwave-Assisted, Metal- and Azide-Free Synthesis of Functionalized Heteroaryl-1,2,3-triazoles via Oxidative Cyclization of *N*-Tosylhydrazones and Anilines. *Journal of Organic Chemistry* **2022**, *87*, 12632–12643. DOI: [10.1021/acs.joc.2c01042](https://doi.org/10.1021/acs.joc.2c01042).
- 11) **Tedder, M. L.**; **Dzeagu, F. O.**; Mason, M. M.; Dixon, D. A.; Carrick, J. D.\* Microwave-Assisted C-H Oxidation of Methylpyridylheteroarenes via a Kornblum-type Reaction. *Tetrahedron* **2022**, *116*, 132805. DOI: [10.1016/j.tet.2022.132805](https://doi.org/10.1016/j.tet.2022.132805)
- 12) Xiao, Z.; Liu, J.; Liu, K.; Petridis, L.; Cai, C.; Cao, L.; Wang, G.; **Chin, A.-L.**; **Cleveland, J. W.**; **Ikedionwu, M. O.**; Carrick, J. D.; Smith, J. C.; Quarles, L. D.\* Small Molecule FGF23 Inhibitors Increase Serum Phosphate and Improve Skeletal Abnormalities in *Hyp* Mice. *Molecular Pharmacology* **2022**, *101*, 408–421.
- 13) Mason, M. M.; Smith, C. M.; Vasiliu, M.; Carrick, J. D.; Dixon, D. A.\* Density Functional Prediction of An(III)/Ln(III) Separation by 1,2,4-Triazinyl-pyridine Derivatives. *Journal of Physical Chemistry A*, **2021**, *125*, 6529-6542. DOI: [10.1021/acs.jpca.1c01854](https://doi.org/10.1021/acs.jpca.1c01854)

- 14) Williams, D. R.; De, R.; Fultz, M. W.; Fischer, D. A.; Morales-Ramos, A.; Rodriguez-Reyes; Carrick, J. D. Correction to "Studies of the Enantiocontrolled Synthesis of the C(10)-C(25) Subunit of Amphidinolide C. *Organic Letters* **2021**, *23*, 3231. DOI: [10.1021/acs.orglett.1c00760](https://doi.org/10.1021/acs.orglett.1c00760)
- 15) **Downs, R. P.**; Xiao, Z.; **Ikedionwu, M. O.**; **Cleveland, J. W.**; **Chin, A.-L.**; **Cafferty, A. E.**; Quarles, L. D.; Carrick, J. D.\* Design and Development of FGF-23 Antagonists: Definition of the Pharmacophore and Initial Structure-Activity Relationships Probed by Synthetic Analogues. *Bioorganic and Medicinal Chemistry* **2021**, *29*, 115877. DOI: [10.1016/j.bmc.2020.115877](https://doi.org/10.1016/j.bmc.2020.115877).
- 16) **Waters, G. D.**; Carrick, J. D.\* Convergent Access to bis-1,2,4-triazinyl-2,2'-bipyridines (BTBPs) and 2,2'-bipyridines via a Pd-catalyzed Ullman-type reaction. *RSC Advances*, **2020**, *10*, 10807–10815. DOI: [10.1039/d0ra00673d](https://doi.org/10.1039/d0ra00673d)
- 17) **Gulledge, Z. Z.**; Carrick, J. D.\* Chemoselective BOC-deprotection of Functionalized Heteroarenes using an Addition / Elimination strategy. *European Journal of Organic Chemistry*, **2020**, *12*, 1817–1822. DOI: [10.1002/ejoc.201901811](https://doi.org/10.1002/ejoc.201901811)
- 18) **Gulledge, Z. Z.**; **Tedder, M. L.**; **Lyons, K. R.**; Carrick, J. D.\* Synthesis of Tridentate Indolyl Pyridinyl [1,2,4] Triazine Lewis Basic Complexants via Pd-catalyzed Suzuki-Miyaura Cross-Coupling. *ACS Omega*, **2019**, *4*, 18855–18866. DOI: [10.1021/acsomega.9b02891](https://doi.org/10.1021/acsomega.9b02891)
- 19) Veerakanellore, G. B.; Smith, C. M.; Vasiliu, M.; Oliver, A. G.; Dixon, D. A.; Carrick, J. D.\* Synthesis of 1H-pyrazol-5-yl-pyridin-2-yl-[1,2,4]triazinyl Soft-Lewis Basic Complexants via Metal and Oxidant Free [3+2] Dipolar Cycloaddition of Terminal Ethynyl Pyridines with Tosylhydrazides. *Journal of Organic Chemistry* **2019**, *84*, 14558–14570. DOI: [10.1021/acs.joc.9b02088](https://doi.org/10.1021/acs.joc.9b02088)
- 20) Chaudhuri, S.; Carrick, J. D.\* Synthetic Access to Functionalized Dipolarophiles of Lewis Basic Complexant Scaffolds through Sonogashira Cross-Coupling. *Journal of Organic Chemistry* **2018**, *83*, 10261–10271. DOI: [10.1021/acs.joc.8b01446](https://doi.org/10.1021/acs.joc.8b01446)
- 21) Smith, C. D.; **Downs, R. P.**; Carrick, J. D.; Dietz, M. L.\* Determination of Extractant Solubility in Ionic Liquids by thermogravimetric analysis. *Solvent Extraction and Ion Exchange* **2018**, *36*, 304–314. DOI: [10.1080/07366299.2018.1495683](https://doi.org/10.1080/07366299.2018.1495683)
- 22) **Lambert, A. E.**; Carrick, J. D.\* Diversification of 6-Bromo-2-substituted Pyridine Derivatives via Suzuki-Miyaura Cross-Coupling. *Journal of Heterocyclic Chemistry* **2018**, *55*, 1232–1239. DOI: [10.1002/jhet.3144](https://doi.org/10.1002/jhet.3144)
- 23) Hill, T. G.; **Chin, A.-L.**; **Tai, S.**; Carrick, J. D.; Ensor, D. D.; Delmau, L. H. Separation of Americium from Europium using 3,3'-Dimethoxy-phenyl-bis-1,2,4-triazinyl-2,6-pyridine. *Separation Science and Technology* **2018**, *53*, 1848–1855. DOI: [10.1080/01496395.2017.1304419](https://doi.org/10.1080/01496395.2017.1304419)
- 24) Tevepaugh, K. N.; Coonce, J. G.; **Tai, S.**; Delmau, L. H.; Carrick, J. D.; Ensor, D. D. Chromatographic Separation of Americium from Europium using bis-2,6-(5,6,7,8-tetrahydro-5,9,9-trimethyl-5,8-methano-1,2,4-benzotriazin-3-yl) Pyridine. *Journal of Radioanalytical and Nuclear Chemistry* **2017**, *314(1)*, 371–376. DOI: [10.1007/s10967-017-5365-0](https://doi.org/10.1007/s10967-017-5365-0)
- 25) **Cleveland, J. W.**; Carrick, J. D.\* Pd-Catalyzed Amination of Functionalized 6-Bromo-pyridinyl-1,2,4-triazine Complexant scaffolds. *European Journal of Organic Chemistry* **2017**, *2017(23)* 3318–3327. DOI: [10.1002/ejoc.201700585](https://doi.org/10.1002/ejoc.201700585)
- 26) **Downs, R. P.**; **Chin, A.-L.**; **Dean, K. M.**; Carrick, J. D.\* Synthesis of Functionalized *hemi*-1,2,4-triazinyl-[2,2']-bipyridines via Telescoped Condensation of [2,2']-bipyridinyl-6-carbonitrile. *Journal of Heterocyclic Chemistry* **2017**, *54(6)*, 3008–3014. DOI: [10.1002/jhet.2908](https://doi.org/10.1002/jhet.2908)
- 27) Xiao, Z. S.; Riccardi, D.; Velazquez, H. A.; **Chin, A.-L.**; Yates, C. R.; Carrick, J. D.; Smith, J. C.; Baudry, J.; Quarles, L. D. Computationally Identified Novel Chemical Compounds that Antagonize FGF-23. *Science Signaling* **2016**, *9(455)*, ra113-Cover Story.
- 28) **Tai, S.**; **Marchi, S. V.**; Carrick, J. D.\* Efficient Preparation of Pyridinyl-1,2,4-triazines via Telescoped Condensation with Diversely Functionalized 1,2-dicarbonyls. *Journal of Heterocyclic Chemistry* **2016**, *53*, 1138–1146. DOI: [10.1002/jhet.2374](https://doi.org/10.1002/jhet.2374)

- 29) **Chin, A.-L.**; Carrick, J. D.\* Modular Approaches to Diversified Soft Lewis Basic Complexants through Suzuki-Miyaura Cross-Coupling of Bromoheteroarenes with Organotrifluoroborates. *Journal of Organic Chemistry* **2016**, *81*, 1106–1115. DOI: [10.1021/acs.joc.5b02662](https://doi.org/10.1021/acs.joc.5b02662)
- 30) Tevepaugh, K. N.; Carrick, J. D.; **Tai, S.**; Coonce, J. G.; Delmau, L. H.; Ensor, D. D. Separation of Americium from Europium using Camphor-bistriazinyl Pyridine. *Solvent Extraction and Ion Exchange* **2016**, *34*, 13–25. DOI: [10.1080/07366299.2015.1110408](https://doi.org/10.1080/07366299.2015.1110408)
- 31) **Tai, S.**, Williams, N. J.; Carrick, J. D.\* Synthesis of *bis*-1,2,4-triazines via Telescoped Condensation of [1,10]-phenanthroline-2,9-dicarbonitrile with Aromatic 1,2-Dicarbonyls. *Journal of Heterocyclic Chemistry* **2016**, *53*, 307–312. DOI: [10.1002/jhet.2295](https://doi.org/10.1002/jhet.2295)
- 32) **Tai, S.**; **Marchi, S. V.**; **Dover, E. J.**; Carrick, J. D.\* Pd-catalyzed Diamination of Dibromo-1,2,4-triazinyl Complexant Scaffolds. *Journal of Organic Chemistry* **2015**, *80*, 6275–6282. DOI: [10.2021/acs.joc.5b00710](https://doi.org/10.2021/acs.joc.5b00710)
- 33) Carrick, J. D.; Jennings, M. P.\* An Efficient Formal Synthesis of (–)-Clavosolide a Featuring a “Mismatched” Stereoselective Oxocarbenium Reduction. *Organic Letters* **2009**, *11*, 769–772. DOI: [10.1021/ol8028302](https://doi.org/10.1021/ol8028302)
- 34) Dunlap, N. K.\*; Mergo, W.; Jones, J. M.; Carrick, J. D. A General procedure for a One-pot Oxidative Cleavage / Wittig Reaction of Glycols. *Tetrahedron Letters* **2002**, *43*, 3923–3925. DOI: [10.1016/S0040-4039\(02\)00661-5](https://doi.org/10.1016/S0040-4039(02)00661-5)

### **Provisional Intellectual Property Applications**

- Quarles, L. D.; Yates, C. R.; Smith, J. C.; Baudry, J. A.; Carrick, J. D. *Fibroblast Growth Factor 23 Antagonists and Related Compositions and Methods*, Filed 10/27/17

### **Invited Book Chapters**

- Li, Jie J., ed.; **Carrick, J. D.**, Pd-Catalyzed C-H Functionalization in *C-H Bond Activation in Organic Synthesis*. pgs. 59–94, **2015**. CRC Press. ISBN: 978-1-4822-3310-0

### **Invited Research Seminars**

- 1) New Directions in Metal-Catalyzed Reactions Symposium, Southeast Regional Meeting of the American Chemical Society, Birmingham, AL, 11/11/21
- 2) University of Alabama at Huntsville, Huntsville, AL, 2/8/19
- 3) University of Tennessee Health Sciences Center, Memphis, TN, 9/13/16
- 4) University of Tennessee, Chattanooga, TN, 9/18/15
- 5) Vanderbilt University, Nashville, TN, 4/13/15
- 6) Middle Tennessee State University, Murfreesboro, TN, 2/6/15
- 7) University of Alabama, Birmingham, Birmingham, AL, 1/15/15
- 8) Austin Peay State University, Clarksville, TN, 11/7/14
- 9) The University of the South, Sewanee, TN, 9/19/14
- 10) University of Alabama, Tuscaloosa, AL, 3/13/14 & 3/1/18
- 11) Louisiana State University, Baton Rouge, LA, 3/11/14

### **Awards**

- 1) Tennessee Tech University Scholastic Research Award for Tenured Faculty (**2023 & 2018**)
- 2) **Henry Dreyfus Teacher-Scholar Award (2022)**
- 3) Tennessee Tech University Scholar-Mentor Award (**2019**)
- 4) Tennessee Tech University College of Arts and Sciences Research and Creative Activity Award (**2018**)

- 5) ACS Organic Division Travel Award for Outstanding Undergraduate Faculty, 44<sup>th</sup> National Organic Chemistry Symposium, College Park, MD (2015)
- 6) ACS Organic Division Travel Award for Outstanding Undergraduate Faculty, 247<sup>th</sup> American Chemical Society National Meeting, Dallas, TX (2014)
- 7) ACS Organic Division Travel Award for Outstanding Undergraduate Faculty, 43<sup>rd</sup> National Organic Chemistry Symposium, Seattle, WA (2013)
- 8) ACS Organic Division Travel Award for Young Researchers attending the 235<sup>th</sup> ACS national meeting in New Orleans, LA, University of Alabama (2008)
- 9) Outstanding 2<sup>nd</sup> Year Chemistry Graduate Student Award, University of Alabama (2007)

### Presentations

- 1) **Agyei, E. A.; Olayiwola, S. O.; Tedder, M. L.**; Fletcher, L. S.; Carrick, J. D.\* Advanced BTPs for Chemoselective Minor Actinide Separations. Oral presentation at the 2024 Spring American Chemical Society National Meeting, New Orleans, LA, 3/24
- 2) Carrick, J. D.\* Design, Synthesis, and Validation of Bipolar Alkoxy-BTP Complexants for Chemoselective Minor Actinide Separation of <sup>241</sup>Am<sup>3+</sup> from Simulated SNF. Oral presentation delivered at the 21<sup>st</sup> Symposium for Separation Science & Technology, Knoxville, TN, 10/25/23
- 3) Carrick, J. D.\*; Shafer, J. C.; Dixon, D. A. Expanding the Operational Capacity of Soft-Donor Complexant Scaffolds for Minor Actinide Separations of Spent Nuclear Fuel through Strategic Functional Group Interconversion. Invited oral presentation delivered at the DOE BES Separations PI Meeting, 8/10/21
- 4) Hawkins, C. A.\*; **Brown, M. L.; Lawson, K. L.**; Dixon, D. A.; Carrick, J. D. N-donor extractant designs and characterization for minor actinide separations. Actinide Separations Conference, Kingsport, TN, 5/20/19
- 5) Carrick, J. D.\*; **Brown, M. L.; Chin, A.-L.**; Dixon, D. A.; **Gulledge, Z. Z.**; Hawkins, C. A.; **Lyons, K. R.**; Mason, M.; **Waters, G. D.** Convergent Strategies for Accessing Soft-Lewis Basic Complexants for Minor Actinide Separations. Oral presentation delivered at the 20<sup>th</sup> Symposium for Separation Science & Technology, Gatlinburg, TN, 10/23/18
- 6) Carrick, J. D.\*; Hawkins, C. A.; Dixon, D. A. Modular Approaches to Contemporary Complexants for Separations. Oral presentation delivered at the DOE BES Separations PI Meeting, Gaithersburg, MD, 2/6/18
- 7) **Chin, A.-L.; Dean, K. M.; Cleveland, J. W.; Tai, S.; Marchi, S. V.; Dover, E. J.**; Carrick, J. D.\* Contemporary Approaches to Soft-N-Donor Heterocyclic Complexant Scaffolds for Chemoselective Minor Actinide Separations. Oral presentation delivered at the 19<sup>th</sup> Symposium for Separation Science & Technology, Gatlinburg, TN, 10/12/16
- 8) Carrick, J. D.\*; **Tai, S.; Marchi, S. V.**; Williams, N. J.; **Tevepaugh, K. N.**; Ensor, D. D.; Delmau, L. H. Design and synthesis of 1,2,4-triazinyl ligands for chemoselective minor actinide extraction. Oral presentation delivered at the 18<sup>th</sup> Symposium for Separation Science & Technology, Oak Ridge, TN, 10/29/14
- 9) **Cleveland, A. H.; Probasco, M. S.; Kirby, J. W.**; Carrick, J. D.\* Efforts toward the asymmetric total synthesis of hamigeromycin b. Oral presentation delivered at the 247<sup>th</sup> ACS National Meeting, Dallas, TX, 3/19/14

### Student Awards

- 1) **Agyei, Eric A.** 3<sup>rd</sup> Place Student Poster Award at the 21<sup>st</sup> Symposium for Separation Science & Technology, Knoxville, TN (2023)
- 2) **Jonathan, Victor C.** ACS Bridge Career Kick-Starter program, San Francisco, CA (2023)
- 3) **Jonathan, Victor C.** ACS Organic Division Travel Award for Outstanding Graduate Students, 48<sup>th</sup> National Organic Chemistry Symposium, Notre Dame, IN (2023)

- 4) **Olayiwola, Samiat O.** *Outstanding Chemistry Graduate Research Poster* at the 18<sup>th</sup> annual Tennessee Tech University Student Research and Creative Inquiry Day (**2023**)
- 5) **Agyei, Eric A.** ACS Local (Nashville, TN) Section Travel Award for Outstanding Graduate Students, 2023 Spring ACS National Meeting, Indianapolis, IN (**2023**)
- 6) **Dzeagu, Fortune O.** *Outstanding Chemistry Graduate Research Poster* at the 17<sup>th</sup> annual Tennessee Tech University Student Research and Creative Inquiry Day (**2022**)
- 7) **Pinson, Connor C.; Stovall, Alexander M.** *Outstanding Chemistry Undergraduate Research Poster* at the 17<sup>th</sup> annual Tennessee Tech University Student Research and Creative Inquiry Day (**2022**)
- 8) **Dzeagu, Fortune O.** *1<sup>st</sup> Place Chemistry Oral Presentation, Graduate Student Division*, at the 131<sup>st</sup> Tennessee Academy of Science Meeting, Tennessee Tech University as Host, (**2021**)
- 9) **Gulledge, Zachary Z.** *Outstanding Chemistry Graduate Research Poster* at the 16<sup>th</sup> annual Tennessee Tech University Student Research and Creative Inquiry Day (**2021**)
- 10) **Gulledge, Zachary Z.** *1<sup>st</sup> Place-tie Chemistry Oral Presentation, Graduate Student Division*, at the 130<sup>th</sup> Tennessee Academy of Science Meeting, East Tennessee State University as Host, Virtual, (**2020**)
- 11) **Tedder, Mariah L.** *1<sup>st</sup> Place-tie Chemistry Oral Presentation, Graduate Student Division*, at the 130<sup>th</sup> Tennessee Academy of Science Meeting, East Tennessee State University as Host, Virtual, (**2020**)
- 12) **Tedder, Mariah L.** Best Poster (Undergraduate Division-Wed., 6/26/19), 46<sup>th</sup> National Organic Chemistry Symposium, Bloomington, IN (**2019**)
- 13) **Waters, Gabrielle D.** Best Poster (Undergraduate Division-Tues., 6/25/19), 46<sup>th</sup> National Organic Chemistry Symposium, Bloomington, IN (**2019**)
- 14) **Waters, Gabrielle D.** ACS Organic Division Travel Award for Outstanding Undergraduate Students, 46<sup>th</sup> National Organic Chemistry Symposium, Bloomington, IN (**2019**)
- 15) **Veerakanellore, Giri Babu** *Outstanding Chemistry Graduate Research Poster* at the 14<sup>th</sup> annual Tennessee Tech University Student Research and Creative Inquiry Day (**2019**)
- 16) **Tedder, Mariah L.; Gulledge, Zachary Z.** *Outstanding Chemistry Undergraduate Research Poster* at the 14<sup>th</sup> annual Tennessee Tech University Student Research and Creative Inquiry Day (**2019**)
- 17) **Waters, Gabrielle D.** *Outstanding Student Poster Award* at the 20<sup>th</sup> Symposium for Separation Science & Technology, Gatlinburg, TN (**2018**)
- 18) **Waters, Gabrielle D.** *Outstanding Chemistry Undergraduate Research Poster* at the 13<sup>th</sup> annual Tennessee Tech University Student Research and Creative Inquiry Day (**2018**)
- 19) **Cleveland, Jacob W.** ACS Organic Division Travel Award for Outstanding Undergraduate Students, 45<sup>th</sup> National Organic Chemistry Symposium, Davis, CA (**2017**)
- 20) **Downs, Ryan P.** *Outstanding Chemistry Undergraduate Research Poster* at the 12<sup>th</sup> annual Tennessee Tech University Student Research and Creative Inquiry Day (**2017**)
- 21) **Cleveland, Jacob W.** Outstanding Student Poster Award at the 19<sup>th</sup> Symposium for Separation Science & Technology, Gatlinburg, TN (**2016**)
- 22) **Dean, Kayla M.** U.S. Dept. of Energy Integrated University Program Scholarship, **\$7,500** (**2016**)
- 23) **Richards, Kelsey D.** *1<sup>st</sup> Place Chemistry Oral Presentation* at the 125<sup>th</sup> Tennessee Academy of Science Meeting, Middle Tennessee State University, Murfreesboro, TN (**2015**)
- 24) **Dover, Evan J.** *Outstanding Chemical Engineering Undergraduate Research Poster* at the 10<sup>th</sup> annual Tennessee Tech University Student Research Day (**2015**)
- 25) **Marchi, Sydney V.** *Outstanding Chemistry Undergraduate Research Poster* at the 10<sup>th</sup> annual Tennessee Tech University Student Research Day (**2015**)
- 26) **Marchi, Sydney V.** *Outstanding Poster Presentation Award* at the Southeastern Undergraduate Research Conference, University of Alabama, Tuscaloosa, AL (**2015**)

- 27) **Tai, Serene** ACS Organic Division Travel Award for Outstanding Undergraduate Students, 249<sup>th</sup> American Chemical Society National Meeting, Denver, CO (2015)
- 28) **Tai, Serene** Outstanding Student Poster Award at the 18<sup>th</sup> Symposium for Separation Science & Technology, Oak Ridge, TN (2014)
- 29) **Cleveland, Alexander H.** American Chemical Society, Division of Organic Chemistry, Summer Undergraduate Research Fellowship (SURF) Program, sponsored by Pfizer, Inc. \$5,000 (2014)
- 30) **Jordan, James A.**, Tennessee Technological University Swindell-Jackson Undergraduate Research Fellowship, \$1,500 (2014)
- 31) **Cleveland, Alexander H.; Probasco, M. Scott** Best Presentation in Organic Chemistry at the Southeast Undergraduate Research Conference, University of Tennessee, Knoxville, TN (2014)
- 32) **Probasco, M. Scott**, Tennessee Tech University Swindell-Jackson Undergraduate Research Fellowship, \$1,500 (2013)
- 33) **Probasco, M. Scott; Kirby, John W.** Outstanding Chemistry Undergraduate Research Poster at the 8<sup>th</sup> annual Tennessee Tech University Student Research Day (2013)

### External Student Presentations

\*Denotes presenter. (TN Tech Undergraduate and Graduate Students) 101 total (52 additional internal)

- 1) **Agyei, E. A.\***; Carrick, J. D. *Synthetic access to unsymmetric, pyridyl-1,2,4-triazine complexant scaffolds via telescoped condensation of heteroaryl carbonitriles*, Oral presentation at the 2024 Spring American Chemical Society National Meeting, New Orleans, LA, 3/24
- 2) **Ajibola, B. R.\***; Carrick, J. D. Progress towards the synthesis of unsymmetric tridentate complexants for application to minor actinide separations, Oral presentation at the 2024 Spring American Chemical Society National Meeting, New Orleans, LA, 3/24
- 3) **Edirin, O. J.\***; Carrick, J. D. *Synthesis of pyridyl-1,2,3-triazole complexant scaffolds via an intramolecular DBU-mediated cyclization of N-tosylhydrazones*, Oral presentation at the 2024 Spring American Chemical Society National Meeting, New Orleans, LA, 3/24
- 4) Fletcher, L. S.\*; **Olayiwola, S. O.; Tedder, M. L.; Hudak, C. B.;** Ensor, D. E.; Carrick, J. D. *Liquid-liquid extraction and spectroscopic studies of 3,3'-dialkoxy BTP bipolar complexants for minor actinide separations*, Oral presentation at the 2024 Spring American Chemical Society National Meeting, New Orleans, LA, 3/24
- 5) **Hudak, C. B.\***; Carrick, J. D. *Progress towards the convergent synthesis of unsymmetric, pyridyl imid- and oxazoles via cyclization of amidines and amides with terminal alkynes*, Poster presentation at the 2024 Spring American Chemical Society National Meeting, New Orleans, LA, 3/24
- 6) **Jonathan, V. C.\***; Carrick, J. D. *Progress towards the total enantioselective synthesis of hamigeromycin B-polyketide synthon*, Oral presentation at the 2024 Spring American Chemical Society National Meeting, New Orleans, LA, 3/24
- 7) **Ajibola, B. R.\***; Carrick, J. D. *Progress towards the synthesis of unsymmetric tridentate complexants for application to minor actinide separations*. Oral presentation at the 133<sup>rd</sup> Tennessee Academy of Science Meeting, Rhodes College, Memphis, TN 11/18/23
- 8) **Agyei, E. A.\***; Carrick, J. D. *Efficient synthesis of unsymmetric pyridyl-1,2,4-triazines as Lewis basic complexant scaffolds toward minor actinide separations*. Oral presentation at the 133<sup>rd</sup> Tennessee Academy of Science Meeting, Rhodes College, Memphis, TN 11/18/23
- 9) **Edirin, O. J.\***; Carrick, J. D. *Synthesis of pyridyl-1,2,3-triazole complexant scaffolds via an intramolecular, DBU-mediated cyclization of n-tosylhydrazones*. Oral presentation at the 133<sup>rd</sup> Tennessee Academy of Science Meeting, Rhodes College, Memphis, TN 11/18/23
- 10) **Hudak, C. B.\***; Carrick, J. D. *Progress towards the convergent synthesis of unsymmetric, pyridyl imid- and oxazoles via cyclization of amidines and amides*. Poster presentation at the 133<sup>rd</sup> Tennessee Academy of Science Meeting, Rhodes College, Memphis, TN 11/18/23



- 11) **Jonathan, V. C.\***; Carrick, J. D. *Total enantioselective synthesis of hamigeromycin B*. Oral presentation at the 133<sup>rd</sup> Tennessee Academy of Science Meeting, Rhodes College, Memphis, TN 11/18/23
- 12) **Olayiwola, S. O.\***; Carrick, J. D. *Synthesis of ester-functionalized bis-(1,2,4)-triazinyl pyridine (BTP) complexants toward minor actinide separation of spent nuclear fuel*. Oral presentation at the 133<sup>rd</sup> Tennessee Academy of Science Meeting, Rhodes College, Memphis, TN 11/18/23
- 13) **Fletcher, L. S.** Exploring alkoxy-BTP complexants for minor actinide separations. Undergraduate Career Night and Graduate School Fair, American Chemical Society Local Section, Nashville, Kentucky Lakes, Memphis, TN 11/10/23
- 14) **Ajibola, B. R.\***; Carrick, J. D. *Progress towards the synthesis of unsymmetric tridentate complexants for minor actinide separations*. Poster presentation at the 21<sup>st</sup> Symposium for Separation Science & Technology, Knoxville, TN, 10/23/23
- 15) **Agyei, E. A.\***; Carrick, J. D. *Telescoped condensation of heteroaryl carbonitriles toward unsymmetric, pyridyl-1,2,4-triazine complexant scaffolds for chemoselective minor actinide separations*. Poster presentation at the 21<sup>st</sup> Symposium for Separation Science & Technology, Knoxville, TN, 10/23/23
- 16) **Edirin, O. J.\***; Carrick, J. D. *Synthesis of pyridyl-1,2,3-triazoles via an intramolecular, DBU-mediated cyclization of N-tosylhydrazones*. Poster presentation at the 21<sup>st</sup> Symposium for Separation Science & Technology, Knoxville, TN, 10/23/23
- 17) **Fletcher, L. S.** Exploring alkoxy-BTP complexants for minor actinide separations. Oral presentation at the 21<sup>st</sup> Symposium for Separation Science & Technology, Knoxville, TN, 10/23/23
- 18) **Hudak, C. B.\***; Carrick, J. D. *Progress towards the synthesis of unsymmetric, pyridyl imid- and oxazoles via oxidative cyclization of amidines and amides with terminal alkynes*. Poster presentation at the 21<sup>st</sup> Symposium for Separation Science & Technology, Knoxville, TN, 10/23/23
- 19) **Olayiwola, S. O.\***; Carrick, J. D. *Synthesis of ester-functionalized bis-(1,2,4)-triazinyl pyridine (BTP) complexants toward minor actinide separations of spent nuclear fuel*. Poster presentation at the 21<sup>st</sup> Symposium for Separation Science & Technology, Knoxville, TN, 10/23/23
- 20) **Ajibola, B. R.\***; Carrick, J. D. *Progress towards the synthesis of unsymmetric pyridyl-1,2,4-complexants for application to minor actinide separations*. Poster presentation at the 48<sup>th</sup> National Organic Chemistry Symposium, The University of Notre Dame, Notre Dame, IN 7/11/23
- 21) **Agyei, E. A.\***; Carrick, J. D. *Synthetic access to unsymmetric, pyridyl-1,2,4-triazine complexant scaffolds via an oxidative condensation sequence from heteroaryl carbaldehydes*. Poster presentation at the 48<sup>th</sup> National Organic Chemistry Symposium, The University of Notre Dame, Notre Dame, IN 7/11/23
- 22) **Edirin, O. J.\***; Carrick, J. D. *Synthesis of pyridyl-1,2,3-triazoles via an intramolecular, DBU-mediated cyclization from N-Tosylhydrazones*. Poster presentation at the 48<sup>th</sup> National Organic Chemistry Symposium, The University of Notre Dame, Notre Dame, IN 7/11/23
- 23) **Jonathan, V. C.\*; Cleveland, A. H.; Cleveland, J. W.; Downs, R. P.; Kirby, J. W.**; Carrick, J. D. *Progress towards the enantioselective total synthesis of hamigeromycin B, Part 1: Polyketide synthon*. Poster presentation at the 48<sup>th</sup> National Organic Chemistry Symposium, The University of Notre Dame, Notre Dame, IN 7/11/23
- 24) **Olayiwola, S. O.\***; Carrick, J. D. *Synthesis of ester-functionalized symmetric bis-(1,2,4)-triazinyl pyridine (BTP) complexants towards minor actinide separations from spent nuclear fuel (SNF)*. Poster presentation at the 48<sup>th</sup> National Organic Chemistry Symposium, The University of Notre Dame, Notre Dame, IN 7/11/23
- 25) **Byrum, D. S.\*; Probasco, M. S.; Cleveland, J. W.**; Carrick, J. D. *Progress towards the enantioselective total synthesis of hamigeromycin B, Part 2: Aromatic synthon*. Poster presentation at the 48<sup>th</sup> National Organic Chemistry Symposium, The University of Notre Dame, Notre Dame, IN 7/11/23



- 26) **Hudak, C. B.\***; Carrick, J. D. *Progress towards the convergent synthesis of unsymmetric, pyridyl imid- and oxazoles via oxidative cyclization of amidines and amides with propargyl sulfonates.* Poster presentation at the 48<sup>th</sup> National Organic Chemistry Symposium, The University of Notre Dame, Notre Dame, IN 7/11/23
- 27) **Agyei, E. A.\***; Carrick, J. D. *Practical approach to heteroaryl carbonitrile synthesis using a hypervalent iodine/NH<sub>4</sub>OAc oxidative condensation strategy.* Oral presentation at the 2023 Spring American Chemical Society National Meeting, Indianapolis, IN, 3/23
- 28) **Edirin, O. J.\***; Carrick, J. D. *DBU-mediated, intermolecular cyclization approach to the synthesis of heteroaryl 1,2,3 triazoles.* Oral presentation at the 2023 Spring American Chemical Society National Meeting, Indianapolis, IN, 3/23
- 29) Fletcher, L. S.\*; **Tedder, M. L.**; **Dzeagu, F. O.**; Ensor, D. D. Carrick, J. D. *Spectroscopic and liquid/liquid extraction studies of 3,3'-dibutyloxy-BTP toward minor actinide separations.* Oral presentation at the 2023 Spring American Chemical Society National Meeting, Indianapolis, IN, 3/23
- 30) **Agyei, E. A.\***; Carrick, J. D. *Oxidative condensation strategy for the direct synthesis of heteroaryl carbonitriles using a hypervalent iodine / NH<sub>4</sub>OAc reagents.* Oral presentation at the 132<sup>nd</sup> Tennessee Academy of Science Meeting, Tennessee State University, Nashville, TN, 11/18/22
- 31) **Edirin, O. J.\***; Carrick, J. D. *Synthesis of heteroaryl 1,2,3-triazoles via an intermolecular cyclization method mediated by DBU.* Oral presentation at the 132<sup>nd</sup> Tennessee Academy of Science Meeting, Tennessee State University, Nashville, TN, 11/18/22
- 32) **Edmonds, M. A.\***; Cashman, D. J.; Carrick, J. D. *Computational design and docking of Hamigeromycin B natural product derivatives in JNK3, EGFR, and HSP90.* Oral presentation at the 132<sup>nd</sup> Tennessee Academy of Science Meeting, Tennessee State University, Nashville, TN, 11/18/22
- 33) **Fletcher, L. S.\***; Ensor, D. D.; Carrick, J. D. *Investigation of americium/europium separation using 3,3'-dibutyloxy-phen-bis-1,2,4-triazinyl-2,6-pyridine.* Oral presentation at the 132<sup>nd</sup> Tennessee Academy of Science Meeting, Tennessee State University, Nashville, TN, 11/18/22
- 34) **Dzeagu, F. O.\***; Carrick, J. D. *Synthesis of 2-(6-(5,6-(diphenyl)-1,2,4-triazin-3-yl) pyridin-2-yl)-5-(diversified benzo)-1,3,4-oxadiazoles via an iodide-mediated reaction.* Oral presentation at the 131<sup>st</sup> Tennessee Academy of Science Meeting, Tennessee Tech University, Cookeville, TN, 11/6/21
- 35) **Pinson, C. C.\***; **Stovall, A. M.**; **Gulledge, Z. Z.**; Carrick, J. D. *Chemoselective green oxidation of heteroaryl isoprenes toward functionalized methyl ketones.* Poster presentation at the 131<sup>st</sup> Tennessee Academy of Science Meeting, Tennessee Tech University, Cookeville, TN, 11/6/21
- 36) **Gulledge, Z. Z.\***; Carrick, J. D. *Oxidative cyclization of 2-pyridyl N-tosylhydrazones toward unsymmetrical 1,2,3-triazole complexants.* Oral presentation at the 130<sup>th</sup> Tennessee Academy of Science Meeting, East Tennessee State University as Host, Virtual, 11/21/20
- 37) **Tedder, M. L.\***; Carrick, J. D. *Bis-1,2,4-triazinylpyridines as a new ligand class for metal-mediated amination of arenes.* Oral presentation at the 130<sup>th</sup> Tennessee Academy of Science Meeting, East Tennessee State University as Host, Virtual, 11/21/20
- 38) **Gulledge, Z. Z.\***; Carrick, J. D. *Selective removal of tert-butoxycarbonyl (Boc) groups from heterocyclic substrates via addition/elimination with primary amines.* Oral presentation scheduled for the 259<sup>th</sup> American Chemical Society National Meeting, Philadelphia, PA, 3/2020
- 39) **Tedder, M. L.\***; Carrick, J. D. *Development of 2-pyridinyl-1,2,4-triazine based alkoxy-substituted scaffolds for minor actinide separations.* Oral presentation scheduled for the 259<sup>th</sup> American Chemical Society National Meeting, Philadelphia, PA, 3/2020
- 40) **Gulledge, Z. Z.\***; **Tedder, M. L.**; **Lyons, K. R.**; Carrick, J. D. *Synthesis of tridentate [1,2,4] triazinyl-pyridin-2-yl indole Lewis basic complexants via Pd-catalyzed Suzuki-Miyaura cross-coupling.* Oral presentation delivered at the Southeastern Undergraduate Research Conference, The University of Alabama, Tuscaloosa, AL, 1/25/20

- 41) **Tedder, M. L.;**\* Carrick, J. D. *Synthesis of alkoxy-substituted 2-pyridinyl-bis[1,2,4]-triazine scaffolds.* Oral presentation delivered at the Southeastern Undergraduate Research Conference, The University of Alabama, Tuscaloosa, AL, 1/25/20
- 42) **Gulledge, Z. Z.;**\* Carrick, J. D. *Specific deprotection of Boc-containing heterocyclic substrates through addition/elimination with simple amines.* Oral presentation at the 129<sup>th</sup> Tennessee Academy of Science Meeting, Columbia State Community College, Columbia, TN, 11/22/19
- 43) **Tedder, M. L.;**\* Carrick, J. D. *Development of alkoxy-substituted scaffolds for minor actinide separations.* Oral presentation at the 129<sup>th</sup> Tennessee Academy of Science Meeting, Columbia State Community College, Columbia, TN, 11/22/19
- 44) **Gulledge, Z. Z.;**\* Carrick, J. D. *Chemoselective Boc-group deprotection of indoles and other carbamates under mild conditions.* Poster presented at the 46<sup>th</sup> National Organic Symposium, Indiana University, Bloomington, IN, 6/26/19
- 45) **Tedder, M. L.;**\* **Gulledge, Z. Z.;** Carrick, J. D. *Frustrated complexant scaffolds of 2-(6-[1,2,4]triazin-3-yl-pyridin-2-yl)-1H-indoles toward minor-actinide separations.* Poster presented at the 46<sup>th</sup> National Organic Symposium, Indiana University, Bloomington, IN, 6/26/19
- 46) Veerakanellore, G. B.;\* Carrick, J. D. *DBU-assisted intermolecular [3+2] dipolar cycloaddition of terminal alkynes with tosylhydrazones towards the synthesis of frustrated pyrazolyl-pyridine-1,2,4-triazine complexant scaffolds for minor actinide separations.* Poster presented at the 46<sup>th</sup> National Organic Symposium, Indiana University, Bloomington, IN, 6/26/19
- 47) **Waters, G. D.;**\* Carrick, J. D. *Ullman-type coupling of functionalized 1,2,4-bistriazinyl-bipyridines toward strategic complexants for minor actinide separations.* Poster presented at the 46<sup>th</sup> National Organic Symposium, Indiana University, Bloomington, IN, 6/26/19
- 48) **Brown, M. L.;**\* Carrick, J. D.; Hawkins, C. A. *Evaluation of N-donor ligands for minor actinide separations.* Poster presented at the Actinide Separations Conference, Kingsport, TN, 5/20/19
- 49) **Lawson, K. L.;**\* Carrick, J. D.; Hawkins, C. A. *Optical spectroscopic studies of lanthanide complexation with N-donor ligands: toward improved minor actinide separations.* Poster presented at the Actinide Separations Conference, Kingsport, TN, 5/20/19
- 50) **Brown, M. L.;**\* Carrick, J. D.; Hawkins, C. A. *Evaluation of N-donor ligands for selective minor actinide separations.* Poster presented at the 257<sup>th</sup> American Chemical Society National Meeting, Orlando, FL, 4/2019
- 51) **Lawson, K. L.;**\* Carrick, J. D.; Hawkins, C. A. *Spectroscopic studies of novel N-donor ligand metal ion complexation.* Poster presented at the 257<sup>th</sup> American Chemical Society National Meeting, Orlando, FL, 4/2019
- 52) **Brown, M. L.;**\* Carrick, J. D.; Hawkins, C. A. *Evaluation of N-donor ligands for selective minor actinide separations.* Poster presentation at the 128<sup>th</sup> Tennessee Academy of Science Meeting, Austin Peay State University, Clarksville, TN, 11/17/18
- 53) **Brown, M. L.;**\* Carrick, J. D.; Hawkins, C. A. *Evaluation of new donor ligands for selective minor actinide separations.* Poster presented at the 20<sup>th</sup> Symposium for Separation Science & Technology, Gatlinburg, TN, 10/22/18
- 54) **Gulledge, Z. Z.;**\* Carrick, J. D. *Iodine-catalyzed electrophilic cyclization towards unsymmetric, functionalized, 5,6-diphenyl-3-(pyridin-2-yl)-1,2,4-triazinyl scaffolds.* Poster presented at the 20<sup>th</sup> Symposium for Separation Science & Technology, Gatlinburg, TN, 10/22/18
- 55) **Waters, G. D.;**\* Carrick, J. D. *Palladium-catalyzed Ullman-type coupling of functionalized pyridines toward strategic complexants for minor actinide separations.* Poster presented at the 20<sup>th</sup> Symposium for Separation Science & Technology, Gatlinburg, TN, 10/22/18
- 56) **Cleveland, J. W.;**\* Carrick, J. D. *Buchwald-Hartwig amination of soft Lewis basic heterocyclic complexant scaffolds.* Poster presented at the 45<sup>th</sup> National Organic Symposium, University of California, Davis, CA, 6/25/17
- 57) **Downs, R. P.;**\* **Dean, K. M.;** Chin, A.-L.; *Preparation of novel hemi-1,2,4-triazinylbipyridines via Negishi coupling and telescoped condensation towards minor-actinide separations..* Poster presented at the 45<sup>th</sup> National Organic Symposium, University of California, Davis, CA, 6/25/17

- 58) **Cleveland, J. W.;**\* Carrick, J. D. *Buchwald-Hartwig amination of soft Lewis basic heterocyclic complexant scaffolds.* Poster presented at the 19<sup>th</sup> Symposium for Separation Science & Technology, Gatlinburg, TN, 10/12/16
- 59) **Dean, K. M.;** Carrick, J. D.\* *Preparation of novel hemi-1,2,4-triazinylbipyridines via Negishi coupling and telescoped condensation towards minor-actinide separations.* Poster presented at the 19<sup>th</sup> Symposium for Separation Science & Technology, Gatlinburg, TN, 10/12/16
- 60) **Richards, K. D.;**\* Chin, A. L.; Carrick, J. D. *Investigation of 1,2,4-triazinyl Complexants for Cadmium Extraction.* Poster presentation at *Posters at the Capitol*, Nashville, TN, 2/17/16
- 61) **Chin, A. L.;**\* Carrick, J. D. *Modular approaches to diversified soft Lewis basic complexants through Suzuki-Miyaura cross-coupling of bromoheteroarenes with organotrifluoroborates.* Oral presentation at the 125<sup>th</sup> Tennessee Academy of Science Meeting, Middle Tennessee State University, Murfreesboro, TN, 11/20/15
- 62) **Cleveland, J. W.;**\* Carrick, J. D. *Pd-catalyzed amination of 3-(6-bromo-pyridin-2-yl)-5,6-diaryl-[1,2,4]triazine complexant scaffolds.* Poster presentation at the 125<sup>th</sup> Tennessee Academy of Science Meeting, Middle Tennessee State University, Murfreesboro, TN, 11/20/15
- 63) **Jordan, J. A.;**\* Carrick, J. D. *Towards the Total Synthesis of Hamigeromycin B.* Poster presentation at the 125<sup>th</sup> Tennessee Academy of Science Meeting, Middle Tennessee State University, Murfreesboro, TN, 11/20/15
- 64) **Richards, K. D.;**\* Chin, A. L.; Carrick, J. D. *Investigation of 1,2,4-triazinyl complexants for cadmium extraction.* Oral presentation at the 125<sup>th</sup> Tennessee Academy of Science Meeting, Middle Tennessee State University, Murfreesboro, TN, 11/20/15
- 65) **Tai, S.; Dover, E. J.; Marchi, S. V.;** Carrick, J. D.\* *Iterative metal-mediated coupling approaches to chemoselective minor actinide complexants.* Poster presented at the 44<sup>th</sup> National Organic Symposium, University of Maryland, College Park, MD, 6/29/15
- 66) **Chin, A. L.;**\* Carrick, J. D. *Progress towards the enantioselective total syntheses of ieodomycins a & b via an asymmetric vinylogous aldol strategy.* Poster presented at the 249<sup>th</sup> ACS National Meeting, Denver, CO, 3/15
- 67) **Marchi, S. V.;**\* **Tai, S.; Dover, E. J.;** Carrick, J. D. *Efficient preparation of pyridinyl-1,2,4-triazines via telescoped condensation with diversely functionalized 1,2-dicarbonyls.* Poster presented at the 249<sup>th</sup> ACS National Meeting, Denver, CO, 3/15
- 68) **Tai, S.;**\* Carrick, J. D. *Pd-catalyzed iterative bis-amination of functionalized dihalo-1,2,4-triazinyl substituted heterocycles.* Poster presented at the 249<sup>th</sup> ACS National Meeting, Denver, CO, 3/25/15
- 69) **Marchi, S. V.;**\* **Tai, S.;** Carrick, J. D. *Design and synthesis of bis-1,2,4-triazine Ligands based on pyridine-2-carbonitrile and pyridine 2,6-dicarbonitrile scaffolds towards chemoselective minor actinide extraction.* Poster presentation at *Posters at the Capitol*, Nashville, TN, 2/25/15
- 70) **Chin, A. L.;**\* Carrick, J. D. *Progress towards the convergent asymmetric total syntheses of ieodomycins a and b.* Poster presented at the 47<sup>th</sup> Southeastern Undergraduate Research Conference, University of Alabama, Tuscaloosa, AL, 2/7/2015
- 71) **Marchi, S. V.;**\* **Tai, S.;** Carrick, J. D. *Design and synthesis of bis-1,2,4-triazine Ligands based on pyridine-2-carbonitrile and pyridine 2,6-dicarbonitrile scaffolds towards chemoselective minor actinide extraction.* Poster presented at the 47<sup>th</sup> Southeastern Undergraduate Research Conference, University of Alabama, Tuscaloosa, AL, 2/7/2015
- 72) **Tai, S.;**\* **Marchi, S. V.; Dover, E. J.;** Carrick, J. D. *Pd-catalyzed iterative bis-amination of functionalized dihalo-1,2,4-triazinyl substituted heterocycles.* Oral presentation at the 47<sup>th</sup> Southeastern Undergraduate Research Conference, University of Alabama, Tuscaloosa, AL, 2/7/2015
- 73) **Chin, A. L.;**\* Carrick, J. D. *Progress towards the convergent asymmetric total syntheses of ieodomycins a and b.* Poster presented at the 124<sup>th</sup> Tennessee Academy of Science Meeting, Walters State Community College, Morristown, TN, 11/21/14
- 74) **Cleveland, A. H.;**\* **Probasco, M. S.; Jordan, J. A.; Kirby, J. W.;** Carrick, J. D. *Progress towards the total enantioselective syntheses of hamigeromycin b and deoxyhamigeromycin b.* Oral

- presentation delivered at the 124<sup>th</sup> Tennessee Academy of Science Meeting, Walters State Community College, Morristown, TN, 11/21/14
- 75) **Dover, E. J.;**\* Carrick, J. D. *Efforts toward iterative Pd-catalyzed bis-alkoxylation of heteroaryl halides.* Poster presented at the 124<sup>th</sup> Tennessee Academy of Science Meeting, Walters State Community College, Morristown, TN, 11/21/14
- 76) **Marchi, S. V.;**\* **Tai, S.;** Carrick, J. D. *The design and synthesis of pyridinyl-1,2,4-triazine ligand scaffolds towards chemoselective minor actinide extraction.* Poster presented at the 124<sup>th</sup> Tennessee Academy of Science Meeting, Walters State Community College, Morristown, TN, 11/21/14
- 77) **Tai, S.;**\* **Marchi, S. V.;** Carrick, J. D. *Synthesis of novel soft-N-donor complexants for chemoselective minor actinide extraction.* Oral presentation delivered at the 124<sup>th</sup> Tennessee Academy of Science Meeting, Walters State Community College, Morristown, TN, 11/21/14
- 78) **Marchi, S. V.;**\* Carrick, J. D. *Design and synthesis of bis-1,2,4-triazine ligands based on pyridine-2-carbonitrile and pyridine 2,6-dicarbonitrile scaffolds towards chemoselective minor actinide extraction.* Poster presented at the 18<sup>th</sup> Symposium for Separation Science & Technology, Oak Ridge, TN, 10/27/14
- 79) **Tai, S.;**\* Williams, N. J.; Carrick, J. D. *Design and synthesis of novel bis-1,2,4-triazine ligands based on a [1,10]-phenanthroline-2,9-dicarbonitrile scaffold and applications toward chemoselective minor actinide extraction.* Poster presented at the 18<sup>th</sup> Symposium for Separation Science & Technology, Oak Ridge, TN, 10/27/14
- 80) **Cleveland, A. H.;**\* Carrick, J. D. *Progress towards the asymmetric total synthesis of Hamigeromycin B.* Poster presented at Pfizer Global Research and Development, Groton, CT, 10/17/14
- 81) **Tai, S.;**\* Williams, N. J.; Carrick, J. D. *Design, synthesis, and distribution studies of novel bis-1,2,4-triazine ligands for chemoselective minor actinide extraction.* Poster presented at the 38<sup>th</sup> Actinide Separations Conference, Albuquerque, NM, 5/20/14
- 82) Delmau, L.; Tevepaugh, K.; **Tai, S.;** Carrick, J.; Ensor, D.\* *Separation of trivalent actinides from lanthanides using pyridine-based receptors.* Poster presented at the 38<sup>th</sup> Actinide Separations Conference, Albuquerque, NM, 5/20/14
- 83) **Cleveland, A. H.;**\* Carrick, J. D. *Study on the origins of reagent-controlled asymmetric induction in the hetero-Diels Alder reaction of chiral  $\beta$ -alkoxyaldehydes with enantiopure chromium (III) catalysts.* Poster presented at the 247<sup>th</sup> ACS National Meeting, Dallas, TX, United States, 3/17/14
- 84) **Chin, A. L.;**\* Carrick, J. D. *New directions in nucleopalladation: efforts toward the synthesis of functionalized silyl-enol ethers from alkenes utilizing a catalytic Wacker-type C-H activation reaction.* Poster presented at the 247<sup>th</sup> ACS National Meeting, Dallas, TX, United States, 3/17/14
- 85) **Tai, S.;**\* Carrick, J. D. *Synthesis of novel bis-1,2,4-triazines via telescoped condensation of [1,10]-phenanthroline-2,9-dicarbonitrile with aromatic 1,2-dicarbonyls.* Poster presented at the 247<sup>th</sup> ACS National Meeting, Dallas, TX, United States, 3/18/14
- 86) **Cleveland, A. H.;** **Probasco, M. S.;** **Kirby, J. W.;** Carrick, J. D. *Efforts toward the asymmetric total synthesis of hamigeromycin b.* Poster presentation at Posters at the Capitol, Nashville, TN, 2/15/14
- 87) **Cleveland, A. H.;**\* **Probasco, M. S.;** **Kirby, J. W.;** Carrick, J. D. *Studies on the origins of reagent-controlled asymmetric induction in the hetero-Diels-Alder reaction of chiral  $\beta$ -alkoxyaldehydes with enantiopure chromium (III) catalysts.* Poster presentation at the Southeast Undergraduate Research Conference, University of Tennessee, Knoxville, TN, 1/31/14
- 88) **Probasco, M. S.;**\* **Cleveland, A. H.;** **Kirby, J. W.;** Carrick, J. D. *Efforts toward the asymmetric total synthesis of hamigeromycin b.* Poster presentation at the Southeast Undergraduate Research Conference, University of Tennessee, Knoxville, TN, 1/31/14
- 89) **Tai, S.;**\* Carrick, J. D. *Synthesis of Novel bis-1,2,4-triazine Ligands for Chemoselective Minor Actinide Extraction.* Poster presentation at the Southeast Undergraduate Research Conference, University of Tennessee, Knoxville, TN, 1/31/14

- 90) **Chin, A. L.;**\* Carrick, J. D. *New directions in nucleopalladation: efforts toward the synthesis of functionalized silyl-enol ethers from alkenes utilizing a catalytic Wacker type C-H activation reaction.* Oral presentation at the Southeast Undergraduate Research Conference, University of Tennessee, Knoxville, TN, 1/31/14
- 91) **Cleveland, Alexander H.;**\* **Kirby, John W.;** Carrick, Jesse D. *Progress towards the enantioselective total synthesis of hamigeromycin b: part I, preparation of the polyketide synthon.* Poster presented at the biennial Louisiana Organic Chemistry symposium, LSU, Baton Rouge, LA, 11/22/13
- 92) **Probasco, Michael S.;**\* **Kirby, John W.;** Carrick, Jesse D. *Progress towards the total synthesis of hamigeromycin b: part II, preparation of the aromatic synthon.* Poster presented at the biennial Louisiana Organic Chemistry symposium, LSU, Baton Rouge, LA, 11/22/13
- 93) **Chin, A. L.;**\* Carrick, J. D. *New directions in nucleopalladation: efforts toward the synthesis of functionalized silyl-enol ethers from alkenes utilizing a catalytic Wacker type C-H activation reaction.* Poster presented at the 41<sup>st</sup> Tennessee Academy of Science Meeting, Motlow State Community College, Lynchburg, TN, 11/15/13
- 94) **Tai, S.;**\* Carrick, J. D. *Synthesis of novel bis-1,2,4-triazines via telescoped condensation of [1,10]-phenanthroline-2,9-dicarbonitrile with aromatic 1,2-dicarbonyls.* Poster presented at the 41<sup>st</sup> Tennessee Academy of Science Meeting, Motlow State Community College, Lynchburg, TN, 11/15/13
- 95) **Cleveland, A. H.;**\* **Kirby, J. W.;** Carrick, J. D. *Progress towards the enantioselective total synthesis of hamigeromycin b: part I, preparation of the polyketide synthon.* Poster presented at the 41<sup>st</sup> Tennessee Academy of Science Meeting, Motlow State Community College, Lynchburg, TN, 11/15/13
- 96) **Probasco, M. S.;**\* **Kirby, J. W.;** Carrick, J. D. *Progress towards the total synthesis of hamigeromycin b: part II, preparation of the aromatic synthon.* Oral presentation delivered at the 41<sup>st</sup> Tennessee Academy of Science Meeting, Motlow State Community College, Lynchburg, TN, 11/15/13
- 97) Delmau, L. H.;\* **Tevepaugh, K. N.;** **Tai, S.;** Carrick, J. D.; Ensor, D. D. *Separation of americium from heavier actinides and trivalent lanthanides using pyridine-based receptors.* Abstract accepted for the 18<sup>th</sup> Symposium on Separation Science and Technology for Energy Applications, Gatlinburg, TN, 10/27/13
- 98) **Tai, S.;**\* Carrick, J. D. *Synthesis of novel bis-1,2,4-triazine ligands for chemoselective minor actinide extraction.* Abstract accepted for the 18<sup>th</sup> Symposium on Separation Science and Technology for Energy Applications, Gatlinburg, TN, 10/27/13
- 99) **Probasco, M. S.;** **Kirby, J. W.;** **Cleveland, A. H.;** Carrick, J. D.\* *Progress towards the enantioselective total synthesis of hamigeromycin b.* 43<sup>rd</sup> National Organic Symposium, University of Washington, Seattle, WA, 6/23/13
- 100) **Probasco, M. S.;**\* **Kirby, J. W.;** Carrick, J. D. *Progress towards the enantioselective total synthesis of hamigeromycin b.* Abstracts of papers, 245<sup>th</sup> ACS National Meeting, New Orleans, LA, United States, 4/7/13
- 101) **Probasco, M. S.;**\* **Kirby, J. W.;** Carrick, J. D. *Progress towards the enantioselective total synthesis of hamigeromycin b.* Poster presented at the 40<sup>th</sup> Tennessee Academy of Science Meeting, Vanderbilt University, Nashville, TN, 11/3/12

\*An additional 52 presentations by 32 students have been delivered at internal TN Tech functions

### **Postdoctoral Research Associates Mentored**

- **Fletcher, Dr. Lesta K.,** *Ph.D. in Environmental Science* (Prof. H. Zhang) 9/22–current.
- **Veerakanellore, Dr. Giri Babu,** *Ph.D. University of Miami* (Prof. V. Ramamurthy) 2018–2019.

### Environmental Science Ph.D. Students Mentored

- **Thilakarathne, Lakshi**, *Ph.D. in Environmental Science* (expected 5/28) 9/23–current.

### M.S. Students Mentored

- 1) **Agyei, Eric A.**, 2/1/22–current, Functional group interconversion of heteroaryl carbaldehydes to the corresponding nitrile via oxidative condensation; Synthesis of unsymmetric BTP soft-N-donor complexants
- 2) **Aimiwu, Emmanuel E.**, 10/1/23–current, Oxidative cyclization of heteroaryl hydrazonimides with carbonitriles to afford biaryl 1,2,4-triazolyl complexants for minor actinide separations
- 3) **Ajibola, Bolade R.**, 9/22–current, *Alkoxy-BTP, BTBP, and BTPPhen complexants*
- 4) **Dzeagu, Fortune O.**, M.S., Chemistry 2022, 10/1/20–12/12/22, *Synthesis of functionalized heteroaryl-1,3,4-oxadiazoles for minor actinide separations*, **Research Scientist, Drug Discovery, Eli Lilly and Company, San Diego, CA**
- 5) **Edirin, Orume J.**, 2/1/22–current, *Synthesis of 3,4-disubstituted-1,2-pyrazolyl soft-N-donor complexants*
- 6) **Edmonds, Meagan A.**, 9/1/21–current, *Computational investigation into the biological activity of hamigeromycin B and related analogues as potential anticancer ligands*
- 7) **Gulledge, Zachary Z.**, M.S., Chemistry 2021, 8/26/19–8/6/21, *Chemoselective BOC deprotection of functionalized indoles, 1,2-indazoles, and related heteroarenes, Green oxidation of functionalized heteroarylisoprenes, Azide-free preparation of functionalized, unsymmetric heteroaryl soft-donors for minor actinide separations*, **Research Scientist, Drug Discovery, Novartis Institutes for Biomedical Research, Cambridge, MA**
- 8) **Jonathan, Victor C.**, 9/22–current, Progress towards the total synthesis of hamigeromycin b and related resorcylic acid lactones
- 9) **Olayiwola, Samiat**, 9/22–current, *Oxidative annulation of heteroaryl complexant scaffolds*
- 10) **Tedder, Mariah L.**, M.S., Chemistry 2021, 8/26/19–8/6/21, *Synthesis of alkoxy- homologues of functionalized bis-1,2,4-triazinyl complexants scaffolds for minor actinide separations, Kornblum-type oxidation of functionalized methyheteroarenes*. **Ph.D. student, Organic Chemistry, Boston College University, Prof. Zhang**

### Undergraduate Students Mentored

#### Tennessee Tech University

- 1) **Buchanan, Anna L.** B.S. Chemical Engineering (expected 5/25), 5/20/24–current, *Synthesis of Heteroaryl Complexants for Minor Actinide Separations*
- 2) **Byrum, Drew S.** B.S. Chemistry (expected 5/25), 5/16/23–8/10/23, *Total synthesis of hamigeromycin B, Part 1: Aromatic Synthon*
- 3) **Chin, Ai Lin**, B.S., Chemical Engineering 2015, 5/28/13–8/1/16, *Synthesis of functionalized silyl-enol ethers by a direct catalytic Wacker-type C-H activation reaction of alkenes, Total synthesis of ieodomycins A and B, Suzuki-Miyaura cross-coupling of Lewis-basic heterocyclic complexant scaffolds, FGF-23 antagonists*, **Ph.D. 2022, Chem. Eng., Virginia Tech**
- 4) **Cleveland, Alexander H.**, B.S., Chemistry 2015, 5/28/13–5/9/15, *The total synthesis of hamigeromycin b (polyketide synthon of convergent route)*, **Ph.D., 2020, Organic Chemistry, Louisiana State University (Prof. R. Kartika), Research Scientist at Los Alamos National Laboratory, NM**
- 5) **Cleveland, Jacob W.**, B.S., Chemical Engineering 2017, 3/1/16–8/10/17, *Buchwald-Hartwig amination of 6-bromo-2-pyridinyl-1,2,4-triazines*, **Ph.D., 2021, Chem. Eng., Georgia Inst. Tech (Prof. C. Jones), Postdoctoral Scientist at Los Alamos National Laboratory, NM**



- 6) **Dean, Kayla M.**, B.S., Chemical Engineering 2017, 1/10/16–9/30/16, *Preparation of bis-triazinylbipyridines via regioselective metalation/Negishi coupling*
- 7) **Dover, Evan J.**, B.S., Chemical Engineering 2016, 9/11/13–5/9/15, *Tandem Fries rearrangement/nucleopalladation chemistry, Buchwald-Hartwig alkoxylation of 4,4'-dibromo aromatic 1,2,4-triazinyl pyridines towards chemoselective minor actinide extraction*
- 8) **Downs, Ryan P.**, B.S., Chemical Engineering 2017, 6/6/16–8/10/17; 3/12/18–4/13/18, *Regioselective magnesiation of aryl amides and subsequent functionalization, Negishi Coupling, FGF-23 antagonists, Progress towards the total synthesis of hamigeromycin b*
- 9) **Gulledge, Zachary Z.**, B.S., Chemistry 2018, 5/14/18–8/23/19, *Synthesis of functionalized 3-[6-(2H-pyrazol-3-yl)-pyridin-2-yl]-[1,2,4]triazines for minor actinide separations, **Research Scientist, Drug Discovery, Novartis Institutes for Biomedical Research, Cambridge, MA***
- 10) **Hudak, C. Blake**, B.S., Chemical Engineering, expected May '24, 10/22–current, *Investigation of cross-coupling reactions using BTP stabilized metal-ligand complexes*
- 11) **Ikedionwu, Munachi O.**, B.S., Biology-Vanderbilt University 2019, 6/6/17–8/15/17; 5/14/18–7/12/18, *FGF-23 antagonists; Progress towards the total synthesis of hamigeromycin b*
- 12) **Jordan, 2<sup>nd</sup> Lt. James A.**, B.S., Biochemistry 2016, 4/14/15–5/8/16, *Progress towards the total synthesis of hamigeromycin b, 2<sup>nd</sup> Lt. U. S. Army, M.D., 2020, East Tennessee State University Quillen College of Medicine*
- 13) **Kee, Skyler G.**, B.S., Forensic Chemistry (expected 5/24), 9/15/22–12/15/23, *Spectroscopic properties of heteroaryl-lanthanide complexes*
- 14) **Kirby, John W.**, B.S., Biochemistry 2013, 3/1/12–8/15/13, *Progress towards the total synthesis of hamigeromycin b (polyketide synthon of convergent route), **M.D., 2018, East Tennessee State University Quillen College of Medicine, Resident in Radiology at the Mayo Clinic, MN***
- 15) **Lambert, Abigail E.**, B.S. Chemical Engineering 2019, 2/1/17–12/15/17, *Pd-catalyzed Suzuki-Miyaura cross-coupling of functionalized 2-halopyridines*
- 16) **Laxton, Steven J.**, B.S., Biochemistry (2019), 1/15/18–5/4/18, *Convergent approaches to frustrated soft-Lewis basic donor complexant scaffolds, **M.D. student at the University of Tennessee Health Sciences Center, Memphis, TN***
- 17) **Lyons, Kyle R.**, B.S., Biochemistry 2019, 1/15/18–7/16/18, *Synthesis of pyridinyl indole 1,2,4-triazinyl frustrated complexant scaffolds for separations*
- 18) **Marchi, Sydney, V.**, B.S., Chemistry 2015, 2/14–5/9/15, *Design and synthesis of 3-pyridin-2-yl 1,2,4-triazines for chemoselective minor actinide extraction, Suzuki coupling of 4,4'-dibromo aromatic 1,2,4-triazinyl pyridine, **Ph.D. Organic Chemistry 2023, The University of Alabama (Prof. S. Woski), Instructor The University of Alabama at Birmingham***
- 19) **Pinson, Connor C.**, B.S., Mathematics 2022, 9/1/20–5/5/22, *Green oxidation of heteroarylisoprenes.*
- 20) **Probasco, Michael S.**, B.S., Chemistry 2014, 5/10/12–5/10/14, *Progress towards the total synthesis of hamigeromycin b (aromatic synthon of convergent route), **Ph.D., 2019, Organic Chemistry, The University of Alabama (Prof. M. P. Jennings), Thermo Fisher Scientific***
- 21) **Qiu, David**, B.S., Chemistry-Vanderbilt University 2020, 5/14/18–8/7/18, *Progress towards the total synthesis of hamigeromycin b*
- 22) **Richards, Kelsey D.**, B.S. Chemistry 2016, 4/15/15–4/12/16, *Design, synthesis, and evaluation of nitrogen-donor complexants for Cd separations, **M.S. graduate, TN Tech, High School Chemistry Teacher, Gallatin, TN***
- 23) **Stephens, Madison T.**, B.S., Biochemistry 2016, 9/11/13–12/31/13, *Progress towards the total synthesis of botryolide e, **M.D., 2020, University of Tennessee-Memphis***
- 24) **Stovall, Alexander M.**, B.S., Biology (expected 5/23), 6/1/21–5/5/22, *Green oxidation of functionalized heteroarylisoprenes.*
- 25) **Tai, Serene**, B.S., Chemistry 2015, 5/28/13–5/9/15, *Design and synthesis of novel bis-1,2,4-triazinyl ligands for chemoselective minor actinide extraction, Buchwald-Hartwig amination of 4,4'-*



*dibromo aromatic 1,2,4-triazinyl pyridines*, **M.S., 2018, Organic Chemistry, University of Pittsburgh (Prof. Wipf)**

- 26) **Tedder, Mariah L.**, B.S., Chemistry 2019, 8/27/18–8/23/19, *Synthesis of pyridinyl indole 1,2,4-triazinyl frustrated complexant scaffolds for separations*, **Ph.D. candidate, Organic Chemistry, Boston College University, Prof. Zhang**
- 27) **Waters, Gabrielle D.**, B.S., Chemical Engineering 2021, 1/11/18–5/5/21, *Synthetic approaches to BTBP complexant scaffolds leveraging metal-mediated coupling strategies*, **Process Engineer, Eastman Chemical Company, Kingsport, TN**
- 28) **Wood, Shayla G.** B.S. Chemistry (expected 5/26), 5/20/24–current, *Synthesis of Heteroaryl Complexants for Minor Actinide Separations*

#### Union College

- 1) **Ibrahim, Ayon**, Union College, B.S., Biology 2013, *Progress towards the total synthesis of hamigeromycin B*, **Ph.D. 2020, University of Pennsylvania Medical School**
- 2) **Lin, X. Han**, Union College, B.S. Biology 2013, *Progress towards the total synthesis of hamigeromycin B*, **M.S. Computer Science at Rensselaer Polytechnic Institute**
- 3) **Vanable, Evan P.**, Union College, B.S. Chemistry 2013, *Progress towards the total synthesis of botryolide E*, **Ph.D., 2019, Organic Chemistry the University of Illinois, Urbana-Champaign** (Prof. K. Hull)