

Jesse D. Carrick, Ph.D.

TN Tech Department of Chemistry
Cookeville, TN 38505-001

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Professional Academic Experience

- Tennessee Tech University Cookeville, TN 8/2016–current
Associate Professor of Chemistry (Tenured)
 - **Teaching:** CHEM 3010/3020 (Organic Chemistry I/II Lecture/Laboratory), CHEM 6210 (Advanced Organic Chemistry)
 - **Research:** Synthesis of novel *bis*-1,2,4-triazines 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 of Arts and Sciences Awards Selection
Department: Graduate Student Executive; NMR user; New Science Building; tenure-track search committees. External seminar coordinator (2012–2014)
- Tennessee Tech University Cookeville, TN 8/2011–7/2016
Assistant Professor of Chemistry

Postdoctoral 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 amphidinolide 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

External Funding

- 1) Carrick, Jessie D.*; Hawkins, Cory A.; Dixon, David A. Modular Approaches to “Click” Complexants for Chemoselective Minor Actinide Separations. U.S. Department of Energy, Basic Energy Sciences, Separations Program, (9/1/17–8/31/20), Amount funded = **\$440,490**
 - 2) Quarles, L. Darryl*; Yates, C. Ryan; Smith, Jeremy C.; Baudry, Jerome. Novel FGF-23 Inhibitors to Treat Disorders of FGF-23 Excess. The University of Tennessee Research Foundation, CORNET program, (6/1/17–5/31/18), Amount funded = **\$30,000 (\$6,000-JDC consultant, outside UT system)**
 - 3) Jiang, Xiaohua*; Lisic, Edward C.; Carrick, Jessie D. (33%) Synergistic Interdisciplinary Approaches to the Design of Anticancer Drugs. Tennessee Board of Regents Office of Academic Affairs Faculty Research Grants. 4/1/16. Amount funded = **\$30,000 (\$10,000-JDC)**
 - 4) Carrick, Jessie D.*; Rice, Jeffrey; Carroll, William R., Zhan, Xuanzhi; Swartling, Daniel J. MRI: Acquisition of a Multinuclear 500 MHz NMR Spectrometer. National Science Foundation. 7/1/15. Amount funded = **\$586,400**
 - 5) Ensor, Dale D.*; Carrick, Jessie D.* (50%) Selective Separation of Americium from Trivalent Lanthanides using BTP, BTP, and BTPPhen Derivatives or Actinyl Crystallization. UT-Battelle, LLC/Oak Ridge National Laboratory. 1/1/14–11/30/15. Amount funded = **\$85,000**
 - 6) Ensor, Dale D.*; Carrick, Jessie D. Fundamental Studies of the Separation of Environmentally Important Radionuclides. UT-Battelle, LLC/Oak Ridge National Laboratory. 5/1/13 Amount funded = **\$18,600** (co-PI amt.)
- Additional **\$142,677** brought into TN Tech Chemistry Department from Internal Sources

Publications (TN Tech Undergraduate Students in Bold)

- 1) 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*, **2020**, *in prep.*
- 2) **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.
- 3) Gulledege, 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.
- 4) **Gulledege, 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.
- 5) 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.
- 6) 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
- 7) 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

- 8) **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
- 9) 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
- 10) 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
- 11) **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
- 12) **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
- 13) 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.
- 14) **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
- 15) **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
- 16) 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
- 17) **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
- 18) **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: 10.1021/acs.joc.5b00710
- 19) Carrick, J. D.; Jennings, M. P.* An efficient formal synthesis of (–)-clavosolide featuring a “mismatched” stereoselective oxocarbenium reduction. *Organic Letters* **2009**, 11, 769–772. DOI: 10.1021/ol8028302
- 20) 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

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) University of Alabama at Huntsville, Huntsville, AL, 2/8/19
- 2) University of Tennessee Health Sciences Center, Memphis, TN, 9/13/16
- 3) University of Tennessee, Chattanooga, TN, 9/18/15
- 4) Vanderbilt University, Nashville, TN, 4/13/15
- 5) Middle Tennessee State University, Murfreesboro, TN, 2/6/15
- 6) University of Alabama, Birmingham, Birmingham, AL, 1/15/15
- 7) Austin Peay State University, Clarksville, TN, 11/7/14
- 8) The University of the South, Sewanee, TN, 9/19/14
- 9) University of Alabama, Tuscaloosa, AL, 3/13/14 & 3/1/18
- 10) Louisiana State University, Baton Rouge, LA, 3/11/14

Presentations

- 1) 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
- 2) 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 20th Symposium for Separation Science & Technology, Gatlinburg, TN, 10/23/18
- 3) 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
- 4) **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 19th Symposium for Separation Science & Technology, Gatlinburg, TN, 10/12/16
- 5) 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 18th Symposium for Separation Science & Technology, Oak Ridge, TN, 10/29/14
- 6) **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 247th ACS National Meeting, Dallas, TX, 3/19/14

Awards

- 1) Tennessee Tech University Scholar-Mentor Award (**2019**)
- 2) Tennessee Tech University Scholastic Research Award for Tenured Faculty (**2018**)
- 3) Tennessee Tech University College of Arts and Sciences Research and Creative Activity Award (**2018**)
- 4) ACS Organic Division Travel Award for Outstanding Undergraduate Faculty, 44th National Organic Chemistry Symposium, College Park, MD (**2015**)
- 5) ACS Organic Division Travel Award for Outstanding Undergraduate Faculty, 247th American Chemical Society National Meeting, Dallas, TX (**2014**)
- 6) ACS Organic Division Travel Award for Outstanding Undergraduate Faculty, 43rd National Organic Chemistry Symposium, Seattle, WA (**2013**)
- 7) ACS Organic Division Travel Award for Young Researchers attending the 235th ACS national meeting in New Orleans, LA, University of Alabama (**2008**)

- 8) Outstanding 2nd Year Chemistry Graduate Student Award, University of Alabama (2007)

Student Awards

- 1) **Tedder, M. L.** Best Poster (Undergraduate Division-Wed., 6/26/19), 46th National Organic Chemistry Symposium, Bloomington, IN (2019)
- 2) **Waters, G. D.** Best Poster (Undergraduate Division-Tues., 6/25/19), 46th National Organic Chemistry Symposium, Bloomington, IN (2019)
- 3) **Waters, G. D.** ACS Organic Division Travel Award for Outstanding Undergraduate Students, 46th National Organic Chemistry Symposium, Bloomington, IN (2019)
- 4) **Veerakanellore, G. B.** *Outstanding Chemistry Graduate Research Poster* at the 14th annual Tennessee Tech University Student Research and Creative Inquiry Day (2019)
- 5) **Tedder, M. L.; Gulledege, Z. Z.** *Outstanding Chemistry Undergraduate Research Poster* at the 14th annual Tennessee Tech University Student Research and Creative Inquiry Day (2019)
- 6) **Waters, G. D.** *Outstanding Student Poster Award* at the 20th Symposium for Separation Science & Technology, Gatlinburg, TN (2018)
- 7) **Waters, G. D.** *Outstanding Chemistry Undergraduate Research Poster* at the 13th annual Tennessee Tech University Student Research and Creative Inquiry Day (2018)
- 8) **Cleveland, Jacob W.** ACS Organic Division Travel Award for Outstanding Undergraduate Students, 45th National Organic Chemistry Symposium, Davis, CA (2017)
- 9) **Downs, R. P.** *Outstanding Chemistry Undergraduate Research Poster* at the 12th annual Tennessee Tech University Student Research and Creative Inquiry Day (2017)
- 10) **Cleveland, Jacob W.** Outstanding Student Poster Award at the 19th Symposium for Separation Science & Technology, Gatlinburg, TN (2016)
- 11) **Dean, Kayla M.** U.S. Dept. of Energy Integrated University Program Scholarship, **\$7,500** (2016)
- 12) **Richards, Kelsey D.** *1st Place Chemistry Oral Presentation* at the 125th Tennessee Academy of Science Meeting, Middle Tennessee State University, Murfreesboro, TN (2015)
- 13) **Dover, Evan J.** *Outstanding Chemical Engineering Undergraduate Research Poster* at the 10th annual Tennessee Tech University Student Research Day (2015)
- 14) **Marchi, Sydney V.** *Outstanding Chemistry Undergraduate Research Poster* at the 10th annual Tennessee Tech University Student Research Day (2015)
- 15) **Marchi, Sydney V.** *Outstanding Poster Presentation Award* at the Southeastern Undergraduate Research Conference, University of Alabama, Tuscaloosa, AL (2015)
- 16) **Tai, Serene** ACS Organic Division Travel Award for Outstanding Undergraduate Students, 249th American Chemical Society National Meeting, Denver, CO (2015)
- 17) **Tai, Serene** Outstanding Student Poster Award at the 18th Symposium for Separation Science & Technology, Oak Ridge TN (2014)
- 18) **Cleveland, Alexander H.** American Chemical Society, Division of Organic Chemistry, Summer Undergraduate Research Fellowship (SURF) Program, sponsored by Pfizer, Inc. **\$5,000** (2014)
- 19) **Jordan, James A.,** *Tennessee Techn University Swindell-Jackson Undergraduate Research Fellowship*, **\$1,500** (2014)
- 20) **Cleveland, A. H.; Probasco, M. Scott** *Best Presentation in Organic Chemistry* at the Southeast Undergraduate Research Conference, University of Tennessee, Knoxville, TN (2014)
- 21) **Probasco, M. Scott,** *Tennessee Tech University Swindell-Jackson Undergraduate Research Fellowship*, **\$1,500** (2013)
- 22) **Probasco, M. Scott; Kirby, John W.** *Outstanding Chemistry Undergraduate Research Poster* at the 8th annual Tennessee Tech University Student Research Day (2013)

External Student Presentations

*Denotes presenter. Undergraduate students are in **bold** type. 64 total (28 additional internal)

- 1) **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 259th American Chemical Society National Meeting, Philadelphia, PA, 3/2020
- 2) **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 259th American Chemical Society National Meeting, Philadelphia, PA, 3/2020
- 3) **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
- 4) **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
- 5) **Gulledge, Z. Z.;*** Carrick, J. D. *Specific deprotection of Boc-containing heterocyclic substrates through addition/elimination with simple amines.* Oral presentation at the 129th Tennessee Academy of Science Meeting, Columbia State Community College, Columbia, TN, 11/22/19
- 6) **Tedder, M. L.;*** Carrick, J. D. *Development of alkoxy-substituted scaffolds for minor actinide separations.* Oral presentation at the 129th Tennessee Academy of Science Meeting, Columbia State Community College, Columbia, TN, 11/22/19
- 7) **Gulledge, Z. Z.;*** Carrick, J. D. *Chemoselective Boc-group deprotection of indoles and other carbamates under mild conditions.* Poster presented at the 46th National Organic Symposium, Indiana University, Bloomington, IN, 6/26/19
- 8) **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 46th National Organic Symposium, Indiana University, Bloomington, IN, 6/26/19
- 9) **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 46th National Organic Symposium, Indiana University, Bloomington, IN, 6/26/19
- 10) **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 46th National Organic Symposium, Indiana University, Bloomington, IN, 6/26/19
- 11) **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
- 12) **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
- 13) **Brown, M. L.;*** Carrick, J. D.; Hawkins, C. A. *Evaluation of N-donor ligands for selective minor actinide separations.* Poster presented at the 257th American Chemical Society National Meeting, Orlando, FL, 4/2019
- 14) **Lawson, K. L.;*** Carrick, J. D.; Hawkins, C. A. *Spectroscopic studies of novel N-donor ligand metal ion complexation.* Poster presented at the 257th American Chemical Society National Meeting, Orlando, FL, 4/2019
- 15) **Brown, M. L.;*** Carrick, J. D.; Hawkins, C. A. *Evaluation of N-donor ligands for selective minor actinide separations.* Poster presentation at the 128th Tennessee Academy of Science Meeting, Austin Peay State University, Clarksville, TN, 11/17/18

- 16) **Brown, M. L.;*** Carrick, J. D.; Hawkins, C. A. *Evaluation of new donor ligands for selective minor actinide separations.* Poster presented at the 20th Symposium for Separation Science & Technology, Gatlinburg, TN, 10/22/18
- 17) **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 20th Symposium for Separation Science & Technology, Gatlinburg, TN, 10/22/18
- 18) **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 20th Symposium for Separation Science & Technology, Gatlinburg, TN, 10/22/18
- 19) **Cleveland, J. W.;*** Carrick, J. D. *Buchwald-Hartwig amination of soft Lewis basic heterocyclic complexant scaffolds.* Poster presented at the 45th National Organic Symposium, University of California, Davis, CA, 6/25/17
- 20) **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 45th National Organic Symposium, University of California, Davis, CA, 6/25/17
- 21) **Cleveland, J. W.;*** Carrick, J. D. *Buchwald-Hartwig amination of soft Lewis basic heterocyclic complexant scaffolds.* Poster presented at the 19th Symposium for Separation Science & Technology, Gatlinburg, TN, 10/12/16
- 22) **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 19th Symposium for Separation Science & Technology, Gatlinburg, TN, 10/12/16
- 23) **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
- 24) **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 125th Tennessee Academy of Science Meeting, Middle Tennessee State University, Murfreesboro, TN, 11/20/15
- 25) **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 125th Tennessee Academy of Science Meeting, Middle Tennessee State University, Murfreesboro, TN, 11/20/15
- 26) **Jordan, J. A.;*** Carrick, J. D. *Towards the Total Synthesis of Hamigeromycin B.* Poster presentation at the 125th Tennessee Academy of Science Meeting, Middle Tennessee State University, Murfreesboro, TN, 11/20/15
- 27) **Richards, K. D.;*** Chin, A. L.; Carrick, J. D. *Investigation of 1,2,4-triazinyl complexants for cadmium extraction.* Oral presentation at the 125th Tennessee Academy of Science Meeting, Middle Tennessee State University, Murfreesboro, TN, 11/20/15
- 28) **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 44th National Organic Symposium, University of Maryland, College Park, MD, 6/29/15
- 29) **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 249th ACS National Meeting, Denver, CO, 3/15
- 30) **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 249th ACS National Meeting, Denver, CO, 3/15
- 31) **Tai, S.;*** Carrick, J. D. *Pd-catalyzed iterative bis-amination of functionalized dihalo-1,2,4-triazinyl substituted heterocycles.* Poster presented at the 249th ACS National Meeting, Denver, CO, 3/25/15
- 32) **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

- 33) **Chin, A. L.;*** Carrick, J. D. *Progress towards the convergent asymmetric total syntheses of ieodomycins a and b.* Poster presented at the 47th Southeastern Undergraduate Research Conference, University of Alabama, Tuscaloosa, AL, 2/7/2015
- 34) **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 47th Southeastern Undergraduate Research Conference, University of Alabama, Tuscaloosa, AL, 2/7/2015
- 35) **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 47th Southeastern Undergraduate Research Conference, University of Alabama, Tuscaloosa, AL, 2/7/2015
- 36) **Chin, A. L.;*** Carrick, J. D. *Progress towards the convergent asymmetric total syntheses of ieodomycins a and b.* Poster presented at the 124th Tennessee Academy of Science Meeting, Walters State Community College, Morristown, TN, 11/21/14
- 37) **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 124th Tennessee Academy of Science Meeting, Walters State Community College, Morristown, TN, 11/21/14
- 38) **Dover, E. J.;*** Carrick, J. D. *Efforts toward iterative Pd-catalyzed bis-alkoxylation of heteroaryl halides.* Poster presented at the 124th Tennessee Academy of Science Meeting, Walters State Community College, Morristown, TN, 11/21/14
- 39) **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 124th Tennessee Academy of Science Meeting, Walters State Community College, Morristown, TN, 11/21/14
- 40) **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 124th Tennessee Academy of Science Meeting, Walters State Community College, Morristown, TN, 11/21/14
- 41) **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 18th Symposium for Separation Science & Technology, Oak Ridge, TN, 10/27/14
- 42) **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 18th Symposium for Separation Science & Technology, Oak Ridge, TN, 10/27/14
- 43) **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
- 44) **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 38th Actinide Separations Conference, Albuquerque, NM, 5/20/14
- 45) Delmau, L.; Tevepaugh, K.; **Tai, S.;** Carrick, J.; Ensor, D.* *Separation of trivalent actinides from lanthanides using pyridine-based receptors.* Poster presented at the 38th Actinide Separations Conference, Albuquerque, NM, 5/20/14
- 46) **Cleveland, A. H.;*** Carrick, J. D. *Study on the origins of reagent-controlled asymmetric induction in the hetero-Diels Alder reaction of chiral β -alkoxyaldehydes with enantiopure chromium (III) catalysts.* Poster presented at the 247th ACS National Meeting, Dallas, TX, United States, 3/17/14
- 47) **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 247th ACS National Meeting, Dallas, TX, United States, 3/17/14

- 48) **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 247th ACS National Meeting, Dallas, TX, United States, 3/18/14
- 49) **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
- 50) **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 β -alkoxyaldehydes with enantiopure chromium (III) catalysts.* Poster presentation at the Southeast Undergraduate Research Conference, University of Tennessee, Knoxville, TN, 1/31/14
- 51) **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
- 52) **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
- 53) **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
- 54) **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
- 55) **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
- 56) **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 41st Tennessee Academy of Science Meeting, Motlow State Community College, Lynchburg, TN, 11/15/13
- 57) **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 41st Tennessee Academy of Science Meeting, Motlow State Community College, Lynchburg, TN, 11/15/13
- 58) **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 41st Tennessee Academy of Science Meeting, Motlow State Community College, Lynchburg, TN, 11/15/13
- 59) **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 41st Tennessee Academy of Science Meeting, Motlow State Community College, Lynchburg, TN, 11/15/13
- 60) Delmau, L. H.;* **Tevepauagh, 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 18th Symposium on Separation Science and Technology for Energy Applications, Gatlinburg, TN, 10/27/13
- 61) **Tai, S.;*** Carrick, J. D. *Synthesis of novel bis-1,2,4-triazine ligands for chemoselective minor actinide extraction.* Abstract accepted for the 18th Symposium on Separation Science and Technology for Energy Applications, Gatlinburg, TN, 10/27/13

- 62) **Probasco, M. S.; Kirby, J. W.; Cleveland, A. H.;** Carrick, J. D.* *Progress towards the enantioselective total synthesis of hamigeromycin b.* 43rd National Organic Symposium, University of Washington, Seattle, WA, 6/23/13
- 63) **Probasco, M. S.;*** **Kirby, J. W.;** Carrick, J. D. *Progress towards the enantioselective total synthesis of hamigeromycin b.* Abstracts of papers, 245th ACS National Meeting, New Orleans, LA, United States, 4/7/13
- 64) **Probasco, M. S.;*** **Kirby, J. W.;** Carrick, J. D. *Progress towards the enantioselective total synthesis of hamigeromycin b.* Poster presented at the 40th Tennessee Academy of Science Meeting, Vanderbilt University, Nashville, TN, 11/3/12

*An additional 26 presentations by 19 students have been delivered at internal TN Tech functions

Postdoctoral Associates Mentored

- **Veerakanellore, Dr. Giri Babu,** *Ph.D. University of Miami (Ramamurthy)* 2018-2019.

M.S. Students Mentored

- **Gulledge, Zachary Z.,** B.S., Chemistry 2019, 8/26/19-current, *Chemoselective Boc Deprotection of Functionalized indoles, 1,2-indazoles, and related heteroarenes*
- **Tedder, Mariah L.,** B.S., Chemistry 2019, 8/26/19-current, *Synthesis of alkoxy- homologues of functionalized bis-1,2,4-triazinyl complexants scaffolds for minor actinide separations*

Undergraduate Students Mentored

Tennessee Tech University

- 1) **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. Chem. E. student, Virginia Tech*
- 2) **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. student, Louisiana State University (Prof. R. Kartika)*
- 3) **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. student Georgia Inst. Tech (Prof. C. Jones)*
- 4) **Dean, Kayla M.,** B.S., Chemical Engineering 2017, 1/10/16–9/30/16, *Preparation of bis-triazinylbipyridines via regioselective metalation/Negishi coupling*
- 5) **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*
- 6) **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*
- 7) **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.*
- 8) **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*
- 9) **Jordan, 2nd Lt. James A.,** B.S., Biochemistry 2016, 4/14/15–5/8/16, *Progress towards the total synthesis of hamigeromycin b, 2nd Lt. U. S. Army, M.D. student, East Tennessee State University (2021)*

- 10) **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**
- 11) **Lambert, Abigail, E.**, B.S. Chemical Engineering (2019), 2/1/17–12/15/17, *Pd-catalyzed Suzuki-Miyaura cross-coupling of functionalized 2-halopyridines*
- 12) **Laxton, Steven J.**, B.S., Biochemistry (2019), 1/15/18–5/4/18, *Convergent approaches to frustrated soft-Lewis basic donor complexant scaffolds*
- 13) **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*
- 14) **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. student, The University of Alabama (Prof. Woski)**
- 15) **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. student, The University of Alabama (Prof. Jennings)**
- 16) **Qiu, David**, B.S., Chemistry-Vanderbilt University (2020), 5/14/18–8/7/18, *Progress towards the total synthesis of hamigeromycin b*
- 17) **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**
- 18) **Stephens, Madison T.**, B.S., Biochemistry 2016, 9/11/13–12/31/13, *Progress towards the total synthesis of botryolide e*, **M.D. student, University of Tennessee-Memphis**
- 19) **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., University of Pittsburgh (Prof. Wipf)**
- 20) **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*
- 21) **Waters, Gabrielle D.**, B.S., Chemical Engineering (2020), 1/11/18–current, *Synthetic approaches to BTBP complexant scaffolds leveraging metal-mediated coupling strategies*

Union College

- 1) **Ibrahim, Ayon**, Union College, B.S., Biology 2013, *Progress towards the total synthesis of hamigeromycin B*, **Ph.D. student, 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. student in 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. student at the University of Illinois, Urbana-Champaign (Prof. Hull)**

Professional Memberships

- 1) American Chemical Society
- 2) American Chemical Society, Division of Organic Chemistry
- 3) Tennessee Academy of Science