

## Chiles Wade Downey

Department of Chemistry  
University of Richmond

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### Professional Experience

- 2005 to present **University of Richmond, Richmond, Virginia**  
Denoon Chair in the Natural Sciences 2024 to present  
Professor of Chemistry 2017 to present  
Associate Professor of Chemistry 2011 to 2017  
Assistant Professor of Chemistry 2005 to 2011  
**Research:** *Silylation-Induced Catalysis; One-Pot Reactions*  
**Teaching:** Organic Chemistry I, Organic Chemistry II,  
Advanced Organic Chemistry, Organic Synthesis, Physical  
Organic Chemistry & Catalysis
- 2004 – 2005 **Massachusetts Institute of Technology, Cambridge, Massachusetts**  
Postdoctoral Fellowship with Professor Gregory C. Fu  
**Research:** *Kinetic Resolution of Azomethine Imines via Dipolar  
Cycloaddition*
- 1998 – 2003 **Harvard University, Cambridge, Massachusetts**  
Graduate Study with Professor David A. Evans  
**Research:** *Development of Catalytic Asymmetric Aldol  
Reactions*  
**Teaching:** *Head Teaching Fellow, Organic Chemistry (2001, 2002)*  
*Teaching Fellow, Organic Chemistry (1998, 1999, 2000)*
- 1996 – 1997 **University of North Carolina, Chapel Hill, North Carolina**  
Undergraduate Study with Professor Michael T. Crimmins  
**Research:** *An Aldol-Metathesis Strategy for the Construction of a  
Carbocyclic Nucleoside*  
**Teaching:** *Teaching Assistant, General Chemistry II Laboratory  
(1997)*

### Education

- |      |                            |                              |
|------|----------------------------|------------------------------|
| 2003 | Ph.D. in Organic Chemistry | Harvard University           |
| 2000 | A.M. in Chemistry          | Harvard University           |
| 1997 | B.S. in Chemistry          | University of North Carolina |

### Awards and Honors

- 2024 Distinguished Scholarship Award, University of Richmond
- 2024 Clarence E. Denoon, Jr. Chair in the Natural Sciences (endowed  
chair, University of Richmond)
- 2022 Claude C. Gravatt and Ann S. Gravatt Faculty Fellowship
- 2013 Henry Dreyfus Teacher-Scholar Award
- 2013 Distinguished Educator Award, University of Richmond
- 2011 Outstanding Mentor Award, School of Arts & Sciences
- 2006 Professor of the Month, named by Delta Delta Delta sorority
- 2006 Professor of the Month, named by Alpha Chi Omega sorority
- 1999, 2001, 2002 Certificate of Distinction in Teaching, Harvard University

1997	Bachelor Science with Highest Distinction and Highest Honors
1996	Phi Beta Kappa, University of North Carolina
1993 – 1997	Davie Scholar, University of North Carolina

### Grants Funded at the University of Richmond

- 2024-2028** American Chemical Society Petroleum Research Fund Type UR Award  
*Cycloadditions and Cyclizations for the Rapid Construction of Highly Substituted Rings*, \$70,000
- 2013-2025** Camille and Henry Dreyfus Foundation: Henry Dreyfus Teacher-Scholar Award  
*Silyl Triflates in the Development of New One-Pot Reactions for the Production of Synthetic Building Blocks*, \$60,000
- 2023-2024** University of Richmond Arts and Sciences Faculty Research Committee Summer Fellowship  
*A Mild and Simple Alkylation of Ketones*, \$6,000
- 2023** A&S Faculty Scholarship, University of Richmond  
*N-Allylation of Amides Promoted by Trimethylsilyl Trifluoromethanesulfonate*, \$2,000
- 2022-2023** Claude C. Gravatt and Ann S. Gravatt Endowed Faculty Fellowship  
*Cyclization of beta-Amino Alcohols*, \$6,000
- 2022** A&S Faculty Scholarship, University of Richmond  
*Synthesis of 2,3-Dihydroisoxazoles*, \$2,000
- 2021-2022** University of Richmond Arts and Sciences Faculty Research Committee Summer Fellowship  
*Alkylation of Amides with Propargyl Carboxylates*, \$6,000
- 2019-2020** University of Richmond Arts and Sciences Faculty Research Committee Summer Fellowship  
*Styrene Synthesis via Aldol Reactions*, \$6,000
- 2018-2019** University of Richmond Arts and Sciences Faculty Research Committee Summer Fellowship  
*New Reactivity Promoted by Trimethylsilyl Trifluoromethanesulfonate*, \$6,000
- 2018-2019** Organic Synthesis, Inc. Grant for Summer Research at an Undergraduate Institution  
*Rapid Construction of Furans from 3-Silylated Propargyl Carboxylates*, \$8,000
- 2015-2020** American Chemical Society Petroleum Research Fund Type UR Award  
*New Reactivity Mediated by Trimethylsilyl Trifluoromethanesulfonate*, \$70,000
- 2011-2015** National Science Foundation Research at Undergraduate Institution (RUI) Grant  
*Reaction Acceleration, Mediation, and Catalysis by In Situ Silylation*, \$180,000
- 2011** Thomas F. and Kate Miller Jeffress Research Grant  
*Reaction Acceleration, Mediation, and Catalysis by In Situ Silylation*, \$20,000
- 2008-2012** American Chemical Society Petroleum Research Fund Type GB Award  
*Synthesis of Chiral Carboxylic Acid Derivatives via Three-Component Coupling Reactions with Ynoate Electrophiles*, \$50,000
- 2007-2011** Research Corporation Cottrell College Science Award  
*A Tandem Enol Silane Formation-Mukaiyama Aldol Reaction: Controlling Cationic Silicon*, \$55,377
- 2005** University of Richmond Arts and Sciences Faculty Research Committee Summer Fellowship  
*A New Stereoselective Claisen Rearrangement*, \$5,000
- 2005** Thomas F. and Kate Miller Jeffress Research Grant  
*The Development of New Stereoselective Intramolecular Pericyclic Reactions*, \$20,000

Competitive Renewal, **2006**, \$10,000

Competitive Renewal, **2007**, \$10,000

### External Awards Received by Undergraduate Research Students

- 2008** **Miles Johnson** *Goldwater Scholar*, awarded to top science undergraduates in the United States
- 2009** **Miles Johnson** *NSF Predoctoral Fellowship*, providing a grant for graduate study
- 2018** **Jack Goodin** *Fulbright Fellowship* to study ecology in Uruguay
- 2020** **Claire Fuller** *Goldwater Scholar*, awarded to top science undergraduates in the United States
- 2022** **Helen Xia** *Beckman Scholar*, in support of research activity at the University of Richmond
- 2023** **Helen Xia** *Goldwater Scholar*, awarded to top science undergraduates in the United States

### Independent Publications at the University of Richmond

*University of Richmond undergraduate coauthors are denoted with an asterisk (\*).*

23. Tyler G. Chong,\* Alex V. Helbling,\* Remi D. Graff,\* C. Wade Downey. One-pot silyl imidate formation-N-alkylation reactions of amides with propargyl propionates. *Tetrahedron Letters* **2023**, 128, Article 154718.
22. Elizabeth D. Heafner,\* Xuechun Lin,\* Alexa H. Connors,\* Hanyu Zhong,\* R. Joseph Coyle,\* Yiqi Liu,\* C. Wade Downey. One-pot enol silane formation-allylation of ketones promoted by trimethylsilyl trifluoromethanesulfonate. *Synthesis* **2023**, 55, 2377-2389.
21. Grant J. Dixon,\* Michael R. Rodriguez,\* Tyler G. Chong,\* Kevin Y. Kim,\* C. Wade Downey. Synthesis of  $\beta,\beta$ -Disubstituted Styrenes via Trimethylsilyl Trifluoromethanesulfonate-Promoted Aldehyde-Aldehyde Aldol Addition-Deformylative Elimination. *The Journal of Organic Chemistry* **2022**, 87, 14846-14854.
20. Zachary Z. Oracheff,\* Helen L. Xia,\* Christopher D. Poff,\* Scott E. Isaacson,\* C. Wade Downey. Friedel-Crafts addition of indoles to nitrones promoted by trimethylsilyl trifluoromethanesulfonate. *The Journal of Organic Chemistry* **2021**, 86, 17328-17336.
19. Danielle E. Sklar,\* Alex V. Helbling,\* Yiqi Liu,\* C. Wade Downey. One-Pot Synthesis of 2-Methylfurans from 3-(Trimethylsilyl)propargyl Acetates Promoted by Trimethylsilyl Trifluoromethanesulfonate. *Tetrahedron Letters* **2021**, 87, Article 153424.
18. C. Wade Downey, Grace Ann L. Robertson,\* Jhonmattew Santa,\* Kari. R. Flicker,\* William M. Stith.\* One-pot silyl ketene imine formation-nucleophilic addition reactions of acetonitrile with acetals and nitrones. *Tetrahedron Letters* **2020**, 61, Article 151537.
17. C. Wade Downey, Grant J. Dixon,\* Jared A. Ingersoll,\* Claire N. Fuller,\* Kenneth W. MacCormac,\* Anna Takashima,\* Rohina Sediqi.\* One-pot enol silane formation-Mukaiyama aldol reactions: crossed aldehyde-aldehyde coupling, thioester substrates, and reactions in ester solvents. *Tetrahedron Letters* **2019**, 60, Article 151192.
16. C. Wade Downey, Danielle N. Confair,\* Yiqi Liu,\* Elizabeth D. Heafner.\* One-Pot Enol Silane Formation-Alkylation of Ketones with Propargyl Carboxylates Promoted by

Trimethylsilyl Trifluoromethanesulfonate. *The Journal of Organic Chemistry* **2018**, *83*, 12931-12938.

15. C. Wade Downey, Hadleigh M. Glist,\* Anna Takashima,\* Samuel R. Bottum,\* Grant J. Dixon.\* Chalcone and cinnamate synthesis via one-pot enol silane formation-Mukaiyama aldol reactions of ketones and acetate esters. *Tetrahedron Letters* **2018**, *59*, 3080-3083.

14. C. Wade Downey, Alice Y.-K. Lee,\* John R. Goodin,\* Courtney J. Botelho,\* William M. Stith.\* Mukaiyama addition of (trimethylsilyl)acetonitrile to dimethyl acetals mediated by trimethylsilyl trifluoromethanesulfonate. *Tetrahedron Letters* **2017**, *58*, 3496-3499.

13. C. Wade Downey, Jared A. Ingersoll,\* Hadleigh M. Glist,\* Carolyn M. Dombrowski,\* Adam T. Barnett.\* One-pot silyl ketene acetal-formation-Mukaiyama–Mannich additions to imines mediated by trimethylsilyl trifluoromethanesulfonate. *European Journal of Organic Chemistry* **2015**, 7287-7291.

12. C. Wade Downey, Christopher D. Poff,\* Alissa N. Nizinski.\* Friedel–Crafts Hydroxyalkylation of Indoles Mediated by Trimethylsilyl Trifluoromethanesulfonate. *The Journal of Organic Chemistry* **2015**, *80*, 10364-10369.

11. C. Wade Downey, Sarah E. Covington,\* Derek C. Obenshain,\* Evan Halliday,\* James T. Rague,\* Danielle N. Confair.\* Silyl trifluoromethanesulfonate-activated *para*-methoxybenzyl methyl ether as an alkylating agent for thiols and aryl ketones. *Tetrahedron Letters* **2014**, *55*, 5213-5215.

10. C. Wade Downey, Erin N. Maxwell,\* Danielle N. Confair\* Silyl Triflate-Accelerated Additions of Catalytically Generated Zinc Acetylides to *N*-Phenyl Nitrones. *Tetrahedron Letters* **2014**, *55*, 4959-4961.

9. C. Wade Downey, Carolyn M. Dombrowski,\* Erin N. Maxwell,\* Chelsea L. Safran,\* Odamea A. Akomah.\* One-Pot Enol Silane Formation-Mukaiyama–Mannich Addition of Ketones, Amides, and Thioesters to Nitrones in the Presence of Trialkylsilyl Trifluoromethanesulfonates. *European Journal of Organic Chemistry* **2013**, 5716-5720.

8. Lutz F. Tietze, Holger Geissler, C. Wade Downey. “Diethyl Ethoxymethylenemalonate” In *Encyclopedia of Reagents in Organic Synthesis* [Online] **2013**, Tomislav Rovis, Ed.; Wiley & Sons: New York.

7. C. Wade Downey, Smaranda Craciun,\* Christina A. Vivalo,\* Ana M. Neferu,\* Carly J. Mueller,\* Stephanie Corsi.\* One-Pot Three-Step Thioconjugate Addition–Oxidation–Diels–Alder Reactions of Ethyl Propiolate. *Tetrahedron Letters* **2012**, *53*, 5766-5768.

6. C. Wade Downey, Smaranda Craciun,\* Ana M. Neferu,\* Christina A. Vivalo,\* Carly J. Mueller,\* Brian C. Southall,\* Stephanie Corsi,\* Eric W. Etchill,\* Ryan J. Sault.\* One-Pot Synthesis of (*Z*)- $\beta$ -Sulfonyl Enoates from Ethyl Propiolate. *Tetrahedron Letters* **2012**, *53*, 5763-5765.

5. C. Wade Downey, Alan S. Fleisher,\* James T. Rague,\* Chelsea L. Safran,\* Megan E. Venable,\* Robert D. Pike. Synthesis of *N*-Acyl-*N,O*-Acetals from *N*-Aryl Amides and Acetals in the Presence of TMSOTf. *Tetrahedron Letters* **2011**, *52*, 4756-4759.

4. C. Wade Downey, Miles W. Johnson,\* Daniel H. Lawrence,\* Alan S. Fleisher,\* Kathryn J. Tracy.\* Acetic Acid Aldol Reactions in the Presence of Trimethylsilyl Trifluoromethanesulfonate. *The Journal of Organic Chemistry* **2010**, 75, 5351-5354.
3. C. Wade Downey, Brian D. Mahoney,\* Vincent R. Lipari.\* Trimethylsilyl Trifluoromethanesulfonate-Accelerated Addition of Catalytically Generated Zinc Acetylides to Aldehydes. *The Journal of Organic Chemistry* **2009**, 74, 2904-2906.
2. C. Wade Downey, Miles W. Johnson,\* Kathryn J. Tracy.\* One-Pot Enol Silane Formation-Mukaiyama Aldol-Type Addition to Dimethyl Acetals Mediated by TMSOTf. *The Journal of Organic Chemistry* **2008**, 73, 3299-3302.
1. C. Wade Downey, Miles W. Johnson.\* A Tandem Enol Silane Formation-Mukaiyama Aldol Reaction Mediated by TMSOTf. *Tetrahedron Letters* **2007**, 48, 3559-3562.

### **Publications at Previous Institutions (post-doctoral and graduate work)**

- “Resolutions of Azomethine Imines via Cu-Catalyzed [3+2] Cycloadditions” Andrés Suárez, C. Wade Downey, Gregory C. Fu *Journal of the American Chemical Society* **2005**, 127, 11244-11245.
- “Versatile Asymmetric Synthesis of Kavalactones: First Synthesis of (+)-Kavain” Thomas E. Smith, Mabel Djang, Alan J. Velander, C. Wade Downey, Kathleen A. Carroll, Sophie van Alphen *Organic Letters* **2004**, 6, 2317-2320.
- “A New Copper Acetate–Bis(oxazoline) Catalyzed, Enantioselective Henry Reaction” David A. Evans, Daniel Seidel, Magnus Rueping, Hon W. Lam, Jared T. Shaw, C. Wade Downey *Journal of the American Chemical Society* **2003**, 125, 12692-12693.
- “Ni(II) Bis(oxazoline)-Catalyzed Enantioselective Syn Aldol Reactions of *N*-Propionylthiazolidinethiones in the Presence of Silyl Triflates” David A. Evans, C. Wade Downey, Jed L. Hubbs *Journal of the American Chemical Society* **2003**, 125, 8706-8707.
- “Unfunctionalized,  $\alpha$ -Epimerizable Non-Racemic Ketones and Aldehydes Can Be Accessed by Crystallization-Induced Dynamic Resolution of Imines,” Janez Kosmrlj, Lee O. Weigel, David A. Evans, C. Wade Downey, J. Wu *Journal of the American Chemical Society* **2003**, 125, 3208-3209.
- “Magnesium Halide-Catalyzed Diastereoselective anti-Aldol Reactions of Chiral *N*-Acylthiazolidinethiones” David A. Evans, C. Wade Downey, Jared T. Shaw, Jason S. Tedrow *Organic Letters* **2002**, 4, 1127-1130.
- “Diastereoselective Magnesium Halide-Catalyzed anti-Aldol Reactions of Chiral *N*-Acylloxazolidinones” David A. Evans, Jason S. Tedrow, Jared T. Shaw, C. Wade Downey *Journal of the American Chemical Society* **2002**, 124, 392-393.
- “Total Synthesis of (–)-Epibatidine” David A. Evans, Karl A. Scheidt, C. Wade Downey *Organic Letters* **2001**, 3, 3009-3012.
- “Enantioselective Lewis Acid-Catalyzed Michael Reactions of Alkylidene Malonates. Catalysis by C2-Symmetric Bis(oxazoline) Copper (II) Complexes in the Synthesis of Chiral, Differentiated Glutarate Esters.” David A. Evans, Tomislav Rovis, Marisa C. Kozlowski, C.

Wade Downey, Jason S. Tedrow *Journal of the American Chemical Society* **2000**, *122*, 9134-9142.

### **Oral Presentations of Independent Research with Undergraduates**

“Styrene synthesis via crossed aldehyde-aldehyde aldol coupling promoted by trimethylsilyl trifluoromethanesulfonate” C. Wade Downey, 75<sup>th</sup> Southeastern Regional Meeting of the ACS, Durham, NC, October 18-21, 2023.

“Friedel–Crafts additions of N-alkylated indoles to nitrones to form 1:1 products” C. Wade Downey, 73<sup>rd</sup> Southeastern Regional Meeting of the ACS, Birmingham, AL, November 10-13, 2021.

“One-pot enol silane formation-Mukaiyama aldol reactions promoted by trimethylsilyl trifluoromethanesulfonate” C. Wade Downey, 71<sup>st</sup> Southeastern Regional Meeting of the ACS, Savannah, GA, October 20-24, 2019.

“One-pot enol silane formation- $\alpha$ -alkylation reactions promoted by trimethylsilyl trifluoromethanesulfonate: An S<sub>N</sub>1 reaction with secondary electrophiles” C. Wade Downey, Colby College, February 22, 2019.

“Alkynylated ketones through in situ enol silane formation-alkylation reactions of with propargyl carboxylates” C. Wade Downey, 70<sup>th</sup> Southeastern Regional Meeting of the ACS, Augusta, GA, October 31-November 3, 2018.

“Alkylation of ketones with propargyl carboxylates promoted by trimethylsilyl trifluoromethanesulfonate” C. Wade Downey, 256<sup>th</sup> American Chemical Society National Meeting, Boston, MA, August 19-23, 2018.

“One-pot enol silane formation-Mukaiyama-Mannich reactions of thioesters and related species mediated by trimethylsilyl trifluoromethanesulfonate” C. Wade Downey, 69<sup>th</sup> Southeastern Regional Meeting of the ACS, Charlotte, NC, November 7-11, 2017.

“Trimethylsilyl trifluoromethanesulfonate as both silylating agent and Lewis acid catalyst in organic reactions new and old” C. Wade Downey, 254<sup>th</sup> American Chemical Society National Meeting, Washington, DC, August 20-24, 2017.

“Alpha Substitution of Nitriles Mediated by Trimethylsilyl Trifluoromethanesulfonate” C. Wade Downey, 68<sup>th</sup> Southeastern Regional Meeting of the ACS, Columbia, SC, October 23-26, 2016.

“Friedel–Crafts hydroxyalkylation of N-alkylindoles with aryl aldehydes: Isolation of 1:1 adduct through a silyl triflate-mediated reaction” C. Wade Downey, 67<sup>th</sup> Southeastern Regional Meeting of the ACS, Memphis, TN, November 4-7, 2015.

“When acetals go wrong: Serendipitous discovery of new reactions through the treatment of acetals with TMSOTf” C. Wade Downey, 66<sup>th</sup> Southeastern Regional Meeting of the ACS, Nashville, TN, October 16-19, 2014.

“Addition of Enol Silanes, Silyl Ketene Acetals, and Zinc Acetylides to Nitrones under Silylative Conditions” C. Wade Downey, 65<sup>th</sup> Southeastern Regional Meeting of the ACS, Atlanta, GA, November 12-16, 2013.

“Development of a One-Pot, Three-Step Thioconjugate Addition-Oxidation-Diels–Alder Cycloaddition Reaction” C. Wade Downey, 64<sup>th</sup> Southeastern Regional Meeting of the ACS, Raleigh, NC, November 14-17, 2012.

“Aldol Additions of Carboxylic Acids in the Presence of Trimethylsilyl Trifluoromethanesulfonate” C. Wade Downey, Miles W. Johnson,\* Daniel H. Lawrence,\* Alan S. Fleisher,\* Kathryn J. Tracy,\* 66<sup>th</sup> Southwest and 62<sup>nd</sup> Southeastern Regional Meeting of the ACS, New Orleans, LA, November 30-December 4, 2010.

“Carbonyl Attack by Enolate and Acetylide Nucleophiles in the Presence of Trimethylsilyl Trifluoromethanesulfonate” C. Wade Downey, College of William & Mary, March 27, 2009.

“In Situ Silylation as an Accelerant in Reactions of Enolate and Acetylide Nucleophiles” C. Wade Downey, Miles W. Johnson,\* Brian D. Mahoney,\* Kathryn J. Tracy,\* Vincent R. Lipari,\* 60<sup>th</sup> Southeast Regional ACS Meeting, Nashville, TN, November 12-15, 2008.

“An In Situ Enol Silane Formation-Mukaiyama Aldol Reaction Mediated by TMSOTf” C. Wade Downey, George Mason University, April 24, 2008.

### **Poster Presentations – Regional and National Meetings**

“Unusual reactions mediated by a not-so-unusual reagent: New synthetic methods with TMSOTf” C. Wade Downey, 3<sup>rd</sup> Symposium for Recent Camille and Henry Dreyfus Teacher-Scholars, New York, NY, October 24, 2014.

“An In Situ Enol Silane Formation-Mukaiyama Aldol Reaction Mediated by TMSOTf” C. Wade Downey, Miles W. Johnson,\* 234<sup>th</sup> National ACS Meeting, Boston, MA, August 19-23, 2007.

“An In Situ Enol Silane Formation-Mukaiyama Aldol Reaction Mediated by TMSOTf: Addition to Aldehydes and Dimethyl Acetals” C. Wade Downey, Miles W. Johnson,\* Kathryn J. Tracy,\* 59<sup>th</sup> Southeast Regional ACS Meeting, Greenville, SC, United States, October 24-27, 2007.

### **Undergraduate Student Oral Presentations – Regional and National Meetings**

*University of Richmond undergraduate coauthors are denoted with an asterisk (\*).*

“Friedel-Crafts alkylation of indoles and benzofurans with secondary acetates and tertiary alcohols” Xia, Helen L.,\* Downey, C. Wade, 75<sup>th</sup> Southeastern Regional Meeting of the ACS, Durham, NC, October 18-21, 2023. **Make this the national ACS meeting in New Orleans**

“Friedel-Crafts alkylation of indoles and benzofurans with secondary acetates and tertiary alcohols” Xia, Helen L.,\* Downey, C. Wade, 75<sup>th</sup> Southeastern Regional Meeting of the ACS, Durham, NC, October 18-21, 2023.

“Friedel–Crafts alkylation of indoles with diarylmethyl acetates promoted by trimethylsilyl trifluoromethanesulfonate” Xia, Helen L.,\* Downey, C. Wade, 74<sup>th</sup> Southeastern Regional Meeting of the ACS, San Juan, PR, October 19-22, 2022.

### **Undergraduate Student Poster Presentations – Regional and National Meetings**

*University of Richmond undergraduate coauthors are denoted with an asterisk (\*).*

“Propargyl amides from trimethylsilyl trifluoromethanesulfonate-promoted additions of secondary amides to propargyl propionates” Chong, Tyler G.;\* Helbling, Alex V.;;\* Graff, Remi D.;\* Downey, C. Wade, 75<sup>th</sup> Southeastern Regional Meeting of the ACS, Durham, NC, October 18-21, 2023.

“One-pot enol silane formation-alkylation reactions of ketones and (diaryl)methyl acetates” Marchione, Katie;\* Smith, Karmen;\* Downey, C. Wade, 75<sup>th</sup> Southeastern Regional Meeting of the ACS, Durham, NC, October 18-21, 2023.

“Synthesis of beta-hydroxyaminoalcohols from ketones” Strigel, S. Mark;\* Lambertson, Olivia;\* Goodner, Ramsey;\* Downey, C. Wade, 75<sup>th</sup> Southeastern Regional Meeting of the ACS, Durham, NC, October 18-21, 2023.

“Trimethylsilyl trifluoromethanesulfonate-promoted one-pot synthesis of 4-isoxazolines from chalcones and N-benzylhydroxylamine” Hughes, Greg;; Downey, C. Wade, 75<sup>th</sup> Southeastern Regional Meeting of the ACS, Durham, NC, October 18-21, 2023.

“Synthesis of 2,3-dihydroisoxazoles from N-benzylhydroxylamine and chalcones promoted by trimethylsilyl trifluoromethanesulfonate” Hughes, Greg;\* Lambertson, Olivia;\* Goodner, Ramsey;\* Downey, C. Wade, 74<sup>th</sup> Southeastern Regional Meeting of the ACS, San Juan, PR, October 19-22, 2022.

“Trimethylsilyl trifluoromethanesulfonate-promoted alkylation of amides with allyl and propargyl propionate” Chong, Tyler G.;;\* Hussein, Mohamad;;\* Helbling, Alex V.;;\* Coyle, R. Joseph;\* Downey, C. Wade, 74<sup>th</sup> Southeastern Regional Meeting of the ACS, San Juan, PR, October 19-22, 2022.

“Synthesis of Styrenes from Aldehyde-Aldehyde Aldol Coupling Products” Rodriguez, Michael;;\* Chong, Tyler G.;;\* Dixon, Grant J.;;\* Downey, C. Wade, 73<sup>rd</sup> Southeastern Regional Meeting of the ACS, Birmingham, AL, November 10-13, 2021.

“One-pot Synthesis of Furans from 3-(trimethylsilyl)propargyl Carboxylates” Helbling, Alex V.;;\* Sklar, Danielle E.;;\* Downey, C. Wade, 73<sup>rd</sup> Southeastern Regional Meeting of the ACS, Birmingham, AL, November 10-13, 2021.

“Enol Silane Formation-allylation Reactions Promoted by Trimethylsilyl Trifluoromethanesulfonate” Coyle, Joseph R.;;\* Heafner, Elizabeth D.;;\* Lin, Xuechun;\* Zhong, Hanyu;\* Downey, C. Wade, 73<sup>rd</sup> Southeastern Regional Meeting of the ACS, Birmingham, AL, November 10-13, 2021.

“Addition of Indoles to Nitrones via Friedel–Crafts Silyloxyaminoalkylation” Xia, Helen L.;;\* Oracheff, Zachary Z.;;\* Poff, Christopher D.;;\* Isaacson, Scott E.;;\* Downey, C. Wade, 73<sup>rd</sup> Southeastern Regional Meeting of the ACS, Birmingham, AL, November 10-13, 2021.

“Synthesis of 2,3-Dihydroisoxazoles from Ketones and N-benzyl Nitrones” Goodner, Ramsey M.;;\* Downey, C. Wade, 73<sup>rd</sup> Southeastern Regional Meeting of the ACS, Birmingham, AL, November 10-13, 2021.

“Crossed Aldol reactions of aldehydes and subsequent styrene formation promoted by trimethylsilyl trifluoromethanesulfonate” Dixon, Grant J.;;\* Downey, C. Wade, 71<sup>st</sup> Southeastern Regional Meeting of the ACS, Savannah, GA, October 20-23, 2019.



“One-pot furan synthesis from ketones and propargyl acetates” Sklar, Danielle E.;\* Downey, C. Wade, 71<sup>st</sup> Southeastern Regional Meeting of the ACS, Savannah, GA, October 20-23, 2019.

“Nitrile aldol reactions mediated by trimethylsilyl trifluoromethanesulfonate” Bottum, Samuel R.;\* Britt, Kylie M.;\* Downey, C. Wade, 71<sup>st</sup> Southeastern Regional Meeting of the ACS, Savannah, GA, October 20-23, 2019.

“Direct allylation of ketones with trimethylsilyl trifluoromethanesulfonate and triethylamine” Zhong, Ivy;\* Heafner, Elizabeth D.;\* Lin, Alethea;\* Downey, C. Wade, 71<sup>st</sup> Southeastern Regional Meeting of the ACS, Savannah, GA, October 20-23, 2019.

“In situ silyl ketene acetal formation-substitution reactions of N-acetyloxazolidinone” Kim, Kevin Y.;\* Downey, C. Wade, 70<sup>th</sup> Southeastern Regional Meeting of the ACS, Augusta, GA, October 31-November 3, 2018.

“One-pot enol silane formation-alkylation of ketones with propargyl and allyl carboxylates” Heafner, Elizabeth D.;\* Confair, Danielle N.;\* Liu, Yiqi,\* Downey, C. Wade, 70<sup>th</sup> Southeastern Regional Meeting of the ACS, Augusta, GA, October 31-November 3, 2018.

“Aldol condensation and nitrile aldol reactions promoted by trimethylsilyl trifluoromethanesulfonate” Bottum, Samuel R.;\* Downey, C. Wade 70<sup>th</sup> Southeastern Regional Meeting of the ACS, Augusta, GA, October 31-November 3, 2018.

“Alkylation-cyclization-aromatization reactions of ketones with (3-silyl)propargyl carboxylates to yield 2-methylfurans” Sklar, Danielle;\* Downey, C. Wade 70<sup>th</sup> Southeastern Regional Meeting of the ACS, Augusta, GA, October 31-November 3, 2018.

“Alkylations of ketones with propargyl carboxylates mediated by TMSOTf” Downey, C. Wade, Heafner, Elizabeth;\* Liu, Yiqi;\* Sklar, Danielle;\* Lin, Xuechun, 69<sup>th</sup> Southeastern Regional Meeting of the ACS, Charlotte, NC, November 7-11, 2017.

“Addition reactions of nitriles to aldehydes and acetals mediated by TMSOTf” Stith, William M.;\* Britt, Kylie M.;\* Downey, C. Wade, 69<sup>th</sup> Southeastern Regional Meeting of the ACS, Charlotte, NC, November 7-11, 2017.

“Aldol Condensations Mediated by Trimethylsilyl Trifluoromethanesulfonate” Takashima, Anna;\* Glist, Hadleigh M.;\* Downey, C. Wade, 68<sup>th</sup> Southeastern Regional Meeting of the ACS, Columbia, SC, October 23-26, 2016.

“Alkylation of ketones and thioesters with propargyl and allyl carboxylates” Downey, Chiles W.; Liu, Yiqi;\* Lin, Xuechun;\* Confair, Danielle,\* 68<sup>th</sup> Southeastern Regional Meeting of the ACS, Columbia, SC, October 23-26, 2016.

“Friedel–Crafts additions of indoles to nitrones” Poff, Christopher D.;\* Downey, C. Wade, 68<sup>th</sup> Southeastern Regional Meeting of the ACS, Columbia, SC, October 23-26, 2016.

“One-pot enol silane-formation-aldol condensation and Mannich addition reactions mediated by trimethylsilyl trifluoromethanesulfonate and amine base” Glist, Hadleigh M.;\* Ingersoll, Jared A.;\* Downey, C. Wade, 67<sup>th</sup> Southeastern Regional Meeting of the ACS, Memphis, TN, November 4-7, 2015.

“TMSOTf-mediated additions of acetonitrile to aldehydes, acetals, and nitrones” Santa, Jhonmattew;\* Stith, William M.;\* Botelho, Courtney J.;;\* Mueller, Carly J.;;\* Lee, Alice;\* Downey, C. Wade, 67<sup>th</sup> Southeastern Regional Meeting of the ACS, Memphis, TN, November 4-7, 2015.

“Trimethylsilyl trifluoromethanesulfonate-mediated additions of indoles to aldehydes and nitrones” Poff, Christopher D.;\* Nizinski, Alissa N.;;\* Downey, C. Wade, 67<sup>th</sup> Southeastern Regional Meeting of the ACS, Memphis, TN, November 4-7, 2015.

“The reactivity of propargyl alcohols and propargyl acetates in the presence of trimethylsilyl trifluoromethanesulfonate” Confair, Danielle N.;\* Downey, C. Wade, 67<sup>th</sup> Southeastern Regional Meeting of the ACS, Memphis, TN, November 4-7, 2015.

“Silyl triflate-mediated openings of epoxides and synthesis of chalcones” Glist, Hadleigh M.;\* Yeutter, Nicholas C.;\* Downey, C. Wade, 66<sup>th</sup> Southeastern Regional Meeting of the ACS, Nashville, TN, October 16-19, 2014.

“Trimethylsilyl trifluoromethanesulfonate-mediated additions of indoles to aldehydes” Poff, Christopher D.;\* Nizinski, Alissa N.;;\* Downey, Wade C., 66<sup>th</sup> Southeastern Regional Meeting of the ACS, Nashville, TN, October 16-19, 2014.

“One-pot enol silane formation-Mukaiyama-Mannich and Mukaiyama aldol reactions of thioesters and ketones in the presence of silyl triflates” Ingersoll, Jared A.;\* Dombrowski, Carolyn M.;;\* Barnett, Adam T.;\* Downey, Wade C., 66<sup>th</sup> Southeastern Regional Meeting of the ACS, Nashville, TN, October 16-19, 2014.

“Reactions of unexpected nucleophiles with aldehydes: acetate-catalyzed additions by  $\alpha$ -silyl nitriles and TMSOTf-catalyzed additions by indoles” Mueller, Carly J.;\* Nizinski, Alissa N.;\* Downey, Wade C., 65<sup>th</sup> Southeast Regional Meeting of the American Chemical Society, Atlanta, GA, United States, November 13-16, 2013.

“TMSOTf-accelerated opening of epoxides with halogens and  $\alpha$ -hydroxylation of ketones” Barnett, Adam T.;\* Yeutter, Nicholas C.;\* Downey, Wade C., 65<sup>th</sup> Southeast Regional Meeting of the American Chemical Society, Atlanta, GA, United States, November 13-16, 2013.

“One-pot enol silane formation-Mukaiyama aldol and Mukaiyama-Mannich reactions of ketones and thioesters” Dombrowski, Carolyn M.;\* Ingersoll, Jared A.;\* Downey, Wade C., 65<sup>th</sup> Southeast Regional Meeting of the American Chemical Society, Atlanta, GA, United States, November 13-16, 2013.

“Zinc acetylides in the presence of TMSOTf: Addition to nitrones and alkylation with methyl ethers” Maxwell, Erin N.;\* Obenschain, Derek C.;\* Downey, Wade C., 65<sup>th</sup> Southeast Regional Meeting of the American Chemical Society, Atlanta, GA, United States, November 13-16, 2013.

“Toward Chiral Auxiliary-Controlled One-Pot Three-Step Thioconjugate Addition-Oxidation-Diels–Alder Cycloaddition Reactions of Propiolates” Derek C. Obenschain,\* Carly J. Mueller,\* Ana M. Neferu,\* C. Wade Downey, 64<sup>th</sup> Southeastern Regional Meeting of the ACS, Raleigh, NC, November 14-17, 2012.

“One-Pot Enol Silane Formation-Mannich-Type Addition of Ketones, Thioesters, and Amides to Nitrones” Carolyn M. Dombrowski,\* Erin N. Maxwell,\* Chelsea L. Safran,\* Odamea A.

Akomah,\* C. Wade Downey, 64<sup>th</sup> Southeastern Regional Meeting of the ACS, Raleigh, NC, November 14-17, 2012.

“One-Pot Three-Step Conjugate Addition-Oxidation-Diels–Alder Reactions of Ethyl Propiolate” Ana M. Neferu,\* Christina A. Vivello,\* Smaranda Craciun,\* Carly J. Mueller,\* C. Wade Downey, 244<sup>th</sup> National ACS Meeting & Exposition, Philadelphia, PA, August 19-23, 2012.

“One-Pot Three-Step Conjugate Addition-Oxidation-Diels–Alder Reactions of Ethyl Propiolate” Ana M. Neferu,\* Christina A. Vivello,\* Smaranda Craciun,\* C. Wade Downey, 243<sup>rd</sup> National ACS Meeting, San Diego, CA, March 25-March 29, 2012.

“One-Pot Three-Step Conjugate Addition-Oxidation-Diels–Alder Reactions of Ethyl Propiolate” Christina A. Vivello,\* Ana M. Neferu,\* Smaranda Craciun,\* Stephanie Corsi,\* C. Wade Downey, 63<sup>rd</sup> Southeast Regional Meeting of the ACS, Richmond, VA, United States, October 26-29, 2011.

“One-Pot Silyl Enol Ether Formation-Alkylation Reactions of Ketones and Esters to *N,O*-Acetals and Vinylogous Acetals in the Presence of TMSOTf” Chelsea L. Safran,\* Evan Halliday,\* C. Wade Downey, 63<sup>rd</sup> Southeast Regional Meeting of the ACS, Richmond, VA, United States, October 26-29, 2011.

“Zinc-Catalyzed Addition of Terminal Alkynes to Dimethyl Acetals in the Presence of TMSOTf” James T. Rague,\* Chelsea L. Safran,\* C. Wade Downey, 66<sup>th</sup> Southwest and 62<sup>nd</sup> Southeastern Regional Meeting of the ACS, New Orleans, LA, November 30-December 4, 2010.

“Toward a One-Pot Heteroconjugate Addition-Oxidation-Diels–Alder Reaction” Smaranda Craciun,\* Christina A. Vivello,\* Stephanie Corsi,\* Brian C. Southall,\* Eric W. Etchill,\* C. Wade Downey, 66<sup>th</sup> Southwest and 62<sup>nd</sup> Southeastern Regional Meeting of the ACS, New Orleans, LA, November 30-December 4, 2010.

“TMSOTf-Mediated Reactions Additions of Silylated Nucleophiles to Carbon-Oxygen Pi Bonds” Alan S. Fleisher,\* James T. Rague,\* Chelsea L. Safran,\* Megan E. Venable,\* C. Wade Downey, 66<sup>th</sup> Southwest and 62<sup>nd</sup> Southeastern Regional Meeting of the ACS, New Orleans, LA, November 30-December 4, 2010.

“Toward a One-Pot Heteroconjugate Addition-Oxidation-Diels–Alder Reaction” C. Wade Downey, Smaranda Craciun,\* Stephanie Corsi,\* Eric W. Etchill,\* Brian C. Southall,\* 239<sup>th</sup> National ACS Meeting, San Francisco, CA, March 21-25, 2009.

“Toward a One-Pot Heteroconjugate Addition-Oxidation-Diels–Alder Reaction” C. Wade Downey, Smaranda Craciun,\* Stephanie Corsi,\* Eric W. Etchill,\* Brian C. Southall,\* 238<sup>th</sup> National ACS Meeting, Washington, DC, August 16-20, 2009.

“In Situ Enol Silane Formation-Mukaiyama Addition to Dimethyl Acetals” Miles W. Johnson,\* Kathryn J. Tracy,\* C. Wade Downey, 60<sup>th</sup> Southeast Regional ACS Meeting, Nashville, TN, November 12-15, 2008.

“ZnBr<sub>2</sub>-Catalyzed Addition of Alkynes to Aldehydes with TMSOTf as an Accelerant” Brian D. Mahoney,\* Vincent R. Lipari,\* C. Wade Downey, 60<sup>th</sup> Southeast Regional ACS Meeting, Nashville, TN, November 12-15, 2008.

“TMSOTf as an Accelerant for ZnBr<sub>2</sub>-Catalyzed Addition of Alkynes to Aldehydes” Brian D. Mahoney,\* C. Wade Downey, 59<sup>th</sup> Southeast Regional ACS Meeting, Greenville, SC, United States, October 24-27, 2007.

### Professional Service

- Reviewer for the journals *Journal of the American Chemical Society*, *Organic Letters*, *Journal of Organic Chemistry*, *Chemical Communications*, *Advanced Synthesis & Catalysis*, *Tetrahedron*, *Tetrahedron Letters*, *Asian Journal of Organic Chemistry*, *SynLett*, *Letters in Organic Chemistry*, *Chinese Journal of Chemistry*, *Molecules*, *Industrial & Engineering Chemistry Research*
- Reviewer for grant proposals for Research Corporation, American Chemical Society Petroleum Research Fund, National Science Foundation.

### University Service

A&S Tenure and Promotion Committee ( <b>Co-Chair, 2021-2022; Chair 2022-2023</b> )	2021-2024
Richmond Scholars Selection Committee	2020, 2023, 2024
Graded Chemistry Research Course (Chem 321) Coordinator	2017-2024
Gamma Sigma Epsilon/Sigma Pi Pi Honor Society faculty advisor	2006-2024
Organic Chemistry Registration Override	2009-2024
Organic Chemistry Transfer Request Coordinator	2009-2024
Diversity and Search Advocate for Biology Director Search	2023
Chemistry Alumni Research Symposium Organizer	2013, 2015, 2018, 2023
Beckman Scholars Selection Committee ( <b>Chair, 2017</b> )	2008, 2010, 2014, 2017, 2020, 2023
Ad Hoc Chemistry Department Flexible Models Committee ( <b>Chair, 2022</b> )	2022
Phi Beta Kappa UR Chapter President (two terms)	2019-2021
University Cultural Affairs Committee	2018-2021
Organic Faculty Search Committee ( <b>Chair, 2020-2021; Co-Chair, 2017-2018</b> )	2007-2008, 2008-2009, 2011-2012, 2013-2014, 2017-2018, 2020-2021
Mace and CJ Gray Award Selection Committee	2020-2021
Department of Chemistry Peer Evaluation Committee	2012-2014, 2017-2019
A&S Sabbatical Fellowships Committee	2019
Phi Beta Kappa UR Chapter Vice President	2018-2019
Undergraduate Research Committee ( <b>Chair, 2 terms 2016-2018</b> )	2009-2012, 2015-2018
UR Chemistry High School Student Workshop Instructor	2007-2019
Department of Chemistry Responsible Conduct of Research Committee	2014-2017
ACS Local Section K-12 Science Teaching Awards Committee	2011-2016
University Admissions Committee ( <b>Chair, 2 terms, 2013-2015</b> )	2012-2015
Admitted Students Research Introduction Host	2010-2012, 2015
Undergraduate Research Committee, Ad Hoc Reviewer	2014
Howard Hughes Medical Institute Summer Fellowships Committee ( <b>Chair</b> )	2012
Grainger Science Selection Committee	2010-2012
Science Graduate School Student Preparation Panel	2009
University Advising Assessment Committee	2006-2007
MCAT Review Instructor for VA-NE Alliance	2006

### Past and Current Undergraduate Collaborators at the University of Richmond

<b>Name</b>	<b>Project</b>	<b>Career Plans</b>
Daniel Lawrence '07	Enol Silane	High School Science Teacher
Ryan Sault '07	Diels–Alder	Osteopath School – Lake Erie
Eric Etchill '08	Diels–Alder	Medical School – Pittsburgh
Brian Southall '08	Diels–Alder	Health Care
Katie Tracy '08	Enol Silane	Medical School – UMDNJ-SOM
Odamea Akomah '09	Enol Silane	Health Care – Sloan Kettering
Stephanie Corsi '09	Diels–Alder	Physician Assistant – NYU Hospitals
Miles Johnson '09	Enol Silane	Chemistry Grad School – UC – Berkeley
Brian Mahoney '09	Alkynylation	Chemistry Grad School – U. Pennsylvania
Vin Lipari '10	Alkynylation	Medical School - NYCOM
Dave Widmayer '10	Diels–Alder	Industry - Polymedix
Smaranda Craciun '11	Diels–Alder	Chemistry Grad School – Harvard University
Megan Venable '11	Enol Silane	Computer Technology
Jimmy Rague '11	Alkynylation	Medical School – Wake Forest University
Alan Fleisher '11	Enol Silane	MBA program – Villanova
Chelsea Safran '12	Alkynylation	Nursing School – University of Pittsburgh
Christina Vivelo '12	Diels–Alder	Public Health Grad School – Johns Hopkins
Ana Neferu '13	Diels–Alder	Chemistry Grad School – St. Andrew's
Sarah Covington '13	Enol Silane	Science Education Grad School – Maryland
Rohina Sediqui '13	Alkynylation	K-12 Teacher – Afghanistan
Carolyn Dombrowski, '14	Enol Silane	Science Consulting – Ernst & Young
Evan Halliday, '14	Alkynylation	Transfer – Rutgers University
Erin Maxwell, '14	Enol Silane	Pharmacy School – UNC-Chapel Hill
Carly Mueller, '14	Silyl Nitrile	Physical Therapy School – Columbia U.
Alissa Nizinski, '14	Indole Alkylation	Medical School – University of Buffalo
Derek Obenschain, '14	Diels-Alder	Chemistry Grad School – Washington
James Maiarana, '14	Enol Silane	Medical School – Boston University
Adam Barnett '15	Enol Silane	Chemistry Grad School – Utah
Courtney Botelho '15	Silyl Nitrile	Envr. Sci. Grad School – Wisconsin
Jared Ingersoll '15	Enol Silane	Medical School—Armed Services Academy
Nick Yeutter '15	Epoxide Opening	Medical School—University of Nebraska
Danielle Confair '16	Alkynylation	Chemistry Grad School – Yale University
Hadleigh Glist '16	Enol Silane	Nursing Ph.D. School – Columbia University
Alice Lee '16	Silyl Nitrile	Accounting
Ken MacCormac '16	Enol Silane	Dental School – University of Connecticut
Chris Poff '17	Indole Alkylation	Chemistry Grad School – Emory
Matt Santa '17	Silyl Nitrile	Computer Science - Google
Anna Takashima '17	Enol Silane	Chemistry Grad School – KU Leuven (Belgium)
Jack Goodin '18	Silyl Nitrile	Philosophy Grad School
Will Stith '18	Silyl Nitrile	Chemistry Grad School – University of Michigan
Yiqi Liu '18	Alkynylation	Chemistry Grad School – Northwestern University
Xuechun Alethea Lin '18	Allylation	Financial Math Grad School – University of Chicago

Kylie Britt '19	Silyl Nitrile	Chemistry Grad School – N. C. State
Grant Dixon '19	Enol Silane	Chemistry Grad School – Washington
Kari Flicker '19	Silyl Nitrile	Medical School – Eastern Virginia Medical School
Elizabeth Heafner '19	Alkynylation	Chemistry Grad School – UC-Berkeley
Zach Oracheff '19	Indole Alkylation	Chemistry Industry
Sam Bottum '20	Silyl Nitrile	Chemistry Grad School – UNC-Chapel Hill
Kevin Kim '20	Chiral Oxazolidinone	Medical School – Virginia Commonwealth University
Dani Sklar '20	Furan Synthesis	Chemistry Grad School – UNC-Chapel Hill
Claire Fuller '21	Aldol	Chemistry Grad School – Cambridge, UK
Scott Isaacson '21	Indole Alkylation	Chemistry Grad School – Northwestern University
Grace Ann Robertson '21	Silyl Nitrile	Medical School – University of Tennessee
Hanyu Ivy Zhong '21	Allylation	Biochem Masters Program – Johns Hopkins
Bianca Bicalho '22	Indole alkylation	Med School – Touro College of Osteopathic Medicine
Ramsey Goodner '22	Dihydro-isoxazoles	Chemistry Grad School – Yale University
Ryan Kern '22	Indole Alkylation	Medical School – Hackensack Meridian
Michael Rodriguez '22	Styrene Synthesis	Chemistry Grad School – UNC-Chapel Hill
Tyler Chong '23	Styrene Synthesis, Amide Propargylation	Chemistry Grad School – Columbia University
Joseph Coyle '23	Allylation	Law School – University of Richmond
Alex Helbling '23	Furan Synthesis, Amide Propargylation	Medical School
Mohamad Hussein '23	Amide Allylation	Chemistry Grad School – University of Delaware
Olivia Lambertson '23	Amino alcohol cyclization	ESL Teacher abroad – Madrid, Spain
Alexa Connors '24	Allylation	Healthcare Business and Marketing
Greg Hughes '24	Dihydro-isoxazoles	Chemistry Grad School – UNC-Chapel Hill
Helen Xia '24	Indole Alkylation	MD-Ph.D. Program – University of Texas-Southwestern Medical Center/NIH
Katie Marchione '25	Ketone alkylation	Medical School
Joshua Pae '25	Carbamate alkynylation	Medical School
Lauren Rausch '25	Povarov reaction	Medical School

Karmen Smith '25	Ketone alkylation	Pharmacy School
Mark Strigel '25	Amino alcohol cyclization	Medical School
Sai Dulam '26	Aldol product cyclization	TBD
Remi Graff '26	Amide Allylation	TBD
Allie Mock '26	Styrene ene	Chemistry Grad School
Eric Zhou '27	2-Indole alkylation	TBD