L. Reginald Mills, Ph.D.
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Oct. 16, 2025

Education and Appointments

2024–present *University of Houston*
Assistant Professor
Drs. Yao & Song Endowed Professor of Chemistry

2021–2024 *Princeton University*
Banting Postdoctoral Fellow, Chirik Laboratory

2015–2020 *University of Toronto*
Ph.D. in Chemistry, Rousseaux Laboratory
Thesis: New Strategies for C–O and C–C Functionalization in the Contexts of Cyclopropanol Chemistry, Transnitrilation, and Ni Catalysis (Chair's Doctoral Medal, CCUCC Chemistry Doctoral Award)

2011–2015 *University of Toronto*
H.B.Sc. with High Distinction: Human Biology (Specialist), Biochemistry (Major), Philosophy (Minor)

Publications

Independent Work

20. Lee, J.-C.; Mills, L. R. Synthesis of Bench-Stable (CO)5Mn(I)−Aryl Compounds by Transmetalation of Arylboronic Esters. *Inorg. Chem.* **2025**, Articles ASAP. DOI: 10.1021/acs.inorgchem.5c02756
19. Mills, L. R. Iron-Catalyzed Kumada Arylation of Aliphatic Alcohol–Derived Electrophiles *via* Sulfonate-to-Halide Substitution. *Organometallics* **2025**, 44, 858–865.
—Top 5 most read Organometallics articles in Mar. 2025.

Postdoctoral Work

18. Mills, L. R.; Kim, J.; Simmons, E. M.; Wisniewski, S. R.; Chirik, P. J. C(sp^3)–C(sp^3) Reductive Elimination from (Phenoxyimine)Cobalt(III)$(CH_3)_2(PMe_3)_2$ Complexes. *Organometallics* **2024**, *43*, 1021–1029.
—Top 10 most downloaded Organometallics articles in Apr. 2024.
17. Mills, L. R.; Simmons, E. M.; Lee, H.; Nester, E.; Kim, J.; Wisniewski, S. R.; Pecoraro, M. V.; Chirik, P. J. (Phenoxyimine)Nickel-Catalyzed C(sp^2)–C(sp^3) Suzuki–Miyaura Cross-Coupling: Evidence for a Recovering Radical Chain Mechanism. *J. Am. Chem. Soc.*, **2024**, *146*, 10124–10141.
—Top 20 most downloaded JACS articles in Apr. 2024.
16. Mills, L. R.; DiMare, F.; Gygi, D.; Lee, H.; Simmons, E. M.; Kim, J.; Wisniewski, S. R.; Chirik, P. J. Phenoxythiazoline (FTz)–Cobalt(II) Precatalysts Enable C(sp^2)–C(sp^3) Bond–Formation for Key Intermediates in the Synthesis of Toll-like Receptor 7/8 Antagonists. *Angew. Chem. Int. Ed.* **2023**, *62*, e202313848.
— Named a "Hot Paper" by Angew. Chem. Int. Ed.

15. Mills, L. R.; Gygi, D.; Simmons, E. M.; Wisniewski, S. R.; Kim, J.; Chirik, P. J. Mechanistic Investigations of Phenoxyimine–Cobalt(II)-Catalyzed C(sp^2)–C(sp^3) Suzuki–Miyaura Cross Coupling. *J. Am. Chem. Soc.* **2023**, *145*, 17029–17041.
14. Mills, L. R.; Gygi, D.; Ludwig, J. R.; Simmons, E. M.; Wisniewski, S. R.; Kim, J.; Chirik, P. J. Cobalt-Catalyzed C(sp^2)−C(sp^3) Suzuki−Miyaura Cross-Coupling Enabled by Well-Defined Precatalysts with L,X-Type Ligands. *ACS Catal.* **2022**, *12*, 1905–1918.
    — *Top 20 most downloaded ACS Catal. articles in Feb. 2022.*
    — *Highlighted in Org. Process Res. Dev.* **2022***, 26,* 1010–1018.

Ph.D. Work

13. Mills, L. R.; Patel, P.; Rousseaux, S. A. L. "Decyanation–(hetero)arylation of malononitriles to access α-(hetero)arylnitriles." *Org. Biomol. Chem.* **2022**, 20, 5933–5937.
12. Monteith, J. J.; Scotchburn, K.; Mills, L. R.; Rousseaux, S. A. L. "Ni-Catalyzed Synthesis of Thiocarboxylic Acid Derivatives." *Org. Lett.* **2022**, *24*, 619–624.
    — *Highlighted in Synfacts* **2022**, *18*, 397–397.
11. Mills, L. R.; Edjoc, R. K.; Rousseaux, S. A. L. "Design of an Electron-Withdrawing Benzonitrile Ligand for Ni-Catalyzed Cross-Coupling Involving Tertiary Nucleophiles." *J. Am. Chem. Soc.* **2021**, *143*, 10422–10428.
    — *Top 20 most downloaded J. Am. Chem. Soc. articles in Aug. 2021.*
10. McDonald, T. R.;‡ Mills, L. R.;‡ West, M. S.;‡ Rousseaux, S. A. L. "Selective Carbon–Carbon Bond Cleavage of Cyclopropanols." *Chem. Rev.*, **2021**, *121*, 3–79. (‡ Denotes equal contribution.)
9. Mills, L. R.; Monteith, J. J.; Rousseaux, S. A. L. "Boronic acid-mediated ring-opening and Ni-catalyzed arylation of 1-arylcyclopropyl tosylates." *Chem. Commun.* **2020**, *56*, 12538–12541.
8. Mills, L. R.; Monteith, J. J.; Gomes, G. d. P.; Aspuru-Guzik, A.; Rousseaux, S. A. L. "The Cyclopropane Ring as a Reporter of Radical Leaving-Group Reactivity for Ni-Catalyzed C(sp^3)–O Arylation." *J. Am. Chem. Soc.* **2020**, *142*, 13246–13254.
    — *Top 20 most downloaded J. Am. Chem. Soc. articles in July 2020.*
    — *Highlighted in Org. Process Res. Dev.* **2020**, *24*, 2369–2381.
7. Mills, L. R.; Graham, J.; Patel, P.; Rousseaux, S. A. L. "Ni-Catalyzed Reductive Cyanation of Aryl Halides and Phenol Derivatives via Transnitrilation." *J. Am. Chem. Soc.* **2019**, *141*, 19257–19262.
    — *Top 20 most downloaded J. Am. Chem. Soc. articles in December 2019.*
    — *Highlighted in Org. Proces. Res. Dev.* **2020**, *24*, 459–469.
    — *Highlighted in Org. Process Res. Dev.* **2020**, *24*, 909–915.
    — *Highlighted in Synfacts*, **2020**, *16,* 169–169.
6. Mills, L. R.; Zhou, C.; Fung, E.; Rousseaux, S. A. L. "Ni-Catalyzed β-Alkylation of Cyclopropanol-Derived Homoenolates." *Org. Lett.*, **2019**, *21*, 8805–8809.
    — *Top 20 most downloaded Org. Lett. articles in October 2019.*
5. West, M. S.; Mills, L. R.; McDonald, T. R.; Lee, J. B.-J.; Ensan, D.; Rousseaux, S. A. L. "Synthesis of *trans*-2-Substituted Cyclopropylamines from α-Chloroaldehydes." *Org. Lett.*, **2019**, *21*, 8409–8413.
    — *Highlighted in Synfacts*, **2019**, *15*, 1404–1404.
4. Mills, L. R.; Rousseaux, S. A. L. "A one-pot electrophilic cyanation–functionalization strategy for the synthesis of disubstituted malononitriles." *Tetrahedron* **2019**, *75*, 4298–4306.

3. Mills, L. R.; Rousseaux, S. A. L. "Modern Developments in the Chemistry of Homoenolates." *Eur. J. Org. Chem.* **2019**, *1*, 8–26.
   — *Named a "Very Important Paper" by Eur. J. Org. Chem.*
2. Mills, L. R.; Rousseaux, S. A. L. "Electrophilic Metal Homoenolates and Their Application in the Synthesis of Cyclopropylamines." *Synlett* **2018**, *29*, 683–688
1. Mills, L.R.; Barrera Arbelaez, L.M.; Rousseaux, S.A.L. "Electrophilic Zinc Homoenolates: Synthesis of Cyclopropylamines from Cyclopropanols and Amines." *J. Am. Chem. Soc.* **2017**, *139*, 11357–11360.
   — *Highlighted in Org. Process. Res. Dev.* **2017**, *21*, 1453–1463.

Scholarships, Awards, and Honours

2024	Drs. Yao & Song Endowed Professor of Chemistry
2022	Participant, 71st Lindau Nobel Laureate Meeting
2022	Canadian Council of University Chemistry Chairs (CCUCC) Chemistry Doctoral Award
2021	2021 Chair's Doctoral Medal (U. of T. Department of Chemistry)
2021	Banting Postdoctoral Fellowship
2019	School of Graduate Studies Conference Grant
2018	Natural Sciences and Engineering Research Council (NSERC) Postgraduate Scholarship—Doctoral (PGS-D)
2017	Special Opportunity Travel Grant
2017	Ontario Graduate Scholarship
2015	Merck Frosst Canada Inc. Graduate Award in Chemistry
2014	Natural Sciences and Engineering Research Council (NSERC) Undergraduate Student Research Award (USRA)
2014	New College Student Council In-Course Scholarship OSOTF

Teaching

Fall 2024	CHEM 6311 "Mechanisms"

Mentorship

Postdoctoral Researchers

2025–present	Kavita Chaudhary
2025–present	Bhaswati Paul

Graduate Students

2024–present	Jia-Chun Lee (Ph.D. student)
2024–present	Rana Shujait Ali (Ph.D. student)
2024–present	Khanh Truong Chau (Ph.D. student)

First-Author Presentations

Apr. 2024 "(Phenoxyimine)Nickel-Catalyzed C(sp^2)−C(sp^3) Suzuki−Miyaura Cross-Coupling: Evidence for a Recovering Radical Chain Mechanism." Invited lecture: Bristol Myers Squibb, New Brunswick, NJ.

Mar. 2024 "Development and Mechanistic Studies of Co-, Fe- and Ni-Catalyzed Suzuki–Miyaura C(sp^2)–C(sp^3) Cross Coupling Reactions." Greg Beutner, Matt Joannou, Heejun Lee, Eric Simmons, Steve Wisniewski, Paul Chirik, Reggie Mills, Adam Bass. BMS-PCI Symposium.

Jan. 2024 "Design of First-Row Transition Metal Catalysts for New C(sp^3)–X Cross-Coupling Reactions." Invited lecture: Cornell University, Ithaca NY.

Dec. 2023 "Design of First-Row Transition Metal Catalysts for New C(sp^3)–X Cross-Coupling Reactions." Invited lecture: University of Houston, TX.

May 2023 "Cobalt-Catalyzed C(sp^2)−C(sp^3) Suzuki−Miyaura Cross-Coupling." Invited lecture: Bristol Myers Squibb, New Brunswick, NJ.

Jun. 2022 "CCUCC Chemistry Doctoral Award Lecture: New Strategies for C–O and C–C Functionalization in the Contexts of Cyclopropanol Chemistry, Transnitrilation, and Ni Catalysis." CSC 2022, Calgary. Oral.

Jun. 2022 "Cobalt-Catalyzed C(sp^2)−C(sp^3) Suzuki−Miyaura Cross-Coupling Enabled by Well-Defined Precatalysts with L,X-Type Ligands." CSC 2022, Calgary. Oral.

Jun. 2022 "Cobalt-Catalyzed C(sp^2)−C(sp^3) Suzuki−Miyaura Cross-Coupling Enabled by Well-Defined Precatalysts with L,X-Type Ligands." Middle Atlantic Regional Meeting, The College of New Jersey. Oral.

Nov. 2019 "Ni-catalyzed β-alkylation of cyclopropanol-derived homoenolates." QOMSBOC 2019, U. of Ottawa, Ottawa. Poster.

Jul. 2019 "Ni-catalyzed reductive cyanation of aryl (pseudo)halides via transnitrilation." GRC Organometallics 2019, Salve Regina, Newport, RI. Poster.

Jul. 2019 "Ni-catalyzed reductive cyanation of aryl (pseudo)halides via transnitrilation." GRS Organometallics 2019, Salve Regina, Newport, RI. Poster.

Jun. 2019 "Ni-catalyzed reductive cyanation via transnitrilation." CCCE 2019, Quebec City, QC. Oral.

Nov. 2018 "Decyanation and Ni-catalyzed arylation of malononitriles for the synthesis of tertiary α-arylnitriles." QOMSBOC 2018, York University, Toronto. Poster.

Nov. 2017 "Electrophilic zinc homoenolates: Synthesis of cyclopropylamines from cyclopropanols and amines." QOMSBOC 2017, McGill University, Montreal. Poster.

May 2017 "Reactivity Inversion of Cyclopropanols for the Synthesis of Cyclopropylamines Using Zinc(II) Salts." CSC 2017, Toronto. Oral.

Mar. 2017 "Using zinc(II) salts to make cyclopropylamines from cyclopropanols." IRTG German–Canadian Conference, University of Toronto. Poster.

Nov. 2016 "Zinc(II)-mediated synthesis of *trans*-cyclopropylamines." QOMSBOC 2016, University of Waterloo. Oral.

Apr. 2016 "Nickel-Catalyzed Cross-Couplings of Cyclopropanol Derivatives with Arylboronic Esters." IRTG German–Canadian Conference, University of Toronto. Poster.