ACHYUT RANJAN GOGOI

PhD (5th Year) in Chemistry *(Computational Organic & Iron Catalysis)*
Anticipated Graduation: May 2026
Texas A&M University, College Station

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Educational Qualifications

Degree/Examination	Board/University	Institute	Year	GPA/CPI/ %
PhD Chemistry	Texas A&M	Texas A&M	2021-Present	3.75
M.Sc. (Chemistry)	IIT Bombay	IIT Bombay	2021	9.69
B.Sc. (Chemistry)	University of Delhi	Zakir Husain Delhi College	2019	9.59

RESEARCH EXPERIENCE

❖ PhD Research (August'2021-Present)

Project 1 Title: Mechanistic Insight Guided Rational Design of Iron-Catalyzed Asymmetric Multicomponent Cross-Coupling Strategies

Supervisor: Prof. Osvaldo Gutierrez, Texas A&M University

- ✓ Spearheading the development of an innovative, asymmetric iron-catalyzed three-component cross-coupling reaction to produce medicinally valuable chiral boronic esters (**>94% ee).**
- ✓ Integrating advanced techniques, including organic synthesis, Density Functional Theory (DFT), and Mössbauer spectroscopy, to uncover key mechanistic insights.
- ✓ Leveraging mechanistic insights to design and develop new strategies for asymmetric iron-catalysis, enabling experimental advancements.

✓ *Manuscripts under preparation*

Project 2 Title: Harnessing the Symbiotic Potential of Computation & Experiment in Elucidation of Reaction Mechanisms.

Supervisor: Prof. Osvaldo Gutierrez, Texas A&M University

- ✓ Utilizing advanced computational tools, including density functional theory (DFT), Molecular Dynamics (MD), and multireference methods, to deepen the understanding of complex organic & organometallic reaction mechanisms.
- ✓ Collaborated with leading experimental research groups worldwide, including the Martin group (ICIQ), Fleming group (Drexel), Scheidt group (Northwestern), Thomas and Powers groups (Texas A&M), Levin group (Chicago), and Wickens group (Wisconsin-Madison).
- ✓ Contributed to high-impact research that resulted in several co-authored publications (17 so far), showcasing potential for a productive synergy between computational and experimental approaches.

❖ Visiting Researcher (September'2023- November'2023)

Project Title: "Mössbauer Study on Iron-Catalyzed Asymmetric Multicomponent Cross-Coupling Strategies"

Supervisor: Prof. Michael Neidig, University of Oxford, United Kingdom

- ✓ Conducted in-depth Mössbauer spectroscopy experiments to investigate iron speciation in asymmetric iron-catalyzed multicomponent cross-coupling reactions.
- ✓ Identified and characterized the stereodetermining active iron species, contributing to a deeper understanding of reaction mechanisms for the development of more effective catalytic strategies.

✓ *Manuscripts under preparation*

TECHNICAL EXPERIENCE

Instrumental Skills	• Mössbauer Spectrometer, NMR, RI-NMR, FT-IR, Polarimeter • UV-Visible Spectrophotometer, Spectrofluorometer
Programming Languages	• C++, Python, ARDUINO, QBASIC, FORTRAN, MYSQL
Software Skills	• Gaussian, Gamess, Orca, Avogadro, AutoCAD

PUBLICATIONS

1. **Gogoi, A. R.**; Rentería-Gómez, A.; Tan, T.D.; Ng, J. W.; Koh, M. J.; Gutierrez, O. Iron-catalyzed radical difunctionalization of alkenes , *Nat. Synth.* **2025**, *4*, 1036–1055.
2. **Gogoi, A. R.**[#]; Usman, F. O.[#]; Mixdorf, J. C.; Gutierrez, O.; Nguyen, H. M. Rhodium-catalyzed Asymmetric Synthesis of 1,2-disubstituted Allylic Fluorides. *Angew. Chem. Int. Ed Engl.* **2023**, *62*.
3. Elgindy, C.; **Gogoi, A. R.**; Rentería-Gómez, Á.; Park, B.; Das, D.; Obertone, C. E.; Dherange, B. D.; Gutierrez, O.; Levin, M. D. Mechanisms and Synthetic Applications of Cyclic, Nonstabilized Isodiazenes: Nitrogen-Atom Insertion into Pyrrolidines and Related Rearrangements. *J. Am. Chem. Soc.* **2025**, *147*, 28179–28188.
4. Targos, K.; **Gogoi, A. R.**; Rentería-Gómez, Á.; Kim, M. J.; Gutierrez, O.; Wickens, Z. K. Mechanism of *Z*-Selective Allylic Functionalization via Thianthrenium Salts. *J. Am. Chem. Soc.* **2024**, *146*, 13689–13696.
5. Aguilera, M. C.; **Gogoi, A. R.**; Lee, W.; Liu, L.; Brennessel, W. W.; Gutierrez, O.; Neidig, M. L. Insight into Radical Initiation, Solvent Effects, and Biphenyl Production in Iron–Bisphosphine Cross-Couplings. *ACS Catal.* **2023**, *13*, 8987–8996.
6. Youshaw, C. R.; Yang, M.-H.; **Gogoi, A. R.**; Rentería-Gómez, A.; Liu, L.; Morehead, L. M.; Gutierrez, O. Iron-Catalyzed Enantioselective Multicomponent Cross-Couplings of α-Boryl Radicals. *Org. Lett.* **2023**, *25*, 8320–8325.
7. Day, C. S.; Renteria-Gomez, A.[#]; Ton, S. J.[#]; **Gogoi, A. R.**[#]; Gutierrez, O.;Martin, R., Elucidating Electron-Transfer Events in Polypyridine Nickel Complexes for Reductive Coupling Reactions. *Nat. Catal.* **2023**, *6* , 244–253.
8. Peng, Q.; **Gogoi, A. R.**; Renteria-Gomez, A.; Gutierrez, O.; Scheidt, K. A., Visible Light-Induced Coupling of Carboxylic Acids with Alcohols and Amines, *Chem* **2023**.
9. Crockett, M.P.; Pina, J.; **Gogoi, A.R.**[#]; Lalisse, R. F.[#]; Nguyen, A.V.; Gutierrez, O.; Thomas, A. A. Breaking the tert-Butyllithium Contact Ion Pair: A Gateway to Alternate Selectivity in Lithiation Reactions, *J. Am. Chem. Soc.* **2023,** *145* , 10743–10755.
10. Leong, D. W.; **Gogoi, A. R.**; Maity, T.; Lee, C.-I.; Bhuvanesh, N.; Gutierrez, O.; Ozerov, O. V. Abstraction of Hydride from Alkanes and Dihydrogen by the Perfluorotrityl Cation. *Angew. Chem. Int. Ed Engl.* **2025**, *64*, e202422190.
11. Wu, F.-P.; Lenz, M.; Suresh, A.[#]; **Gogoi, A. R.**[#]; Tyler, J. L.; Daniliuc, C. G.; Gutierrez, O.; Glorius, F. Nitrogen-to-Functionalized Carbon Atom Transmutation of Pyridine. *Chem. Sci.* **2024**, *15*, 15205–15211.
12. Zhu, J. L.; Schull, C. R.; Tam, A. T.; Rentería-Gómez, Á.; **Gogoi, A. R.**; Gutierrez, O.; Scheidt, K. A. Photoinduced Acylations via Azolium-Promoted Intermolecular Hydrogen Atom Transfer. *J. Am. Chem. Soc.* **2023**, *145*, 1535–1541.
13. Altundas, B.; Alwedi, E.; Song, Z.; **Gogoi, A. R.**; Dykstra, R.; Gutierrez, O.; Fleming, F. F. Dearomatization of Aromatic Asmic Isocyanides to Complex Cyclohexadienes. *Nat. Commun.* **2022**, *13*, 6444.
14. Thompson, R. R.; Figgins, M. T.; Wannipurage, D. C.; Renteria-Gomez, A.; **Gogoi, A. R.**; Telser, J.; Tierney, D. L.; Neben, M. C.; Demeshko, S.; Gutierrez, O.; Powers, D. C. P-P Coupling with and without Terminal Metal-Phosphorus Intermediates. *J. Am. Chem. Soc.* **2025**, *147*, 5350–5359.

15. Rentería-Gómez, A.; Lee, W.; Yin, S.; Davis, M.; **Gogoi, A. R.**; Gutierrez, O. General and Practical Route to Diverse 1-(Difluoro)Alkyl-3-Aryl Bicyclo[1.1.1]Pentanes Enabled by an Fe-Catalyzed Multicomponent Radical Cross-Coupling Reaction. *ACS Catal.* **2022**, *12*, 11547–11556.
16. Das, M.; **Gogoi, A. R.**; Sunoj, R. B. Molecular Insights on Solvent Effects in Organic Reactions as Obtained through Computational Chemistry Tools. *J. Org. Chem.* **2022**, *87*, 1630–1640.
17. Mandal, H.; Ogunyemi, O. J.; Nicholson, J. L.; Orr, M. E.; Lalisse, R. F.; Rentería-Gómez, Á.; **Gogoi, A. R.**; Gutierrez, O.; Michaudel, Q.; Goodson, T., 3rd. Linear and Nonlinear Optical Properties of All-Cis and All-Trans Poly(p-Phenylenevinylene). *J. Phys. Chem. C Nanomater. Interfaces* **2024**, *128*, 2518–2528.

[#]equal contribution, *for full list of publications please check my google scholar profile*

CONFERENCES/SYMPOSIUMS/SEMINARS

- Secured the **Third Best Poster Presentation award** in ***Diversity in Science Symposium'23*** organized by SACNAS (Society for Advancement of Chicanos/Hispanics & Native Americans in Science) TAMU Chapter.
- Presented an oral talk titled **"***Mechanistic Insight Guided Rational Design of Iron-Catalyzed Asymmetric Multicomponent Cross-Coupling Strategies***"** at **ACS Fall 2024, Denver**.
- Presented a virtual oral talk titled "*Synergizing Computation and Experiments for Sustainable Reaction Design*" at the **Catalysis Innovation Consortium(CIC) System Wide Meeting 2025** organized by Emory University.
- Presented a virtual oral talk titled "*Harnessing the symbiotic potential of computation and experiment for sustainable iron catalysis*" at the ***Theoretical and Physical Organic Chemistry (TPOC)*** Monthly Meeting 2023 organized by University of Houston and UC Davis.
- Presented a poster titled **"***Fe-Catalyzed Asymmetric Multicomponent Cross-Coupling Reactions: Scope and Mechanistic Insights***"** at ***Gordon Research Conference (Physical Organic Chemistry) 2023***.
- Presented a poster titled "*Mechanistic Insight Guided Rational Design of Iron-Catalyzed Asymmetric Multicomponent Cross-Coupling Strategies*" at ***Catalysis Innovation Consortium (CIC) Annual Meeting 2024*** at Emory University.
- Presented a poster titled "*Mechanistic Insight Guided Rational Design of Iron-Catalyzed Asymmetric Multicomponent Cross-Coupling Strategies*" at the ***Welch Conference 2024*** in Houston***.***
- Presented a poster titled "*Mechanistic Insight Guided Rational Design of Iron-Catalyzed Asymmetric Multicomponent Cross-Coupling Strategies*" at the ***Cotton Medal Conference 2023 and 2024*** organized by Texas A&M University***.***
- Presented a poster titled "*Computational Investigation into Electron Transfer Events in Polypyridine Ligated Nickel Complexes*" at ***Houk Research Conference 2022***, ***UCLA***.

SCHOLARSHIPS & EXTRA-CURRICULAR ACTIVITIES

- Recipient of the **Sharon Dabney Memorial Scholarship** for excellence in research and departmental leadership at Texas A&M University.
- **Secretary** at Phi Lambda Upsilon: The Honorary Chemical Society of Texas A&M University, 2024.
- Student Ambassador at Catalysis Innovation Consortium (CIC).
- Physical Chemistry Division Representative at Chemistry Student Safety Committee (CSSC) Board 2024.
- Graduate Student Member: American Chemical Society, 2024.