Dr. Avishek Guin

Max-Planck-Institut für Kohlenforschung,
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Education

Indian Institute of Science — Bengaluru, India
Ph.D. in Organic Chemistry; — *Aug 2018 – Dec 2023*

Indian Institute of Technology Kharagpur — Kharagpur, India
M.Sc., Chemistry (First Class); CGPA: 9.16 out of 10 — *Aug 2016 – June 2018*

Visva-Bharati University — Santiniketan, India
B.Sc., Chemistry (Honours), Physics, Mathematics; — *Aug 2013 – June 2016*
First Class; CGPA: 8.16 out of 10

Research Experience

Max-Planck-Institut für Kohlenforschung — Mülheim an der Ruhr, Germany
Post-doctoral Fellow — *April 2024 – present*
Supervisor: **Prof. Dr. Dr. h.c. Dr. h. c. Benjamin List**

Topic: *Asymmetric Catalysis*

Indian Institute of Science — Bengaluru, India
Ph.D. in Organic Chemistry — *Aug 2018 – Dec 2023*
Supervisor: **Prof. Akkattu T. Biju**

Thesis: *Harnessing Strained Systems: Arynes, Donor-Acceptor Cyclopropanes, and Bicyclobutanes in Annulations, Multicomponent Couplings and Insertion Reactions*

Indian Institute of Technology Kharagpur — Kharagpur, India
M.Sc. Project — *May 2017 – June 2018*
Supervisor: **Prof. Modhu Sudan Maji**

Thesis: *One-Pot Benzannulation of 2-Alkenyl Indoles in Presence of Aldehydes Using Oxygen as a Sole Oxidant*

Awards and Honours

The Prime Minister's Research Fellows (PMRF) — *Dec 2020*
Awarded the Prime Minister's Research Fellowship by the Goverment of India (*Every time received "Recommended with commendation grade" for outstanding performance in annual reviews).*

Graduate Aptitude Test in Engineering (GATE) — *Feb 2018*
Conducted by Indian Institute of Technology Guwahati (**All India Rank 183**).

CSIR-UGC Junior Research Fellowship — *June 2017*
Awarded the CSIR-UGC JRF by Joint Council of Scientific and Industrial Research and University Grants Commission, New Delhi (**All India Rank 32**).

CSIR-UGC Junior Research Fellowship — *Dec 2016*
Awarded the CSIR-UGC JRF by Joint Council of Scientific and Industrial Research and University Grants Commission, New Delhi (**All India Rank 18**).

Joint Admission Test For Masters (JAM) — *Feb 2016*
Conducted by Indian Institute of Technology Madras (**All India Rank 63**).

DST INSPIRE Scholarship — *Aug 2013 – July 2018*
Scholarship awarded by the Department of Science and Technology for being the top 1% in the state in Higher Secondary Examination.

Merit-Cum-Means Scholarship *July 2011 – June 2013*
Scholarship awarded by the Government of West Bengal.

Conferences

ICOC 2023 *Oct 2023*
Presented a poster on "Lewis Acid-Catalyzed Diastereoselective Carbofunctionalization of Bicyclobutanes Employing Naphthols" during the International Conference on Organometallics and Catalysis 2023 held in Goa (India).

PMRF Annual Symposium *Feb 2023*
Presented a poster on "Lewis Acid-Catalyzed Ring-Opening Reactions of Donor-Acceptor Cyclopropanes and Bicyclobutanes" during the PMRF Annual Symposium held at IIT Madras, Chennai (India).

CHEMSCI2023: Leaders In The Field Symposium *Jan 2023*
Presented a poster on "Lewis Acid-Catalyzed Ring-Opening Reactions of Donor-Acceptor Cyclopropanes and Bicyclobutanes" during the CHEMSCI2023: Leaders In The Field Symposium held at JNCASR, Bangalore (India).

ICOC 2020 *Mar 2020*
Presented a poster on "Lewis Acid-Catalyzed Ring-Opening 1,3-Aminothiolation of Donor-Acceptor Cyclopropanes Using Sulfenamides" during the International Conference on Organometallics and Catalysis 2020 held in Goa (India).

Book Chapters

4. Ring-Opening 1,3-Difunctionalization of Donor-Acceptor Cyclopropanes.
Guin, A.; Biju, A. T. In ***Donor-Acceptor Cyclopropanes in Organic Synthesis*** Chapter 6, Editor: P. Banerjee and A. T. Biju; ***Wiley-VCH***. 2023, ISBN: 978-3-527-349876, pages 167-190.

3. Molecular Rearrangements.
Guin, A.; Deswal, S.; Biju, A. T. In ***Comprehensive Aryne Synthetic Chemistry*** Chapter 3-4, Editor: H. Yoshida; ***Elsevier***. 2022, pages 223-266.

2. An Introduction to the Chemistry of Arynes.
Roy, T.; **Guin, A.**; Biju, A. T. In ***Modern Aryne Chemistry*** Chapter 1, Editor: A. T. Biju; ***Wiley-VCH***. 2021, ISBN: 978-3-527-34646-2, pages 1-25.

1. Hetarynes, Cycloalkynes and Related Intermediates.
Guin, A.; Bhattacharjee, S.; Biju, A. T. In ***Modern Aryne Chemistry*** Chapter 9, Editor: A. T. Biju; ***Wiley-VCH***. 2021, ISBN: 978-3-527-34646-2, pages 359-406.

Publications

17. Lewis Acid-Catalyzed Unusual (4+3) Annulation of para-Quinone Methides with Bicyclobutanes: Access to Oxabicyclo [4.1.1]octanes.
Deswal, S.; **Guin, A.**; Biju, A. T. *Angew. Chem. Int. Ed.* **2024**, e202408610.

16. Lewis Acid-Catalyzed Diastereoselective Ene Reaction of Thioindolinones/Thiolactams with Bicyclobutanes.
Guin, A.; Deswal, S.; Harariya, M. S.; Biju, A. T. *Chem. Sci.* **2024**, *15*, 12473.

15. Lewis Acid-Catalyzed One-Pot Thioalkenylation of Donor-Acceptor Cyclopropanes Using in situ Generated Dithiocarbamates and Propiolates.
Harikumar, S.; Kandy, L. T. K.; **Guin, A.**; Biju, A. T. *Org. Biomol. Chem.* **2024**, *22*, 1834.
Invited to the special issue celebrating the 100th birthday of Prof. Sukh Dev.

14. Stereoselective Alder-Ene Reactions of Bicyclo [1.1.0] Butanes: Facile Synthesis of Cyclopropyl- and Aryl-Substituted Cyclobutenes.
Dasgupta, A.; Bhattacharjee, S.; Tong, Z.; **Guin, A.**; McNamee, R.; Christensen, K.; Biju, A. T.; Anderson, E. *J. Am. Chem. Soc.* **2024**, *146*, 1196.

13. Lewis Acid-Catalyzed Diastereoselective Carbofunctionalization of Bicyclobutanes Employing Naphthols.
Guin, A.; Bhattacharjee, S.; Harariya, M. S.; Biju, A. T. *Chem. Sci.* **2023**, *14*, 6585.

12. Benzotriazole-Triggered Three-Component Lewis Acid-Catalyzed Ring-Opening 1,3-Aminofunctionalization of Donor-Acceptor Cyclopropanes.
Deswal, S.; **Guin, A.**; Biju, A. T. *Org. Lett.* **2023**, *25*, 1643.

11. Synthesis of Trisubstituted Oxazoles via Aryne Induced [2,3] Sigmatropic Rearrangement-Annulation Cascade.
Gaykar, R. N.; Deswal, S.; **Guin, A.**; Bhattacharjee, S.; Biju, A. T. *Org. Lett.* **2022**, *24*, 4145.

10. Ring-Opening 1,3-Carbothiolation of Donor-Acceptor Cyclopropanes Using Alkyl Halides and In Situ Generated Dithiocarbamates.
Guin, A.; Deswal, S.; Biju, A. T. *J. Org. Chem.* **2022**, *87*, 6504.

9. Three-Component, Diastereoselective [6+3] Annulation of Tropone, Imino Esters and Arynes.
Guin, A.; Gaykar, R. N.; Deswal, S.; Biju, A. T. *Org. Lett.* **2021**, *23*, 7456.

8. Transition-Metal-Free C2-Functionalization of Pyridines through Aryne Three-Component Coupling.
Guin, A.; Bhattacharjee, S.; Biju, A. T. *Chem. Eur. J.* **2021**, *27*, 13864.
Selected as a "Hot Paper" by the Editors.

7. An Umpolung Oxa-[2,3] Sigmatropic Rearrangement Employing Arynes for the Synthesis of Functionalized Enol Ethers.
Gaykar, R. N.; George, M.; **Guin, A.**; Bhattacharjee, S.; Biju, A. T. *Org. Lett.* **2021**, *23*, 3447.

6. Thiophenols as Protic Nucleophilic Triggers in Aryne Three-Component Coupling.
Bhattacharjee, S.; **Guin, A.**; Gaykar, R. N.; Biju, A. T. *Org. Lett.* **2020**, *22*, 9097.

5. Lewis Acid-Catalyzed Ring-Opening 1,3-Aminothiolation of Donor-Acceptor Cyclopropanes Using Sulfenamides
Guin, A.; Rathod, T.; Gaykar, R. N.; Roy, T.; Biju, A. T. *Org. Lett.* **2020**, *22*, 2276.

4. Three-Component Aminoselenation of Arynes.
Gaykar, R. N.; **Guin, A.**; Bhattacharjee, S.; Biju, A. T. *Org. Lett.* **2019**, *21*, 9613.

3. Selective Synthesis of *N*-H and *N*-Aryl Benzotriazoles by the [3+2] Annulation of Sodium Azide with Arynes.
Guin, A.; Gaykar, R. N.; Bhattacharjee, S.; Biju, A. T. *J. Org. Chem.* **2019**, *84*, 12692.

2. Iodide as a Nucleophilic Trigger in Aryne Three-Component Coupling for the Synthesis of 2-Iodobenzyl Alcohols.
Bhattacharjee, S.; **Guin, A.**; Gaykar, R. N.; Biju, A. T. *Org. Lett.* **2019**, *21*, 4383.
Highlighted in Organic Chemistry Portal.

1. Formal [4+2] Benzannulation of 2-Alkenyl Indoles with Aldehydes: A Route to Structurally Diverse Carbazoles and Bis-carbazoles.
Banerjee, A.; **Guin, A.**; Saha, S.; Mondal, A.; Maji, M. S. *Org. Biomol. Chem.* **2019**, *17*, 1822.

Teaching Experience

Teaching Assistant *Aug 2020 – Dec 2020*
UG (major) Organic Chemistry course: **UC-206**
Instructors: **Prof. A. T. Biju** & **Prof. T. K. Chakraborty**
Class Strength: 120 students
Responsibilities involved designing pedagogical & instructional materials; leading tutorial sessions; setting up and correcting assignments, quizzes, and exams; routinely giving feedback to students for improving performance in the course; and assisting in course grading.

PMRF Teaching Assistant *Jan 2021 – May 2021*
Students of grade 3
Instructor: **Ms. Krishnendu C R**
Class Strength: 55 students
Responsibilities involved designing instructional materials for students of Grade 3 at Kendriya Vidyalaya as a part of the mandatory teaching requirement for PMRF awardees.

PMRF Teaching Assistant *Aug 2022 – Dec 2022*
Second year undergraduates at Bhagat Phool Singh Mahila Vishwavidyalaya
Class Strength: 67 students
Served as an instructor for a course on organometallic chemistry for second-year undergraduate students as a part of the mandatory teaching requirement for PMRF awardees.