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EDUCATION

CSIR-National Chemical Laboratory, Pune, India. Aug. 2013

Ph. D. (Chemistry)

Thesis title: *Preparation and evaluation of some chiral catalysts for aldol reaction in organic and aqueous media*. [link]

Shivaji University, Kolhapur, India. May 2005

M. Sc. (Org. Chem., 72%**)**

Project Title: Study of Fries Rearrangement reaction at room temperature.

Shivaji University, Kolhapur, India May 2003

B. Sc. (Chem., 75%**)**

RESEARCH EXPERIENCE

1. Research Scientist *AmAr* Chemistry Pvt. Ltd. Kanjurmarg West, Mumbai April 2021-Present

In collaboration with N. J. Biopharmaceuticals LLC. 350 Carter Rd, Princeton, NJ 08540, United States.

- Planning and synthesis of new anticancer agents and ADC drug linkers within timelines.
- Closely handling a team of 3 synthetic chemists.

2. Scientific Research Advisor (Part time) May 2020–March 2021

ChemEngg Research Pvt. Ltd., N2-408, River Residency, Phase 3, Chikhali, Pune, India, 411062.

- Literature search for finding the best possible routes.
- Costing of the project and troubleshooting the synthetic challenges.

3. Postdoctoral Researcher, Ruhr-Universität, Bochum, Germany. Mar. 2018–April 2020

Advisor- Prof. Stefan Huber.

- Established organocatalysis of new C-C bond forming reactions such as Mukaiyama aldol, oxa-Diels-Alder reaction through halogen bonding interaction.
- Developed new chiral cationic bidentate and bifunctional XB-donors containing chiral rigid sidearms through an efficient synthetic sequence. Using the imidazolium-based bidentate XB donors, practical recognition of diamines was achieved by NMR spectroscopy. Along with this, the first example of asymmetric catalysis of a C-C bond forming reaction (Mukaiyama aldol) was accomplished solely through halogen bonding interaction when preorganized variants of these donors were used.

4. Postdoctoral Researcher, Ben-Gurion University of the Negev, Israel. Nov. 2013–Dec. 2017

Advisor- Prof. N. Gabriel Lemcoff.

- An efficient protocol for the selective divergent photochemical synthesis of either of the γ-buteneolides or γ-ketoesters from the common starting materials and intermediates was established using a novel concept of molecular UV-filters.

■ Developed novel latent Ru-based olefin metathesis catalysts for applications in stereolithographic 3D-printing and the study of reversible exchange during dendrimer dynamics.

■ UV-filtration by molecular filters was efficiently utilized to avoid photodeprotection of photolabile protecting groups in the light-activated olefin metathesis, which on further photochemical transformation lead to all photochemical synthesis of bioactive coumarins.

5. Ph. D. Graduate student OCD, CSIR-NCL, Pune. Aug. 2006–Aug. 2013
Advisor- Dr. N. N. Joshi, Sci.-F (*Rtd.*).

■ Evaluated the asymmetric Lewis base catalysis of Mukaiyama-aldol reaction of TMS-enolates through hypervalent silicon chemistry.

■ Proline derived catalysts were systematically assessed to establish the effect of several design parameters on the outcome of direct aldol reaction.

■ To understand the mechanism and species responsible for enantio-discrimination, chiral adducts of amines, alcohols, and phenols were screened as catalysts for the direct aldol reaction and a simple adduct of proline and 8-hydroxyquinoline showed significant improvement in enantioselectivity.

This work was funded by the CSIR-JRF Fellowship.

6. Trainee Research Scientist, Excel Industries Ltd. India. Nov. 2005–July 2006
Worked on the process development of Nizatidine analogs and few important polychlorinated phenolic intermediates of bioactive molecules and agrochemicals.

5. M. Sc. project Dept. Chem. Shivaji Uni. Kolhapur. May 2004–Jan. 2005
Advisor: Prof. M. B. Deshmukh.
Worked on the Fries Rearrangement reaction at room temperature in nitromethane as the solvent.

FELLOWSHIPS

- Post-doctoral fellowship on ERC grant, Ruhr-Universität, Bochum from March 2018–April 2020.
- Post-doctoral fellowship of OU, Israel, during Nov. 2013–2017.
- Senior Research Fellowship (SRF) for 2008–2011, awarded by CSIR, New Delhi, India.
- Junior Research Fellowship (JRF) for 2006–2008, awarded by CSIR, New Delhi, based on the best performance in National Eligibility Test conducted in Dec. 2005**.**
- Shivaji University Merit Scholarship for being topper in the M.Sc. entrance examination (97/100) of Dept. of Chem., Shivaji University, Kolhapur-2003.

ACHIEVEMENTS

- Qualified CSIR-National Eligibility Test (NET) in Chemical Sciences with JRF *twice* (Dec. 2005 and June 2006) conducted by CSIR and stood among the top 20% of qualified candidates all over India.
- Qualified State Eligibility Test (SET) for lectureship in Maharashtra conducted by UOP during Jan. 2006.
- Highest ever marks in the M.Sc. entrance examination of Shivaji University Kolhapur (97/100).
- Certificate for best academic performance during S. Y. B. Sc. in 2002.

GRANTS

- JRF and SRF (2006-2011) by CSIR, New Delhi, India.
- MSCA-IF-ST 2020, Research proposal on reserve list (Score-92.6%) and seal of excellence.
- Beatriu de Pinós programme (BP 2020), submitted proposal- BP_L01 **DZ4LHBGNZ.**
- ERC-2021-Starting grant, submitted proposal- 101040950.

SERVICE & OUTREACH

- Secretory Member of Committee, G. J. Hostel NCL Pune 2007–2008.
- Reviewer of Journal of Coordination Chemistry. 2020.
- Membership of Israel Chemical Society.
- Membership of American Chemical Society.

JOURNAL PUBLICATIONS

1. Mukaiyama aldol reaction catalyzed by (benz)imidazolium-based halogen bond donors.

Sutar R. L.; Erochok**,** N.; Huber, S. M., *Org. Biomol. Chem.* **2021**, *19*, 770–774 [link] (**IF-3.564**).

2. Bidentate chiral bis(imidazolium)-based halogen bond donors: synthesis and applications in enantioselective recognition and catalysis.

Sutar R. L.; Enlange, E.; Stoll, R.; Huber, S. M., *Angew. Chem*. *Int. Ed.* **2020**, *59*, 6806–6810; [link] *Angew. Chem.* **2020**, *132*, 6872–6877 [link] (**IF-12.83**).

Highlighted as front cover page 6633 [link].

3. Catalysis of organic reactions through halogen bonding.

Sutar R. L.*; Huber, S. M., *ACS Catal.* **2019**, *9*, 9622–9639 [link] (**IF- 12.221**).

4. New latent metathesis catalysts equipped with exchangeable boronic ester groups on the NHC.

Sutar, R. L.; Butilkov, D.; Lemcoff, N. G.; Reany, O., *J. Coord. Chem.* **2018**, *71*, 1715–1727 [link] (**IF-1.703**).

5. Guiding a divergent reaction by photochemical control: bichromatic selective access to levulinates and butenolides.

Sutar, R. L.; Sen, S.; Eivgi, O.; Segalovich, G.; Schapiro, I.; Reany O.; Lemcoff, N. G. *Chem. Sci.* **2018**, *9*, 1368–1374 [link] (**IF-9.603**).

6. Bichromatic photosynthesis of coumarins by UV filter enabled olefin metathesis.

Eivgi, O.; **Sutar, R. L.**; Reany, O.; Lemcoff, N. G., *Adv. Synth. Catal.* **2017**, *359*, 2352–2357 [link] (**IF-5.123**).

7. Route to benzimidazol-2-ones via decarbonylative ring contraction of quinoxalinediones: application to the synthesis of flibanserin, a drug for treating hypoactive sexual desire disorder in women and marine natural product hunanamycin analogue.

Shingare, R. D.; Kulkarni, A. S.; **Sutar, R. L.**; Reddy, D. S. *ACS Omega* **2017***, 2,* 5137–5141 [link] (**IF-2.584**).

8. A Light activated olefin metathesis catalyst equipped with a chromatic orthogonal self-destruct function.

Sutar, R. L.; Levin, E.; Butilkov, D.; Goldberg, I; Reany, O.; Lemcoff, N. G., *Angew. Chem. Int. Ed.* **2016**, *55*, 764–767 [link]; *Angew. Chem.* **2016**, *128,* 774–777 [link] (**IF-12.83**).

*Highlighted in ChemPlusChem, **2016**, 81, 157–160* [link].

9. A general approach to *N*-heterocyclic carbenes with a fused tetracyclic core: ligands for Suzuki–Miyaura cross-coupling reaction.

Sutar, R. L.; Kumar, V.; Shingare, R. D.; Thorat, S.; Gonnade, R.; Reddy, D. S., *Eur. J. Org. Chem.* **2014**, 4482–4486 [link] (**IF-3.029**).

10. Role of additives in chiral amine-catalyzed direct aldol reaction.

Sutar, R. L.; Joshi, N. N., *Syn. Commun.* **2014**, *44*, 352–360 [link] (**IF-1.337**).

11. A study of Lewis base catalyzed aldol reaction of trimethylsilyl enolates.

Sutar, R. L.; Joshi, N. N., *Ind. J. Chem. Sec. B* **2014,** *53B*, 1553–1560 [link] (**IF-0.546**).

12. Systematic evaluation of a few proline derivatives as catalysts for a direct aldol reaction.

Sutar, R. L.; Joshi, N. N., *Tetrahedron: Asymmetry* **2013**, *24*, 43–49 [link] (**IF-2.34**).

13. Base-catalyzed Mukaiyama-type aldol additions, a continued quest for stereoselectivity.

Sutar, R. L.; Joshi, N. N., *Tetrahedron: Asymmetry* **2013**, *24*, 1345–1363 [link] (**IF-2.34**).

14. Divergent photochemical organic synthesis: Strategies and applications.

Sutar, R. L.; Reany, O.; Lemcoff, N. G., An invited review in *Chem* under preparation. (**IF-14.8**).

Total citations- 198, *h*- index- 8 (Source- Scopus)

PATENTS

1. Novel *N*-heterocyclic carbene compounds, their preparation and use.

Reddy, D. S. **Sutar, R. L.**; Kumar, V.; Shingare, R. D., **WO 2015/102020A1, IN3809/DEL/2013.**

BOOK CHAPTERS

1. Halogen bonding in organocatalysis.

Sutar R. L. in *Halogen Bonding in Solution*, (Eds. Huber, S. M.), Wiley-VCH Verlag GmbH & Co Germany, 2021. [Link].

2. Catalysis by halogen bonding based on iodine.

Sutar R. L. Huber S. M. in *Iodine Catalysis in Organic Synthesis*, (Eds. Ishihara, K., Muniz, K.), Wiley-VCH Verlag GmbH & Co Germany, 2021.

3. Exploration of halogen bonding for the catalysis of organic reactions.

Sutar R. L. Huber S. M. in *Supramolecular Catalysis: New Directions and Developments*, (Eds. Raynal, M., van Leeuwen, P. W. N. W.), Wiley-VCH Verlag GmbH & Co Germany, 2021.

POSTERS PRESENTED

1. Sunscreen assisted divergent photochemical syntheses.

Sutar, R. L.; Lemcoff N. G., *on 22nd ISOM symposium at ETH-Zurich in July 2017.*

2. Sunscreen assisted photochemical divergence.

Sutar, R. L.; Lemcoff N. G., *during 82nd annual meeting of ICS at Tel-Aviv in Feb. 2017*.

3. A light activated olefin metathesis catalyst equipped with self-destruct function.

Sutar, R. L.; Lemcoff N. G., *during 81st annual meeting of ICS at Tel-Aviv in Feb. 2016*.

4. Catalytic dendrimers for selective olefin metathesis.

Sutar, R. L.; Lemcoff N. G., *on 80th annual meeting of ICS at Tel-Aviv in Feb. 2015.*

5. Chiral Lewis base catalyzed Mukaiyama-type aldol reaction

Sutar, R. L.; Joshi, N. N., *on National Science Day celebration at NCL in Feb. 2012.*

6. New proline derived organocatalysts for enantioselective direct aldol reaction.

Sutar, R. L.; Joshi, N. N., on *National Science Day and IYC celebration at NCL in Feb. 2011*.

REFERENCES

1. **Prof. N. G. Lemcoff**
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