

# CURRICULUM VITAE

## **Dr. Dewal S. Deshmukh**

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### **Summary**

- Highly self-motivated chemistry teacher with demonstrated research expertise in organic synthesis, process development and catalysis.
- Expert in developing transition metal catalysed C-H bond activation reactions with high efficiency.
- Practised in instrument monitoring and analytical method development/performance (GC, NMR, GC-MS, IR, etc).
- Flexible team player with strong leadership capabilities.
- Experience of teaching in academic institutes.

### **Education**

- ✓ Ph.D. – Institute of Chemical Technology (formerly UDCT), Mumbai.  
Research Topic: “Synthesis of N-Heterocyclic compounds using C-N bond formation reactions.”
- ✓ Maharashtra State Eligibility Test (MH-SET) for Assistant Professor by S. P. Pune University–2015
- ✓ Graduate Aptitude Test in Engineering (GATE) by Indian Institute of Technology (IIT)– 2014
- ✓ M.Sc. (Organic Chemistry, 60.85%) – Department of Chemistry, S. P. Pune University – 2013
- ✓ B.Sc. (74.59%) – SGB Amravati University –2011

### **Awards/ Fellowships**

- ‘Best Ph.D. (Sci.) thesis award’ by Institute of Chemical Technology, Mumbai
- Selected as Summer Faculty Research Fellow (SFRF-2023) at Indian Institute of Technology (IIT) Delhi.
- Senior research fellowship (SRF) in 2017 under UGC-BSR fellowship program by University Grants Commission, New Delhi, India.
- Junior research fellowship (JRF) in 2015 under UGC-BSR fellowship program by University Grants Commission, New Delhi, India.
- Selected as a member of SGB Amravati University Student council 2010-11.
- Elected as a General Secretary of College student council 2010-11.
- Selected for University level Avishkar competition-2009.

### **Research Experience**

**May 2015–September 2020: PhD Research Fellow (UGC-BSR) Institute of Chemical Technology, Mumbai (Mentor: Prof. B. M. Bhanage)**

- Synthesized substituted quinazoline derivatives under metal-free conditions using molecular iodine catalyst.
- Discovered effective strategies of C-H activation reactions in synthetic methodology.
- Performed air sensitive and moisture sensitive reactions with transition metal catalysis.
- Developed and characterized transition metal complexes for C-H functionalization reactions.
- Synthesized isoquinolines and isoquinolines using various directing groups and transition metals.
- Investigated mechanism of C-H activation reaction with ESI-MS analysis.
- Published research in scientifically peer reviewed international journals.
- Assisted project team members with annulation of Cbz imines with alkynes *via* C-H activation.
- Advised project team members with synthetic chemistry, characterization and data analysis problems.
- Synthesized imine and amide derivatives to develop directing groups for C-H activation.
- Trained postgraduate student and summer intern for their research project and developed project report.
- Designing of reactions on milligram and scale up level, Literature search and report development, learned purification techniques: column, flash column chromatography.

### **Experimental Skills**

- Experience in rapid scale-up of reactions from milligrams to grams scale.
- Scientific software including Scifinder, Beilstein, Reaxys, Scopus, Chemdraw, Extensive experience of Microsoft Office.
- Extensive experience of using analytical techniques: NMR, GC, GC-MS, IR with sound knowledge of analytical data interpretation.
- Hands-on experience in characterization techniques: NMR, GC, GC-MS, IR.
- Good writing and communication skills; experience in writing the research proposals and manuscripts.
- Well versed in characterization of organic compounds through various spectroscopic techniques such as <sup>1</sup>H NMR, <sup>13</sup>C NMR, Mass Spectroscopy, I.R., etc.

## Publications

1. N-Tosylhydrazone as an Oxidizing Directing Group for the Redox-Neutral Access to Isoquinolines via Cp\*Co(III)-Catalyzed C–H/N–N Activation; **D. S. Deshmukh**, N. Gangwar and B. M. Bhanage; *Journal of The Indian Chemical Society* **2021** (DOI: <https://doi.org/10.1016/j.jics.2021.100001>).
2. Rapid and Atom Economic Synthesis of Isoquinolines and Isoquinolinones by C-H/N-N Activation using Homogeneous Recyclable Ru(II) Catalyst in PEG Media; **D. S. Deshmukh**, N. Gangwar and B. M. Bhanage; *Eur. J. Org. Chem.* **2019** (DOI: 10.1002/ejoc.201900366).
3. Ruthenium-Catalyzed Annulation of N-Cbz Hydrazones via C–H/N–N Bond Activation for the Rapid Synthesis of Isoquinolines; **D. S. Deshmukh** and B. M. Bhanage; *Synthesis* **2019**.
4. Cp\*Co(III)-catalyzed annulation of azines by C–H/N–N bond activation for the synthesis of isoquinolines; **D. S. Deshmukh**, P. A. Yadav and B. M. Bhanage; *Org. Biomol. Chem.* **2019** (DOI: 10.1039/C9OB00174C).
5. N-Tosylhydrazone directed annulation via C-H/N-N bond activation in Ru(ii)/PEG-400 as homogeneous recyclable catalytic system: a green synthesis of isoquinolines; **D. S. Deshmukh** and B. M. Bhanage; *Org. Biomol. Chem.* **2018** 16, 4864-4873. (DOI: <https://doi.org/10.1039/C8OB01082J>)
6. Molecular Iodine Catalyzed Benzylic sp<sup>3</sup> C–H Bond Amination for the Synthesis of 2-Arylquinazolines from 2-Aminobenzaldehydes, 2-Aminobenzophenones and 2-Aminobenzyl Alcohols; **D. S. Deshmukh** and B. M. Bhanage; *Synlett* **2018**, 29, 979–985.
7. Cp\*Co(III) catalyzed annulation of N-Cbz hydrazones for the redox-neutral synthesis of isoquinolines via C-H/N-N activation; D. D. Subhedar, **D. S. Deshmukh** and B. M. Bhanage; *Synthetic Communications* **2019** (DOI: <https://doi.org/10.1080/00397911.2019.1655765>).

## Books written

Book chapter entitled 'Insights into Sustainable C–H Bond Activation' in book 'Catalysis for Clean Energy and Environmental Sustainability -Biomass Conversion and Green Chemistry - Volume 1' (Springer Publications).

## Poster/Oral Presentations

- Presented a paper entitled "Redox-neutral synthesis of isoquinolines using cp\*Co(III) catalyzed annulation of N-cbz hydrazones via C-H/N-N bond activation" in the Second International web Conference on "**Advanced Material Science and Nanotechnology**" organised by Vinayak Vidyan Mahavidyalaya, Nandgaon Khandeshwar, Dist. Amravati on 23<sup>rd</sup> to 25<sup>th</sup> November 2021.
- Presented a paper entitled 'A green synthesis of isoquinolines and isoquinolinones via C-H bond activation reactions,' at **National Conference on Multidisciplinary Research in Science and Technology (NMRST-2020)**: 24<sup>th</sup> January 2020; Shri R. L. T. College of Science, Akola, Maharashtra, India. (Best oral presentation prize)
- Paper presented entitled "Iodine-Catalyzed Benzylic sp<sup>3</sup> C–H Bond Amination for the Synthesis of Quinazolines from 2-Aminobenzaldehyde, 2-Aminobenzophenone and 2-Aminobenzyl Alcohol" in the online **National Conference on "Recent Advances in Chemical Sciences (NCRACS-2020)** organised by Department of Chemistry and IQAC, Shankarlal Khandelwal Arts, Science and Commerce College, Akola on 1st and 2nd May 2020.
- Presented a paper entitled 'A green synthesis of N-containing heterocycles via C-H bond functionalization reactions,' at **National Conference on Innovative Research in Science and Technology (NCIRST-2019)**: 17th and 18th December 2019; Shri Shivaji Science College, Amravati, Maharashtra, India. (2nd prize for oral presentation)
- Synthesis of isoquinolines: N-tosylhydrazone directed annulation via C-H/N-N bond activation using recyclable Ru(II)/PEG-400 catalytic system, at **International Conference on Frontiers in Chemical Sciences (FICS 2018)**: 6<sup>th</sup>– 8<sup>th</sup> December 2018; Indian Institute of Technology, Guwahati, India.
- Molecular Iodine-Catalyzed Benzylic sp<sup>3</sup> C–H Bond Amination for Synthesis of 2-Arylquinazolines from 2-Aminobenzaldehyde, 2-Aminobenzophenone and 2-Aminobenzyl Alcohol, at **Indo-Japan Conference (IJC-2018)**: 18<sup>th</sup>– 19<sup>th</sup> January 2018; CSIR-NCL, Pune, India.

## Workshops/Conferences attended

- **MS-DEED Level 1** Programme for College Teachers by IISER Pune and MSFDA (online) from 21<sup>st</sup> to 23<sup>rd</sup> December 2021.
- **MS-DEED Level 2** Programme for College Teachers by MSFDA at IISER Pune from 16<sup>th</sup> May to 28<sup>th</sup> May 2022.
- **Online Refresher Course In Chemistry For Higher Education** organized by S.G.T.B. Khalsa College, University of Delhi held from 01<sup>st</sup> Dec 2020 to 31<sup>st</sup> Mar 2021.
- **Online "Faculty Induction Programme/Orientation Programme"** organized by Teaching Learning Centre (TLC), Ramanujan College in association with Research Development and Services Cell, Ramanujan College, University of Delhi under MHRD-sponsored Pandit Madan Mohan Malaviya National Mission on Teachers and Teaching (PMMMNMTT), held from 4<sup>th</sup> June, 2020 to 1<sup>st</sup> July, 2020.

- **American Chemical Society School Festival**, held at Institute of Chemical Technology, Mumbai, India on 19<sup>th</sup> and 20<sup>th</sup> March, 2018.
- **Advances in Organometallic and Bio-Organometallic Chemistry (AOBOC-2018)**, held at Institute of Chemical Technology, Mumbai, India on 20<sup>th</sup> and 21<sup>st</sup> February, 2018.
- **Workshop on Laboratory Safety-Pitfalls and Remedies**, held at Institute of Chemical Technology, Mumbai, India on 27<sup>th</sup> and 28<sup>th</sup> February, 2017.
- **Workshop cum Training Programme on Analytical Instrumentation Phase – II**, held at Institute of Chemical Technology, Mumbai, India on 21<sup>st</sup> and 22<sup>nd</sup> February, 2017.
- **The international Symposium on “The Recent Developments in Chromatography & Mass Spectrometry”**, held at Institute of Chemical Technology, Mumbai, India on 18<sup>th</sup> and 19<sup>th</sup> November, 2016.
- **Workshop on Nanomaterials: Emerging trends**, held at Institute of Chemical Technology, Mumbai, India on 16<sup>th</sup> and 17<sup>th</sup> September, 2016.
- **16<sup>th</sup> Orientation Programme in Catalysis Research**, held at National Centre for Catalysis Research, Indian Institute of Technology Madras, Chennai, India from 24<sup>th</sup> November to 12<sup>th</sup> December 2015.
- **Avishkar-2009 (Research competition)**, held at SGB Amravati University, Amravati, India on 23<sup>rd</sup> and 24<sup>th</sup> December, 2009.

### Professional membership and other expertise

- **Life Member of Amravati University Chemistry Teachers Association Life Member.**
- **Life Member of Indian Science Congress Association, Kolkata (L40605).**

### References

**1. Prof. Bhalchandra M. Bhanage, FRSC, FMASc**  
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**3. Dr. Dinesh N. Sawant**  
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