

# Dr. Manpreet Singh MRSC

Ph.D. / Post-Doc (Taiwan, South Korea)

Assistant Professor, School of Sciences

Baba Farid Group of Institutions, Bathinda, Punjab

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## RESEARCH INTERESTS

### Organic Chemistry

- Photochemical and electrochemical assisted C-C, C-N coupling reaction and C-H activation.
- C-H functionalization through electrochemical and photochemical reaction.
- C-F bond formation via Prins-type cyclization.
- Use of elemental sulfur as powerful reagent/catalyst for the synthesis of biologically potential sulfur-embedded organic frameworks.
- Synthesis of biologically active sulfa-heterocycles via difunctionalization of alkenes.
- Cycloaddition chemistry, green chemistry and synthesis of nitrogen-containing heterocyclic scaffolds via novel approaches of pharmacological interest.
- Synthesis of nanoparticle-based catalysts for C-H activation reactions.
- Assessment of photophysical properties of novel fluorescent compounds.

### Medicinal Chemistry

- Designing, synthesis & evaluation of multi-targeting agents for the treatment of various neurological disorders including Alzheimer's disease, Parkinson's disease and depression.
- Synthesis of anticancer and anti-infective agents.

## EDUCATION

Year	Qualification	University / Institute	Notes
2021	Ph.D. (Synthetic Organic and Medicinal Chemistry)	Department of Chemistry, Dr. B. R. Ambedkar National Institute of Technology, Jalandhar	Advisor: Dr. Virender Singh (Professor, Central University of Punjab, Bathinda, India); Thesis Topic: Design and Synthesis of Therapeutically Potential $\beta$ -Carboline Based Molecular Architectures via Exploration of Formyl $\beta$ -Carboline
2017	GATE (Chemical Science)	IIT Bombay (Indian Institute of Technology Bombay, India)	Secured All India GATE Rank 390 in 2017
2016	CSIR-NET-JRF (Chemical Science)	CSIR-UGC (Council for Scientific and Industrial Research-National Eligibility Test for Lectureship and University Grants Commission, Delhi, India)	Secured All India Rank 53 in 2016.
2012	M.Sc. (Hons.) Chemistry	Guru Nanak Dev University, Amritsar, India	Thesis Topic: Asymmetric aldol reactions; Advisor: Prof. Swapandeep Singh Chimni
2010	B.Sc. (Chemistry)	Punjab University, Chandigarh	

## Research EXPERIENCE

Position	Institution	Duration	Research Focus
Post-Doctoral Research Associate	Soonchunhyang University, South Korea	1 March 2024 to 30 Nov 2025	Electrochemical C-H functionalization of aliphatic alicyclic amines; Mentor: Prof. Kim Dae-young

Position	Institution	Duration	Research Focus
Post-Doctoral Research Associate	National Central University, Taiwan	20 Feb 2023 to 30 July 2023	C-F bond formation via Prins-type cyclization; Mentor: Prof. Duen-Ren Hou
Senior Research Fellow,	Department of Chemistry, Dr. B. R. Ambedkar National Institute of Technology, Jalandhar	1-2-2019 to 26 July 2021	Design and Synthesis of Therapeutically Potential $\beta$ -Carboline Based Molecular Architectures via Exploration of Formyl $\beta$ -Carboline
Junior Research Fellow,	Department of Chemistry, Dr. B. R. Ambedkar National Institute of Technology, Jalandhar	1-1-2017 to 31-1-2017	Design and Synthesis of Therapeutically Potential $\beta$ -Carboline Based Molecular Architectures via Exploration of Formyl $\beta$ -Carboline

## AWARDS AND SCHOLARSHIPS

- Membership of the Royal Society of Chemistry (London) (2026).
- Postdoctoral Research Fellowship awarded by National Research Foundation (NRF), Govt. of Korea, at Soonchunhyang University and Seoul National University, South Korea (2025).
- Postdoctoral Research Fellowship awarded by National Research Foundation (NRF), Govt. of Korea, at Soonchunhyang University, South Korea (2024).
- State University Research Excellence (SERB SURE) (ANRF) grant of ₹28.9 lakh awarded by SERB-DST, New Delhi, India (2023).
- Postdoctoral Research Fellowship awarded by the National Science and Technology Council (NSTC), R.O.C., Govt. of Taiwan (2022).
- Best Poster Award in National Conference at Dr. B. R. Ambedkar NIT Jalandhar (2017).
- CSIR-NET (JRF), Chemical Sciences – All India Rank 53 (2016).
- GATE (Chemical Sciences) – All India GATE Score 390 (2017).
- CSIR-SRF (Senior Research Fellowship), CSIR-New Delhi (2019).
- CSIR-JRF (Junior Research Fellowship), CSIR-New Delhi (2016).

## PROFESSIONAL EXPERIENCE

Designation	Institution / Department	Duration
Assistant Professor / Assistant Dean (R&D Cell)	Department of Chemistry, Baba Farid Group of Institutions, Bathinda	1 Dec 2025 to till date
Assistant Professor	Department of Chemistry, Baba Farid Group of Institutions, Bathinda	18 Aug 2023 to 27 Feb 2024
Assistant Professor	Department of Chemistry, Baba Farid Group of Institutions, Bathinda	18 Aug 2022 to 15 Feb 2023
Assistant Professor	Department of Chemistry, DAV University, Jalandhar-144001	4 Oct 2021 to 7 Jun 2022

## RESEARCH PROJECT DETAILS

Project Title	Grant Agency	Sanctioned Amount	Status
Development of Propargylamine-derived Anti-Alzheimer Agents through A <sup>3</sup> -Coupling File No. SUR/2022/002945	ANRF	28,06,580 INR	Ongoing

## PUBLICATIONS FROM POST-DOC

1. M. Singh, J.-W. Lee, Y. Kim, D. Y. Kim\*. "Mn(III)-mediated oxidative cyclisation via C(sp<sup>3</sup>)-H functionalisation: an efficient strategy for benzo-fused aza-heterocycle synthesis", Org. Biomol. Chem., 2026, DOI: <https://doi.org/10.1039/D6OB00041J>.
2. M. Singh, D. Y. Kim\*. "Electrochemical Synthesis of Benzo-fused Aza Heterocycles via C(sp<sup>3</sup>)-H Bond Functionalization/Cyclization", Adv. Synth. Catal., 2026, just accepted.

3. Y. Kim, J. Jang, M. Singh, T. H. Kim, Dae Y. Kim\*. "Electrochemical Ring-Opening 1,3-Diamination of Arylcyclopropanes With Dibzenesulfonimide and Nitriles", *Asian J. Org. Chem.*, 2026, 5586632, doi.org/10.1002/ajoc.70378.

## PUBLICATIONS DURING Ph.D. AND INDEPENDENT CAREER

1. A. Saini, R. Mehta, K. Kaur, Virender Singh, M. Singh\*. "Silver(I)-Catalyzed Regioselective A<sup>3</sup>-Coupling for the Synthesis of (Phenylvinyl)Imidazo[1,2-a]pyridines and Late-Stage Drug Functionalization", *J. Org. Chem.*, 2026, under review.
2. A. Chaturvedi, V. Sharma, P. Sharma, M. Singh, C. C. Malakar, R. Rawal, V. Singh. "From Scissoring to Construction: Azirine-2H-Carbaldehydes as Gateways to N–N Bond for the Regioselective Synthesis of N-Alkyl Pyrazoles and Indole-pyrazole Conjugates", *Org. Biomol. Chem.*, 2026, revision submitted (IF 2.9).
3. V. Sharma, A. Chaturvedi, B. Singh, M. Bajaj, M. Singh\*, V. Singh. "Copper-Catalyzed 2H-Azirine Ring Expansion: An Efficient Route to N-Substituted Pyrazoles", *Chemistry – An Asian Journal*, 2025, 20, e70407 (IF 3.5).
4. V. Sharma, A. Chaturvedi, C. C. Malakar, R. K. Rawal, M. Singh\*, V. Singh. "Modular Synthesis of Cross-Conjugated Triethynylethylenes via Double Sonogashira Coupling: A Platform for  $\pi$ -Extended Frameworks", *Asian J. Org. Chem.*, 2025, 14, e70225 (IF 2.7).
5. A. Chaturvedi, V. Sharma, R. K. Rawal, M. Singh\*, V. Singh. "Sustainable Protocol for Cu-catalysed A<sup>3</sup>-coupling under solvent-free conditions", *Org. Biomol. Chem.*, 2025, 23, 854-863 (IF 2.9).
6. A. Chaturvedi, V. Sharma, F. Nafla, K. S. Prasad, D. Sharma, N. Kumar, R. Chandel, M. Singh, R. K. Rawal, V. Singh. "Transition metal-free efficient synthesis of bis(indolyl) propynes (BIPs)", *Org. Biomol. Chem.*, 2024, 22, 7039-7051 (IF 2.9).
7. Vaishali, N. Banyal, S. Sharma, M. Singh, C. C. Malakar, V. Singh. "An efficient, step-economical synthesis of  $\beta$ -carboline tethered imidazopyrido[3,4-b]indoles from acetals", *New J. Chem.*, 2024, 48, 11394-11406 (IF 2.7).
8. S. Sharma, V. Singh, M. Singh, A. Sharma. "A simple and efficient route to pyrazole-based dihydrofuranones via lactonization approach", *Chem. Pap.*, 2024, 78, 2519–2534 (IF 2.9).
9. S. Sharma, V. Singh, M. Singh, A. Sharma. "Indium-mediated Domino Lactonisation Approach towards Diastereoselective Synthesis of Pyrazole C-3 Linked Butyrolactones", *Beilstein Arch.*, 2023, 202315.
10. M. Singh, Vaishali, Deepika, Joyti, C. C. Malakar, V. Singh. "Transition-Metal-Free Cascade C–N Bond Formation: An Effective Strategy for the Synthesis of  $\beta$ -Carboline N-Fused Imidazolium Acetates and Estimation of their Light-Emitting Properties", *Synthesis*, 2023, 55, 20 (IF 3.0).
11. M. Singh, Vaishali, R. Jamra, Deepika, S. Kumar, V. Singh. "Synthesis of  $\beta$ -Carboline Tethered  $\alpha$ -Amino Amidines through Ugi-Type Multicomponent Reaction", *Chemistry Select*, 2022, 7, e202202392 (IF 2.3).
12. M. Singh, R. Jamra, C. C. Malakar, V. Singh. "Transition metal free dual C–S bond forming approach for the one-pot synthesis of  $\beta$ -carboline tethered 2-acylbenzothiophenes", *Asian J. Org. Chem.*, 2021, 11, e202100653 (IF 3.1).
13. M. Singh, R. Jamra, S. Rattan, S. Mehra, V. Singh. "Potassium tert-butoxide-Promoted Synthesis of Fluorescent  $\beta$ -Carboline Tethered 1,3,5-Triazines and Assessment of Their Luminescent Properties", *Asian J. Org. Chem.*, 2021, 10, 2184 (IF 3.1).
14. M. Singh, Vaishali, S. Kumar, R. Jamra, S. K. Pandey, V. Singh. "A Metal-free Approach towards Synthesis of  $\beta$ -Carboline C1 Substituted Pyrido(2,3-c)carbazole Derivatives (Nitramarine Analogues) Through A<sup>3</sup>-coupling and Estimation of their Light Emitting Properties", *Tetrahedron*, 2020, 76, 131640 (IF 2.4).
15. M. Singh, Vaishali, A. K. Paul, V. Singh. "Isatin as 2-Aminobenzaldehyde Surrogate: Transition Metal-free Efficient Synthesis of 2-(2'-Aminophenyl)benzothiazole Derivatives", *Org. Biomol. Chem.*, 2020, 18, 4459-4469 (IF 2.9).
16. M. Singh, P. Awasthi, V. Singh. "Iodine Catalysed Synthesis of Luminescent  $\beta$ -Carboline Tethered Thiazolo[4,5-c]carbazole and Naphtho[2,1-d]thiazole Derivatives and Estimation of their Light Emitting Properties", *Eur. J. Org. Chem.*, 2020, 2020, 1023-1041 (IF 3.261).
17. M. Singh, A. K. Paul, V. Singh. "Transition Metal-free Approach towards Regioselective Synthesis of  $\beta$ -Carboline Tethered Pyrroles and 2,3-Dihydro-1H-pyrroles", *New J. Chem.*, 2020, 44, 12370-12383 (IF 2.7).
18. M. Singh, Vaishali, R. Kumar, V. Singh. "Catalyst-free and Metal-free Approach towards Synthesis of Amide and Thioamide linked  $\beta$ -Carboline-pyridine Conjugates and Estimation of their Photophysical Properties", *Chemistry Select*, 2020, 5, 5172-5179 (IF 2.3).

## BOOK CHAPTERS

1. D. Singh, M. Singh, Z. A. Khan. *Role of MXenes in Biotechnology*, Springer Nature, 2024. Print ISBN: 978-981-97-4063-5.
2. D. Singh, M. Singh, Z. A. Khan, A. Bathla. "Plant Viruses and Nanotechnology Approach to Combat Viral Pathogens", Taylor & Francis, 2024. Print ISBN: 9781003329169.
3. M. Singh, A. Husain, K. Kaur. "Advances in electronic Material for clean energy conversions and storage applications", Woodhead Publishing Series in Electronics and Materials. Edited by Aftab Aslam Parwaz Khan, Mohammed Nazim, Abdullah M. Asiri.

Woodhead Publishing is an imprint of Elsevier, 2023, Chapter 4, 81–93. Print ISBN: 978-0-323-91206-8.  
<https://www.elsevier.com/books-and-journals>.

## PATENTS

1. M. Singh, A. Saini. A Copper-Catalyzed Method for Producing N-Substituted Pyrazoles via 2H-Azirine Ring Expansion, 2026. Application No. 202611002406.
2. M. Singh, A. Saini. CROSS-CONJUGATED TRIETHYNYLETHYLENE COMPOUNDS AND A METHOD FOR THE PREPARATION THEREOF, 2026. Application No. 202611000022.
3. M. Singh, V. Singh, A. Chaturvedi, V. Sharma. ALKYNE-TETHERED DIHYDROISOQUINOLINE DERIVATIVES AND SUPERFAST SOLVENT-FREE REGIOSELECTIVE SYNTHESIS THEREOF, 2025. Application No. 202511073941.
4. M. Singh, V. Singh, V. Sharma, A. Chaturvedi. BENZIMIDAZO[2,1-A]ISOQUINOLINE DERIVATIVES AND A SOLVENT-FREE PROCESS THEREOF (Published), 2025. Application No. 202511070662.
5. M. Singh, V. Singh, A. Chaturvedi, V. Sharma. BIPHENYLACETYLENE-TETHERED PROPARGYLAMINE COMPOUNDS AND DERIVATIVES THEREOF, AND SOLVENT-FREE SYNTHESIS PROCESS THEREOF (Filed), 2025. Application No. 202511068158.
6. M. Singh, V. Singh, Vaishali. SYNTHESIS OF BETA-CARBOLINE TETHERED IMIDAZOPYRIDO[3,4-B]INDOLES AND DERIVATIVES THEREOF FROM ACETALS (Published), 2025. Application No. 202511005412.
7. M. Singh, V. Singh, A. Chaturvedi, V. Sharma. TRANSITION METAL-FREE EFFICIENT SYNTHESIS OF BIS(INDOLYL)PROPYNES (BIPS) AND DERIVATIVES THEREOF (Published), 2024. Application No. 202411085304.
8. M. Singh, V. Singh. IMIDAZOPYRIDO[3,4-B]INDOLE-BASED FLUOROPHORES AND ONE-POT METAL-FREE SYNTHESIS THEREOF (Published), 2024. Application No. 202311086018.

## SYMPOSIUMS AND CONFERENCES

1. Invited lecture entitled “How to design research proposal for govt funding” 10 January 2026 Baba Faid college of education Bathinda
2. Presented paper “Metal-Free Cascade C–S Bond Formation: An Effective Strategies for the Synthesis of Sulfur-Embedded Valuable Molecular Scaffolds”; Translational Trends in Natural and Health Sciences (TTNHS-2024), 4th to 6th December 2025, Central University of Punjab, Bathinda.
3. Invited lecture entitled Setting SMART Project Goals & Designing Work Plans 2nd August 2025 BSSS-Institute of Advanced Studies, Bhopal
4. Presented paper “Efficient synthesis of 2-aryl benzothiazole”, 7–9 Feb 2022, 25th Punjab Science Congress on Future Endeavours of Science and Technology for Sustainable Growth, organized by Department of Chemistry, Sri Guru Teg Bahadur Khalsa College, Sri Anandpur Sahib, Rupnagar, Punjab
5. Presented paper. “Synthesis of Therapeutically Potential  $\beta$ -Carboline Based Molecular Architectures and Estimation of their Optical Properties”, 31 Oct 2020 to 1 Nov 2020, J-NOST 2020 (Junior-National Organic Symposium Trust), first virtual J-NOST online platform at ISC Bangalore
6. Presented paper. “Catalyst-free and Metal-free Approach towards Synthesis of Amide- and Thioamide-Linked  $\beta$ -Carboline-Pyridine Conjugates and Estimation of Their Photophysical Properties”, 6–7 March 2020, National Conference Science & Technology for a Sustainable Future at D.A.V. College, Jalandhar
7. Presented paper. “I<sub>2</sub>-Mediated Expeditious Synthesis of Highly Fluorescent  $\beta$ -Carboline C-1(3) Tethered Benzothiazole Derivatives and Assessment of their Photophysical Properties”, 12–13 Oct 2019, International Conference Chemical Constellation Cheminar-2019 at Dr. B. R. Ambedkar NIT Jalandhar
8. Presented paper. “Metal-Free Approach towards Expeditious Synthesis of  $\beta$ -Carboline C-1 Tethered Benzothiazoles Derivatives of Therapeutic Importance”, 18 April 2019, National Conference at Sant Baba Bhag Singh University, Jalandhar, Punjab
9. Presented paper. “I<sub>2</sub>-Mediated Expeditious synthesis of  $\beta$ -Carboline C-1 Tethered Benzothiazoles Derivatives and Assessment of their Fluorescence Properties”, 4–5 Nov 2018, National Conference Tech Niti at Dr. B. R. Ambedkar NIT Jalandhar
10. Presented paper. “Metal-free approach towards regioselective synthesis of  $\beta$ -carboline C-1 tethered 2,3,4-trisubstituted 1H-dihydropyrroles & Pyrroles”, 5–6 Oct 2018, International Multi-track Conference on Sciences, Engineering & Technical Innovation (IMTC-2018), CT Institute of Engineering, Management and Technology, Jalandhar, Punjab
11. Presented paper. “I<sub>2</sub>-Mediated Expeditious synthesis of  $\beta$ -Carboline C-1 Tethered Benzothiazoles Derivatives”, 8–9 Sept 2018, International Conference on Science: Emerging Scenario & Future Challenges at National Institute of Technology Hamirpur, Himachal Pradesh
12. Presented paper. “Transition-Metal-Free Approach towards Expeditious Synthesis of  $\beta$ -Carboline C-1 Tethered Benzothiazoles Derivatives of Therapeutic Importance”, 17–18 Nov 2017, 12th National Conference on Organics, Metallorganics and

Thermodynamics under the auspices of the Indian Thermodynamics Society, organized by Department of Chemistry, Guru Jambheshwar University of Science and Technology, Hisar, Haryana

## INSTRUMENT TRAINING

- UV-Visible spectrophotometer – Hands-on training for the UV-vis spectrometer equipped with solid state assembly attachment (UV-2600, Shimadzu) with 5 years' experience.
- HRMS (High resolution mass spectrometry) – Hands-on training on HRMS (Anton Paar, SAXSess mc2) with 4 years' experience. Well versed with advanced SAXS analysis software (GIFT, DECON, SASfit, ATSAS etc.). Have done experiments on the beamline at KEK, Japan and completed a training program at Central University of Punjab, Bathinda.
- Nuclear Magnetic Resonance (NMR) – Handling NMR instrument (JEOL, Japan) during post-doc studies in South Korea and Taiwan, and completed a training program at Central University of Punjab.
- FT-IR spectrometer – Hands-on training on FT-IR spectrometer (Agilent Technologies, Cary 600 series).

## SHORT-TERM COURSES AND WEBINARS ATTENDED

- Participated in 5 days (14–18 Sep 2020) online Short Term Training Programme on Chemistry for Engineering Applications organized by Department of Chemistry, NIT Jalandhar, Punjab.
- Participated in 5 days (20–24 Dec 2020) Short Term Course on Future Perspectives of Research in Chemical Science and Technology organized by Department of Chemistry, NIT Jalandhar, Punjab.
- Participated in (15 Oct 2020) online webinar on Basics of Dynamic Light Scattering and its Applications for Nano Particle Size and Zeta Potential Analysis organized by Department of Chemistry, NIT Jalandhar, Punjab.
- Participated in (25 Oct 2020) online webinar on Organic and Analytical Chemistry Applications in Industry organized by Department of Chemistry, NIT Jalandhar, Punjab.

## REFERENCES

Name	Details
<b>Prof. Virender Singh</b>	Department of Chemistry School of Basic and Applied Sciences, Central University of Punjab, Bathinda, Punjab-151001, India E-mail: virender.singh@cup.edu.in, singhvirender010@gmail.com Mobile: +91 9780998060
<b>Prof. Daeyoung Kim</b>	Department of Chemistry, Soonchunhyang University, South Korea E-mail: dyong@sch.ac.kr Mobile: 01099771326
<b>Prof. Duen-Ren Hou</b>	Department of Chemistry National Central University, Taiwan Email: drhou@cc.nce.edu.tw
<b>Dr. Chandi Charan Malakar</b>	Associate Professor (Chemistry) National Institute of Technology Manipur Department of Basic Science and Humanities, Langol, Imphal-795004 E-mail: cmalakar@nitmanipur.ac.in, chdeepm@gmail.com Tel: +91 9862532117
<b>Prof. Dr. Akhilesh Kumar Verma</b>	Department of Chemistry North Campus, University of Delhi, Delhi-110007 Phone No. Office: 91-11-27666646 (Ext.175)

## DECLARATION

I hereby declare that all the information given is true to the best of my knowledge.

*Manpreet Singh*

**Dr. Manpreet Singh**