

Faculty Profile

Brief Profile (Few Paragraphs)



Dr. Sridharan M, research stands out in synthetic organic chemistry, particularly in total synthesis, X-ray crystallography, and heterocyclic chemistry. His work on phenolic compounds, nanomaterials for wastewater treatment, and indole alkaloids places him among researchers exploring both fundamental and applied aspects of organic chemistry. His contributions emphasize:

- Structural investigations of novel organic frameworks, particularly indoloacridines.
- Eco-friendly nanomaterials for environmental applications, aligning with green chemistry principles.
- Regiospecific synthesis of complex heterocycles, advancing biogenetic pathways.
- Computational molecular studies on carbazole derivatives for anticancer applications.

His work is highly interdisciplinary, bridging organic synthesis with materials science and biological applications. Dr.Sridharan M integrates structural analysis and biological relevance, making his research impactful across multiple domains.

Personal Information

- **Name:** Dr Sridharan M
- **Designation:** Assistant Professor-Selection Grade
- **Department:** Chemistry
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- **Phone:** +91-080-68188228

Google Scholar <https://scholar.google.co.in/citations?user=cDR06oQAAAAJ&hl=en>

Domain of Expertise

- Synthetic Organic Chemistry – Heterocyclic Chemistry
- Medicinal/Pharmaceutical Chemistry
- Molecular Modelling Studies / X-ray Crystallography/ Spectroscopy
- Material Science and Nano chemistry

Research Focus

- **Primary Area:** Organic & Medicinal Chemistry

Allied Areas:

- **Computational Chemistry** – Advanced molecular modeling, quantum chemistry, and AI-driven drug discovery.
- **Bioorganic & Biochemical Research** – Exploring organic chemistry applications in enzyme mechanisms, metabolic pathways, and drug metabolism.
- **Photochemistry & Electrochemistry** – Light-driven reactions, organic semiconductors, and electrochemical synthesis.
- **Nanotechnology & Material Engineering** – Functional nanomaterials, molecular electronics, and smart coatings.

Academic Qualifications

- **Ph.D.:** Organic Chemistry, Bharathiar University, April 2009– “*Synthetic Studies on Carbazoles*”
- **M.Sc./M.Tech:** M.Sc., Chemistry, Bharathiar University, May 2003
- **B.E./B.Tech:** B.Sc., Chemistry, Bharathiar University, April 2001
- **Postdoctoral Research:** CSIR–Postdoctoral Research Associate, May 2009–August 2012, Department of Organic Chemistry, Indian Institute of Science, Bangalore-12, India.

Professional Experience:

Publications & Patents

Journal Publications

1. E. Suvarna, A. S. Setlur, K. Chandrashekar, **M. Sridharan** and V. Niranjana, “Computational molecular perspectives on novel carbazole derivative as an anti-cancer molecule against CDK1 of breast and colorectal cancers via gene expression studies,” *Computational Biology and Chemistry*, vol. 108, p. 107979, Feb. 2024.
2. R. Mahesh, K. Vora, M. Hanumanthaiah, A. Shroff, P. Kulkarni, **M. Sridharan**, Ramdas, H. L. Ramachandrai, and A. V. Raghu, “Alumina-based nanomaterials for wastewater treatment,” *Korean Journal of Chemical Engineering*, vol. 40, no. 9, pp. 2035–2045, Sep. 2023.
3. S Rajeshkumar, K. Yadav, **M. Sridharan**, and S. M. Roopan, “Nano silver: an overview of shape, size-controlled synthesis and their antibacterial property,” *High Energy Chemistry*, vol. 57, no. 3, pp. 205–216, Jun. 2023.
4. M Sudeep, Y. V. Rajyaguru, C. K. Rastogi, S. A. MP, **M. Sridharan**, A. Khosla, and C. Manjunatha, “Recent development of nickel-based chalcogenides for hydrogen generation,” *Materials Today: Proceedings*, vol. 73, pp. 316–322, Jan. 2023.
5. S Sarkar, V. Suchithra, **M. Sridharan**, and C. Manjunatha, “Nanobot swarm for targeted elimination of tumor in brain,” *ECS Transactions*, vol. 107, no. 1, p. 2803, Apr. 2022.
6. A.Thiruvalluvar, **M. Sridharan**, K. J. Rajendra Prasad, and M. Zeller, “Synthesis and crystal structure of 1-hydroxy-8-methyl-9H-carbazole-2-carbaldehyde,” *Acta Crystallographica Section E: Crystallographic Communications, Structure Reports*, vol. 77, no. 9, pp. 867–870, Sep. 2021.

7. A.Thiruvalluvar, R. Kusanur, and **M. Sridharan**, "tert-Butyl 3-amino-5-bromo-1H-indazole-1-carboxylate," *IUCrData*, vol. 6, no. 7, p. x210694, Jul. 2021.
8. D. Priya, G. Elango, S. M. Roopan, S. Shanavas, R. Acevedo, M. Golkonda, and **M. Sridharan**, "Abutilon indicum Mediated CuO Nanoparticles: Eco-Approach, Optimum Process of Congo Red Dye Degradation, and Mathematical Model for Multistage Operation," *ChemistrySelect*, vol. 5, no. 28, pp. 8572–8576, Jul. 2020.
9. **M. Sridharan**, Synthetic Utility and Single Crystal X-ray Diffraction Studies of Biologically Active Carbazoles and Indoloacridines," *Proceedings of International Conference on Drug Discovery (ICDD)*, 2020.
10. A.Thiruvalluvar, **M. Sridharan**, K. J. Rajendra Prasad, and M. Zeller, "Crystal structure of (E)-2-(furan-2-ylmethylidene)-2,3,4,9-tetrahydro-1H-carbazol-1-one," *Acta Crystallographica Section E: Crystallographic Communications, Structure Reports*, vol. 74, no. 1, pp. 59–61, Jan. 2018.
11. **M. Sridharan**, K. J. Rajendra Prasad, G. Madhumitha, N. A. Al-Dhabi, and M. V. Arasu, "Application of UV-Vis spectrophotometric process for the assessment of indoloacridines as free radical scavenger," *Journal of Photochemistry and Photobiology B: Biology*, vol. 162, pp. 641–645, Sep. 2016.
12. V. Surendra, S. M. Roopan, M. V. Arasu, N. A. Al-Dhabi, and **M. Sridharan**, "Phenolic compounds in drumstick peel for the evaluation of antibacterial, hemolytic and photocatalytic activities," *Journal of Photochemistry and Photobiology B: Biology*, vol. 161, pp. 463–471, Aug. 2016.
13. K R Prasad, J. E. Nidhiry, and **M. Sridharan**, "Total synthesis of the indole alkaloids Henrycinol A and B," *Tetrahedron*, vol. 70, no. 31, pp. 4611–4616, Aug. 2014.
14. **M. Sridharan**, M. Zeller, and K. J. Rajendra Prasad, "Regiospecific synthesis of Biogenetically Possible Phenylpyrano[2,3-A] carbazolones," *Journal of Chemical Research*, vol. 38, no. 8, pp. 510–513, Aug. 2014.
15. **M. Sridharan**, and K. J. Rajendra Prasad, "Synthetic utility of 2-furylmethylene-2,3,4,9-tetrahydrocarbazol-1-ones: syntheses of pyrazolo, isoxazolo, pyrido and pyrimido annelated carbazoles," *Journal of Chemical Research*, vol. 35, no. 1, pp. 53–59, Jan. 2011.
16. A Srikrishna, **M. Sridharan**, and K. R. Prasad, "Reaction of dialkyl 2-butynoate with aniline and formaldehyde: revision of the structure of the product," *Tetrahedron*, vol. 66, no. 21, pp. 3651–3654, May 2010.

17. E. Yamuna, **M. Sridharan**, K. J. Rajendra Prasad, and M. Zeller, "Structural Investigations on 4-Chloro-6-Phenyl-7,8,9,14-Tetrahydroquinolino [2',3':7,6]cyclohept[b]indoles," *Journal of Chemical Crystallography*, vol. 40, pp. 402–411, May 2010.
18. M. Zeller, **M. Sridharan**, K. J. Rajendra Prasad, and A. Ngendahimana, "1-(1-Hydroxy-9H-carbazol-2-yl)-3-methylbut-2-en-1-one," *Acta Crystallographica Section E: Crystallographic Communications, Structure Reports*, vol. 66, no. 2, pp. o297–o298, Feb. 2010.
19. **M. Sridharan**, K. J. Rajendra Prasad, A. E. Kotheimer, T. R. Wagner, and M. Zeller, "Whole Molecule Disorder in a Solid Solution of Two Indoloacridines," *Journal of Chemical Crystallography*, vol. 39, pp. 804–811, Nov. 2009.
20. **M. Sridharan**, K. J. Rajendra Prasad, and M. Zeller, "9-Chloro-1-methyl-7-phenyl-5,6-dihydro-13H-indolo [3,2-c] acridine," *Acta Crystallographica Section E: Crystallographic Communications, Structure Reports*, vol. 65, no. 5, p. o1064, May 2009.
21. **M. Sridharan**, K. J. Rajendra Prasad, A. T. Gunaseelan, A. Thiruvalluvar, and R. J. Butcher, "4-Methyl-7,8,9,10-tetrahydrocyclohepta [b] indol-6 (5H)-one," *Acta Crystallographica Section E: Crystallographic Communications, Structure Reports*, vol. 65, no. 4, p. o698, Apr. 2009.
22. **M. Sridharan**, K. J. Rajendra Prasad, A. T. Gunaseelan, A. Thiruvalluvar, and R. J. Butcher, "4,8-Dimethylpyrano [2,3-a] carbazol-2 (11H)-one," *Acta Crystallographica Section E: Crystallographic Communications, Structure Reports*, vol. 65, no. 4, p. o830, Apr. 2009.
23. **M. Sridharan**, K. J. Rajendra Prasad, A. Ngendahimana, and M. Zeller, "Structural investigations of novel indoloacridines," *Journal of Chemical Crystallography*, vol. 39, pp. 270–278, Apr. 2009.
24. **M. Sridharan**, L. K. Beagle, M. Zeller, and K. J. Rajendra Prasad, "Syntheses of pyrazolo-, isoxazolo-, pyrido-and pyrimido-carbazoles from 2-(3', 4'-dimethoxybenzylidene)-2,3,4,9-tetrahydrocarbazol-1-ones," *Journal of Chemical Research*, vol. 2008, no. 10, pp. 572–577, Oct. 2008.
25. **M. Sridharan**, K. J. R. Prasad, A. Ngendahimana, and M. Zeller, "2,2-Dimethyl-2,3-dihydropyrano[2,3-a]carbazol-4(11H)-one," *Acta Crystallographica Section E: Crystallographic Communications, Structure Reports*, vol. 64, p. o2155, Nov. 2008.

26. **M. Sridharan**, K. J. Rajendra Prasad, and M. Zeller, "2,2,9-Trimethyl-2,3-dihydropyrano [2,3-a] carbazol-4-(11H)-one," *Acta Crystallographica Section E: Crystallographic Communications, Structure Reports*, vol. 64, no. 11, p. o2156, Nov. 2008.
27. **M. Sridharan**, K. J. R. Prasad, A. Ngendahimana, and M. Zeller, "2,2,10-Trimethyl-2,3-dihydropyrano[2,3-a]carbazol-4(11H)-one," *Acta Crystallographica Section E: Crystallographic Communications, Structure Reports*, vol. 64, no. 11, p. o2157, Nov. 2008.
28. **M. Sridharan**, K. J. Rajendra Prasad, A. T. Gunaseelan, A. Thiruvalluvar, and R. J. Butcher, "7,8,9,10-Tetrahydrocyclohepta [b] indol-6 (5H)-one," *Acta Crystallographica Section E: Crystallographic Communications, Structure Reports*, vol. 64, no. 9, p. o1697, Sep. 2008.
29. **M. Sridharan**, and K. J. R. Prasad, "Syntheses of Substituted Furo- and Pyrano-[2,3-a] carbazoles from 2-Cinnamoyl-1-hydroxycarbazoles," *Zeitschrift für Naturforschung B*, vol. 63, no. 9, pp. 1112–1116, Sep. 2008.
30. **M. Sridharan**, K. J. Rajendra Prasad, A. T. Gunaseelan, A. Thiruvalluvar, and R. J. Butcher, "6-Chloro-3,4-dihydro-9H-carbazol-1 (2H)-one," *Acta Crystallographica Section E: Crystallographic Communications, Structure Reports*, vol. 64, no. 8, p. o1635, Aug. 2008.
31. **M. Sridharan**, K. J. Rajendra Prasad, A. Ngendahimana, and M. Zeller, "7,8,9,10-Tetrahydro-2-methylcyclohepta [b] indol-6 (5H)-one," *Acta Crystallographica Section E: Crystallographic Communications, Structure Reports*, vol. 64, no. 7, p. o1207, Jul. 2008.
32. **M. Sridharan**, K. J. Rajendra Prasad, A. T. Gunaseelan, A. Thiruvalluvar, and A. Linden, "6-Methoxy-2,3,4,9-tetrahydro-1H-carbazol-1-one," *Acta Crystallographica Section E: Crystallographic Communications, Structure Reports*, vol. 64, no. 4, pp. o763–o764, Apr. 2008.
33. **M. Sridharan**, K. J. Rajendra Prasad, and M. Zeller, "2,2,8-Trimethyl-2,3-dihydropyrano [2,3-a] carbazol-4 (11H)-one," *Acta Crystallographica Section E: Crystallographic Communications, Structure Reports*, vol. 63, no. 11, p. o4344, Nov. 2007.
34. **M. Sridharan** and K. J. Rajendra Prasad, "Novel 13H-indolo [3,2-c] acridines and their methyl derivatives," *Journal of Chemical Research*, vol. 2007, no. 3, pp. 164–169, Mar. 2007.

Conference Papers

Presented research findings and attended various national and international conferences, contributing to discussions on advanced topics in chemistry and related fields.

International Conferences- 12

National Conferences-20

Books/Book Chapters

Patents [Filed / Published / Granted]

1. [Patent Title], [Patent No.], [Year].

R & Grants & Consultancy Projects

Ongoing & Completed Consultancy Projects

- New Heterocyclic Drugs For prevention/ treatment of Malaria and Dengue fever”, VGST-TRIP-2012-13, Govt. of Karnataka. (Completed)

Professional Memberships

- Life Member of the Indian Society for Technical Education (ISTE).
- Life Member of the Indian Science Congress Association (ISCA).
- Annual Member of Indian Council of Chemists (ICC).

Awards & Recognitions

- Indian Council of Chemists -ICC Award-2018-NIT Surathkal, Mangalore-575025
- Award of Excellence- ICT top Performer “Use of ICT in Education for Online & Blended Learning”-2016 by IIT Bombay. Mumbai.

Student Supervision

- Ph.D. Candidates: -
- M.Tech/M.Sc. Students: 30
- Undergraduate Research Mentees: 20

Professional Roles

- **Mentor- AICTE Approved** -Pedagogy for online and Blended Teaching- Learning Process, 2017 by IIT Bombay under PMMMNMTT, MHRD, GoI.
- **Mentor- AICTE Approved**- Foundation Program in ICT for Education, 2017 by IIT Bombay under PMMMNMTT, MHRD, GoI.

Teaching

Core Courses: First Year Courses

Chemistry of Functional Materials (CM221IB)

Chemistry of Smart Materials and Device (CM211IA)

Engineering Chemistry (18CH12/22) & (21CH12/22)

Second Year Course for Chemical Engineering:

Technical Chemistry (18CH33)

7th Semester- Global / Institutional Electives

Chemistry of Materials and Molecular Analysis.

Materials for Advanced Technology and Spectroscopic Characterization.

Engineering Materials for Advanced Technology.

Advanced/Lab Courses:

- Engineering Chemistry Lab, Technical Chemistry Lab,

Responsibilities

- **Academic:** Chief Coordinator -Exam Section, SAP Coordinator, Sports Coordinator
- **Administrative:** Students Induction Programs & Controller of Examinations

External Connect

- **Member of BoS / BoE** – K.S. Institute of Technology (KSIT), Raghuvanahalli, Kanakapura Main Road, Bengaluru-560 109.
- **Molecular Reproduction and Development Genetics (MRDG), Indian Institute of Science (IISc), Bangalore, India** – Engaged in interdisciplinary collaborations focusing on molecular genetics and structural studies.
- **Professor M. Zeller, Department of Chemistry, Purdue University, West Lafayette, Indiana, USA** – Joint research efforts in advanced X-ray crystallography and structural elucidation of complex organic frameworks.
- **Professor R.J. Butcher, Department of Chemistry, Howard University, Washington, D.C., USA** – Partnership in crystallographic investigations, specializing in precision structural characterization of heterocyclic compounds.

- **Professor A. Linden, Institute of Organic Chemistry, University of Zurich, Zurich, Switzerland** – Collaborations in high-resolution X-ray crystallographic studies, emphasizing molecular geometry and supramolecular interactions.

Participated in the "National E-Panel Discussion Series - Unlocking Higher Education: Digital Transformation," organized by DAV Institute of Management, Faridabad, from July 16 to July 18, 2020. approved by AICTE and affiliated with M.D. University, Rohtak. Certificate ID: J5QNWCC-CE000121.

Participated in the virtual scientific event "Webinar on Frontiers in Organic Electronics," organized by the Department of Chemistry at the National Institute of Technology, Rourkela, Odisha, from June 29 to July 3, 2020.