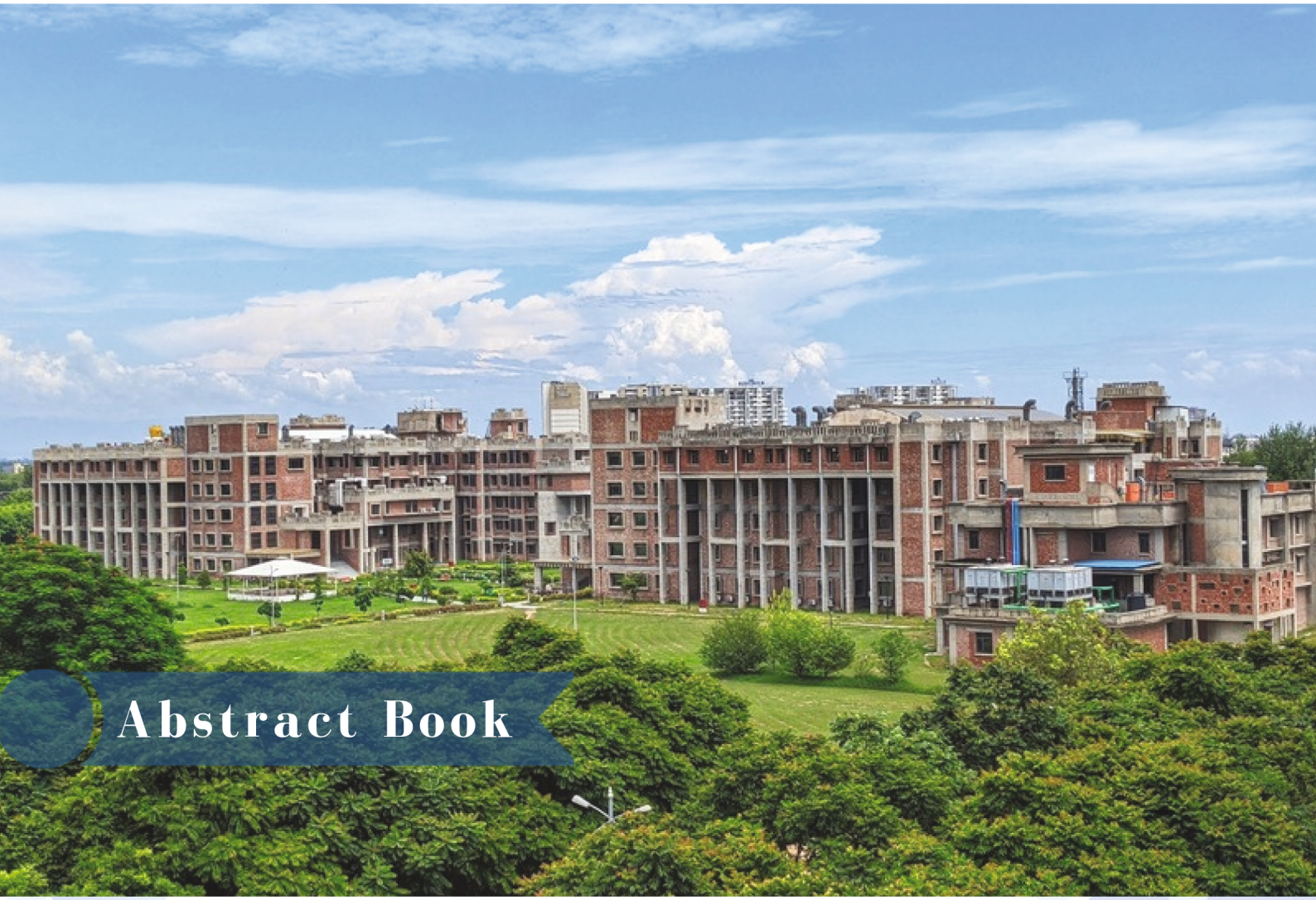
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2ND NOST-ECR Symposium 2026

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OCTOBER 15–17, 2026



Abstract Book

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Program Schedule

Invited Lectures (IL): 13 |Special Lectures (SL): 04 | Flash Talks (FT): 05

***Day 1:* 15 October 2026 | Thursday** Day-1 Coordinator: Prof. Vishal Rai	
13:00 – 14:15	Arrival, Lunch and Registration at LHC
14:15 – 15:15	Department and Instrument Facility Visits
TEA/COFFEE BREAK (15:30 – 16:00)	
Inaugural Session (16:00 - 16:20)	
16:00 – 16:20	Welcome Remarks by the Convener, NOST-ECR [2 min]
	Remarks by Prof. Krishna P. Kaliappan (Chair, NOST Council) [5 min]
	Remarks by Prof. Ganesh Pandey (Chair, NOST) [5 min]
	Overview of NOST-ECR by Prof. S. Chandrasekaran (Trustee, NOST) [5 min]
Technical Session 1 (16:20 - 18:15) Chairperson: Prof. Diwan S. Rawat	
16:20 – 16:45 (13 + 12)	**IL1**: Dr. Sanhita Sinharay, IISc Bangalore
16:50 – 17:15 (13 + 12)	**IL2**: Dr. Ramkrishna Sarkar, IIT Kanpur
17:20 – 17:45 (13 + 12)	**IL3**: Dr. Biswarup Jash, IIT Kharagpur
17:50 – 18:15 (13 + 12)	**IL4**: Dr. Nazar Hussain, BHU Varanasi
10 min Break	
Technical Session 2 (18:25 – 19:05) Chairperson: Dr. Aparna Ganguly	
18:25 – 19:05 (25 + 15)	**SL1**: Prof. Uday Maitra, IISc Bangalore
Departure to the Dinner Venue and Dinner (19:05 – 22:00)	
***Day 2:* 16 October 2026 | Friday** Day-2 Coordinator: Prof. Akhila K. Sahoo	
Technical Session 3 (09:30 – 11:10) Chairperson: Prof. J. K. Bera	
09:30 – 09:55 (13 + 12)	**IL5**: Dr. Vinaykumar Kanchupalli, University of Hyderabad
10:00 – 10:25 (13 + 12)	**IL6**: Dr. Amit Kumar Simlandy, IISER Berhampur
10:30 – 11:10 (25 + 15)	**SL2**: Prof. Praveen K. Vemula, InStem Bangalore
GROUP PHOTO **TEA/COFFEE BREAK** (11:10 – 11:45)	
Technical Session 4 (11:45 – 13:10) Chairperson: Prof. R. Vijaya Anand	
11:45 – 12:10 (13 + 12)	**IL7**: Dr. L. Ravithej Singh, CSIR-IICT Hyderabad
12:15 – 12:40 (13 + 12)	**IL8**: Dr. Supriya Rej, IIT Dharwad
12:45 – 13:10 (13 + 12)	**IL9**: Dr. Rajendra Kumar Konidena, IIT Patna
LUNCH (13:10 – 14:10)	

Poster Session with Tea/Coffee (14:10 – 15:40) Coordinator: Dr. Sugumar Venkataramani	
Technical Session 5 (15:40 – 17:50) Chairperson: Dr. D. Srinivasa Reddy	
15:40 – 16:05 (13 + 12)	**IL10**: Dr. Abhishek Dewanji, IIT Mandi
16:10 – 16:35 (13 + 12)	**IL11**: Dr. Naga Rajiv Lakkaniga, IIT (ISM) Dhanbad
16:40 – 17:05 (13 + 12)	**IL12**: Dr. Ravindra S. Phatake, CSIR-IIIM Jammu
17:10 – 17:50 (25 + 15)	**SL3**: Prof. Raghavan B. Sunoj, IIT Bombay
10 Min Break	
Panel Discussion (18:00 – 18:50) **Topic:** Balancing Research, Teaching, and Institutional Responsibilities **Panelists**: Prof. S. Chandrasekaran, Prof. Ganesh Pandey, Prof. Anindya Datta, Prof. Diwan S. Rawat, Dr. D. Srinivasa Reddy **Moderator**: Prof. Krishna P. Kaliappan	
Departure to the Dinner Venue and Dinner (19:00 – 22:00)	
***Day 3:* 17 October 2026 | Saturday** Day-3 Coordinator: Dr. Namrata Rastogi	
Technical Session 6 (09:30 – 10:40) Chairperson: Dr. Ajay Jha	
09:30 – 09:55 (13 + 12)	**IL13**: Dr. Srimanta Manna, NIPER Mohali
10:00 – 10:40 (25 + 15)	**SL4**: Dr. Mandar Bodas, Elsevier India
TEA/COFFEE BREAK (10:40 – 11:10)	
Technical Session 7 (11:10 – 12:00) Chairperson: Prof. S. A. Babu	
11:10 – 11:20 (7 + 3)	**FT1**: shortlisted poster presenter 1
11:20 – 11:30 (7 + 3)	**FT2**: shortlisted poster presenter 2
11:30 – 11:40 (7 + 3)	**FT3**: shortlisted poster presenter 3
11:40 – 11:50 (7 + 3)	**FT4**: shortlisted poster presenter 4
11:50 – 12:00 (7 +3)	**FT5**: shortlisted poster presenter 5
Panel Discussion (12:05 – 12:55) **Topic**: Building Collaborations Within and Beyond the Organization **Panelists**: Prof. Vinod K. Singh, Prof. J. S. Yadav, Prof. Vishal Rai, Prof. Praveen K. Vemula, Dr. Mandar Bodas **Moderator**: Prof. J. K. Bera	
CLOSING SESSION (12:55 – 13:05) Coordinator: Prof. Krishna P. Kaliappan	
12:55 – 13:05 (10 + 0)	Feedback and closing remarks
LUNCH & DEPARTURE (13:10 onwards)	

Invited Lectures

Biosketch

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Sanhita completed her Bachelors from Jadavpur University and Masters in Chemistry from IIT Madras, India. She completed her PhD from University of Arizona, Tucson where she worked on enzyme-activatable MRI contrast agent development and translation. She then joined National Institutes of Health, NIH, Clinical Center, Maryland, for her postdoctoral studies, where her research focused on neuroimaging in infectious diseases. She was a research instructor at MD Anderson Cancer Center in Houston, Texas, prior to joining IISc as an assistant professor in March 2021 in the Department of Bioengineering, where she leads the Molecular Imaging Research laboratory. She is the recipient of Mazumdar-Shaw Young Investigator in Bioengineering, and DBT Har Gobind Khorana Innovative Young Biotechnologist Award.

IL1

Small-Molecule Zinc-Phthalocyanine Optoacoustic Agents -radiation-free metabolic imaging of peritoneal metastasis and a path to phototheranostics

Sanhita Sinharay
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Abstract

Detecting cancer where it is most difficult to see, such as disseminated across the peritoneum or buried in deep-seated, treatment-resistant tissue, remains a central challenge for molecular imaging. The clinical mainstay for visualizing metabolically active tumors, ^{18}F-FDG PET, delivers ionizing radiation, depends on costly radiopharmacy infrastructure, and resolves millimeter-scale disease poorly, and these constraints are especially limiting in resource-constrained settings.

This seminar presents small-molecule optoacoustic (photoacoustic) probes built on a zinc-phthalocyanine (ZnPc) scaffold as a versatile platform that aims to respond to that problem. I will focus on Glucose-Phthalocyanine (GPc), a first-of-its-kind, water-soluble, tetra-glucose-conjugated ZnPc that reports tumor glucose avidity, a radiation-free counterpart to FDG for imaging superficial tumors within a 5 cm depth. As a demanding test case, the presentation will focus on how GPc, imaged by multispectral optoacoustic tomography (MSOT), detects and longitudinally tracks peritoneal metastases in an intraperitoneal OVCAR-8 and OVCAR-3 ovarian cancer model, matched with the gross pathology and histology data.

I will then extend the platform from diagnosis to therapy: asymmetric ZnPc constructs that couple deep-tissue optoacoustic imaging with NIR-activated, ROS-generating photodynamic therapy, which we demonstrated in a pancreatic cancer model. Together, these results position the zinc-phthalocyanine scaffold as a single chemistry for translational imaging.

Biosketch

Dr. Ramkrishna Sarkar

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Dr. Ramkrishna Sarkar is an Assistant Professor in the Department of Chemistry at the Indian Institute of Technology Kanpur, India. He received his M.Sc. in Chemistry from the Indian Institute of Science (IISc), Bangalore, in 2014 and his Ph.D. in Polymer Science from the Department of Inorganic and Physical Chemistry at IISc in 2019, under the supervision of Prof. S. Ramakrishnan. He subsequently joined Prof. Anja Palmans's group at Eindhoven University of Technology in the Netherlands for his postdoctoral research. The Sarkar group's research broadly lies at the intersection of polymer chemistry, molecular design, and sustainability. His group is interested in understanding how molecular-level control of polymer chemistry can be used to develop high-performance, recyclable, and reusable polymeric materials. The group's current research focuses on recyclable thermosets, (closed-loop) chemical recycling of polymers, upcycling of polymer waste, and sustainable polymer materials that combine performance, durability, and circularity.

IL2

Designing dynamic chemistries for the (closed-loop) recycling of thermoset polymers

Dr. Ramkrishna Sarkar

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Abstract: The inherent non-recyclability of thermoset polymers, a major sustainability barrier, can be addressed by incorporating dynamic covalent linkages, resulting in polymers known as covalent adaptable networks (**CANs**). However, the dynamic linkages that enable recyclability often compromise the thermal and mechanical robustness of these polymers. Designing dynamic chemistries that impart both robustness and dynamicity to the resulting **CANs** is a key challenge.

To this end, we recently introduced benzyl ether-based transetherification as a robust and dynamic chemistry for the design of **CANs** and demonstrated the reprocessing of the thermoset-like polymer (**Fig. 1**).[1] Subsequently, the closed-loop recyclability of these robust, thermoset-like, ether-based crosslinked polymers was demonstrated.[2] Most recently, we have designed another robust and dynamic chemistry, benzyl thioether-based trasthioetherification, to construct the **CANs**.[3] The two chemistries that we have introduced were integrated to design diverse recyclable thermosets while addressing key challenges in the literature.[4-6]

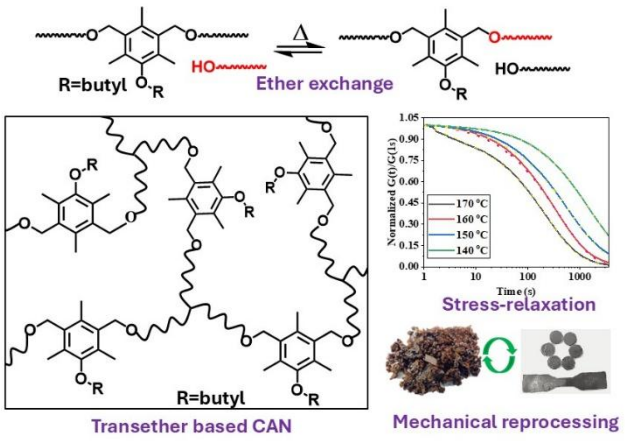


Fig. 1: Schematic illustrations of dynamic ether exchange (top), the transether-based **CAN** (left), and the resulting dynamic properties (right).

In my talk, I will primarily focus on the molecular design strategy, with an emphasis on the dynamicity and recyclability of these crosslinked polymers.

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[6] Gupta, V.; Sarkar, R. *ACS Appl. Mater. Interfaces* **2026**, *18*, 41566–41580.

Biosketch

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Our research is inspired by the structural and functional sophistication of natural biochemical machinery, guiding us to pursue both fundamental and translational directions in chemistry. On the fundamental front, we investigate the molecular origins of life, seeking plausible prebiotic reactions that could have driven the transition from simple chemical systems to the complexity characteristic of extant biology. Given their ubiquitous role in extant biochemistry, we examine how Earth-abundant metal ions orchestrate critical transformations, such as facilitating metabolite transformations, promoting oligonucleotide formation, and enabling amino acid synthesis under prebiotic conditions. Complementing these fundamental studies, we explore diverse aspects of nucleic-acid chemistry. This includes the design of synthetic molecules that selectively recognize guanine quadruplex (G-quadruplex) conformations with high specificity, aiming to overcome current therapeutic limitations. We also apply principles of synthetic nucleic acid chemistry to develop functional nucleic acid-based molecules with potential biomedical applications. Achieving these goals requires an interdisciplinary framework at the interface of synthetic organic chemistry, coordination chemistry, and chemical biology.

IL3

Metal Ions and Chemical Evolution: Unveiling Their Role in the Emergence of Life

Dr. Biswarup Jash
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Abstract

In origin-of-life research, scientists explore how unguided natural processes could have spontaneously organized to generate the first living systems from non-living precursors. It is widely accepted that emergence of life must have been preceded by a series of 'chemical evolution'[1]. Given the essential roles of metal ions in modern biology, it is reasonable to propose that they also played a significant role throughout biochemical evolution (Fig. 1)[2]. In our experimental setup, we demonstrated that metal ions play a crucial role in promoting the regiospecific formation of 2′,3′-cyclic ribonucleotides, which are often considered as one of the competent components in RNA chain growth. By adding Ni^{2+} or Co^{2+} to a condensation mixture comprising ribonucleoside, and exposing it to wet-dry cycles, we observed a four-fold increase in the formation of 2′,3′-cyclic ribonucleotide compared to assay without metal ions[3]. On the other hand, understanding the transition from simple organic molecules to a functional, energy-dissipating primordial metabolic network is a major challenge in origin of life research. While the formation of early metabolites is already reported, the mechanism by which these networks could have performed oxidation reaction, without the aid of enzymes in the plausible prebiotic condition remains an open question. We addressed this gap by demonstrating that a simple, two-component system-Cu^{2+}/ethanedithiol can direct oxidation reactions in water at elevated temperature. This non-enzymatic reaction successfully mediates the oxidation-mediated interconversion and concomitant breakdown of several prebiotically relevant metabolites[4]. Our findings shed light on primordial metabolic evolution by showing how degradation of early organic molecules could have driven the development of expanded chemical networks.

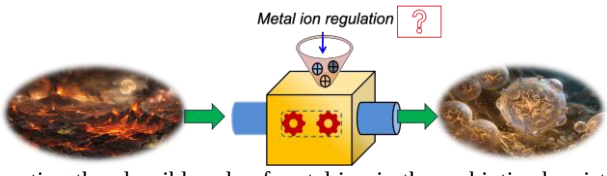


Fig. 1: Concept diagram representing the plausible role of metal ion in the prebiotic chemistry leading to the emergence of life.

Keywords: Origin of life, Prebiotic chemistry, Metal ion, RNA, Metabolites

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Biosketch

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Dr. Nazar Hussain is an Assistant Professor in the Department of Medicinal Chemistry, Institute of Medical Sciences, Banaras Hindu University (BHU), Varanasi. He obtained his B.Sc. and M.Sc. degrees in Chemistry from the University of Jammu and completed his Ph.D. in Chemical Sciences from the Academy of Scientific and Innovative Research (AcSIR) in 2019 under the supervision of Dr. Debaraj Mukherjee at CSIR-Indian Institute of Integrative Medicine, Jammu. His doctoral research focused on the development of new methodologies for C–C bond formation in sugar enol ethers and their application in the synthesis of chiral building blocks.

Following his Ph.D., Dr. Hussain worked as a Postdoctoral Research Associate at the Institut National de la Recherche Scientifique (INRS), Canada, where he further developed his expertise in synthetic organic and medicinal chemistry. His research interests primarily encompass synthetic carbohydrate chemistry, glycal functionalization, C-glycosides, deoxy sugars, stereoselective synthesis, and carbohydrate-based medicinal chemistry. His research program aims to develop efficient and stereoselective synthetic methodologies for accessing structurally diverse carbohydrate derivatives and exploring their applications in medicinal chemistry.

Short-term goals include developing greener catalytic methods, expanding carbohydrate-based molecular libraries, and evaluating their biological potential. Long-term goals are to establish an interdisciplinary research program integrating synthetic chemistry, catalysis, computational chemistry, and medicinal chemistry for the discovery of novel carbohydrate-derived therapeutic candidates.

IL4

Glycals in Modern Organic Synthesis: Site- and Stereoselective Transformations and Applications

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Glycals are versatile carbohydrate-derived building blocks that have emerged as powerful synthons for the stereoselective synthesis of structurally diverse and biologically relevant molecules.[1] Their unique enol ether functionality, coupled with the inherent chirality of the carbohydrate framework, enables selective functionalization at multiple positions. Our recent research efforts have focused on developing efficient and stereoselective synthetic strategies using glycals, with particular emphasis on the synthesis of C-glycosides, deoxy sugars and glycosides, site-selective functionalization, and annulated carbohydrate architectures.[1] During these investigations, we have explored transition-metal-catalyzed, Lewis acid-mediated, and metal-free approaches for the regio- and stereoselective functionalization of glycals. Palladium-catalyzed enol ether coupling has provided efficient access to C2-branched carbohydrates and C-glycosides, while Lewis acid-mediated annulation of glycal derivatives has enabled the construction of conformationally constrained carbohydrate frameworks. We have also investigated site-selective glycal activation using inexpensive and readily accessible promoters, providing streamlined approaches to 2-deoxy and C1/C3-functionalized carbohydrate derivatives. Collectively, these methodologies provide efficient access to diverse and structurally complex carbohydrate scaffolds with potential applications in synthetic and medicinal chemistry (Figure 1).

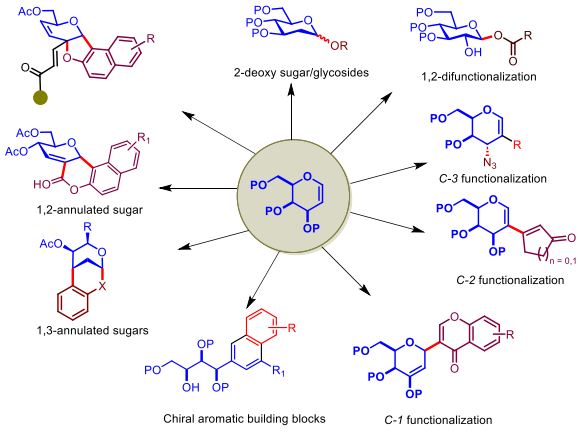


Figure 1. Glycals Diversifications

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BioSketch



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Dr. Vinay Kumar Kanchupalli was born and raised in Andhra Pradesh, India. He received his B.Sc. and M.Sc. degrees in Organic Chemistry from Andhra University, followed by a Ph.D. from the Indian Institute of Science Education and Research (IISER) Bhopal under the supervision of Dr. Sreenivas Katukojvala. His doctoral research focused on the design and synthesis of diverse enalcarbenoids and their synthetic applications. Further, Dr. Kanchupalli pursued postdoctoral research at Loyola University Chicago, USA, and the Indian Institute of Technology Bombay.

In 2019, he began his independent academic career at NIPER Hyderabad as a DST-INSPIRE Faculty Fellow and subsequently served as a SERB Research Scientist. In 2024, he joined the School of Chemistry, University of Hyderabad, as an Assistant Professor. His research interests broadly encompass the development of transition-metal- and photocatalytic synthetic methodologies, with a particular focus on C–H functionalization, annulation reactions, and the synthesis of structurally complex molecules, including biologically relevant molecular scaffolds and natural products.

Notable awards:

- M.Sc. (Organic Chemistry), Gold Medal for the Best Outgoing Student-2009.
- DST Inspire Faculty Award 2019-23.
- SERB Research Scientist (SERB-SRS) 2024-25.
- OPPI Young Scientist Award for the year-2023.
- Thieme Chemistry Journals Award-2025.

IL5

Directing-Group Migration: A Versatile Strategy for Cascade Annulation and Molecular Complexity

Dr. Vinaykumar Kanchupalli
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Abstract: Directing groups have emerged as powerful tools for controlling the reactivity and selectivity of transition-metal-catalyzed transformations.[1] In our research, we have explored an unconventional facet of directing-group chemistry in which the directing group is not merely a spectator or a transient coordination element, but actively participates in the reaction through directing-group migration.[2] This strategy provides new opportunities for reorganizing molecular frameworks and enabling otherwise challenging cascade transformations.

In this presentation, our recent advances in directing-group migration-enabled catalytic cascade reactions will be highlighted. These methodologies employ transition-metal catalysis to promote sequential bond-forming events, including annulation, dearomatization, spiroannulation, and skeletal reorganization, providing efficient access to structurally diverse and highly functionalized heterocyclic architectures (**Fig. 1**).[3] In particular, directing-group migration offers a unique pathway for controlling regioselectivity and generating molecular complexity through multiple transformations in a single operation. Overall, these studies demonstrate that directing-group migration is more than a mechanistic phenomenon, highlighting its potential as a versatile strategy for the efficient synthesis of complex molecular architectures.

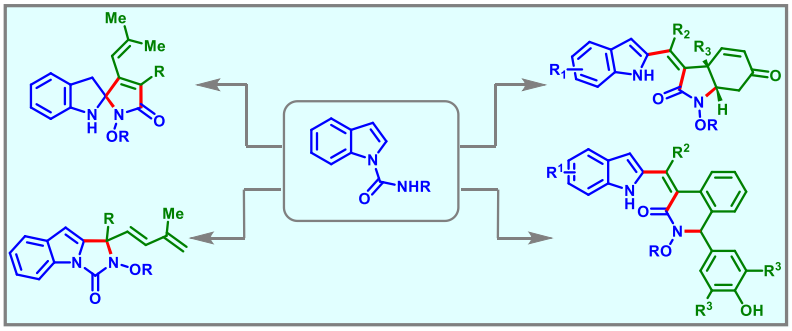


Fig. 1. Synthesis of diverse heterocycles via TM-catalyzed directing-group migration strategies

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Biosketch

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Amit completed his B.Sc. and M.Sc. degrees in chemistry from Visva-Bharati University. Amit earned his doctoral degree in 2018 under the supervision of Prof. Santanu Mukherjee from the Indian Institute of Science (IISc), Bangalore, where he focused on developing enantioselective transformations. During his stays in Prof. M. Kevin Brown's lab at Indiana University and in Prof. Keary M. Engle's lab at The Scripps Research Institute, CA, as a Postdoctoral fellow, he developed several olefin functionalization reactions using transition metal catalysts. After completing five years of postdoctoral studies in the US, Amit joined the Department of Chemical Sciences at IISER Berhampur as an Assistant Professor.

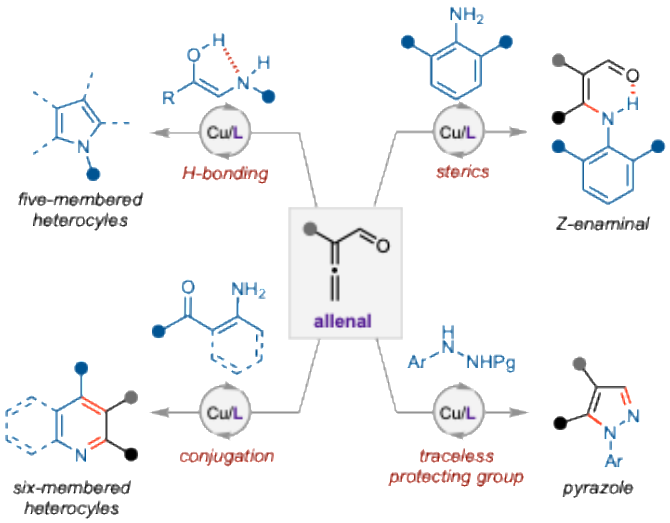
Investigating the unconventional reactivity patterns of readily available substrates is crucial in synthetic organic chemistry, as it helps bridge existing knowledge gaps in the field. His group is currently exploring the underexploited allenal reactivity of cyclic propargylic carbonates to synthesize medicinally important nitrogenous heterocycles. They are also working on the transition metal-catalyzed atropselective synthesis of valuable axially chiral molecules. Additionally, they are developing new protocols for the stereoselective synthesis of 1,2- and 1,3-stereocenters via innovative synergistic catalysis.

IL6

Strategies to Harness Allenal Reactivity: A Modular Approach to Nitrogenous Heterocycles

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Nitrogenous heterocycles are ubiquitous in natural products, pharmaceuticals, and agrochemicals. Over the years, chemists have developed a range of synthetic strategies to access these valuable structural motifs. In our recent studies, we have envisioned a new retrosynthetic disconnection that leverages an allenal as a coupling partner. The allenal has been largely overlooked due to its instability and limited availability. We have introduced a copper-catalyzed protocol to readily access allenal from propargyl cyclic carbonates and to synthesize diverse nitrogenous heterocycles. In general, propargyl carbonate generates highly electrophilic Cu-allenylidene species that can be efficiently intercepted by nucleophiles to yield propargylated products[1]. Interestingly, when a weak nucleophile is introduced, the allenylidene can rearrange to form an allenal *in situ*. We have utilized diverse strategies, such as hydrogen-bonding[2], steric effects[3], and traceless protection-group approaches[4], to modulate the nucleophilicity of amine derivatives and engage them directly with the allenal intermediate, paving the way for chemo- and regioselective synthesis of substituted five- and six-membered[5] heterocycles.



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Dr. Ravithej Singh earned his doctoral degree from Jawaharlal Nehru University, New Delhi, for the research conducted at CSIR-Central Drug Research Institute, Lucknow. He was awarded the CSIR-CDRI Incentive Award for his excellent research work. Dr. Singh's academic foundation lies in Medicinal Chemistry and Drug Discovery, which served as the cornerstone for both his doctoral research training in India and subsequent international postdoctoral research at the University of Maryland School of Medicine, USA. Some of his synthesized G-protein-coupled receptor antagonists have shown therapeutic potential and have been filed for a US patent for further development.

In 2019, Dr. Singh was appointed as a Scientist in the Fluoro-Agrochemicals Division at CSIR-IICT and was promoted to Senior Scientist in 2023. His current research aims to bridge academic synthesis with industry scale-up. His research in fluorochemistry resulted in a patented cost-competitive indigenous process for commercially and strategically important spatiality chemicals such as CFC-113a, CFC-133a, HFC-32, HFC-23, HFO-1243zf, HFO-1234yf, and HFO-1336mzz(*E*). Some of these technologies are licensed to industries in alignment with the GoI's initiatives, such as Make in India and Self-Reliant India. Apart from translation research, his group focuses on exploratory research towards the development of trifluoromethylation and difluoromethylation methodologies with improved sustainability metrics.

Currently, Dr. Singh leads the Facility Creation Project for Fluorochemicals, funded by CSIR, New Delhi, to establish a state-of-the-art laboratory at the CSIR-Indian Institute of Chemical Technology (CSIR-IICT), Hyderabad, to strengthen indigenous fluorochemicals research in India.

IL7

Bracing the Paradigm Shift Towards Hydrofluoroolefins in Fluorochemicals Research

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Abstract

Escalating efforts to limit Greenhouse Gas (GHG) emissions around the globe are resulting in growing pressure on the use of Hydrofluorocarbons (HFCs) and motivating a search for HFCs replacements with lower global warming potentials (GWPs). Hydrofluoroolefins are a new generation of fluorochemicals with zero ozone depletion potential (ODP) and very low GWP with very short atmospheric lifetime when compared to HFCs, therefore, they have become a substitute for HFCs. The process technology for HFOs is not available in the country, and the development of indigenous and internationally competent technology for HFOs, using indigenously available feedstock chemicals and developing non-infringing processes, is needed to meet the global environmental protection agreements.

By adhering to the country's commitment under the Montreal Protocol, the Fluorochemicals Laboratory, the only facility in the government sector at CSIR-Indian Institute of Chemical Technology (IICT), initiated work to develop process technology for next-generation fluorochemicals, HFOs. This effort was supported by the Ministry of Environment, Forest and Climate Change, the Department of Science and Technology (DST, New Delhi), and the Council of Scientific and Industrial Research (CSIR, New Delhi).

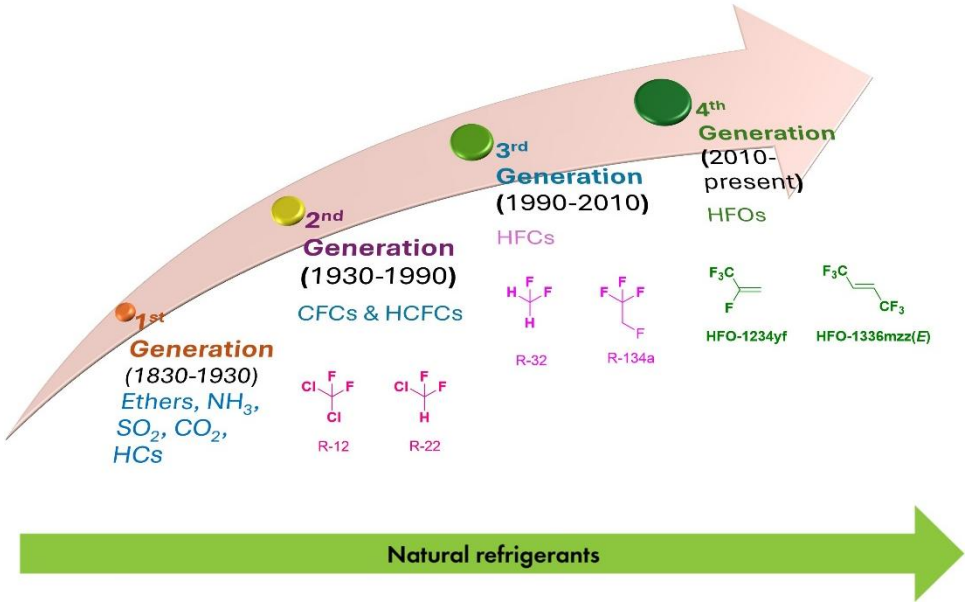


Figure. The development of synthetic fluorochemicals over the generations

Biosketch



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Dr. Supriya Rej earned his Ph.D. from Osaka University, Japan, under the supervision of Prof. Kazushi Mashima, specializing in organic synthesis and catalysis. Afterward, Dr. Rej joined Prof. Naoto Chatani's research group as a postdoctoral research associate and was awarded the prestigious JSPS Postdoctoral Fellowship in 2019. In 2020, Dr. Rej was appointed as Specially Appointed Assistant Professor at Osaka University. Further international recognition came with the Alexander von Humboldt Postdoctoral Fellowship, which led to research at TU Berlin from 2021 to 2023 with Prof. Martin Oestreich. After brief academic appointments at Christ University and CBMR Lucknow, Dr. Rej is currently serving as a Ramanujan Faculty at IIT Dharwad.

Dr. Rej has been the recipient of several distinguished fellowships, including JICA, JSPS, Humboldt, ICIQ-BdP, and Ramanujan Faculty fellowships. Research contributions include over 35 peer-reviewed publications, three book chapters, and one edited book, with broad interests spanning catalysis, organometallic chemistry, and sustainable organic synthesis.

IL8

Enabling Surrogate Chemistry in Organic Synthesis

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Surrogate chemistry has emerged as a powerful strategy for overcoming the limitations of unstable, hazardous, or otherwise impractical reagents by employing bench-stable precursors that generate the desired reactive species *in situ* under controlled conditions. Beyond reagent replacement, the concept can also enable the functionalization of otherwise unreactive molecules by converting them into chemically accessible surrogate forms that mimic the reactivity of the native substrate. This approach offers advantages in terms of safety, operational simplicity, and synthetic versatility. Ethylene, for example, is the world's most widely produced petrochemical feedstock, with annual production exceeding 223 million tonnes; however, its low intrinsic reactivity and gaseous nature pose significant challenges for direct and selective functionalization, often necessitating high-pressure conditions. We recently demonstrated that readily handled vinylsilanes can serve as bench-stable surrogates for ethylene, enabling its synthetic utility under more practical conditions. Similarly, quinone monoacetals and quinone imine ketals have emerged as valuable surrogates for otherwise unreactive substrates, providing synthetic equivalents of benzoquinones and aniline derivatives, respectively, for diverse functionalization reactions

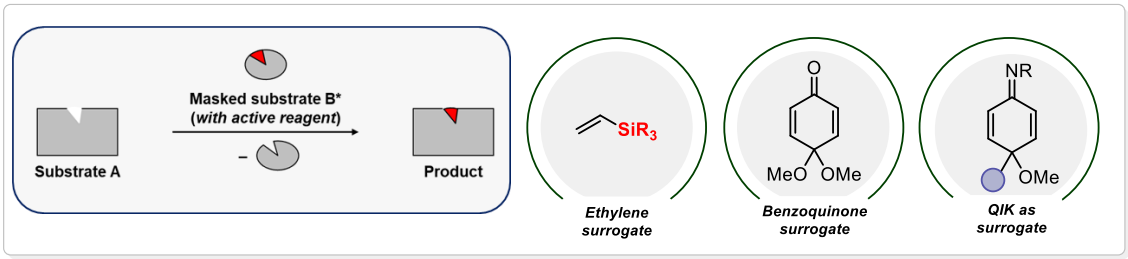


Figure 1. Schematic representation of synthesis using surrogate molecules.

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Biosketch



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Dr. Konidena is an Assistant Professor in the Department of Chemistry at IIT Patna, with expertise in organic chemistry and functional materials. He earned his Ph.D. from IIT Roorkee in 2017 under the supervision of Prof. K. R. Justin Thomas. He subsequently held postdoctoral positions at Sungkyunkwan University, South Korea (2018-2020), TU Dresden, Germany and Kyung Hee University, South Korea (2021-2022), and Kyushu University, Japan (2022-2023). He is the recipient of several national and international fellowships, including the NPDF-SERB, NRF-Korea, JSPS-Japan, Marie Skłodowska-Curie and ERA by European Union, as well as the Ramanujan Faculty Fellowship-SERB. Before joining IIT Patna in May 2024, he served as a Research Assistant Professor at SRMIST for one year. His research interests primarily focus on the design, synthesis, and development of innovative organic functional materials for organic light-emitting diodes (OLEDs) and energy-storage devices.

At IIT Patna, Dr. Konidena founded the Organic Materials Laboratory (***OM-Lab***), dedicated to the design and development of advanced organic semiconducting materials for sustainable optoelectronics and energy-related technologies. A central research goal of the laboratory is to develop purely organic alternatives to conventional *metal*-based functional materials for emerging technologies, including OLEDs, batteries, and super-capacitors. In short term, ourgroup aims to design and synthesize efficient, narrowband multi-resonance thermally activated delayed fluorescence (MR-TADF) emitters, establishing their structure-property relationships, and translating promising molecular systems into high-performance OLEDs. In the long term, the group seeks to develop *metal*-free, purely organic advanced functional materials that can enable real-world devices with significant technological and societal impact.

IL9

N-Embedded π-Fused Polycyclic Organic Systems: Molecular Design to High-Performance OLEDs

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Abstract: Crafting synthetically complex, boron (B)-free, purely organic nitrogen-embedded polyaromatic hydrocarbon (*N*-PAH)-based multi-resonance (MR)-emitters has garnered tremendous attention for next-generation organic light-emitting devices (OLEDs). However, achieving short-wavelength emission (λ_{em} < 400 nm) while maintaining a narrow full-width at half-maximum (FWHM) < 30 nm and high efficiency remains challenging.[1-4] Rational molecular designs that reveal the structural factors governing FWHM and efficiency are highly desirable to push these emitters into practical OLEDs. In this talk, I will demonstrate sequential π-interlocking as a molecular strategy to systematically narrow emission FWHM and enhance the efficiency of *N*-PAH-based MR emitters.[1,2] A series of structurally related emitters containing two *N*-atoms and six phenyl rings was developed with progressively increasing π-interlocking, from *mono*- to *four*-fold fused architectures. The emitters were synthesized using facile synthetic approaches, including nucleophilic substitution, Pd-mediated oxidative ring-closing, and Suzuki-Miyaura coupling reactions. Combined photophysical and theoretical studies reveal that sequential π-interlocking progressively rigidifies the molecular framework, suppresses vibronic coupling, and minimizes excited-state structural relaxation, resulting in systematic emission narrowing. The FWHM decreases from 58 to 24 nm, accompanied by a pronounced blue-shift of 12 nm, with each additional π-interlocking unit contributing ~10-14 nm FWHM narrowing. The *four*-fold interlocked emitter exhibits pure ultraviolet electroluminescence (λ_{EL} < 400 nm) with an EQE of 4.2% and CIEy ≈ 0.029. Moreover, its application as a host for a green phosphor affords an EQE of ~18.5% with only ~1% roll-off at 3000 cd m^{-2}. These findings establish sequential π-interlocking as a versatile molecular design strategy for developing efficient B-free narrowband organic emitters for advanced OLEDs.

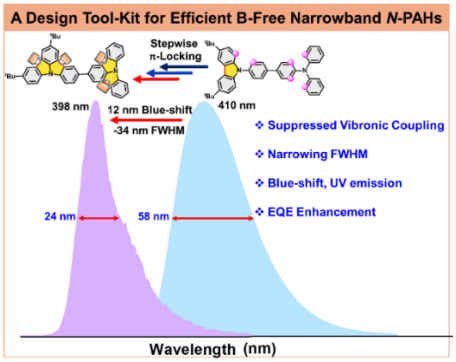


Figure 1: Synergistic π-interlocking approach for highly efficient narrowband UV-emitters.

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Biosketch

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Abhishek studied B.Sc. Chemistry (Hons.) at the Dinabandhu Andrews College under the University of Calcutta, after which he pursued M.Sc. at IIT Kharagpur. He then moved to Germany for Ph.D. under the supervision of Prof. Armido Studer at the University of Münster followed by two postdoctoral research stays in the group of Prof. Magnus Rueping at RWTH Aachen University and with Prof. David Procter at the University of Manchester, respectively. He is the recipient of the NRW Graduate School of Chemistry doctoral fellowship and EPSRC Postdoctoral Fellowship. Abhishek's doctoral and postdoctoral research experiences include radical chain reactions, visible light-catalysis, triplet state chemistry, earth-abundant transition metal-catalysis, electron donor-acceptor complexes and arene C-H functionalization reactions.

Abhishek’s research group at IIT Mandi is working on the radical redox reactivity of main group organic compounds with a focus on using common trivalent phosphorous compounds as activators for simple alkenes, alkynes and heteroarenes. For several decades, transition metals have taken the center stage in the realm of organic method development. Later, organic reagents and catalysts, via ionic pathways, have been highly successful in building molecular complexity. Main group organic compounds hold great potential in the field of radical redox chemistry to exhibit exciting uncharted reactivities. On one hand the group is exploring phosphinium radical cation as a tool for functionalization of alkenes and alkynes leading to the modular synthesis of organic building blocks; parallelly they are also developing novel methods for the functionalization of heteroarenes via heteroaryl phosphonium salts, using single electron redox chemistry as well as transition metal catalysis.

Abhishek’s group aims to expand the emerging field of organic main group radical redox chemistry as part of a more general goal to develop sustainable organic synthetic methods.

IL10

‘Reagent-free’ redox-neutral deoxygenative sulfenylation of azine phosphonium salts with aryl sulfinates

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Azine phosphonium salts have emerged in the recent years as an excellent platform to carry out site-selective C-H functionalization of azines (e.g. pyridine, pyrazine, quinoline, quinoxaline etc.).[1-3] The key step to convert such phosphonium salts to functionalized azines is the C-P^+ bond cleavage, which also gives rise to equimolar amount of phosphines. Phosphines are excellent deoxygenating reagents due to the strong oxophilic nature of phosphorous, as exhibited in several classical reactions e.g. Wittig, Mitsunobu and Appel reactions. These facts prompted us to design a user-friendly deoxygenative sulfenylation of azines using sodium sulfinates as a thiol precursor.[4-6] The method hereby developed does not require any added deoxygenating reagent, as the phosphine produced in situ via C-P^+ bond cleavage, performs the desired deoxygenation under photoredox conditions. Another aspect of synthetic advantage of this method is the successful use of the sulfinates as precursors of thiols, which allows us to avoid the unpleasant odour and the health hazards associated with thiols. In this photochemical deoxygenative coupling reaction, azine phosphonium salts and aryl sulfinates react in presence of a photoredox catalyst under blue light-irradiation to furnish aryl azinyl thioethers in good to excellent yields without the need of any added reagents.[7] Although alkyl sulfinates were not equally successful, efforts are ongoing in our laboratory to develop conditions to obtain the alkyl thioethers applying similar strategy.

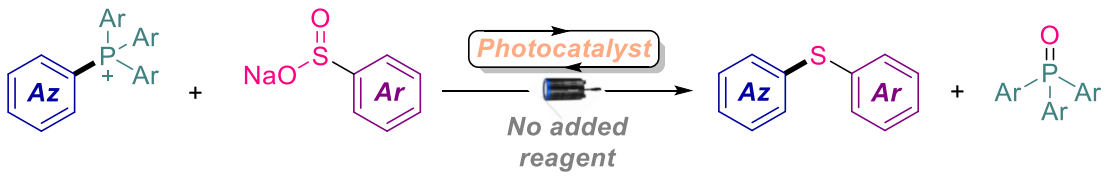


Figure. ‘Reagent-free’ redox-neutral deoxygenative sulfenylation.

References:

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Biosketch

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Naga Rajiv Lakkaniga pursued B.Pharm and M.Pharm from BITS Pilani, Rajasthan. He did PhD from University of Arkansas for Medical Sciences, USA, and postdoctoral research from Scripps Research, La Jolla, USA. His lab at IIT (ISM) Dhanbad focuses on small-molecule drug discovery, with interdisciplinary approach including computational drug design, bioinformatics, heterocyclic synthesis, enzymatic screening and cellular studies. The current focus is on targeting key oncogenic kinases including RET, Mps1, Aurora B, and TNIK, which are implicated in aggressive cancers such as triple-negative breast cancer (TNBC), non-small cell lung cancer (NSCLC), and oral carcinomas. His lab also focuses on investigating protein structure and function through computational structural biology by employing enhanced sampling molecular dynamics (MD) simulations.

IL11

FEP+-Guided Drug Design: A Case Study in the Discovery of Aurora B Inhibitors

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Abstract

Free Energy Perturbation (FEP+) has emerged as a powerful computational approach for predicting relative binding affinities and guiding rational drug design. By estimating the energetic impact of structural modifications, FEP+ can facilitate the prioritization of compounds for synthesis and accelerate lead optimization. Here, we demonstrate the application of FEP+ in drug design using the discovery and optimization of Aurora kinase B inhibitors for triple-negative breast cancer (TNBC) as a case study. A quinazoline-based compound series was designed and investigated using an integrated computational and experimental workflow. FEP+ was employed to predict the effects of structural modifications on Aurora B binding affinity and guide the selection of compounds for synthesis and biological evaluation. Iterative application of this approach enabled the exploration of structure-activity relationships and identification of potent Aurora B inhibitors, including a lead compound exhibiting 4 nM inhibition of Aurora B. This study highlights the utility of FEP+ in guiding chemical optimization and prioritizing compounds within a lead series, demonstrating its potential to reduce experimental burden and accelerate the discovery of potent kinase inhibitors for challenging therapeutic targets.

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Biosketch

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Dr. Ravindra S. Phatake is a Scientist at the CSIR–Indian Institute of Integrative Medicine (CSIR-IIIM), Jammu, where he leads a research programme in organic synthesis, medicinal chemistry, natural-product chemistry and functional molecular materials. His research focuses on developing new synthetic methodologies, designing biologically active and fluorescent molecules, and developing functional nanomaterials for applications in drug discovery, sensing, imaging and catalysis.

Dr. Phatake completed his Ph.D. in Chemistry from CSIR–National Chemical Laboratory (NCL), Pune, in 2017, under the supervision of Dr. C. V. Ramana, where he developed expertise in organic and transition-metal-mediated synthesis. He subsequently joined Ben-Gurion University of the Negev (BGU), Israel, as a Postdoctoral Fellow with Prof. Gabriel Lemcoff, where he worked on ruthenium-based organometallic complexes, particularly latent olefin-metathesis systems, with applications in polymer chemistry and photocatalysis. He then moved to Justus Liebig University Giessen (JLU), Germany, as a Postdoctoral Research Associate (PDRA) with Prof. Urs Gellrich, where he broadened his research experience into boron and main-group chemistry, including organoboron reagents and catalytic transformations.

His multidisciplinary training across organic, organometallic, carbene, main-group, polymer and photochemical chemistry has shaped his approach to molecular design, reaction development and the exploration of new chemical reactivity. At CSIR-IIIM, his research programme integrates new synthetic methodologies and heterocyclic chemistry, Cu–carbene and diazo chemistry, natural-product semisynthesis and medicinal chemistry, fluorescent molecular systems, and functional nanomaterials. These diverse areas are connected by a common objective: to develop new strategies for making structurally complex molecules and materials and understanding how their molecular structure translates into biological, photophysical and catalytic function. Through this approach, his group aims to bridge fundamental synthetic chemistry with applications in drug discovery, sensing, imaging and catalysis. The guiding philosophy of the group is simply: "**WE MAKE MOLECULES**."

IL12

Making Molecules with Cu–Carbene Chemistry: From Diazo Reactivity to Molecular Function

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Abstract: Diazo compounds are versatile precursors to reactive metal–carbene intermediates, with their reactivity strongly governed by their electronic nature. Among them, acceptor–acceptor diazo compounds offer a particularly attractive platform because they combine practical stability with highly electrophilic carbene reactivity, enabling diverse C–C and C–N bond forming transformations. Copper provides an accessible and versatile platform for controlling this reactivity, yet the pathways followed by acceptor–acceptor diazo compounds remain highly dependent on the reaction partner and substrate.

Building on this opportunity, our group explores Cu–carbene chemistry of acceptor–acceptor diazo compounds for making molecules with function. We develop new bond-forming and annulation reactions with amines, alkynes, heteroarenes and carbonyl compounds to access diverse heterocycles, while investigating the factors that govern competing reaction pathways. These molecular frameworks are further explored as bioactive molecules for medicinal chemistry and as fluorescent molecules and probes for sensing and imaging. Thus, our research connects diazo reactivity and Cu–carbene chemistry with molecular function reflecting our group philosophy: ***We Make Molecules***.

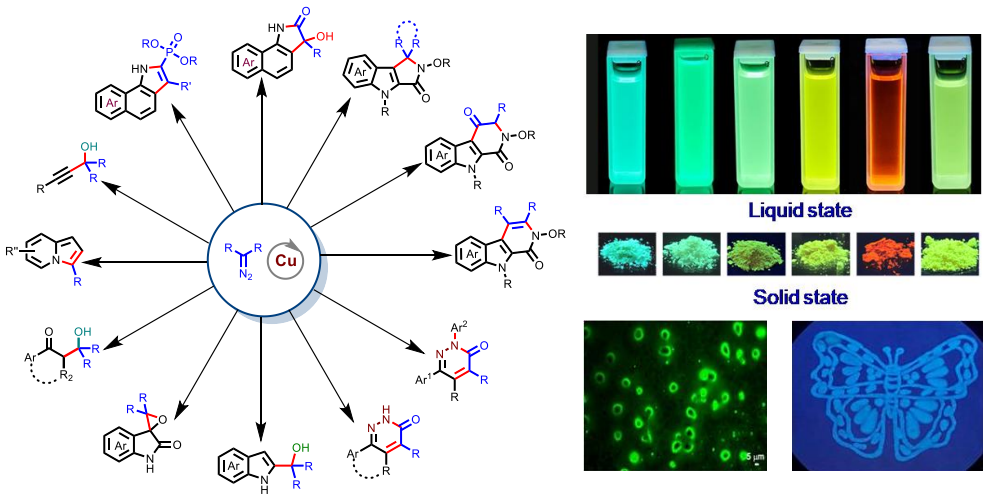


Figure. Cu–carbene chemistry of diazo compounds toward diverse molecular frameworks and functional molecules.

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Biosketch

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Dr. Srimanta Manna received his M.Sc. degree in degree from the Indian Institute of Technology Bombay (IIT Bombay) in 2012. He subsequently moved to Germany to pursue his Ph.D. at the Max Planck Institute of Molecular Physiology, Dortmund, where he was awarded his doctoral degree with *Summa Cum Laude*, recognising outstanding academic achievement, in 2017. His doctoral research was conducted in the groups of Prof. Andrey P. Antonchick and Prof. Herbert Waldmann, where he worked on hypervalent iodine-mediated C–H amination and copper-catalysed oxidative cyclopropanation reactions. In 2017, Dr. Manna joined the research group of Prof. David Procter at the University of Manchester, UK, as an EPSRC Postdoctoral Fellow and was subsequently awarded a Marie Skłodowska-Curie Fellowship in 2018. His research in the Procter group focused on the development of copper-catalyzed asymmetric multicomponent coupling reactions. In 2020, he moved to Stockholm University, Sweden, to join Prof. Jan-Erling Bäckvall's research group, where his research focused on iron-catalysed biomimetic oxidation. In 2022, he joined the group of Prof. Matthew Gaunt at the University of Cambridge, UK, where he worked on bioconjugation chemistry using RNA and DNA templates, with an emphasis on developing chemical strategies for the selective functionalization of nucleic acids.

Currently, his research group encompasses a broad spectrum of interests in medicinal chemistry and process chemistry, with a strong emphasis on the development of sustainable synthetic methodologies and the strategic repurposing of classical chemical reactions. His research aims to address key challenges associated with the commercial synthesis and scale-up of antiviral and antibacterial drugs, with a particular focus on developing cost-effective, environmentally benign, and sustainable synthetic processes.
His group is actively engaged in collaborative research with leading institutions, including Harvard University, IISER Behrampore, and IIT Roorkee, to develop innovative solutions to challenging problems in antimicrobial resistance (AMR) and facilitate the discovery and development of new molecular entities for antibacterial screening.

IL13

Arylative Curtius Rearrangement via Nitrogen Atom Insertion Strategy

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The Curtius rearrangement has been employed for more than 140 years as a reliable strategy for synthesizing primary amines and carbamates from acyl azides.[1] Although this transformation offers several advantages, its potential for the synthesis of diarylamines and N-substituted anilines has remained unexplored. In particular, repurposing the Curtius rearrangement to enable C-N cross-coupling using readily available both aryl and aliphatic carboxylic acids represents an untapped synthetic opportunity.[2] We questioned whether it might be possible to expand a new concept: a nitrogen insertion strategy for decarboxylative coupling with a suitable coupling partner could be a unique modification to cross-coupling reactions that generates nitrogen-rich aryls. This complementary strategy can be applied to drug synthesis, natural products, agrochemicals, materials, and functional polymers. The synthesis of secondary amines through arylative Curtius and Hofmann rearrangements, facilitated by the Smiles rearrangement, represents a significant advancement. This method has been successfully applied in the production of active pharmaceutical ingredients, natural products, and novel molecular entities, particularly for antibacterial screening. Its efficacy underscores its potential to generate sustainable and valuable molecules that benefit society.[3]

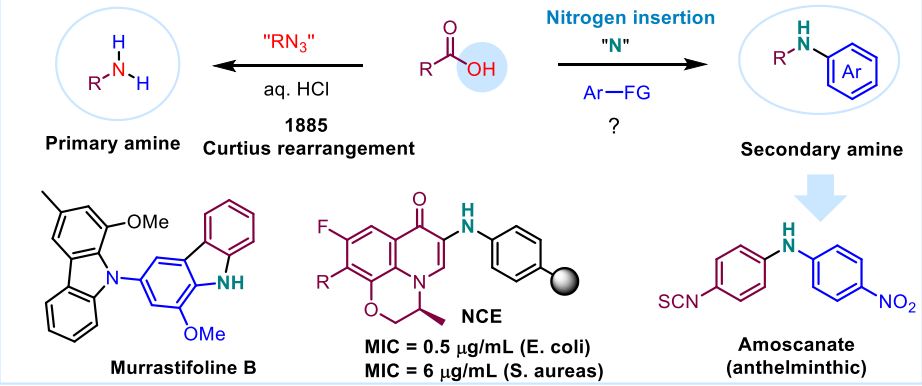


Figure. Arylative-Curtius rearrangment via Nitrogen Atom Insertion Strategy

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Poster Presenters

Biosketch



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Our research group at the Department of Chemistry, Indian Institute of Technology Roorkee (IITR), focuses on developing innovative catalytic strategies for sustainable chemical synthesis and carbon utilization. Our research lies at the interface of homogeneous and heterogeneous catalysis, with particular emphasis on the valorization of CO_2, CO, renewable feedstocks, and waste-derived resources into value-added chemicals and fuels. We are interested in designing molecular and supported metal catalysts that enable selective hydrogenation, dehydrogenation, hydrogen borrowing, and C1-molecule transformations under efficient and sustainable conditions. A key challenge in this field is to achieve high catalytic activity and selectivity while addressing catalyst stability, recyclability, scalability, and efficient utilization of renewable and waste resources.

In the short term, our goal is to establish robust catalytic platforms for CO_2 capture and utilization, arene hydrogenation and polymer upcycling. We aim to understand catalyst–substrate interactions and reaction mechanisms through systematic catalyst design and detailed characterization. In the long term, we seek to develop scalable and recyclable catalytic technologies that bridge fundamental molecular-level understanding and practical applications in sustainable chemical manufacturing, carbon management, and the circular use of waste resources.

P1

Selective Catalytic Depolymerization of Thermoset Epoxy Resins for Chemical Recycling

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Abstract

Plastics and polymer composites have become essential materials in modern life. Their global production has increased from 2 million tons in 1950 to approximately 450 million tons today. This rapid growth is driven by their low cost and the availability of fossil-based raw materials. Plastics are broadly classified into thermoplastics and thermosetting polymers. Thermoplastics can be repeatedly melted and reshaped due to their linear or lightly branched structures. In contrast, thermosetting plastics possess permanently cross-linked networks that prevent melting and reshaping, resulting in their accumulation as persistent waste after use.

Epoxy resins are widely employed thermosetting polymers owing to their high thermal stability, mechanical strength, chemical resistance, and adhesive characteristics. They are extensively utilized in aerospace, automotive, electronics, construction, and wind energy applications, particularly as matrices in carbon- and glass-fibre-reinforced composites. However, their widespread use has resulted in increasing amounts of end-of-life epoxy waste, creating a significant environmental concern, with landfilling, incineration, and energy-intensive pyrolysis being common disposal methods.

Chemical recycling has recently gained attention as an effective approach for transforming polymer waste into valuable, recoverable monomers through controlled depolymerization of the polymer framework. In this study, we present a preliminary investigation of the catalytic cleavage of the C(alkyl)–O bond in an epoxy polymer, enabling the recovery of diol, using molecular metal catalysts (Figure). Various molecular metal catalysts were tested using both noble and non-noble metals. Among the catalysts examined, Ru-MACHO-BH showed catalytic activity, achieving 44% conversion with 40% diol yield. A range of commercially available epoxy polymers was evaluated for their ability to selectively cleave the C(alkyl)–O bond resulting in the formation of diols.

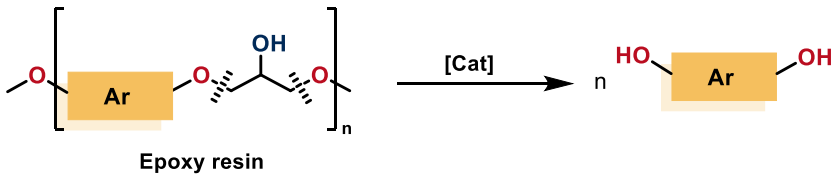


Figure. Disconnection of C(alkyl)–O bond in an epoxy resin.

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Biosketch

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Dr Shiv Kumar received his BSc (Hons.) in Chemistry from Kirori Mal College, University of Delhi in 2008. He then moved to the Indian Institute of Science, Bengaluru, India where he completed his integrated doctorate degree under the supervision of Prof. Satish Patil. Here he extensively worked on fluorescent organic semiconductors for organic light-emitting diode (OLED) and nitroaromatic sensing applications. After obtaining his Integrated Ph.D. degree in 2016, he then joined as a SERB-National Postdoctoral Fellowship (N-PDF) at IIT Kanpur. In 2017, Shiv received Marie-Curie fellowship, and then moved to the University of St Andrews, UK to work with Prof. Eli Zysman-Colman in the School of Chemistry. In 2020, Shiv then moved to the Université Libre de Bruxelles (ULB), Belgium to work with Prof. Franck Meyer at the Faculty of Pharmacy as postdoctoral fellow sponsored by F.R.S.-FNRS, Belgium. In August 2023, Shiv returned to India and joined as an Assistant Professor in the Department of Chemistry at the University of Delhi. His current area of research focused on rational design, synthesis, and characterization of organic semiconductors to understand the underlying structure-property relationship and their potential applications in various optoelectronic devices.

Research Interests:

- Organic Light-Emitting Diodes (OLED)
- Organic Field-Effect Transistors (OFET)
- Organic Solar Cells (OSC)
- Organic Neuromorphic Devices (OND)
- Sensors

P2

Photo-Induced Ion Trapping in an Azobenzene Molecular System for Organic Neuromorphic and Retinomorphic Computing

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Abstract

Herein, we report the design and synthesis of an azobenzene-based photo-responsive molecular system[1,2] capable of light-mediated ion trapping for potential organic neuromorphic[3] and retinomorphic device application[5] (**Figure 1**). The molecular platform was engineered to combine the robust photoisomerization characteristics of azobenzene with ion-binding functionality using oligoethylene glycol chains, enabling reversible modulation of ionic interactions under optical stimulation. Structural characterization and spectroscopic analyses confirm successful synthesis of the target material. Furthermore, detailed NMR investigations revealed pronounced ion-trapping behaviour for Na^+ and K^+ ions, indicating strong host–guest interactions and photo-responsive ionic modulation. Ongoing studies are focused on device fabrication and evaluation of the material in photo-responsive memory, organic neuromorphic devices, and retinomorphic platforms[4]. This work establishes azobenzene-derived molecular systems as a promising class of photo-ionic materials for future artificial vision and neuromorphic bioelectronics.

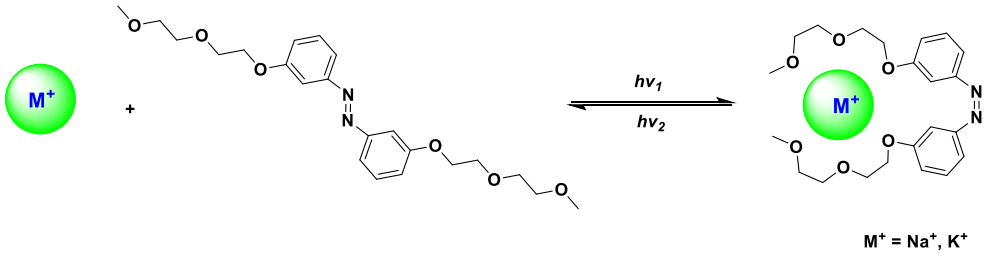
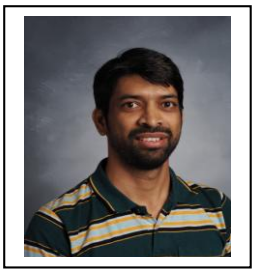


Figure 1 Azobenzene-based photo-responsive moiety capable of light-mediated ion-trapping.

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Biosketch



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Our team at CDRI is committed to advancing bioactive natural product synthesis and small-molecule antibacterial drug discovery through two complementary research programs:

1. Total Synthesis of Natural Products and Methodology Development: We develop efficient and innovative synthetic strategies for the total synthesis of bioactive natural products and natural-product-inspired small molecules. In parallel, we develop new synthetic methodologies to address challenging chemical transformations and enable rapid access to structurally diverse chemical scaffolds. The synthesized natural products and their analogs are systematically evaluated for antibacterial activity against clinically relevant pathogens, with the goal of identifying biologically active lead/s and through their structure–activity relationships (SAR).

2. Small-Molecule Antibacterial Drug Discovery

a) Structure-Based Design: We integrate synthetic chemistry, computational methods, and structural biology to design small molecules targeting essential bacterial proteins. Our current focus includes target LolCDE, an essential inner-membrane ABC transporter involved in bacterial lipoprotein trafficking. Structure-guided ligand design and medicinal chemistry are employed to develop and optimize novel LolCDE inhibitors against Gram-negative pathogens.

b) Phenotypic Drug Discovery: We employ high-throughput phenotypic screening (in collaboration) of diverse compound libraries to identify novel antibacterial chemical matter. Validated hits are advanced through medicinal chemistry and SAR-driven optimization, followed by mechanistic studies and PK/PD evaluation. This integrated approach aims to identify chemically novel antibacterial lead/s with defined mechanisms of action, strong intellectual property potential, and translational promise.

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P3

Divergent Total Synthesis of (-)-Crossiguanipyrazine-D, Crossiguanipyrazine-A, and Crossiellidines-B in Protected Form

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Abstract

Crossiguanipyrazines and Crossiellidines are structurally unique natural products featuring a tetrasubstituted pyrazine core and three guanidine-derived side chains. Crossiellidines display potent broad-spectrum antibacterial activity against ESKAPE pathogens,[1] while the Crossiguanipyrazine scaffold exhibits activity against *Mycobacterium tuberculosis*.[2] Herein, we describe the enantiopure synthesis of Crossiguanipyrazines-D and -A along with synthesis of Crossiellidine-B in protected form using an efficient and divergent synthetic strategy. Central to our approach is a common advanced intermediate prepared on a gram scale from appropriately protected *L*-ornithine. Modular manipulation of the vinyl-boronate-containing side chain enables divergent installation of structurally distinct substituents, providing streamlined access to the target natural products and their analogs from a single common intermediate. Application of the optimized sequence enabled the synthesis of a focused library of analogs, establishing a versatile platform for investigating the structure-activity relationships of this antibacterial scaffold (Figure 1).

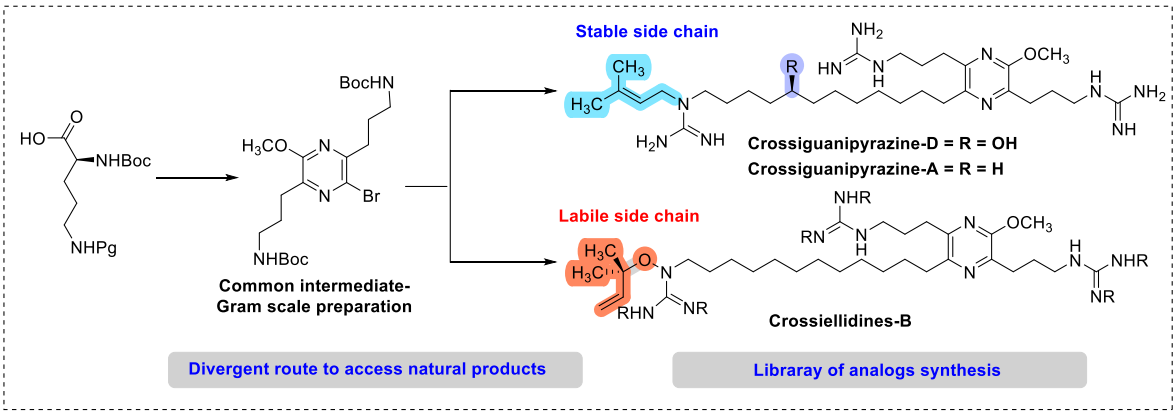


Figure 1. Divergent synthesis of (-)-Crossiguanipyrazine-D, Crossiguanipyrazine-A, and Crossiellidines-B in protected form.

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Biosketch

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Yogesh was born and brought up in Pune, Maharashtra. He received his B.Sc. in Chemistry and M.Sc. in Organic Chemistry from the University of Pune and completed his Ph.D. in Organic Synthesis at IIT Bombay in 2018 under the supervision of Prof. Santosh J. Gharpure. Following his doctoral studies, he joined Prof. K. C. Nicolaou's group at Rice University, where he worked on the total synthesis of complex anticancer natural products and drugs, including epothilone, halichondrins, and eribulin. In 2020, he joined Prof. Martin Burke's group at the University of Illinois Urbana–Champaign as a postdoctoral researcher, where his research focused on the development of renal-sparing derivatives of amphotericin B. This work led to the discovery of a new antifungal clinical candidate and provided an opportunity to translate synthetic chemistry toward therapeutic development. In 2022, he joined Novo Nordisk Inc., Boston, as a Medicinal Chemist, where he worked on oligonucleotide therapeutics. Since 2025, Yogesh has been an Assistant Professor in the Department of Chemistry at IIT Madras.

Yogesh has received several honors, including the DST INSPIRE Faculty Fellowship Award (2022), the RSC Organic & Biomolecular Chemistry Outstanding Reviewer Award (2021), and the NOST–Sai Life Best Ph.D. Thesis Award (2018).
His research group at IIT Madras focuses on total synthesis of natural products, molecular rearrangements, Medicinal Chemistry, and the discovery of "supernatural products." Traditionally, total synthesis has largely focused on achieving the synthesis of a natural product as the ultimate endpoint. Yogesh's research group seeks to move beyond this conventional paradigm by exploring not only how to synthesize natural products, but also how their structures can be strategically modified to enhance, diversify, or reprogram their biological functions. Through the development of innovative and efficient synthetic strategies, his group aims to access complex natural products and their analogues and transform them into functionally superior "supernatural products." By integrating total synthesis with molecular design and Medicinal Chemistry, the group seeks to uncover new biological functions, establish structure–function relationships, and develop promising molecular leads for the treatment of pressing medical challenges.

P4

Beyond Nature: From Natural Product Synthesis to Supernatural Products

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Natural product synthesis has evolved from reproducing nature's complex molecules into a powerful platform for discovering new chemistry and biological function. Today, natural products are increasingly viewed not as endpoints, but as starting points for exploring new chemical space and functions. The future of the field therefore lies in using synthetic chemistry to perturb and reimagine natural product structures, enabling us to go beyond nature and access molecules with enhanced or entirely new properties.

In this talk, I will highlight two case studies that illustrate this evolution from the past and present toward the future of natural product synthesis. The first will focus on the short total synthesis of halichondrin B, demonstrating how innovative synthetic strategies and reaction design can address the challenges of architecturally complex natural products.[1] The second will explore the concept of "supernatural products"- engineered natural product derivatives designed to retain the key features of nature's molecular architectures while overcoming their limitations. As an example, I will discuss the discovery and development of renally sparing amphotericin B derivatives, demonstrating how synthetic modification can transform a natural product into a functionally improved therapeutic candidate that has advanced to Phase I clinical trials.[2]

The final part of the talk will present the research vision and themes being pursued at IIT Madras, where we seek to discover new molecules, new reactivity, and new functions. Together, these studies illustrate a shift from simply synthesizing natural products toward discovering functionally superior natural product derivatives.

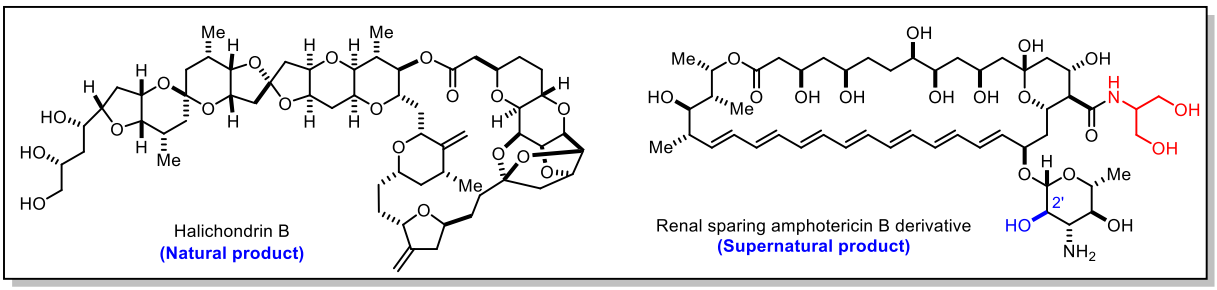


Figure. Structures of halichondrin B and renal sparing amphotricine B derivative

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Biosketch

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The developments in optoelectronic and magnetic materials have revolutionized the modern information era. Though predicting the upcoming era is difficult, the current trend suggests that the next transformative technology will be flexible and wearable devices that will require next-generation materials with extraordinary optoelectronic, magnetic, and conductivity properties. Our research focuses on the design, synthesis, and stabilization of 'Molecular Organic Materials' having such properties by employing strategic approaches involving supramolecular non-bonding interactions. We strive to prepare ambient-stable open-shell and electron-deficient/rich π-conjugated organic compounds. This work also helps us understand π-electron delocalization and aromaticity/antiaromaticity. Our research combines experimental and theoretical approaches and particularly uses absorption, emission, and ESR spectroscopy and electrochemical studies in combination with DFT calculations. We are also involved in the design and synthesis of redox-active fluorophores for bio-imaging, sensing, and photocatalysis applications.

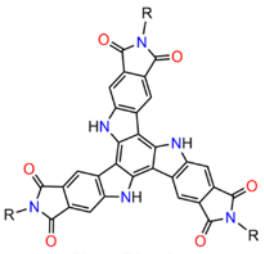
P5

Design and Synthesis of Electron-Deficient Organic Materials and Their Radicals for Conductivity and Magnetism Applications

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Abstract: The development of stable, conjugated, electron-deficient organic compounds and their radicals/radical ions has been an area of increasing interest in recent years. Such materials have been utilised in a range of applications, from conducting to magnetic films, to organic spintronics, to biological probes for magnetic resonance experiments, and as electrode active materials for the development of next-generation batteries.[1] More fundamentally, the study of stable radical cations or anions also allows insight into the nature of the polarons thought to be responsible for charge transport in organic devices.

C$_3$*-symmetric* molecules have fascinated scientists because of their beauty and significant applications in nonlinear optical devices, asymmetric catalysis, molecular recognition, and discotic liquids.[2] *C*$_3$*-symmetric* molecules are known to display doubly degenerate HOMO and LUMO energy levels. This indicates that doubly reduced *C*$_3$*-symmetric* molecules will exhibit triplet character and can be used to prepare ferromagnetic materials.[3]



Planar Triangle
(Triazatruxenetriimide)

The hypothesis that incorporating imide groups into a *C*$_3$*-symmetric* framework to form a triimide structure further enhances the electronic and structural characteristics of the molecules, making such systems highly promising for applications in organic electronics and photonics.[4,5] Despite its potential applications, this area is underexplored due to the synthetic challenges involved in constructing three imide groups on aromatic frameworks. In this work, we design and synthesize a new class of *C*$_3$*-symmetric* triazatruxenetriimide molecules to investigate their photophysical and magnetic properties. The molecular framework consists of a central benzene core linked to three electron-deficient imide units through amine bridges, forming a donor-acceptor architecture with extended π-conjugation.

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Biosketch

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Dr. Vivek Wakchaure is an Assistant Professor in the Department of Chemistry at IIT Jodhpur. He received his Ph.D. in Chemical Sciences from CSIR-NCL, Pune, followed by postdoctoral research at the University of Vienna, Austria, and Ulm University, Germany. His research focuses on the design and synthesis of functional organic materials, stable organic radicals, and multispin systems for applications in OLEDs, energy storage, spintronics, and quantum technologies.

Research Interests

His group develops stable organic radicals with tunable electronic, optical, and spin properties and explores their integration with 2D materials. The short-term goal is to establish structure–property relationships and develop new radical-based functional materials, while the long-term vision is to create advanced organic materials for next-generation energy, optoelectronic, quantum technologies, and biomedical applications.

Molecular Engineering of Open-Shell Organic Materials for Quantum, Optoelectronic and Biomedical Applications

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Abstract

Stable organic radicals[1] are appealing subjects of study due to their unusual structures and notable physicochemical properties (magnetic and optical). Furthermore, recent developments have revealed extensive new applications across various fields, especially in quantum sensing, quantum information processing, and biomedical applications.[3] However, these emerging new applications require ensembles of multiple radical centers rather than one single molecular radical of spin 1/2.[4] While there has been some progress recently,[5-7] further work is needed on discrete multi-spin compounds and the self-assembly of multi-spin complexes from simple building blocks.

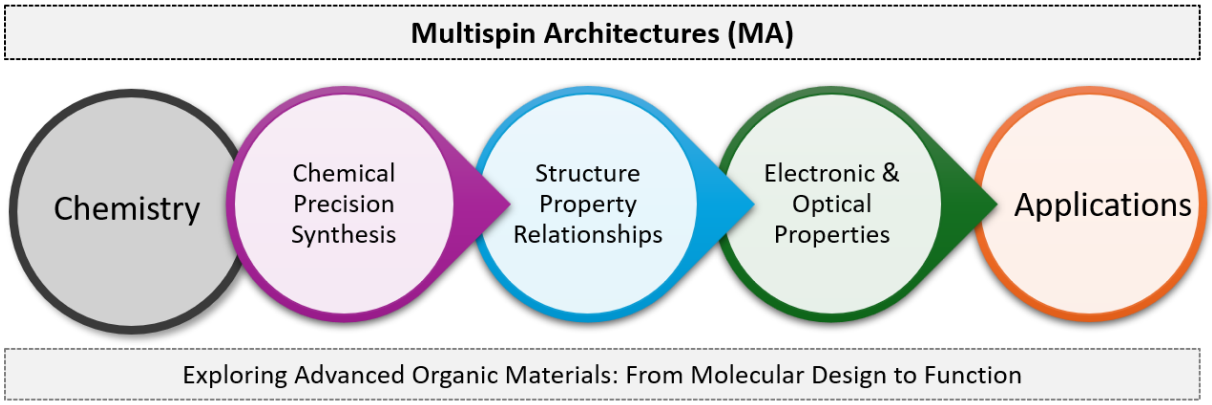


Figure 1. Overview of the workflow and scientific structure.

References:

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Bio sketch

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Dr. Kaur grew up in Amritsar, Punjab, where she earned her B.Sc. (Hons.) and M.Sc. (Hons.) in Chemistry from Guru Nanak Dev University. Following her studies, she worked as a Research Associate in R & D at Jubilant Life Sciences Ltd. for three and a half years. She then moved to Blacksburg, Virginia (USA) to pursue her PhD with Prof. John B Matson at Virginia Tech. Her doctoral research focused on developing small organic molecules as well as peptide and polymer-based macromolecules to deliver and study the release kinetics of hydrogen sulfide gas, a known gasotransmitter.

After completing her PhD, Dr. Kaur was awarded an NCCR-WINS postdoctoral fellowship by Swiss National Science Foundation (SNSF) to conduct independent research. She moved to EPFL, Switzerland to join the research group of Prof. Harm-Anton Klok. Her research work aimed to investigate low magnitude mechanical forces in polymeric systems such as hydrogels and film. Specifically, she worked on developing peptide-polymer hybrids for studying the swelling-induced phenomena in polymer brushes.

Dr. Kaur briefly served as an Assistant Professor in the Department of Polymer and Process Engineering, IIT Roorkee, before assuming her current position as an Assistant Professor in the Department of Chemistry at IITGN. Her research group, Advanced Soft Materials Lab (ASML), works at the interface of chemistry and material science. The group is interested in designing and controlling the microscale architecture of the material in order to understand its effect on the material properties ranging from mechanical instability in synthetic tissue-mimicking materials to degradability in addition polymers.

P7

Engineering Macromolecular Microstructures: From Construction to Deconstruction of Functional Materials

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Abstract

Macromolecular materials based on peptides and polymers are indispensable for numerous applications in the field of drug delivery, tissue engineering, semiconductors, batteries and many more. The ability to manipulate material microstructure allows researchers to control their macroscopic properties crucial for specific applications.

My research group, Advanced Soft Materials Lab (ASML), at IITGN is engaged in understanding the microscale structure of the macromolecules and its impact on their properties. In this context, I will give a brief overview of two major research areas we are actively working on. The first research domain concerns with strain-stiffening materials.[1] While nature has an abundance of load-bearing proteins, most of which show strain-stiffening behavior, synthetic counterparts of natural strain-stiffening materials based on polymers or peptides remains challenging to synthesis. We are involved in designing strain-stiffening materials by controlling: 1) peptide morphology and 2) phase behavior to understand how microstructure dictates mechanical properties of the material.

The second research domain of ASML lab deals with polymer sustainability. We devise strategies to include weak linkages in the polymer materials to enable their facile depolymerization back to its monomers. We are interested in exploring the effects of chain stability on the depolymerization kinetics. Furthermore, we also work on understanding the effect of mechanical forces within the bulk polymers in assisting the depolymerization process.

References and notes:

[1] Kaur, K., *Adv. Funct. Mater.* **2026**, *138*, e07712.

Biosketch

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Mani Sengoden obtained his M.Sc. in Chemistry (2010) from Bharathidasan University under the mentorship of Prof. S. Muthusamy and his Ph.D. in Synthetic Organic Chemistry (2017) from the Indian Institute of Technology Guwahati (IIT Guwahati) under the guidance of Prof. T. Punniyamurthy. He then worked as a temporary faculty in NIT Trichy for a semester and moved to the Green Chemistry Centre of Excellence (GCCE), University of York, UK with Prof. Michael North as a SERB-OPDF researcher (2018-2019). Later, he worked with Prof. Donald J. Darensbourg at Texas A&M University, College Station, USA for 2021-2025. Currently working as a Ramanujan Faculty member at NIT Puducherry, India since September 2025. His research focuses on green and sustainable chemistry, particularly designing eco-friendly strategies that utilize CO_2 for synthesizing heterocyclic compounds and polymeric materials.

In the short term, Dr. Sengoden's group focuses on CO_2 valorization, developing synthetic methodologies to convert CO_2 into cyclic/polymeric carbonates and synthesis of functional polyesters. In the long term, the group aims to integrate green chemistry principles with advanced synthetic strategies, enabling scalable and sustainable access to molecular architectures while positioning CO_2 as a renewable carbon resource.

Development of Degradable Polyesters and Polycarbonates: Utilizing Biomass and Carbon Dioxide for Sustainable Functional Materials

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Abstract: Growing environmental concerns on the increased consumption of non-renewable resources coupled with the release of carbon dioxide (CO_2) are amongst today's most pressing sustainability challenges.[1] Consequently, interest in polymers derived from renewable feed stocks like biomass are recognized for their environmentally friendly, green, and renewable attributes.[2] This shift is propelled by the persistent buildup of nonbiodegradable, petroleum-derived polymers in the ecosystem, alongside long-term objectives like economic sustainability. In this regard, significant efforts have been directed toward developing methods for the biomass conversion into a chemical and utilization of CO_2, their integration into synthetic compounds under mild conditions.[3] The ring opening copolymerization (ROCOP) offers an efficient route supporting the growing carbon capture and utilization (CCU) economy, enabling CO_2 emissions to be repurposed as feedstock for degradable polymers. In this context, we are exploring the use of bio-derived epoxides and their coupling reactions with CO_2 as well as cyclic anhydrides to synthesize polycarbonates and polyesters (Figure 1).[4] In addition, post-polymerization modification (PPM) strategies[5] will be employed to enhance the physical properties of these polymeric materials, including thermal stability and mechanical strength, to meet the requirements of desired applications.

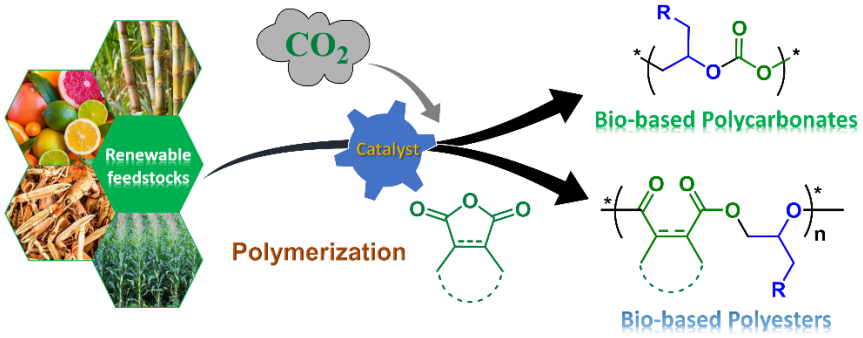


Figure 1. A general pathway illustrates from biomass to degradable functional polymers.

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Biosketch

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Dr. Sunil Pulletikurti is an Assistant Professor in the Department of Chemistry and Chemical Biology at the Indian Institute of Technology (Indian School of Mines) Dhanbad. He received his Ph.D. from the Indian Institute of Technology Bombay in 2020. He was a Postdoctoral Research Fellow (2020–2023) and subsequently a NASA Postdoctoral Fellow (2023–2025) at The Scripps Research Institute, California, USA. His research interests lie at the interface of synthetic organic chemistry, lipid chemistry, and chemical evolution.

The Lipid Membrane Chemical Biology Group focuses on the synthesis and functional study of natural and unnatural phospholipids, with particular emphasis on membrane dynamics, self-assembly, lipid asymmetry, membrane stability, and the chemical evolution of life. The group investigates how lipid molecular structure and organization can be used to understand and control membrane properties, including the effects of small molecules and metal ions. Another major direction is the development of lipid-based systems for drug delivery, including lipid functionalization to improve drug stability and cellular uptake and the encapsulation of small molecules, mRNA, and other polymers. In chemical evolution, the group studies the formation and compartmentalization of phospholipids and other lipids and their roles in organic and metabolic reactions and oligomerization. The research is inherently interdisciplinary, combining synthetic organic chemistry with studies of self-assembly, membrane function, and biologically relevant chemical processes. Current and longer-term efforts are directed toward developing molecularly defined lipid systems that address fundamental questions in membrane chemistry and chemical evolution while also enabling new lipid-based platforms for therapeutic delivery.

Compartmentalization of Protometabolic Reactions under Plausible Prebiotic Conditions in Model Protocells

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Abstract Protocellular compartmentalization and protometabolic reactions are widely considered important steps in the origins of life, as self-assembled protocellular compartments, such as protocells and coacervate-based microenvironments provides unique physicochemical conditions necessary for sustaining primitive biochemical networks, while protometabolism is a network of prebiotically plausible chemical reactions. Here we show that the compartmentalization of protometabolic pathways originated from the reaction between pyruvate and glyoxylate under plausible prebiotic conditions. Heterogeneous protocell system and the presence of $Zn(Pro)_2$ is shown to enhance the rate of the protometabolic reaction and increase in the charge as reaction progress leads to the retainment of dianion ketoacids. Furthermore, the reaction inside the vesicles is shown to have enhanced rate of the protometabolic reaction than the reaction outside the vesicles. These results suggest that compartmentalization of protometabolic pathway could have been emerged under plausible prebiotic conditions, that could not only help to retain key metabolites but also play crucial role in protometabolic reaction pathway.

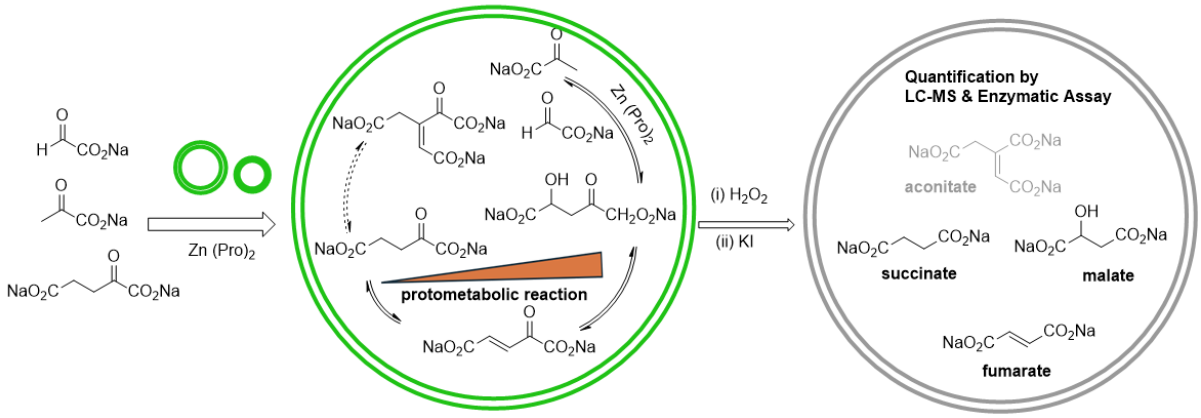


Figure. Compartmentalization of Protometabolic α-ketoacid reaction

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Biosketch

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Our research group is focused on the development of efficient and sustainable approaches to organic synthesis, ranging from the design of new reaction methods to the application of these methods to the synthesis of biologically interesting molecules. We are especially interested in green organic transformations such as microwave-assisted, tandem, aqueous-assisted and hypervalent iodine mediated reactions. The methods developed will be applied to the synthesis of bioactive natural products, pharmaceutically relevant molecules and complex heterocycles. One of the central challenges in modern organic synthesis is the conception of methods for the efficient construction of molecular complexity and diversity with high levels of stereo- and regiocontrol and minimal waste. To address these challenges, we plan to develop new catalytic, cascade reactions and multicomponent processes which can provide multiple bonds formation in a single step under mild reaction conditions. In this respect, special emphasis will be placed on developing new approaches with improved efficiency, selectivity, atom economy, and scalability. At present we are working on development of Direct Wittig reactions and its applications in making synthetically usefull molecules and also working new Donor-Acceptor systems for photophysical studies. Some work also diverted in the stnthesis of spiroindilinones synsthesis and its applications. We aim to establish a multidisciplinary research platform that integrates reaction development, mechanistic investigations, catalysis, total synthesis, and medicinal chemistry. This integrated approach will enable the discovery of innovative chemical transformations and the development of efficient, sustainable synthetic strategies for accessing intresting organic molecules of biological and pharmaceutical importance.

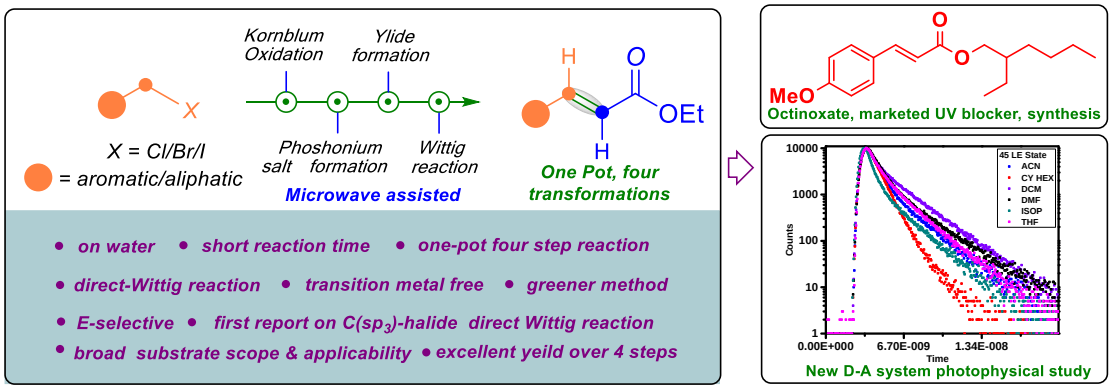
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P10

First Tandem One-Pot "On-Water" Direct Wittig Reaction of C(sp³)–X Halides: A Microwave-Assisted Green Synthesis of (*E*)-α,β–Unsaturated Esters

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Hemant Kumar Kisan *[b], Avik Kumar Pati*[c]
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A novel synthetic approach has been developed for the synthesis of (*E*)-α,β–unsaturated esters *via* a microwave-assisted, one-pot, "on-water" direct Wittig reaction. This method employs an *in situ* Kornblum oxidation, enabling a four-step sequence in a single pot: i. Kornblum Oxidation: ii. Salt Formation: iii. Ylide Formation: iv. Wittig Reaction. This one-pot approach offers advantages such as reduced reaction times, increased efficiency, and minimized waste generation. The use of microwave irradiation and on-water conditions further enhances the reaction's sustainability and practicality. The developed method provides a convenient, greener, economic, short and efficient route for the synthesis of (*E*)-α,β–unsaturated esters, which are valuable building blocks in organic synthesis. This poster presentation will address a detail, synthesis and scope of the below method.



Microwave Assisted Green Synthesis of (*E*)-Cinnamates by "on water" Direct Wittig Reactions of C(sp3)-X halides and its potential applications

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Biosketch

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Dr Balasubramani completed his PhD in Chemistry at Bharathidasan University, Tiruchirappalli, in 2019 under the supervision of Prof. S. Muthusamy, during which he developed expertise in experimental synthetic organic chemistry. Thereafter, he briefly worked as an Associate Scientist at GVK Biosciences, Bengaluru. At the end of 2019, he moved to the University of Hyderabad to work with Prof. Goverdhan Mehta as a Dr D. S. Kothari Postdoctoral Fellow. During this period, he explored the reactivity of ynones and related building blocks to construct complex molecular architectures using green, sustainable synthetic approaches. In mid-2023, he joined CSIR–Indian Institute of Chemical Technology (CSIR-IICT), Hyderabad, where he currently serves as a DST-Inspire Faculty in the Department of Organic Synthesis & Process Chemistry.

His research focuses on developing new synthetic methodologies for bioactive molecules and exploring new chemical space by harnessing the unique reactivities of multifunctional starting materials. In particular, his group investigates the diverse reactivities of diazo carbonyl compounds under Lewis and Brønsted acid catalysis to access structurally complex and biologically relevant molecules. In the long term, his group aims to develop novel Brønsted acid catalysts for asymmetric synthesis, enabling the efficient construction of complex and stereochemically rich molecules.

P11

Harnessing Molecular Reactivity for Sustainable Chemical Synthesis

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Abstract

Diazo compounds are versatile building blocks in organic synthesis and have provided an attractive platform for a variety of metal-carbene transformations. Numerous rhodium- and copper-catalysed transformations of diazo compounds have been well established for the synthesis of diverse carbocyclic and heterocyclic molecules. In addition, Lewis- and Brønsted-acid-catalysed transformations have also been explored, albeit to a lesser extent. We are interested in investigating the reactivity and efficient functionalization of diazo compounds using triflic acid/HFIP. Subsequently, we aim to develop a chiral BINOL-based C–H acid catalyst for diverse synthetic applications.

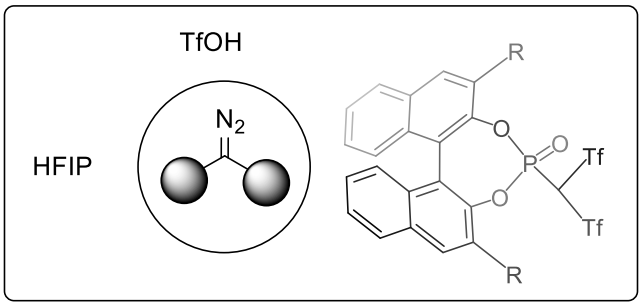


Figure. Diverse activation of diazo compounds.

In addition, we are working to harness the diverse reactivity of multifunctional precursors to explore new chemical space for biological and materials applications using green, sustainable approaches.

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Biosketch

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Our research group at NIPER-Mohali is working on the merger of synthetic organic chemistry and medicinal chemistry to develop small molecules of therapeutic importance. We applied novel synthetic approaches to rationally design and synthesize molecules for antibacterial and antiviral drug discovery program. We also explore the fundamentals of strained ring systems in novel reactivity. Additionally, we explore the area of C-H activation, photoredox catalysis and radical-mediated synthetic transformations for sustainable development.

P12

Metal-Free Ring-Opening of Bicyclo[1.1.0]butanes for Diastereose-lective Hydro-Alkynylthiolation

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Abstract

The modern drug discovery program is highly influenced by the presence of unconventional small rings, which circumvent issues such as poor solubility and metabolic instability.[1] strain-release-driven transformation has significantly strengthened the medicinal chemist's arsenal by providing a unique opportunity to incorporate a small-ring system in bioactive lead compounds as suitable covalent warheads.[2] Among widely explored strained molecules, bicyclo[1.1.0] butane (BCB), the smallest bicyclic hydrocarbon has provided a unique opportunity to synthesise substituted cyclobutanes, a promising structural motif frequently encountered in pharmaceutical and natural products.[3] In this present strategy, we explored the metal-free ring opening of BCBs with in-situ generated alkynyl-thiolate anion intermediate from readily available 1,2,3-thiadiazoles under basic conditions to afford *syn*-selective thio-alkynylated products. The methodology accommodates a wide range of BCBs and 1,2,3-thiadiazoles, with notable examples including Ibuprofen and naproxen derivatives. The resulting product was utilised in a diverse range of reactions, highlighting the significance of the developed protocol.

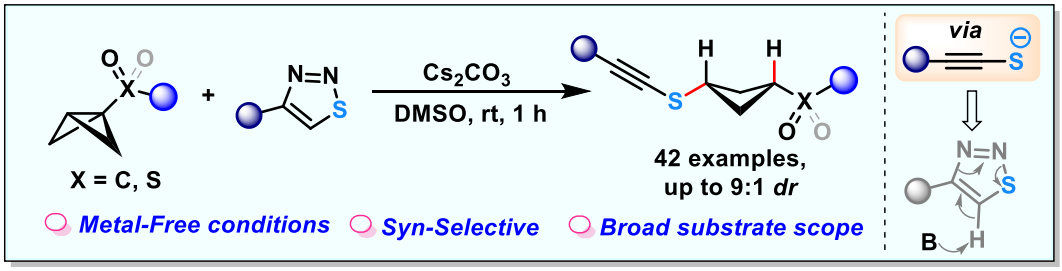


Figure. Metal-Free ring Opening of BCBs with 1,2,3-thiadiazoles

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Special Lectures

Biosketch



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Uday Maitra received his PhD from Columbia University (Prof. Ronald Breslow) and spent two years as a postdoc at the University of California at Berkeley (Prof. Paul Bartlett). He is currently an honorary professor and INSA Senior Scientist at IISc Bangalore.

His research interests are in the area hydrogels, organic-inorganic hybrid materials and photoluminescent sensors. During the past decade his group has developed a general strategy for low cost, paper based photoluminescent sensors for a variety of analytes. His most recent activity involves the development of a rapid and inexpensive kit for the detection of flu viruses.

Uday Maitra is also greatly interested in Chemistry Education and runs a show “Chemistry is Fun!” for school and college students.

He has received several awards and honours and is currently the Chair of the IUPAC Committee on Chemistry Education and an IUPAC Science Board member.

SL1

Challenges and Opportunities in (Organic) Chemistry Education

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Abstract

Modern societies face multiple global challenges, which have been highlighted in the United Nation's 17 sustainable development goals (SDGs).[1] These include issues related to energy, environment, human health, education *etc*. Chemistry, *as the central, creative, useful and connecting science*, can tackle many of these challenges.[2] Addressing them appropriately, however, would require that the future generations of students are equipped with knowledge and skills that can enable '*systems thinking*' to help them connect to other disciplines for collaboration.[3] This in turn requires that the administrators and educators at all levels take definitive action now to align curricula, instructional methods and assessment practices in a manner so that the our students are better trained in chemistry to tackle global challenges.[4]



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Biosketch

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Prof. Praveen Kumar Vemula, Dean (Research), obtained PhD in Organic Chemistry (Indian Institute of Science, Bangalore), and subsequently did postdoctoral research at City University of New York and Harvard Medical School. He started his independent lab at BRIC-inStem in 2013. His bioengineering lab at BRIC-inStem is developing innovative biomaterials and chemical biology approaches to solve unmet clinical needs. His lab has adopted innovative conceptual approaches that bridge chemistry and biology to develop clinically translatable technologies. Primarily, developing both prophylactic and therapeutic technologies. He published >100 research papers and holds >50 pending/granted patents. Based on the technologies developed in his lab, he co-founded 8 start-up companies, through which >25 products were launched into the market worldwide and have reached to millions of people.

His work has been recognized by:
2026 - Elected Fellow of the Indian Academy of Sciences, Bengaluru
2025 - Sun Pharma Science Foundation Research Fellowship 2025 Award
2025 - CRSI Bronze Medal 2025 from Chemical Research Society of India
2024 - ICT-RSC Innovation Award (Institute of Chemical Technology-Royal Society of Chemistry)
2023 - National Biotechnology Innovation Award - 2023 (Dept. of Biotechnology)
2020 - Biotech Product, Process Development and Commercialisation Award
(Dept. of Biotechnology)

SL2

A Roadmap for Translational Research: Journey of Science-Entrepreneurship

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Abstract

Often, the path to effective translational research is unclear. There are no systematic guidelines for conducting translational research to develop technologies that can address unmet clinical needs. Science-entrepreneurship plays a major role in conducting translational research, where lab-based scientific discoveries can be converted into viable products to reach the market and make a societal impact. In this talk, I will present a case study from our own work to discuss the key parameters that can help conduct effective translational research.

Our lab is focusing on clinical translational research through biomaterials and chemical biology programs. By using chemical design tools, we have been developing therapeutic and prophylactic biomaterials for medical applications. A wide range of technologies developed in the lab were used for multiple medical applications, such as the treatment of inflammatory bowel diseases and arthritis, and the prevention of rejection episodes in transplanted organs.[1,2] Additionally, prophylactic technologies were developed to prevent pesticide-induced toxicity and lethality.[3,4] Additionally, we will discuss our efforts in translating these technologies into the clinic.

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Raghavan B. Sunoj received a PhD in the year 2001 from Indian Institute of Science Bangalore and a postdoctoral training at the Ohio State University (USA) before joining IIT Bombay in 2003. He is currently a professor of chemistry and at the centre for machine intelligence and data science and holds the Google cloud chair professor position. His research interests are in computational organic chemistry and machine learning as applied to practically important problems in asymmetric catalysis and reaction mechanism. He has published well over 180 research articles in journals of repute with an h-index of 55. He has delivered more than 150 invited/keynote lectures in leading conferences as well as in universities globally.

He is a receipt of national awards such as the Shanti Swarup Bhatnagar prize in Chemical Sciences (2019) and National Award to Teachers (higher education) (2023). He is an elected fellow of the Indian Academy of Sciences as well as the National Academy of Sciences India. He is an elected member of the board of World Association of Theoretical and Computational Chemists (WATOC), Asia Pacific Association of Theoretical and Computational Chemists (APATCC), and Structural and Mechanistic Chemistry Division of the IUPAC. He is an associate editor of The Journal of Organic Chemistry. He serves on the editorial boards of Chemical Society Reviews (since 2023) and WIRES: computational molecular science (2020-2024). He is a member of editorial advisory boards of Chemical Science, Chem, Journal of Computational Chemistry, and Organic Letters. Earlier he was on the editorial advisory board of ACS Catal., Resonance –Journal of Science Education.

SL3

Machine Learning and Generative-AI for Chemical Reaction Development

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Increasing number of application of artificial intelligence and machine learning in almost all facets of life has appeared in recent years, including those in chemistry and biology.[1] Insofar as AI/ML adaptions to chemical space is concerned, most of such studies focused on molecular property predictions of direct significance to drug discovery. Similarly, generative-AI techniques have showed promise in antibiotic discovery.[2] While dovetailing predictive abilities of ML with gen-AI seems to offer interesting new avenues for molecular discovery, the feasibility of synthesis of such generated compounds would require careful assessment. The hype surrounding AI as a universal problem solver and the perceived threats of it replacing human experts from their jobs remain eerily close and realistic.[3]

It should be reckoned that the reliability of an ML model depends on the training data and on the nature of the tasks that it is deployed to predict. One of the challenging applications of AI/ML is in predicting reaction outcome, such as the yield or selectivities.[4] If these outcomes can be predicted, time and resources could be saved before setting out to carry out reactions, which are likely to be poor yielding. In this talk, I wish to highlight how ML models can be designed even with a few hundreds of training data and how it could be extended to generative tasks.[5] In particular, the utility of reinforcement learning to identify new substrates with much higher yields or catalysts that can enhance enantioselectivity would be highlighted.[6] A critical evaluation of whether or not generative-AI might be able to guide future experimental exploration in the domain of asymmetric catalysis would as well be in focus.[7]

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Mandar Bodas is a synthetic and medicinal chemist by training whose career spans two decades of hands-on drug discovery followed by a second chapter in scientific data and analytics. He earned his Ph.D. in chemistry from the National Chemical Laboratory (NCL), Pune, working on phosphorus ylide methodology, Sharpless asymmetric dihydroxylation and the total synthesis of 3-hydroxypipecolic acid, AAL-toxin and related alkaloids; he also holds an M.Sc. in Organic Chemistry and a Post Graduate Diploma in Business Management from M. S. University, Baroda. Postdoctoral work with Prof. William D. Lubell at the Université de Montréal took him into solid-phase peptide synthesis and constrained lactam peptides, contributing to some twenty papers and proceedings, including in JACS. He then joined Ranbaxy Laboratories as a Research Scientist, designing kinase inhibitors and combinatorial libraries for oncology, before moving to the Biocon–Bristol-Myers Squibb Research Centre (BBRC), Bangalore, where he rose to Senior Principal Investigator. Across a decade at BBRC he directed medicinal chemistry programmes in neuroscience, atherosclerosis, heart failure and fibrosis, delivering two clinical candidates and co-authoring seven patents on LXR modulators, ROCK inhibitors and small molecules targeting SARS-CoV-2, and earned R&D Milestone and multiple R&D Star Awards.

Since September 2018 Mandar has been with Elsevier, progressing from Solution Sales Manager for South Asia to Customer Consultant for South Asia, SEA and ANZ, and from 2024 to his current role as Solution Consultant for Life Sciences products across APAC — work recognised with the Most Valuable Player award for Life Sciences (2024) and the Regional Breakthrough Award (2018). He partners with pharmaceutical, biotech, chemicals and academic R&D organisations to translate scientific questions into workable solutions built on Elsevier's portfolio — Reaxys, Embase, PharmaPendium and associated datasets and APIs — across target identification, lead optimisation, DMPK and toxicology, regulatory strategy and pharmacovigilance. The central challenge is scale and trust: literature, patents, assay data and regulatory filings grow exponentially while R&D teams face shorter timelines and closer scrutiny of productivity. Technological demand has shifted accordingly, from keyword search toward semantically enriched, FAIR-aligned data, knowledge graphs, predictive models for synthesis and toxicology, and the retrieval-augmented use of large language models — all of which depend on provenance, reproducibility and sound data governance. His scientific credibility, combined with commercial fluency, lets him bridge researcher workflows and platform capability, and feed practitioner needs back into product development.

SL4

The Molecule, The Medicine, The Market: A Chemist's Path Through Three Versions of the Same Question

Mandar Bodas

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Abstract

Can it be made? A research career is usually narrated as a sequence of specialisations; mine is better described as one question asked in three successive dialects. Doctoral work at the National Chemical Laboratory, Pune, developed phosphorus ylide methodology, including a one-pot intramolecular Wittig annulation to chromones and thiochromones [1], and enantioselective routes to 3-hydroxypipecolic acid and related aza-scaffolds using Sharpless asymmetric dihydroxylation [2]. Postdoctoral research at the Université de Montréal extended this into solid-phase peptide chemistry, constructing Freidinger lactams on support to scan a backbone for the constrained conformation that carries activity [3].

Should it be made? Industry replaced that scoreboard entirely: kinase inhibitors for oncology at Ranbaxy Laboratories, then a decade at the Biocon–Bristol-Myers Squibb Research Centre as Senior Principal Investigator in neuroscience, atherosclerosis, heart failure and fibrosis, yielding two clinical candidate nominations and seven published patent families. Discovery is multi-parameter optimisation under chronic information scarcity: potency, selectivity, exposure, hERG and CYP liabilities and scalability are optimised at once and largely in conflict. Its most durable lesson: most of what a programme needs to know already exists somewhere, and the cost of not finding it is measured in years.

Can it be found? Since 2018, in solution and consulting roles at Elsevier across Asia Pacific, that observation has become the work itself. Literature, patents, assay data and regulatory filings grow faster than any group can read them, while decisions are made on shorter timelines. Demand has shifted from keyword retrieval toward semantically enriched, FAIR-aligned data, knowledge graphs and retrieval-augmented language models — each usable only insofar as provenance and reproducibility can be shown. The role is diagnostic rather than transactional: translating a researcher's question into data that can answer it, for academic and industrial groups alike.

The lecture traces that path candidly, including the parts that were not planned, and closes on the bridge between the two worlds: over twenty-five Faculty Development Programme lectures and course series on drug discovery, good laboratory practice and laboratory safety at universities and institutes of national importance, and work as co-investigator on a DBT-funded project. For early career researchers the argument is simple — doctoral training is a method rather than a subject, and it is more useful to follow the bottleneck than the job title.

References and notes:

[1] Kumar, P.; Bodas, M. S. *Org. Lett.* **2000**, *2*, 3821.

[2] Kumar, P.; Bodas, M. S. *J. Org. Chem.* **2005**, *70*, 360.

[3] Jamieson, A. G.; Boutard, N.; Beauregard, K.; Bodas, M. S.; et al. *J. Am. Chem. Soc.* **2009**, *131*, 7917.

Biosketch

Prof. Jitendra Kumar Bera
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Prof. J. K. Bera's research group works in Organometallic Chemistry – Ligand design incorporating desired functionalities, synthesis of new metal complexes, studying fundamental chemistry and applications of these compounds in different areas. A large part of our activity is dedicated to the catalytic evaluation for reactions that are synthetically challenging and directly address chemical aspects of renewable energy and sustainability. Understanding the mechanism of a catalytic reaction is a key undertaking in our program. Furthermore, we seek to expand the use of these compounds in biology and materials chemistry.

He is currently serving as a distinguished member of the Editorial Advisory Board of the *Journal of the Indian Chemical Society* and has served on the Editorial Advisory Board of Dalton Transactions (RSC), as Associate Editor of Applied Organometallic Chemistry (Wiley), and on the Editorial Advisory Board of *Organometallics* (ACS). He was a member of several renowned scientific communities, some of which are the Core Committee Member, PAC on Inorganic and Physical Chemistry (SERB), Council member of the Chemical Research Society of India (CRSI), and National Organizing Committee (NOC). He was a Visiting Professor at Osaka University, Japan, and at the University Paul Sabatier, France.

Council Members

Biosketch

Prof. Krishna P. Kaliappan
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Department of Chemistry
Indian Institute of Technology (IIT), Bombay
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Homepage: https://www.chem.iitb.ac.in/~kpk/



Prof. K. P. Kaliappan is an eminent scientist. His research group is devoted to designing and developing new efficient methodologies for the synthesis of complex molecules and natural products with immense biological importance. Some of the pioneering syntheses from his group are the total synthesis of platencin, platensimycin, palmerolide A, and dysidiolide.

He is now serving as Dean of Strategy at IIT Bombay. He is a recipient of prestigious awards, such as the Prof. S. C. Bhattacharyya Award for excellence in Pure Science, the Prof. C. N. R. Rao National Prize in Chemical Sciences, the CRSI Bronze Medal, the Excellence in Teaching Award (IIT Bombay), the Swarnajayanti Fellowship, and the B. M. Birla Science Prize for Chemistry. He is a distinguished member of several national and international scientific organizations. He is a distinguished fellow of the Indian Academy of Sciences and a member of the Synthesis Sub-Committee of IUPAC, Organic and Biomolecular Division III. He is an advisory board member of the *Organic and Bimolecular Chemistry* Journal. He also served as vice president of RSC West India section.

Biosketch



Dr. D. Srinivasa Reddy

EDUCATION

Ph.D., Synthetic Organic Chemistry, University of Hyderabad, India, 2000
Adviser: ***Professor Goverdhan Mehta***

M.Sc., Organic Chemistry, Osmania University (Nizam College), India, 1993
B.Sc., Chemistry, Botany and Zoology, Osmania University (SP College), India, 1991

EXPERIENCE

06/2022-present	***Director,*** CSIR- Indian Institute of Chemical Technology, Hyderabad, Uppal Road, India.
07/2020-03/2023	***Director***, CSIR- Indian Institute of Integrative Medicine, Jammu, Canal Road, India ***(additional charge)***
02/2022-09/2022	***Director (additional charge)***, CSIR- Central Drug Research Institute, Lucknow, UP, India.
12/2018-07/2020	***Senior Principal Scientist***, Division of Organic Chemistry, National Chemical Laboratory, Pune, India.
11/2014-12/2018	***Principal Scientist***, Division of Organic Chemistry, National Chemical Laboratory, Pune, India.
11/2010-11/2014	***Senior Scientist***, Division of Organic Chemistry, National Chemical Laboratory, Pune, India.
11/2007-10/2010	***Section Head/Group Leader***, Discovery Chemistry, Advinus Therapeutics Pvt. Ltd, Pune, India.
12/2003-10/2007	***Research Investigator/Principal Scientist***, Discovery Chemistry, Dr. Reddy's Laboratories Ltd., Hyderabad, India.
9/2001-11/2003	***Postdoctoral Fellow***, Department of Medicinal Chemistry, University of Kansas, KS, USA; Mentor: ***Prof. Jeffrey Aubé***
6/2000-8/2001	***Postdoctoral Fellow***, Department of Chemistry, University of Chicago, Chicago, IL, USA; Mentor: ***Prof. Sergey A. Kozmin***
8/1994-5/2000	School of Chemistry, University of Hyderabad, Hyderabad, India ***Doctoral Student***; Adviser: ***Prof. Goverdhan Mehta***

- 20 + Years of research experience (post-PhD) in total synthesis of natural products/medicinal chemistry/drug discovery

Experienced in leading drug discovery programs (7 years of pharma industry experience)

- One of the molecules (Licogliflozin) discovered by his team in industry is currently in human clinical trials (Phase-II), where he was a project leader.
- Out-licensed patent/technology (two nos.) developed by team at CSIR-NCL.
- Has experience in coordinating multi-disciplinary teams as a project leader, in particular, during the tenure at pharma industry.
- Acquired skills in designing novel small molecules and lead optimization.
- Experienced in planning and execution of projects (Govt. and Industry).
- Accomplished total synthesis of several natural products (>50 nos) and many of them are for the first time.
- Identified Silinezolid with high brain:plasma ratio with a potential to treat brain infections.
- Identified novel mosquito repellents – further work is in progress.
- Developed a method to access enantiopure pheromones towards crop protection.
- Identified novel Cladologs towards potent anti-malarials.
- Identified a few early leads towards developing drugs for treating infectious diseases and metabolic disorders.

RESEARCH INTERESTS

- Total Synthesis of Natural Products
- Medicinal Chemistry and Drug Discovery

AWARDS AND RECOGNITIONS

- J. C. Bose National Fellowship by SERB, DST, Govt. of India
- Shanti Swarup Bhatnagar Prize in chemical sciences
- Fellow of the Indian National Science Academy, India (INSA)
- Fellow of the Indian Academy of Sciences, India (FASc)
- Fellow of the National Academy of Sciences, India (FNASc)
- NASI-Reliance Industries Platinum Jubilee Award in physical sciences
- Sun Pharma Research (Ranbaxy) Award in pharmaceutical sciences
- OPPI (Organization of Pharmaceutical Producers of India) Scientist Award for contributions in pharmaceutical sciences
- Nominated member of the scientific body of Indian Pharmacopoeia, Govt. of India
- CRSI Bronze Medal in Chemical Science
- CDRI Award for Excellence in drug discovery research - Chemical Sciences
- Editor of Bioorganic & Medicinal Chemistry Letters (BMCL), an Elsevier journal
- Fellow of the Maharashtra Academy of Sciences
- Fellow of the Telangana Academy of Sciences
- Scientist of the year award by NCL Foundation
- DST-SERB PAC member (co-opt) for the Organic Chemistry
- KKG Menon Memorial Lecture Award of ICT, Mumbai
- Darshan Ranganathan Memorial Lecture Award by CRSI.
- Council Member of the (NOST) National Organic Symposium Trust
- Council Member of the Chemical Research Society of India (CRSI)

- Nominated member of the General and Governing Body of National Dope Testing Laboratory (NDTL), Ministry of Youth Affairs and Sports, Govt of India

Bio-Sketch



Prof. (Col.) Diwan S Rawat, FNA, FNASc, FRSC, CChem (London) Vice-Chancellor Kumaun University, Nainital, Uttarakhand Email: dsrawat@chemistry.du.ac.in Professor Rawat is the youngest Vice Chancellor in the 53-year history of Kumaun University, Nainital, the University from where he did graduation and postgraduation. After obtaining his Ph.D. from Central Drug Research Institute, Lucknow and he worked with Panchsheel Org Ltd, Indore and Lupin Labs from 1997-1999. From 1999 – 2002 worked at Indiana University and Purdue University, USA. In 2002, he joined National Institute of Pharmaceutical Education and Research, Mohali as Assistant Professor and in 2003 he joined Delhi University as a Reader. He was promoted to Full Professor in 2010 and became senior Professor in 2020. Prof. Rawat has published over 176 research papers, authored a book, the book was forwarded by Nobel Laureate Sir DHR Barton, he authored 7 book chapters, and 22 patents to his credit. His research work has been cited over 8300 times with impressive h-index of 55 and i-10 index of 145. Professor Rawat has developed a molecule which has potential to treat Parkinson disease for which there is no drug available. Recently, the molecule has progressed to phase II human clinical trials and two molecules are in preclinical development, one for autoimmune and other for dementia. This is the first molecule that got US FDA approval from any Indian academic institute. Prof Rawat has supervised 29 PhD students and 9 post-doctoral students. He has vast administrative experience and has introduced digital degree concept at University of Delhi and DU became first University in the country to release over 1.78 lakh digital degrees in 2021. As Vice Chancellor of Kumaun University he introduced many reformative initiatives such as internal research funding, talent hunt program, internship etc and University got MERU status with Rs 100 Cr grant and ANRF-PAIR project of Rs 100 Cr. Ministry of Defense, Govt of India conferred Honorary Colonel rank to Prof Rawat for his contribution to NCC at Kumaun University. Selected Awards and Honors (from 2015 onwards only): 1. Outstanding Vice Chancellor of India award (2026), 15th Indian Education Summit organised by India Education Network, February 7, 2026, New Delhi 2. Fellow, Indian National Science Academy (FNA), 2025. 3. Acharya PC Ray Memorial Award, Indian Chemical Society, 2025. 4. Vasvik research award, 2022. 5. ISCB Excellence award in drug discovery, 2022. 6. Fellow, National Academy of Sciences (FNASc), 2021. 7. Excellence Award for Exemplary Services, University of Delhi 2021. 8. President of Chemical Sciences Section, Indian Science Congress, 2019-2020. 9. Visiting Professor, Japan Advanced Institute of Science and Technology, Japan. 10. Professor SP Hiremath Memorial Award, Indian Council of Chemist, 2016. 11. Professor RC Shah

Memorial Lecture Award, Indian Science Congress 2015. 12. Associate Editor, Royal Society Advances and Scientific Report.

Biosketch

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Education:

Postdoctoral Fellow, Kyoto University, Japan (with Prof. A. Osuka)	2004-2006
Postdoctoral Fellow-JSPS, Kyoto University, Japan (with Prof. T. Hiyama)	2002-2004
Postdoctoral Fellow, RWTH Aachen, Germany (with Prof. H-J. Gais)	2002-2002
Ph.D, National Chemical Laboratory, Pune, India (with Prof. G. Pandey)	2001
MSc (Organic Spl), Utkal University, Bhubaneswar, Odisha	1994

Career:

Professor, University of Hyderabad, India	2016-present
Associate Professor, University of Hyderabad, India,	2013-2016
Assistant Professor, University of Hyderabad, India,	2007-2012
Scientist, Sai Advantium Pharma Limited, Hyderabad, India,	2006-2007

Scientific activities:

-Published over 100 papers and 7 International Patents
-Delivered lectures over 95 seminars in the National Symposiums in India.
-Delivered 35 invited lectures in the International Conference.

Research topics:

-Development of novel synthetic methods for organic synthesis.
-Functionalizations of sp^2 and sp^3 C-H bonds. Stereoselective C-H functionalizations.
-Gold and silver-catalyzed organic transformations.
-Synthesis of fused-π-conjugated heterocycles.
-Synthesis of nitro and nitrogen-rich insensitive high energetic materials.

Awards:

Fellow of Indian National Science Academy (FNA)-2025
Fellow of Indian Academy of Sciences (FASc)-2021
Fellow of Royal Society of Chemistry (FRSC)-2020
Fellow of National Academy of Sciences (FNASc)-2019
UGC-BSR-Mid Career Award-2020
Prof. D. K. Banerjee Memorial Lecture Award 2012, IISc, Bangalore.
Japan Society for the Promotion of Science (JSPS) Fellowship 2002.

Supervision and Guidance:

-PhD completed-**22**, -Currently supervising-**09** -Total Citations **5960**

[**h-Index = 47**; **i10 Index = 95;** Google Scholar as on 19/09/2026]

Recognition:

Associate Editor of the New Journal of Chemistry (RSC) from January 2017

Academia-Industry Collaboration:

Consultant to Sai Life Sciences (2007-2009); Adama Pvt. Ltd. (2015-2023).

Contribution to National /International Forum

- Prof. Angela Marinetti, CNRS-ICSN, GIIF-sur-Yvette, Paris under CEFIPRA.
- Member of School Board of Chemistry: Central University of Rajasthan and Jharkhand, BHU
- Council Member of the National Organic Symposium Trust (NOST; 2019-2021; 2022-2026).
- Member of the RSC, Member of the ACS-USA

Biosketch

Namrata Rastogi

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Dr. Namrata Rastogi completed Ph.D. from the Department of Chemistry, Indian Institute of Technology, Bombay in 2006 under the supervision of Prof. I. N. N. Namboothiri. She worked as postdoctoral research associate at the Indian Institute of Technology, Kanpur and University of Minnesota, Minneapolis, USA, during 2006 to 2009. She then served as senior research scientist in Jubilant Biosys Drug Discovery and Development, Bengaluru, Karnataka for 2 years. Dr. Rastogi joined CSIR-Central Drug Research Institute, Lucknow in 2011 as Scientist, where she is currently at the position of Senior Principal Scientist.

Dr. Rastogi is recipient of several awards and fellowships including INSA-DFG Scientist Bilateral Exchange Fellowship-2014, RSC Greygnog Young Scientist-2015, ISCB Distinguished Woman Scientist-2019, CRSI Bronze Medal-2023, CRS Bronze Meadal-2024 and DST-SERB POWER Fellowship-2024. Recently in 2025, she has been selected in the first batch of INSA Women Associates (IWA). Dr. Rastogi also served/serves on the editorial board of several journals including Asian Journal of Organic Chemistry, Synthesis, Journal of Chemical Sciences, Tetrahedron, and Tetrahedron Letters.

Biosketch

Prof. Vishal Rai
J. C. Bose Fellow, FNASc, FRSC
Department of Chemistry Coordinator, SERB-PACE
Indian Institute of Science Education and Research, Bhopal
Founder and Director, Plabeltech
Associate Editor, *Chemical Communications*
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Prof. Vishal Rai's research group is leading the development of chemical technologies for the *precision engineering of proteins*. His research team wants to contribute through homogeneous bioconjugates for directed cancer chemotherapeutics and surgical oncology. Besides, they are investing efforts to make small-molecule precision therapeutics possible in the future.

He is the founder and director of *Plabeltech Private Limited* (https://plabeltech.com), which works with biopharma companies to develop next-generation therapeutic protein and antibody conjugates. He is the recipient of the J. C. Bose Fellowship, Shanti Swarup Bhatnagar Award, Swarnajayanti Fellowship, Ramanujan Fellowship, Distinguished Teacher Award, CRSI Bronze Medal, CDRI Award, SERB Technology Translation Award, NASI-Reliance Innovation Fellowship, among others. He has been involved in scientific outreach activities as a NOST council member, ICBS national co-chair, and Asia representative in Commonwealth Chemistry. He has served as a member of the ACS Editor-in-Chief search committee, an advisory board member of *Chemical Science*, *Bioconjugate Chemistry*, and an ECB member of *ACS Chemical Biology*. At present, he serves as an Associate Editor of *Chemical Communications*.

Biosketch



Dr. S. S. V. Rama Sastry
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Ramasastry obtained his Ph.D. in Chemical Sciences in 2005 from the Indian Institute of Science, Bangalore, under the supervision of Prof. A. Srikrishna. He then pursued postdoctoral research with Prof. Carlos F. Barbas, III, at The Scripps Research Institute, San Diego (USA). In 2011, he joined the Department of Chemical Sciences at IISER Mohali as an Assistant Professor and has been a Professor there since 2023.

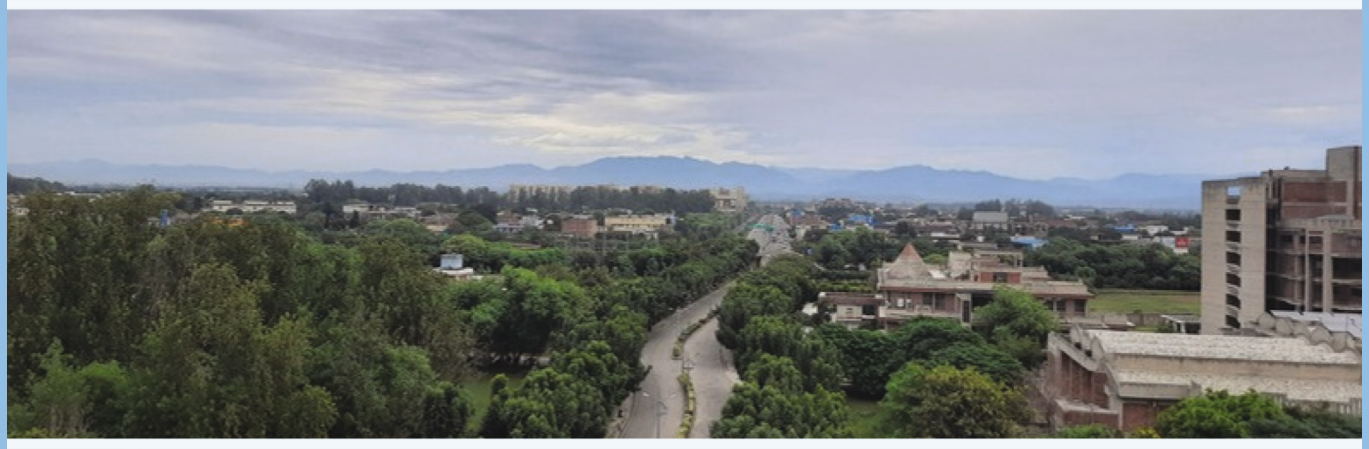
His research interests encompass the development of sustainable and atom economic reactions through organophosphine catalysis, palladium-catalyzed allylic alkylation reactions, one-pot cascade transformations involving sulfur ylides, and application of these methodologies to the synthesis of bioactive natural products and pharmaceutically relevant compounds.

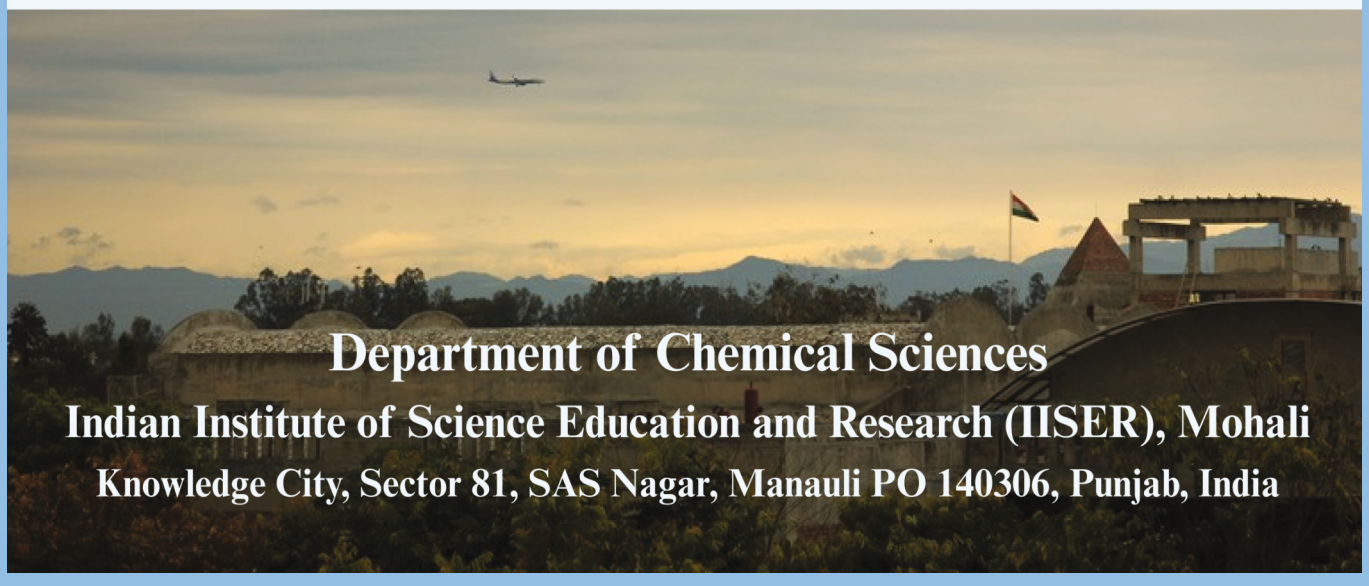
He has been inducted as an INSA Associate Fellow (2026). He was a recipient of the Silver Star Medal (2025) from Chirantan Rasayan Sanstha (CRS), the CDRI Award for Excellence in Drug Research (2022), DST-Swarnajayanti Fellowship (2018), the CRSI Bronze Medal (2018), the AVRA Young Scientist award (2018), the OPPI Young Scientist award (2018), and the Thieme Chemistry Journals award in (2017). He was invited to become FRSC under the Leaders in the Field (LITF) scheme. He served as an Editorial Advisory Board member of the RSC journal *Organic & Biomolecular Chemistry* (OBC) from 2017 to 2022 and has been a member of its Editorial Board since 2022. He was also invited to become a Council Member of the NOST for the 2023–2026 term and as a Council Member of CRSI for the 2026–2029 term.











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