



# DEPARTMENT OF CHEMISTRY

(DST - FIST SPONSORED)

CENTRAL UNIVERSITY OF TAMIL NADU THIRUVARUR

[Established by an Act of Parliament, 2009]

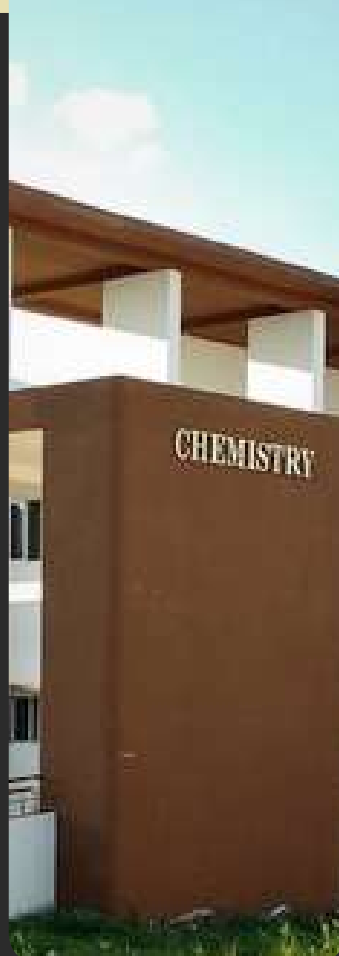
# CHEM CONNECT

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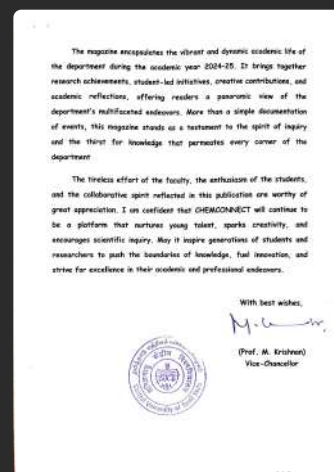
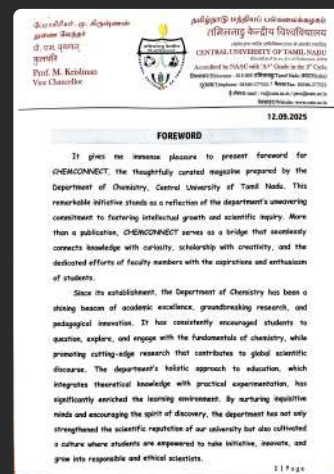
# FOREWORD BY THE VICE-CHANCELLOR

It gives me immense pleasure to pen this foreword for CHEMCONNECT, the thoughtfully curated magazine prepared by the Department of Chemistry, Central University of Tamil Nadu. This remarkable initiative stands as a reflection of the department's unwavering commitment to fostering intellectual growth and scientific inquiry. More than a publication, CHEMCONNECT serves as a bridge that seamlessly connects knowledge with curiosity, scholarship with creativity, and the dedicated efforts of faculty members with the aspirations and enthusiasm of students.

Since its establishment, the Department of Chemistry has been a shining beacon of academic excellence, groundbreaking research, and pedagogical innovation. It has consistently encouraged students to question, explore, and engage with the fundamentals of chemistry, while promoting cutting-edge research that contributes to global scientific discourse. The department's holistic approach to education, which integrates theoretical knowledge with practical experimentation, has significantly enriched the learning environment. By nurturing inquisitive minds and encouraging the spirit of discovery, the department has not only strengthened the scientific reputation of our university but also cultivated a culture where students are empowered to take initiative, innovate, and grow into responsible and ethical scientists.

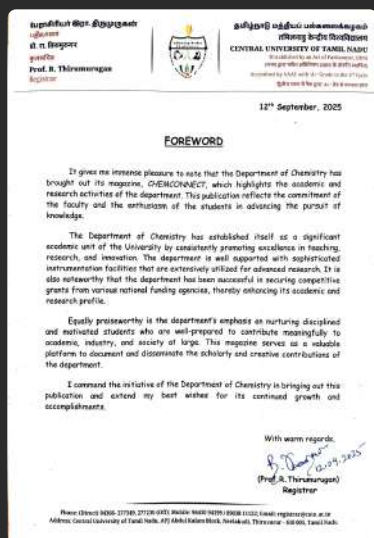
The magazine encapsulates the vibrant and dynamic academic life of the department during the academic year 2024–25. It brings together research achievements, student-led initiatives, creative contributions, and academic reflections, offering readers a panoramic view of the department's multifaceted endeavors. More than a simple documentation of events, this magazine stands as a testament to the spirit of inquiry and the thirst for knowledge that permeates every corner of the department.

The tireless effort of the faculty, the enthusiasm of the students, and the collaborative spirit reflected in this publication are worthy of great appreciation. I am confident that CHEMCONNECT will continue to be a platform that nurtures young talent, sparks creativity, and encourages scientific inquiry. May it inspire generations of students and researchers to push the boundaries of knowledge, fuel innovation, and strive for excellence in their academic and professional endeavors.





# FOREWORD BY THE REGISTRAR



It gives me immense pleasure to note that the Department of Chemistry has brought out its magazine, CHEMCONNECT, which highlights the academic and research activities of the department. This publication reflects the commitment of the faculty and the enthusiasm of the students in advancing the pursuit of knowledge.

The Department of Chemistry has established itself as a significant academic unit of the University by consistently promoting excellence in teaching, research, and innovation. The department is well supported with sophisticated instrumentation facilities that are extensively utilized for advanced research. It is also noteworthy that the department has been successful in securing competitive grants from various national funding agencies, thereby enhancing its academic and research profile.

Equally praiseworthy is the department's emphasis on nurturing disciplined and motivated students who are well-prepared to contribute meaningfully to academia, industry, and society at large. This magazine serves as a valuable platform to document and disseminate the scholarly and creative contributions of the department.

I commend the initiative of the Department of Chemistry in bringing out this publication and extend my best wishes for its continued growth and accomplishments.

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# MESSAGE

*from the*

# CHIEF EDITOR

Such endeavours kindle far more than intellectual growth, they inspire confidence, sharpen communication, and build bonds of teamwork and creativity. Every contribution, whether a thoughtful article, a creative piece, or a scientific insight, echoes the spirit of collaboration that defines our department.

I extend my heartfelt gratitude to all contributors, students, staff, and faculty whose commitment has brought this edition to life. A special note of appreciation goes to the editorial team, whose perseverance and vision have transformed scattered ideas into this polished work of collective expression.

May this magazine not only inform but also inspire; may it ignite fresh ideas, kindle curiosity, and remind us of all of the vibrant academic and cultural life that thrives within our department. Let it stand as a testament to the belief that when creativity meets knowledge, possibilities become limitless.

It is with great joy and pride that I present to you the first edition of our departmental magazine, a vibrant tapestry woven with the passion, imagination, and scientific spirit of our students and faculty. A magazine is much more than a collection of words and images; it is a living mirror that reflects the growth, creativity, and vision of the academic family it represents.

At the Department of Chemistry, we have always nurtured a culture of curiosity, inquiry, and critical thinking. This magazine stands as a platform where young minds dare to dream, explore, and give voice to their ideas beyond the boundaries of the classroom. Each page carries not only the fragrance of science but also the artistry of thought, reminding us that knowledge flourishes best when shared.

# Faculty Members



**Dr. S. NAGARAJAN**

PROFESSOR & HEAD  
*Organic Electronics & Synthetic  
Organic Chemistry*



**Dr. T. MOHAN DAS**

PROFESSOR  
*Carbohydrate Chemistry*



**Dr. R. RANJITH KUMAR**

ASSOCIATE PROFESSOR  
*Synthetic Organic Chemistry*



**Dr. V. RAJENDIRAN**

ASSOCIATE PROFESSOR  
*Coordination, Bio-inorganic &  
Medicinal Chemistry*



**Dr. VITTAL BABU  
GUDIMETLA**

ASSISTANT PROFESSOR  
*Hybrid Organic-Inorganic Material,  
Carbon Nanomaterials, Organometallics  
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**Dr. M. SHIVA PRASAD**

ASSISTANT PROFESSOR  
*Organocatalysis & Asymmetric  
Synthesis*



**Dr. V. PRABHA**

ASSISTANT PROFESSOR  
*Computational Chemistry*



**Dr. JOHN PRAKASH**

ASSISTANT PROFESSOR  
*Photophysical Chemistry &  
Fluorescence Spectroscopy*



**Dr. MEENAKSHI PAHWA**

ASSISTANT PROFESSOR  
*Nanoparticles & Supramolecular  
Chemistry*

# Faculty Members



**Dr. RAJKUMAR  
SUBRAMANI**

ASSISTANT PROFESSOR  
*C-H Activation Chemistry and  
Main Group Chemistry*



**Dr. M. RAMACHANDRAN**

GUEST FACULTY



**Dr. T. ALWIN**

GUEST FACULTY

## Non-Teaching staff



**Dr. K. Chandru**

Sr. Technical Assistant



**Dr. Mijun Chandran**

Technical Assistant



**Mr. J. Arulprasath**

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**Mr. N. Sembulingam**

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**Mr. Mani**

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# Dr. S. Nagarajan

## Professor & Head



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### Connect:

**Google Scholar** : <https://scholar.google.com/citations?user=MdygFIYAAAAJ&hl=en>  
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Prof. S. Nagarajan joined the Central University of Tamil Nadu in 2012 and currently holds the position of Head of the Department of Chemistry. He was the first faculty member appointed to the department and has served as the founding Head from 2013 to 2019. He has contributed significantly to the University, taking on key roles such as Dean of the School of Basic and Applied Sciences, Dean of Students' Welfare, and Controller of Examinations (*i/c*). Presently, he serves as the Dean of Academics. He gained international exposure as a Postdoctoral Fellow at the Nanoscience group of CEMES-CNRS, Toulouse, France, and as a Guest researcher at the International Center for Materials Nano-architectonics (MANA), NIMS, Tsukuba, Japan. With an impressive scholarly record over the course of his career, he has successfully supervised 16 PhD scholars, 22 MPhil candidates, and three Postdoctoral Scholars. In recognition of his research endeavors, he secured a grant totalling Rs. 160 Lakhs from prestigious funding bodies such as DST, CSIR, UGC, and industry

### Research Focus:

**Organic Synthesis & Organic Electronics:** Organic Electronics is a budding interdisciplinary research area focusing on technologies that rely on organic semiconductors instead of traditional inorganic ones. Organic electronics will help us to address the crucial problems of modern society. This field results in low-cost, lightweight, flexible, wearable technologies, energy-efficient lighting, efficient memory devices, and molecular sensors.

Virtually unlimited possibilities of synthetic organic chemistry and compatibility with inexpensive solution-based fabrication techniques make organic semiconductors an extremely viable novel technology of the future. His group's research focuses on design and synthesis of new organic compounds and understanding how molecular structure alters the properties of such materials. For this purpose, we work on molecular design, synthesis, characterization techniques, photophysical studies, computational studies, device fabrication, and characterization to advance the field of organic electronics and contribute to the development of efficient and sustainable electronic devices for information processing.

### Key Research Areas:

- Design and synthesis of new organic molecules for Electronics.
- Fabrication of non-volatile resistive memory devices and efficient organic field-effect transistors.

### Selected Publications:

- Gayathri, R.; Angela, V. M.; Devibala, P.; Imran, P. M.; Nagarajan, S. Tailoring the Resistive Switching WORM Memory Behavior of Functionalized Bis (Triphenylamine). *ACS Appl. Mater. Interfaces* 2023, 15 (19), 23546–23556.
- Angela, V. M.; Harshini, D.; Imran, P. M.; Nagarajan, S. Strategical Design and Synthesis of D–A–D-Based Quinolines for Improved WORM Memory Performance. *J. Mater. Chem. C* 2023, 11 (3), 1103–1110
- Dheepika, R.; Sonalin, S.; Imran, P. M.; Nagarajan, S. Unsymmetrical Starburst Triarylamine: Synthesis, Properties, and Characteristics of OFETs. *J. Mater. Chem. C* 2018, 6 (26), 6916–6919.

- Guillermet, O.; Niemi, E.; Nagarajan, S.; Bouju, X.; Martrou, D.; Gourdon, A.; Gauthier, S. Self-Assembly of Fivefold-Symmetric Molecules on a Threefold-Symmetric Surface. *Angew. Chemie Int. Ed.* 2009, 121 (11), 2004–2007.
- Calmettes, B.; Nagarajan, S.; Gourdon, A.; Abel, M.; Porte, L.; Coratger, R. Bicomponent Supramolecular Packing in Flexible Phthalocyanine Networks. *Angew. Chemie Int. Ed.* 2008, 47 (37), 6994–6998

### Grants & Funding:

- Design and Synthesis of Functionalized Quinolines for Stable and Non-volatile Resistive Memory Devices, ANRF, 3 Years (2024-2027), Funding: Rs. 51.09 Lakhs

### Research Group:



### Research Scholars:



### Publications in 2024-25:

- Akshaya, M.; Gayathri, R.; Imran, P. M.; Nagarajan, S. Exploring Single Atom Substitution In Phenanthro [9, 10-d] Imidazole-Based D- $\pi$ -A Architectures with Fluorene and its Heteroanalogs for Non-Volatile Resistive WORM Memory Device Applications. *Chem. Eur. J.* 2025, 31 (12), e202404337.
- Gayathri, R.; Akshaya, M.; Imran, P. M.; Bhuvanesh, N.S.P.; Nagarajan, S. Efficient Non-Volatile WORM Memory Devices from Ferrocene Functionalized Quinoxaline Systems. *Chem. Asian J.* 2025, 20 (10), e202401888.
- Gokul, R.; Gayathri, R.; Imran, P. M.; Bhuvanesh, N.S.P.; Nagarajan, S. Exploring the potential of malononitrile functionalized donor-acceptor systems for non-volatile memory device applications, *Phys. Chem. Chem. Phys.* 2025, 27 (1), 129-137.

- Akshaya, M.; Harshini, D.; Gayathri, R.; Imran, P. M.; Nagarajan, S. Asymmetrically Functionalized Phenanthro[9,10-d]imidazole-Based Donor–Acceptor Architectures for High-Performance Ternary Memory Devices. *ACS Appl. Electron. Mater.* 2024, 6 (10), 7522–7539.
- Asit, H.; Angela, V. M.; Bhagyanath, P.K.; Imran, P. M.; Bhuvanesh, N.S.P.; Nagarajan, S. Design and synthesis of pyridine-bridged benzothiazole-based DA system for SRAM memory devices. *Synth. Met.* 2024, 309, 117777.
- Balambiga, B.; Devibala, P.; Imran, P. M.; Nagarajan, S. Tunable Charge Transport Using Heterocycles-Flanked Alkoxyphenanthrenes for High-Performing OFETs. *ACS Omega* 2024, 9 (41), 42091–42102.
- Gayathri, R.; Akshaya, M.; Imran, P. M.; Nagarajan, S. Design of Triphenylamine-based D- $\pi$ -A Systems for Efficient Ternary WORM Memory Devices, *Chem. Eur. J.* 2024, 30 (48), e202402015.
- Swetha, S.V.; Gayathri, R.; Ardra, M.; Imran, P. M.; Nagarajan, S. Inherent D-A Architecture in Indoloquinoxalines with an Array of Substituents for Non-Volatile Memory Device Applications, *ChemPhysChem* 2024, 25 (9), e202400003.
- Ardra, M.; Gayathri, R.; Swetha, S.V.; Imran, P. M.; Nagarajan, S., Tweaking the Non-Volatile Write–Once–Read–Many–Times (WORM) Memory using Donor-Acceptor Architecture with Isatin as Core Acceptor, *ChemPlusChem* 2024, 89 (8), e202400018.
- Harshini, D.; Angela, V. M.; Imran, P. M.; Nagarajan, S. Exploring the Transformation of Static Random Access Memory to Write-Once-Read-Many-Times Memory Behavior in Imidazole–Triphenylamine-Based Devices, *ACS Appl. Electron. Mater.* 2024, 6 (1), 358–369.
- Gayathri, R.; Akshaya, M.; Imran, P. M.; Nagarajan, S. Modified Donor End Caps for Binary-to-Ternary WORM Memory Conversion in N-Heteroaromatic Systems, *ChemPhysChem* 2024, 25 (11), e202400062.
- Devibala, P.; Balambiga, B.; Imran, P. M.; Nagarajan, S.  $\pi$ -Extended indoloquinoxaline functionalized triaryl amines with ethynyl and tetracyanobutadiene bridges for p-channel and ambipolar OFETs, *New J. Chem.* 2024, 48 (1), 193–202.
- Angela, V. M.; Harshini, D.; Imran, P. M.; Bhuvanesh, N.S.P. Nagarajan, S., Rational design of quinoline-based D-A system to accomplish a switching from binary to ternary memory devices, *Synth. Met.* 2024, 305, 117598.
- Bhagyanath, P.K.; Angela, V. M.; Asit, H.; Imran, P. M.; Bhuvanesh, N.S.P.; Nagarajan, S., Switching from binary to ternary WORM memory behavior of benzothiadiazole-based D–A system, *Mater. Adv.* 2024, 5 (8), 3323–3333.
- A. S. Achutha, A.S.; Krishna, S.; Pushpa, V.L.; Harshini, D.; Aiswarya, U.S.; Nagarajan, S.; Anto, R.J.; Vinod, B.S.; Prakash, P.; Manoj, S. V.; Manoj, K. B.; Sarithamol, S.; Surendran, S.; Divya, V. Designing JAK2 Inhibitors Beyond Myeloproliferative Neoplasms - Theoretical and Experimental Analysis for Solid Cancers, *ChemistrySelect* 2024, 9 (19), e202400072.
- Noureen, S.; Devibala, P.; Imran, P. M.; Nagarajan, S., Acetylene-extended triaryl amines for solution-processable p-channel OFETs, *Synth. Met.* 2024, 302, 117541

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#### Conferences (2024-25):

- Akshaya, M. and Nagarajan, S., Enhanced Resistive Switching WORM Memory Behavior in D- $\pi$ -A Architectures Through Terminal Donor Unit Modification, International Conference on Nanoscience and Nanotechnology for Sustainability, SCMS School of Engineering and Technology, Karukutty, Ernakulam, 4 & 5 July 2024.
- Swetha, S. V. and Nagarajan, S., Design and Synthesis of [3]-Phenacene-based A- $\pi$ -D- $\pi$ -A and D- $\pi$ -A Architecture for Non-Volatile Memory Device Applications, National Conference on Advances in Material Science and Technology, PSG College of Technology, Coimbatore, 27 & 28 December 2024.
- Siddharth, K. S. and Nagarajan, S., Fine Tweaked Quinoxalines: Robust Materials for Binary WORM Memory Devices, 23rd Prof. K.V. Thomas Endowment National Seminar on Frontiers in Materials Science, Sacred Heart College, Thevara, Kochi, 27 & 28 November 2024.

- Ardra, M. and Nagarajan, S., Ferrocene based D- $\pi$ -A Systems for Binary WORM Memory Applications, 23rd Prof. K.V. Thomas Endowment National Seminar on Frontiers in Materials Science, Sacred Heart College, Thevara, Kochi, 27 & 28 November 2024.
- Devibala, P. and Nagarajan, S., High Mobility and ON/OFF Ratio of Solution-processable p-Channel OFETs from Pyrene, Anthracene and Triphenylamine based D- $\pi$ -D triads, CRSI National Symposium in Chemistry and CRSI-ACS Lectures, Dr Reddy's Laboratories Ltd, Hyderabad, 4 to 6 July 2024.
- Gayathri, R. and Nagarajan, S., Design and Synthesis of D- $\pi$ -A-based N-Heteroaromatic Systems for Improved WORM Memory Performance, National Conference on Nanoscience and Nanotechnology for Sustainability, SCMS School of Engineering and Technology, Karukutty, Ernakulam, 4 & 5 July, 2024.
- Gokul, R. and Nagarajan, S., Donor-Acceptor Platforms with Malononitrile for Next-Generation Resistive Memory Devices, ICMGS 2025 International Conference on Materials for Green and Sustainable Chemistry, Gandhigram Rural Institute, Dindigul, 6 & 7 March 2025.
- Janani, K. and Nagarajan, S., Functionalized Triphenylamine and Phenoxazinone-based Blends for Organic Non-Volatile Binary WORM Memory Devices, ICMGS 2025 International Conference on Materials for Green and Sustainable Chemistry, Gandhigram Rural Institute, Dindigul, 6 & 7 March 2025.
- Jayalakshmi, L. and Nagarajan, S., Pyridine-based D- $\pi$ -A Systems for Memory Device Applications, ICMGS 2025 International Conference on Materials for Green and Sustainable Chemistry, Gandhigram Rural Institute, Dindigul, 6 & 7 March 2025.
- Namitha, A. and Nagarajan, S., International Influence of Polyaromatics in Phenanthro[9,10-d]imidazole-based Donor-Acceptor Systems for Non-Volatile Resistive WORM Memory Device Applications, ICMGS 2025 International Conference on Materials for Green and Sustainable Chemistry, Gandhigram Rural Institute, Dindigul, 6 & 7 March, 2025.
- Thejalakshmi and Nagarajan, S., Design and Synthesis of Dibenzothiophene-S, S-dioxide-based D-A-D' and D-A-A' Architected Organic Small Molecules, ICMGS 2025 International Conference on Materials for Green and Sustainable Chemistry, Gandhigram Rural Institute, Dindigul, 6 & 7 March, 2025.
- Agrawal, K. and Nagarajan, S., Imidazole-based D-A-D and D-A-A Systems for Resistive Memory Applications for Organic Non-Volatile Binary WORM Memory Devices, ICMGS 2025 International Conference on Materials for Green and Sustainable Chemistry, Gandhigram Rural Institute, Dindigul, 6 & 7 March, 2025.
- Lubna Parveen, C., Akshaya, M., and Nagarajan, S., Strategical design and synthesis of Donor-acceptor-based Quinoliness for Improved WORM memory performance, ICMGS 2025 International Conference on Materials for Green and Sustainable Chemistry, Gandhigram Rural Institute, Dindigul, 6 & 7 March, 2025

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#### **Awards & Recognitions:**

- Fellow of Royal Society of Chemistry.
- Fellow of Indian Chemical Society.
- Fellow of Academy of Sciences Chennai.
- Member of American Chemical Society.
- Life member of Chemical Research Society of India (CRSI).
- Life member of the Indian Solid State Association.

- Fellow of the Society of Environmental Science.
  - BOYSCAST Fellowship, awarded by the Govt. of India, New Delhi.
  - Young Scientist Fellowship from the Tamil Nadu State Council for Science and Technology, Chennai.
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#### **Internship (2024-25):**

- Basila A, Manonmaniam Sundaranar University, Tirunelveli, 27/05/2024 to 27/06/2024.
  - Atkshaya Lakshmi A, Manonmaniam Sundaranar University, Tirunelveli, 27/05/2024 to 27/06/2024.
  - Anubaby T, Manonmaniam Sundaranar University, Tirunelveli, 27/05/2024 to 27/06/2024.
  - Melsia Pearl S, Manonmaniam Sundaranar University, Tirunelveli, 27/05/2024 to 27/06/2024.
  - Gowri S B, Manonmaniam Sundaranar University, Tirunelveli, 31/01/2025 to 31/03/2025.
  - Prasanna M K, Manonmaniam Sundaranar University, Tirunelveli, 31/01/2025 to 31/03/2025.
  - Jebaseela S, V.V.Vanniaperumal College for Women, Virudhunagar. 12/05/25 to 12/06/25.
  - Jeshindha D, V.V.Vanniaperumal College for Women, Virudhunagar. 12/05/25 to 12/06/25.
  - Amuthalakshmi M, V.V.Vanniaperumal College for Women, Virudhunagar. 12/05/25 to 12/06/25.
  - Muthulakshmi B, V.V.Vanniaperumal College for Women, Virudhunagar. 12/05/25 to 12/06/25.
  - Sabarimalar V, Madurai Kamaraj University, Madurai. 21/05/25 to 21/06/25.
  - Subasri, Pondicherry University, Pondicherry. 06/05/2025 to 06/07/2025
-

# Dr. T. Mohan Das

## Professor

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**Google Scholar** : <https://scholar.google.co.in/citations?user=g-KfW9wAAAAJ&hl=en>  
**Research Gate** : <https://www.researchgate.net/profile/Thangamuthu-Das>  
**Scopus ID** : 26667037000  
**ORCID** : <https://orcid.org/0000-0001-8029-5600>

Prof. T. Mohan Das completed his Ph.D. from IIT Bombay, Mumbai, India under Prof. C. P. Rao. After finishing his postdoc in Taiwan, he joined the Department of Organic Chemistry, University of Madras (2004). He is a recipient of Young Scientist award from DST Young Scientist Scheme (2006) and Dr H C Srivastava Memorial Award (2015) by ACCTI, India. He moved to Central University of Tamil Nadu in 2013 and was promoted to Professor there (2017). He has guided more than ten PhDs, and has more than 80 publications in international peer reviewed journals in Carbohydrate Chemistry.

**Research Focus:**

His research group focuses on the design and synthesis of biologically active sugar-based molecules having gelation ability and sugar-based chemosensors for the detection of ionic species.

**Key Research Areas:**

- Design and synthesis of 4,6-O-protected monosaccharide and modification at the C1/anomeric position to generate various glycosides such as C-, N- and O-glycosides.
- Determination of bioactivity of the sugar derivatives and study of their structure-activity relationship.
- Design and synthesis of sugar-based gelators for application in developing smart materials.

**Selected Publications:**

- Rabecca Jenifer. V, J. G. Malecki, T. Mohan Das "Photo-Responsive Organogelator Based on Cholesterol Incorporated Sugar-Azobenzene Derivatives", *Carbohydr. Res.*, 2025, 549, 109356.
- S. Pradhan, F. Hussain; J. G. Malecki, T. Mohan Das. Pyridine hydrazide glycoconjugate-based gelators: Facile synthesis and exploring their application in iodide sensing. *J. Mol. Liq.* 2024, 416B, 126529.
- Rabecca Jenifer. V, J. G. Malecki, T. Mohan Das "Synthesis of Aryl Azobenzene- Based Sugar Derivatives for Organogelators and the Colorimetric Detection of Cu<sup>2+</sup> Metal Ions" *Ind. Eng. Chem. Res.* 2023, 62(33), 13034–13045.
- S. Pradhan, P. Muthuvel, T. Mohan Das "Synthesis of a novel series of [1,5]- benzothiazepine-C-β-D-glycoside derivatives in a facile one-pot method and insight into their anti-oxidant properties" *J. Mol. Struct.*, 2023, 1281, 135138.
- P. V. Bhavya, K. Soundarajan, J. G. Malecki, T. Mohan Das "Sugar-Based Phase- Selective Supramolecular Self-Assembly System for Dye Removal and Selective Detection of Cu<sup>2+</sup> Ions" *ACS Omega*, 2022, 7(43), 39310–39324.

## Research Group:



## Research Scholars:



**Ms. Sheersha Pradhan**  
JAN 2021



**Mr. Navaneethan K**  
JAN 2025



**Ms. Mofika S**  
DEC 2024



**Mr. Vasu Dev A**  
DEC 2024



**Ms. Sahana T**  
DEC 2024



**Mr. Maheshwaran M**  
DEC 2024

## Publications in 2024-25:

- S. Pradhan, J. G. Malecki, T. Mohan Das "Highly selective iodide detection in solution and gel state using tuneable benzoate N-glucosides" *Anal. Sens.* 2025, 00, e202500083.
- P. V. Bhavya, J. G. Malecki, T. Mohan Das "Isoniazid-Sugar-Triazole-Based Fluorescent "Turn-On" Chemo sensor for Zn<sup>2+</sup> and Mn<sup>2+</sup> Detection with Potential Biological Applications" *ChemistrySelect* 2025, 10, e202405443.
- Rabecca Jenifer. V, J. G. Malecki, T. Mohan Das "Photo-Responsive Organogelator Based on Cholesterol Incorporated Sugar-Azobenzene Derivatives", *Carbohydr. Res.*, 2025, 549, 109356.
- S. Pradhan, B. Jahnavi, T. Mohan Das "Recent Advances in the Synthesis and Applications of Partially Protected N-Glycosylamines" *Curr. Org. Chem.* 2025, 29(5), 402-420.
- S. Pradhan, F. Hussain; J. G. Malecki, T. Mohan Das. Pyridine hydrazide glycoconjugate-based gelators: Facile synthesis and exploring their application in iodide sensing. *J. Mol. Liq.* 2024, 416B, 126529.
- Rabecca Jenifer. V, S. Pradhan, T. Mohan Das "Emerging aspects of Triazole in Organic Synthesis: Exploring its Potential as a Gelator" *Curr. Org. Synth.* 2024, 21(4), 456-512.

- Rebecca Jenifer. V, P. S. Vishmaya, T. Mohan Das “Saccharides and their derivatives as potential organogelators” Trends Carbohydr. Res. 2024, 16(1), 89-117.
- 

#### Conference in 2024-25:

- S. Pradhan, B., T. Mohan Das, Synthesis of a novel series of [1,5]-benzothiazepine-C- $\beta$ -D-glycoside derivatives in a facile one-pot method and insight into their anti-oxidant properties, CARBO-XXXVIII: International conference on Recent Advances in Glycoscience and Glycotechnology Department of Bioengineering and Technology, Gauhati University, Guwahati, Assam, India, 4<sup>th</sup> - 6<sup>th</sup> December, 2024.
  - S. Mofika, V. Bhuvanewari, T. Mohan Das, Chemistry of Glyco-hybrid derivatives and its biological applications, National Conference on Emerging Infectious Diseases and Human Health – NSEIDHH-2025, Department of microbiology, vivekanandha college of arts and science for woman, Thiruchengode , Namakkal, 7<sup>th</sup> & 8<sup>th</sup> January, 2025.
  - T. Mohan Das, International Conference: Trends in Organometallic and Bioinorganic Chemistry (i-TOB 2025), Centre for Organometallic Chemistry (COMC), School of Chemistry, Bharathidasan University, Tiruchirappalli, 3<sup>rd</sup> & 4<sup>th</sup> January, 2025.
  - T. Mohan Das, National Seminar on Emerging Infectious Diseases and Human Health, Department of Microbiology, Vivekananda College of Arts and Sciences of Women, (Autonomous) Tiruchengode, 7<sup>th</sup> & 8<sup>th</sup> January, 2025.
  - T. Mohan Das, National Seminar on Current Innovations in Basic Science (NSCIBS/2025), Department of Physics and Chemistry, A.D.M. College for Women, (Autonomous), Nagapattinum, 14<sup>th</sup> & 15<sup>th</sup> February, 2025.
- 

#### Awards & Recognitions:

- Life member, Chemical Research Society of India (CRSI).
  - Life member, Green Chemistry network (India).
  - Executive Council member, Association of Carbohydrate Chemists and Technologists of India (ACCTI).
  - Life member, ACCTI.
- 

#### Interns (2024-25):

- P. Subaranjini, Manonmanium Sundaranar University, Tirunelveli, Jan – Mar 2025
- P. Supriya, Sri Padmavathi Mahila Vishwavidyalaya, Andhra Pradesh, April – May 2025
- B.Anoosha, Sri Padmavathi Mahila Vishwavidyalaya, Andhra Pradesh, April – May 2025
- N. Raguraman, Bishop Heber College, Trichy, May 2025

# Dr. R Ranjith Kumar

## Associate Professor



### Contact:

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**Email** : ranjithkumar@cutn.ac.in  
**Website** : <https://cutn.ac.in/staff-members/dr-r-ranjith-kumar/>  
**Location** : VRK 123, Department of Chemistry, CUTN

### Connect:

**Google Scholar** : <https://scholar.google.co.in/citations?user=Nqe6vz4AAAAJ&hl=en>  
**Research Gate** : <https://www.researchgate.net/profile/Raju-Ranjith-Kumar>  
**Scopus ID** : 18038508900  
**ORCID** : <http://orcid.org/0000-0002-9926-7770>

Dr. R. Ranjith Kumar has been serving as an Associate Professor in the Department of Chemistry at the Central University of Tamil Nadu (CUTN) since December 1, 2022. He completed his M.Sc. in Chemistry from Government Arts College, Ooty, in 2001, and went on to earn his Ph.D. in Chemistry from Madurai Kamaraj University (MKU) in 2008. In pursuit of advanced research, he worked as a post-doctoral fellow under the renowned chemist Prof. Henri B. Kagan at the University of Paris, France, during 2008–2009. His promising research led to him receiving the Young Scientist Fellowship from the Department of Science and Technology (DST), New Delhi, during the year 2009–2010. Dr. R. Ranjith Kumar began his academic career as an Assistant Professor in the Department of Organic Chemistry at MKU on March 18, 2010. Over the years, he has actively contributed to the field of synthetic organic chemistry, with a special focus on the design and synthesis of small-molecule fluorescent heterocyclic probes for sensor applications. His work also involves detailed structural elucidation using NMR spectroscopy.

### Research Focus:

**Synthetic Organic Chemistry** : RRK is a passionate explorer at the frontier of synthetic organic chemistry, where molecules meet meaning, and science serves society. His research is a compelling blend of curiosity, creativity, and commitment to real-world impact, rooted deeply in the design and synthesis of complex organic compounds that hold promise for medicine, environmental safety, and advanced diagnostics

### Key Research Areas:

- **Synthesis of small molecule organic heterocycles:** RRK's intellectual pursuits revolve around heterocyclic chemistry, particularly the creation of nitrogen-, oxygen-, and sulfur-containing structures, molecules that often lie at the heart of potent drugs and biochemical tools. But he does not stop at synthesis; he seeks to understand, refine, and repurpose these compounds for life-changing applications.
- **Fluorescent Chemosensors:** A hallmark of his work is the development of fluorescent chemosensors, ingenious molecular devices that can detect harmful substances such as heavy metals and explosives like picric acid. These sensors, often described as "molecular light switches," illuminate the invisible dangers in our environment, providing tools that are both elegant in design and crucial in utility.
- **NMR Spectroscopy:** He also dives deep into the molecular world using advanced NMR spectroscopy, decoding the structures of novel organic compounds with surgical precision. This aspect of his work ensures that every compound is not just created, but fully understood, laying a strong foundation for future applications in pharmaceuticals, environmental monitoring, and beyond.

## Selected Publications:

- S. S. Roja, P. Sneha Sunil, M. D. Maqsood, M. Vidhyashree, J. Prakash, R. Ranjith Kumar, Benzo[4,5]imidazole[2,1-b]quinazoline-1(2H)-one: An efficient fluorescent probe for the selective and sensitive detection of Cu(II) ions, 2025, Spectrochim. Acta A Mol. Biomol. Spectrosc., 333, 125853.
- S. Raja Rubina, P. Stalin, C. S. Meenatchi, S. Murugesan, R. Ranjith Kumar, Synthesis of epiminocyclohepta[b]pyrazolo[4,3-e]pyridines from tropinone: fluorescent “Turn On–Off” chemosensors for the sequential detection of Al<sup>3+</sup>, Cd<sup>2+</sup> and Pb<sup>2+</sup> in Nanomolar Concentration, 2022, J. Mol. Struct., 1269, 133724.
- A. Shylaja, S. Raja Rubina, S. S. Roja, R. Ranjith Kumar, Novel blue emissive dimethylfuran tethered 2-aminopyridine-3-carbonitrile: dual responsive fluorescent chemosensor for Fe<sup>3+</sup> and picric acid in nanomolar detection limit, 2020, Dyes Pigm., 174, 108062.
- A. Shylaja, S. S. Roja, R. Vishnu Priya, R. Ranjith Kumar, Four-component domino synthesis of pyrazolo[3,4-h]quinoline-3-carbonitriles: “Turn-Off” fluorescent chemosensor for Fe<sup>3+</sup> ions, 2018, J. Org. Chem., 83, 14084.
- R. Ranjith Kumar, S. Perumal and M. Balasubramanian, 2008, Seven-membered Rings with Three Heteroatoms 1,2,5, in Comprehensive Heterocyclic Chemistry III, Alan R. Katritzky, Christopher A. Ramsden, Eric F.V. Scriven, Richard J.K. Taylor, Elsevier Science, Volume 13, Chapter 15, 433–487

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## Research Group:



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## Research Scholars:



**Ms. K Arthy**  
NOV 2023



**Mr. N. Mathivanan**  
NOV 2023



**Mr. Jijo T George**  
JAN 2025



**Mr. M. Mohanavelan**  
FEB 2025

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## Publications in 2024-25:

- S. S. Roja, P. Sneha Sunil, M. D. Maqsood, M. Vidhyashree, J. Prakash, R. Ranjith Kumar, Benzo[4,5]imidazole[2,1-b]quinazoline-1(2H)-one: An efficient fluorescent probe for the selective and sensitive detection of Cu(II) ions, 2025, Spectrochim. Acta A Mol. Biomol. Spectrosc., 333, 125853.

- A. Shylaja, S. S. Roja, R. Ranjith Kumar, Blue luminescent pyridine-tethered quinazoline framework: highly selective and sensitive picric acid chemosensor, 2025, J. Mol. Struct., 1320, 139637.
  - P. R. Stalin, S. Murugesan, J. Prakash, R. Ranjith Kumar, One-pot three-component cascade synthesis of pyrazolopyrido[2,3-h]quinazolines: effective fluorescent turn-off probes for sensing Pd<sup>2+</sup> ions, 2025, ChemistrySelect, 10, e01643.
  - P. R. Stalin, S. S. Roja, V. Ajithkumar, P. Varalakshmi, S. Murugesan, R. Ranjith Kumar, Seven-component domino synthesis of quinolino[7,8-j][1,7]phenanthrolines: fluorescent sensors for selective picric acid detection and live-cell imaging, 2025, ChemistrySelect, In press.
- 

#### Conferences (2024-25):

- P. R. Stalin, R. Ranjith Kumar, S. Murugesan, Microwave assisted synthesis of benzimidazole tethered spiro indeno[1,2-b]quinoxaline: A fluorescent “turn off” chemosensor for Ag<sup>+</sup> Ions, International Conference on Materials for Green and Sustainable Chemistry (ICMGS 2025), The Gandhigram Rural Institute, Dindigul, 6-7 Mar 2025.
  - N. Mathivanan, R. Ranjith Kumar, Novel pyrazolo[3,4-j][1,7]phenanthroline-3-carbonitriles: A four-component domino synthesis and fluorescence-based sensor applications, International Conference on Innovations in Chemical Sciences, Dr. NGP College of Arts and Science, Coimbatore, 8-9 Jan 2025.
  - K. Arthy, R. Ranjith Kumar, A one-pot three-component domino synthesis of dihydro-4H-pyrano-quinoline hybrid heterocycles, International Conference on Innovations in Chemical Sciences, Dr. NGP College of Arts and Science, Coimbatore, 8-9 Jan 2025
- 

#### Awards & Recognitions:

- Life member, Chemical Research Society of India.
  - Life member, National Magnetic Resonance Society of India.
- 

#### Internship (2024-25):

- Mr. Ajesh Ram J.J, Nesamani Memorial Christian College, Marthandam, 20.12.2024 to 19.01.2025
- Ms. Priyanka R, Nesamani Memorial Christian College, Marthandam, 20.12.2024 to 19.01.2025
- Ms. Reshma J, Nesamani Memorial Christian College, Marthandam, 20.12.2024 to 19.01.2025
- Mr. Samin Antony, Nesamani Memorial Christian College, Marthandam, 20.12.2024 to 19.01.2025
- Ms. Abi S, V. V. Vanniaperumal College, Virudhunagar, 17.11.2024 to 17.12.2024
- Ms. Sree Bala M, V. V. Vanniaperumal College, Virudhunagar, 17.11.2024 to 17.12.2024
- Ms. Pani Poucia A, Holy Cross College, Nagercoil, 28.05.2024 to 25.06.2024
- Mr. Balamurugan S, Madurai Kamaraj University, Madurai, 01.06.2024 to 30.06.2024
- Ms. Santhiya S, Madurai Kamaraj University, Madurai, 01.06.2024 to 30.06.2024

# Dr. V. Rajendiran

## Associate Professor

**Contact:**

**Phone** : +91-9176832625

**Email** : rajendiran@cutn.ac.in

**Website** : <https://cutn.ac.in/staff-members/dr-v-rajendiran/>

**Location** : VRK 217, Department of Chemistry, CUTN

**Connect:**

**Google Scholar** : <https://scholar.google.co.in/citations?user=w4JXpMQAAAAJ>

**Research Gate** : <https://www.researchgate.net/profile/Venugopal-Rajendiran>

**Scopus ID** : 8691738400

**ORCID** : <https://orcid.org/0000-0003-2561-8387>

Dr. Rajendiran Venugopal is an Associate Professor of Chemistry at the Central University of Tamil Nadu. After earning his Ph.D. from Bharathidasan University in 2008, he pursued postdoctoral research at Academia Sinica, Taiwan. His research explores transition metal-based anticancer agents, metallonucleases, fluorescent probes, PDT, and nanomedicine. He has received the UGC Raman Fellowship, SNSF International Short Visit, and SERB-DBT grants, and was awarded the CRSI Best Poster Prize in 2019. With 26 international publications and over 2300 citations, he continues to guide Ph.D. scholars and review for leading journals. Recently, he filed an Indian patent for a novel metal-based therapeutic complex.

**Research Focus:**

His research group primarily focuses on Bioinorganic and Medicinal Inorganic Chemistry, with a particular emphasis on investigating the role of metal complexes in medicine and catalysis. His group is interested in the application-oriented development of metal-containing compounds such as metallonucleases, metalloproteases, fluorescent nucleic acid probes, anticancer agents, and nanomedicine. They have designed and synthesized several copper(II) and ruthenium(II) mixed-ligand metal complexes and evaluated their cytotoxicity against various cancer cell lines. Recently, they discovered that some of the copper complexes exhibit promising anticancer activity, showing nanomolar IC<sub>50</sub> values against cancer cells. In addition to synthetic inorganic chemistry, structural characterization of new metal complexes, and cytotoxicity studies, the group is strongly committed to exploring the mechanisms underlying their anticancer activity.

**Key Research Areas:****Metal-Based Therapeutics and Enzyme Mimics:**

Focused on the design of copper(II) and ruthenium(II) mixed-ligand complexes with potent anticancer activity. These compounds exhibit nanomolar IC<sub>50</sub> values and function through DNA/protein binding, cleavage, and redox mechanisms. Additionally, the group develops metallonucleases and metalloproteases that mimic enzymatic behavior for therapeutic and biochemical applications.

**Fluorescent Probes, Bioimaging, and Photodynamic Therapy:**

Development of metal-based fluorescent complexes for DNA/protein detection and bioimaging. The group also investigates light-activated photodynamic therapy (PDT) agents and explores nanomedicine approaches to enhance drug delivery, targeting, and therapeutic efficacy.

**Selected Publications:**

- Passi, I.; Abraham, L. M.; Raj, A. S. W. W.; Varadhan, M.; Muthuraman, S.; Sivaramakrishnan, M. P.; Vadivelu, P.; Manoharan, R.; Velusamy, M.; Rajendiran, V. Enhanced Cytotoxicity of Half-sandwich Ruthenium(II) Complex Containing Nitro-Substituted Salicyllimidazo[1,5-a]pyridine toward Hormone-independent Triple-negative Breast Cancer Cells. *Inorg Chem.*, 2025, 64, 14073-14090.

- Mamindla, A.; Murugan, D.; Varadhan, M.; Ajaykamal, T.; Rangasamy, L.; Palaniandavar, M.; Rajendiran, V. Mixed-ligand copper(II)-diimine complexes of 3-formylchromone-N 4 -phenyl thiosemicarbazone: 5,6-dmp co-ligand confers enhanced cytotoxicity. RSC Adv., 2024, 14 (43), 31704–31722.
- Kartikeyan, R.; Murugan, D.; Ajaykamal, T.; Varadhan, M.; Rangasamy, L.; Velusamy, M.; Palaniandavar, M.; Rajendiran, V. Mixed ligand copper(ii)-diimine complexes of 2-formylpyridine-N4-phenylthiosemicarbazone: diimine co-ligands tune their vitronanomolar cytotoxicity. Dalton Trans., 2023, 52 (26), 9148–9169.
- Mamindla, A.; Varadhan, M.; Kartikeyan, R.; Amuthamozhi, A.; Akbarsha, M. A.; Rajendiran, V. Comparative DNA-/BSA-binding, DNA cleavage, and cytotoxic properties of copper(II) amino/salicyl-phenolate Schiff bases (phen) complexes that induce generation of phenoxyl radicals. Polyhedron 2023, 243, 116534.
- Shao, S.; Rajendiran, V.; Lovell, J. F. Metalloporphyrin nanoparticles: Coordinating diverse theranostic functions. Coord. Chem. Rev., 2019, 379, 99–120.

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### Grants & Funding:

- **Department of Biotechnology (DBT)** - *“Bio-degradable nanofiber encapsulated biofertilizer to enhance phosphorous and other micronutrient uptake in rice”*.  
Total sanctioned amount: ₹9,19,900

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### Research Group:



### Research Scholars:



**Mr. Manikandan V**  
AUG 2022



**Ms. Liji M.A.**  
JUL 2023



**Ms. Vidhya Lakshmi S**  
NOV 2023



**Ms. Surya M**  
NOV 2023



**Mr. Arunkumar A**  
DEC 2024



**Ms. G. Lavanya Devi**  
DEC 2024

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#### Publications in 2024-25:

- Passi, I.; Abraham, L. M.; Raj, A. S. W. W.; Varadhan, M.; Muthuraman, S.; Sivaramakrishnan, M. P.; Vadivelu, P.; Manoharan, R.; Velusamy, M.; Rajendiran, V. Enhanced Cytotoxicity of Half-Sandwich Ruthenium(II) Complex Containing Nitro- Substituted Salicylimidazo[1,5-a]pyridine toward Hormone-Independent Triple- Negative Breast Cancer Cells. *Inorg Chem.*, 2025, 64, 14073-14090.
- Varadhan, M., Passi, I., Chinnathangavel, T., & Rajendiran, V. (2025). ( $\eta^6$ -Benzene)chlorido[2-(pyridin-2-yl)quinoline- $\kappa^2$ N,N']ruthenium(II) tetrafluoridoborate. 2025, *IUCrData*, 10, x241240.
- Mamindla, A., Murugan, D., Varadhan, M., Ajaykamal, T., Rangasamy, L., Palaniandavar, M., & Rajendiran, V. (2024). Mixed-ligand copper(II)-diimine complexes of 3-formylchromone-N4-phenyl thiosemicarbazone: 5,6-dmp co-ligand confers enhanced cytotoxicity, 2024, *RSC Adv.*, 14, 31704-31722.

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#### Patents:

- Indian Patent published on “Mixed Ligand Copper(II) Complexes Containing Thiosemicarbazone Derivative and Diimine as Potential Anticancer Agents”, Venugopal Rajendiran, Radhakrishnan Kartikeyan, and Mallayan Palaniandavar, Application number: 202441036662 dt. 17.05.2024
- Indian Patent filed on “Water-soluble mitochondria targeting anticancer copper(II) complexes, process for preparation and use thereof”, Venugopal Rajendiran, Manikandan Varadhan, and M A Liji. Application number: 202541025690 dt. 23.03.2025

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#### Conference in 2024-25:

- Venugopal Rajendiran, Copper(II) and Ruthenium(II) complexes as potential anticancer agents, 5 th ICCS-GSI 2025, Department of Chemistry, National College, Tiruchirappalli, July 26, 2024.
- Venugopal Rajendiran, Copper(II) complexes as potential anticancer agent, Inauguration of Chemistry Association organized by Department of Chemistry, Dharmapuram Gnanambigai Govt. Arts College for Women, Mayiladuthurai, September 12, 2024.
- Venugopal Rajendiran, Ferrocene conjugated thiosemicarbazone and its Cu(II) heteroleptic complexes for evaluating their DNA/Protein binding efficiency, nuclease activity, and cytotoxicity, International Conference MTIC-XXI, Department of Chemistry, IIT Kharagpur, December 14-17, 2024.
- Manikandan Varadhan, and Venugopal Rajendiran, Water-soluble Mitochondria Targeting Cytotoxic Copper(II) and 99m Technetium Complexes of TPP-Appended Dipicolylamine, 21 st International Conference MITC -XXI, By Department of Chemistry, IIT Kharagpur, December 14-17, 2024.
- Liji M A, and Venugopal Rajendiran, Enhanced cytotoxicity of ruthenium(II)-p- cymene complexes of nitro-substituted salicylimidazo[1,5-a]pyridine with triple negative breast cancer cells, 21 st International Conference MITC-XXI, By Department of Chemistry, IIT Kharagpur, December 14-17, 2024. (Best poster prize)

- Venugopal Rajendiran, Medicinal Inorganic Chemistry: Copper(II) Complexes as Potential Anticancer Agents, Horizon 2024-25 on "Supramolecular and Medicinal Inorganic Chemistry, by the Department of Chemistry, NIT Tiruchirappalli, January 31, 2025.
- Divya S Nair and V. Rajendiran, Copper(I) fluorescent complexes for selective sensing of nitroaromatic explosives, International Conference on CCVG-2025, In association with Indian Photobiology Society, Madanapalle Institute of Technology & Science, Andhra Pradesh, India, March 07, 2025.
- Devika Nambiar and V. Rajendiran, Design and synthesis of water-soluble mixed- ligand copper(II) complexes of deferiprone and 3N ligands: An experimental investigation of biomimetic catalytic activity, International Conference on CCVG-2025, In association with Indian Photobiology Society, Madanapalle Institute of Technology & Science, Andhra Pradesh, India, March 06, 2025.
- Megavathi R and V. Rajendiran, Carbazole, phenothiazine, and anthracene appended copper(I) sensors for nitroaromatic explosives, International Conference on CCVG-2025, In association with Indian Photobiology Society, Madanapalle Institute of Technology & Science, Andhra Pradesh, India, March 07, 2025.
- Kugan M and V. Rajendiran, Functional mimic of phenoxazinone enzyme by mixed-ligand copper(II) complexes of chitosan and 1,10-phenanthroline, International Conference on CCVG-2025, In association with Indian Photobiology Society, Madanapalle Institute of Technology & Science, Andhra Pradesh, India, March 07, 2025.
- Krishnaveny V K and V. Rajendiran, Design and Synthesis of DNA, Protein Binding and DNA Cleaving Mixed Ligand Copper(II) complexes of substituted 2-formylpyridine-N 4 -phenyl thiosemicarbazone, International Conference on CCVG-2025, In association with Indian Photobiology Society, Madanapalle Institute of Technology & Science, Andhra Pradesh, India, March 07, 2025.
- Shafla shirin and V. Rajendiran, Design and synthesis of water-soluble mixed-ligand copper(II) complexes of deferiprone and 3N ligands: An experimental investigation of biomimetic catalytic activity, International Conference on CCVG-2025, In association with Indian Photobiology Society, Madanapalle Institute of Technology & Science, Andhra Pradesh, India, March 06, 2025.
- Manikandan Varadhan, Venugopal Rajendiran, Mixed ligand copper(II)-deferiprone complexes: 3N ligands determine the mode of coordination of deferiprone and influence cytotoxicity in breast cancer cells, 5 th International Conference ICCS-GSI 2025, by PG and Research Department of Chemistry, Government Arts College, Thiruchirappalli, Tamil Nadu, August 08, 2025.
- Venugopal Rajendiran, Medicinal Inorganic Chemistry: Copper(II) and Ruthenium(II) complexes as Potential Anticancer Agents, DBT CAFÉ 2025 Lecture Series, Department of Biotechnology, Central University of Tamil Nadu, Thiruvarur, April 24, 2025.

#### **Interns (2024-25):**

- A. T. Amirtha , V.V.Vanniaperumal College For Women (Autonomous), Virudhunagar. Nov 18 – Dec 18, 2024.
- A. Ambika, V.V.Vanniaperumal College For Women (Autonomous), Virudhunagar. Nov 18 – Dec 18, 2024.
- A. Anusuya, V.V.Vanniaperumal College For Women (Autonomous), Virudhunagar. Nov 18 – Dec 18, 2024.
- G. Sivaranjani, V.V.Vanniaperumal College For Women (Autonomous), Virudhunagar. Nov 18 – Dec 18, 2024.

# Dr. Vittal Babu Gudimetla

## Assistant Professor

**Contact:**

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**Email** : vittalbabu@cutn.ac.in  
**Website** : <https://cutn.ac.in/staff-members/dr-vittal-babu-gudimetla/>  
**Lab Website**: <https://sites.google.com/view/drvtalbgudimetla>  
**Location** : VRK 220, Department of Chemistry, CUTN

**Connect:**

**Google Scholar** : <https://scholar.google.com/citations?user=uKdgoYgAAAAJ&hl=en>  
**Linkedin** : <https://in.linkedin.com/in/vittalbabugudimetla>  
**Research Gate** : <https://www.webofscience.com/wos/author/record/X-4551-2018>  
**Scopus ID** : 14051933700  
**ORCID** : <https://orcid.org/0000-0003-1198-7261>

Dr. Vittal Babu Gudimetla is an Assistant Professor in the Department of Chemistry at Central University of Tamil Nadu. He is teaching the topics on organometallic chemistry, reagents in organic synthesis, and physical methods in chemistry-II as core courses to the PG and PhD students for almost a decade. His research focus is on the synthesis and development of structurally intriguing, axial chiral,  $\alpha$ -diimines, imidazolium salts, NHCs and finding their applications in metal-mediated catalysis, advanced chemical sensors, and as sustainable materials. Academically, he has been trained with a B.Sc. from Univ. of Madras, MSc from IIT Madras, Ph.D. from Case Western Reserve University (CWRU), USA and Postdoctoral Fellowship from Rice University, USA in diverse research domains centred on synthetic chemistry. He has qualified UGC-CSIR-JRF fellowship, GATE (All India Rank of 34 (98.71 percentile)) Exam and also awarded an Outstanding Graduate Performance Award from CWRU, USA.

**Research Focus:**

Synthesis and applications of structurally diverse  $\alpha$ -diimines, imidazolium salts and NHCs for catalysis and other technological applications.

**Key Research Areas:**

- Synthesis of Less Explored Axially Chiral Diimines and NHCs (DST-SERB Project).
- Catalytic and Materials Applications of Diimines and NHCs (DST-SERB Project)

**Selected Publications:**

- Joy, B. P.; Kannilakkandi, S.; Kodakkadan, K. V.; Srinivasan, S. K.; Gudimetla, V. B. "Silver-NHC complex as a fluorophore for the selective detection of sulphide ( $S^{2-}$ ) anions". *New J. Chem.*, 2025,49, 3365-3369
- Joy, B. P.; Paul, S.; Sethy, S.; Gudimetla, V. B.; "Non-Symmetrical Tetraaryl $\alpha$ -Diimines via Transimination: A Promising Route for Non-Symmetrical 1,3,4,5-Tetraarylimidazolium Chlorides". *ChemistrySelect*, 2023, 8(9), e202204605
- Joy, B. P.; Paul, S.; Manohar B. G.; Gudimetla, V. B.; "Benzilbis(2-hydroxyanil) - highly efficient fluorophore for ferric ion ( $Fe^{3+}$ ) sensing." *New J. Chem.*, 2023, 47, 2995-2999.
- Paul, S.; Joy, B. P.; Sasikala, G.; Raghuthaman, A G.; Gudimetla, V. B.; "Copper-NHC Based Ullmann Catalysis in Water for Selective N-Arylation of 3-Aminophenols", *ChemistrySelect*, 2020, 5(47), 15004-5009.
- Paul, S.; Joy, B. P.; Rajendran, R.; Gudimetla, V. B.; "Cost Efficient Synthesis of Diaryl Ethers Catalysed by CuI, Imidazolium Chloride and  $Cs_2CO_3$ ", *ChemistrySelect*, 2019, 4(24), 7181-7186

## Grants & Funding:

- DST-SERB-EEQ, "The synthesis of less explored axially chiral ...NHC's for catalytic and material applications" 2024-2027 (Rs. 48.2 Lakhs)
- 

## Research Group:



## Research Scholars:



**Mr. Pushkar Shashi**  
DEC 2023



**Mr. Siva Kumar S**  
DEC 2024

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## Publications in 2024-25:

Joy, B. P.; Kannilakkandi, S.; Kodakkadan, K. V.; Srinivasan, S. K.; Gudimetla, V. B. "Silver-NHC complex as a fluorophore for the selective detection of sulphide ( $S^{2-}$ ) anions". *New J. Chem.*, 2025, 49, 3365-3369.

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## Patents:

- Title: Synthesis of non-symmetrical  $\alpha$ -diketiminates and NHCs, Indian Patent (filed on 01/02/21; Granted on 07/01/25); Application: 202141004387; Patent Number: 557533  
Applicant: Central University of Tamil Nadu;  
Inventors: Vittal Babu Gudimetla, Bony P Joy and Sudeep Paul
- 

## Conference in 2024-25:

- Gudimetla, V. B. "Exploring the Scope of  $\alpha$ -Diimines and its Applications" 30<sup>th</sup> International Conference in Organometallic Chemistry, 14<sup>th</sup> -18<sup>th</sup> July, 2024, Agra, India.

## **Awards & Recognitions:**

- Robert Welch Foundation Postdoctoral Fellowship, for PDF at Rice University, USA, 2009.
  - Outstanding Research Performance Award, for Ph.D. Research Work, CWRU, USA, 2007.
- 

## **Internships (2024-25):**

- C. Haripriyah (Reg. No. 24701906), Department of Chemistry, V. V. Vanniaperumal College for Women (Autonomous), Virudhunagar – 626001, Tamil Nadu. (December – 2024)
  - E. Kavitha (Reg. No. 24701911), Department of Chemistry, V. V. Vanniaperumal College for Women (Autonomous), Virudhunagar – 626001, Tamil Nadu. (December – 2024)
  - R. Lavanya (Reg. No. 24701912), Department of Chemistry, V. V. Vanniaperumal College for Women (Autonomous), Virudhunagar – 626001, Tamil Nadu. (December – 2024)
  - B. Rakshana (Reg. No. 24701914), Department of Chemistry, V. V. Vanniaperumal College for Women (Autonomous), Virudhunagar – 626001, Tamil Nadu. (December – 2024)
  - G. Krishnaveni (Reg No: 2023ORG23040), Department of Chemistry, Sri Padmavati Mahila Visvavidyalayam, Tirupati – 510502, Andhra Pradesh. (June – 2025)
  - K. Nowjiya (Reg No: 2023ORG23055), Department of Chemistry, Sri Padmavati Mahila Visvavidyalayam, Tirupati – 510502, Andhra Pradesh. (June – 2025)
-

# Dr. M. Shiva Prasad

## Assistant Professor

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**Website** : <https://cutn.ac.in/staff-members/dr-m-shiva-prasad/>  
**Lab Website** : <https://www.mspsgroupcutn.in/>  
**Location** : VRK 212, Department of Chemistry, CUTN

**Connect:**

**Google Scholar** : <https://scholar.google.com/citations?user=fkoQOHWAAAAJ&hl=en&oi=ao>  
**Linkedin** : <https://www.linkedin.com/in/dr-m-shiva-prasad-mrsc/>  
**Research Gate** : [https://www.researchgate.net/profile/Madavi-Prasad?ev=hdr\\_xprf](https://www.researchgate.net/profile/Madavi-Prasad?ev=hdr_xprf)  
**Scopus ID** : 57215597296  
**ORCID** : <https://orcid.org/0000-0001-5225-7252>

Madavi Shiva Prasad (MSP) hails from Adilabad District, Telangana State, India. He received his B.Sc. in Biochemistry from Kakatiya University and MSc in Organic Chemistry from Osmania University, Hyderabad. He began his Doctoral studies in Organic Chemistry under the direction of Prof. D. B. Ramachary, School of Chemistry, University of Hyderabad, Hyderabad. During his time in Ph.D., the formation of secondary catalytic species, "Aminal" mechanism was firmly elucidated by him for the first time. He joined the Central University of Tamil Nadu, Tiruvarur, India in 2013, where he is currently an Assistant Professor of Chemistry (Senior scale).

**Research Focus:**

His research interests span around the asymmetric synthesis of small natural products, natural product mimics and biologically potent scaffolds by exploiting catalysis.

**Key Research Areas:**

- **Enamine Catalysis:** We developed first time an enamine activated remote [4+2]-annulation reaction for the construction of a variety of functionalised hexa-/octahydro-indole scaffolds from four to six contiguous stereocenters and a spiro center with an exceptional enantio- and diastereoselectivities.
- **Hydrogen Bonding Catalysis:** We have developed an unprecedented 3+2 annulation of trifluoroethyl isatin ketimine to construct tetrahydro pyrrole/thiazole scaffolds with multiple stereocenters with an exceptional enantio- and diastereoselectivities.

**Selected Publications:**

- Bharani, S.; Rao, B. A.; Chowhan, L. R.; Pallegogu, R.; Prasad, M. S. Asymmetric Synthesis of spiro[benzofuran-pyrrolidine]-indolinedione via Bifunctional Urea Catalyzed [3+2]-annulation Reaction. *Organic & Biomolecular Chemistry*, 2024.
- Prasad, M. S.; Thoudam, B.; Saha, S.; Jha, A. K.; Bharani, S.; Ponnada, C. Defluorinative hydroxylation promoted by silica to access optically pure hexahydrofuranocarbazole via [4+2] addition reaction. *Asian Journal of Organic Chemistry* 2025, 14, e202400752.
- Prasad, M. S.; Jha, A. K.; Bharani, S. Stereoselective synthesis of functionally rich spirooctahydroquinoline oxindoles via enamide Cycloisomerisation/[4+2]-Addition sequence. *Advanced Synthesis & Catalysis* 2024, 366 (9), 2014–2019.
- Prasad, M. S.; Sivaprakash, M.; Bharani, S.; Chowhan, L. R. Trienamine catalysed unprecedented remote olefin E/Z isomerisation/[4+2]-cycloaddition reaction to access spirooxindole hexahydroindoles. *Organic & Biomolecular Chemistry*, 2023, 21 (5), 945–949.
- Prasad, M. S.; Bharani, S.; Jha, A. K.; Naik, S. C.; Sivaprakash, M.; Chowhan, L. R. Enantioselective synthesis of octahydrofuranindole core of aspidosperma alkaloids via a Diels-Alder/Reduction/Fluoroetherification reaction sequence. *Chemistry - an Asian Journal* 2023, 18, e202300419.

## Grants & Funding:

- Anusandhan National Research Foundation, Aminocatalytic Remote [4+2]-annulation: Synthesis/DFT Studies and Anti-Alzheimer's Screening of Optically Pure Perhydroquinoline Scaffolds, 2024-2027.
- Anusandhan National Research Foundation, Enantioselective Synthesis of Decahydroquinoline Cores of Lycopodium Alkaloids via Organocatalytic Diels Alder Reaction, 2024-2027.

## Research Group:



## Research Scholars:



**Mr. Aman Kumar Jha**  
NOV 2023



**Mr. Biddika Ananda Rao**  
AUG 2024

## Publications in 2024-25:

- Bharani, S.; Rao, B. A.; Chowhan, L. R.; Pallegogu, R.; Prasad, M. S. Asymmetric Synthesis of spiro[benzofuran-pyrrolidine]-indolinedione via Bifunctional Urea Catalyzed [3+2]-annulation Reaction. *Organic & Biomolecular Chemistry*, 2024.
- Prasad, M. S.; Thoudam, B.; Saha, S.; Jha, A. K.; Bharani, S.; Ponnada, C. Defluorinative hydroxylation promoted by silica to access optically pure hexahydrofuranocarbazole via [4+2] addition reaction. *Asian Journal of Organic Chemistry* 2025, 14, e202400752.
- Prasad, M. S.; Jha, A. K.; Boppuri, H.; Rejith, D.; Bharani, S.; Haridas, S. Aminocatalytic, stereoselective synthesis of tetrahydrocarbazole spiropyrazolones via remote [4 + 2] annulation of indole tethered Enal with olefinic pyrazolones. *ChemistrySelect* 2025, 10, e202404935.
- Prasad, M. S.; Jha, A. K.; Bharani, S. Stereoselective synthesis of functionally rich spirooctahydroquinoline oxindoles via enynamide Cycloisomerisation/[4+2]-Addition sequence. *Advanced Synthesis & Catalysis* 2024, 366 (9), 2014–2019.
- Prasad, M. S.; Ramesh, M.; Jha, A. K.; Bharani, S.; Saha, S.; Bedanta, T.; Chandrasekhar, P.; Sarasija, M. Amine catalyzed remote [4+2]-annulation of indole tethered ENAL and oxindole Olefin to access optically pure hydrocarbazole spirooxindole scaffolds. *Asian Journal of Organic Chemistry* 2024, 13, e202400061.

### Conference in 2024-25:

- Madavi S. Prasad and Aman K. Jha, Highly Diastereoselective Synthesis of Spirooctahydroquinoline Cores Lepadine Alkaloid From Enynamides and Oxindoles, ICCSHIP-2025, Dayanand Science College, Latur, 14-02-2025
- Madavi S. Prasad and Sivaprakash, Enantioselective Synthesis of Perhydroindole Scaffolds Via Aminocatalytic Remote [4+2] Annulation, Fostering Catalysis for Societal Benefit-2024 (FCSB-24), School of Chemistry, University of Hyderabad, 2024
- Madavi S. Prasad and Sivaprakash, Amine Catalyzed Remote Diels-Alder Reaction to Access Optically Pure Octahydrofuranoindole Scaffolds., ICRA GCD-24, Akal University Punjab, 4-6 Sept., 2024
- Madavi S. Prasad and Sivaprakash, A Journey Towards the Amino-catalytic Asymmetric Synthesis of Aspidosperma Alkaloids Core, AN INTERDISCIPLINARY APPROACH ON INNOVATIVE MATERIALS-IAIM-2024", VV Vannaiperumal College, Virudhunagar, 8<sup>th</sup> Aug., 2024
- Madavi S. Prasad and Aman Kumar jha, Asymmetric Synthesis of Lepadine Alkaloids Core, CACEE-2024", TIFR, Mumbai, 16-20<sup>th</sup> Dec., 2024
- Aman Kumar Jha, Sankar Bharani and Madavi S. Prasad, Employing a Combination of Transition Metal and Amine Catalysis for Stereoselective Synthesis of Spirooctahydroquinoline Oxindoles, National Conference on "Recent Advances in Chemistry Explorations for Sustainability, organized by Periyar University, Salem, 13-14 Feb 2025.
- Aman Kumar Jha, Sankar Bharani and Madavi S. Prasad, Sequential Pd and Amine Catalysis to Unlock the Stereoselective Assembly of Octahydroquinoline Frameworks, ChemSci 2024: Leaders in the field symposium IISER Thiruvananthapuram, India, December 9-11, 2024.
- Aman Kumar Jha, Sankar Bharani and Madavi S. Prasad, Combined Transition Metal and Amine Catalysis to Forge Stereoselectively Spirooctahydroquinoline Oxindoles, National Conference on Emerging Frontiers in Chemical Sciences, organized by Farook College, Kozhikode, Kerala, 2-3 Dec 2024.

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### Awards & Recognitions:

- MRSC, Royal Society of Chemistry.
  - Regular Member - ACS, American Chemical Society.
  - Life Member, Chemical Research Society of India.
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# Dr. Prabha V

## Assistant Professor



### Contact:

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### Connect:

**Google Scholar** : <https://scholar.google.co.in/citations?user=Nqe6vz4AAAAJ&hl=en>  
**Research Gate** : <https://www.researchgate.net/profile/Prabha-Vadivelu-3>  
**Scopus ID** : 18038508900  
**ORCID** : <https://orcid.org/0000-0001-5063-240X>

Dr Prabha V, currently at the Central University of Tamil Nadu, has built her research career around a deep-rooted fascination with molecular reactivity and catalysis. Trained as a theoretical and computational chemist, her academic journey spans from doctoral research at Heriot-Watt University to postdoctoral work in Germany, culminating in her present role, where she continues to explore the frontiers of quantum chemical methods. Her work reflects a deep commitment to understanding the chemical phenomena at the molecular level, with a focus on how theoretical insights can drive advancements in catalysis and material design. Beyond research, Dr Prabha V. views teaching as a platform to cultivate analytical thinking and scientific rigour. She strives to inspire students to explore the molecular world with curiosity and precision.

### Research Focus:

Prabha's research expertise lies in the field of computational chemistry, with a strong emphasis on modelling organic, inorganic, and bioinorganic reactions using advanced Density Functional Theory (DFT) methods. A central theme of her work is biomimetic catalysis, where she investigates enzyme-inspired systems to understand and replicate nature's strategies for achieving selective and efficient chemical transformations. By studying the electronic structure and mechanistic features of bioinorganic complexes, she aims to provide insights that support the rational design of functional catalysts. In addition to this, she also explores the activation and conversion of carbon dioxide (CO<sub>2</sub>) using metal-based and molecular catalysts, contributing to the development of sustainable approaches in carbon capture and utilisation. By simulating the behaviour of transition metal complexes and enzyme-inspired systems, her work bridges fundamental theory and practical applications in green chemistry, catalysis, and materials design.

### Key Research Areas:

- **Biomimetic Catalysis:** In this area, her research group explore enzyme-inspired catalytic systems to understand how structural motifs found in nature can be translated into synthetic catalysts. My research focuses on modelling the reactivity of transition metal complexes that mimic metalloenzyme active sites, with an emphasis on uncovering the role of electronic structure, ligand architecture, and reaction environment in facilitating selective transformations. This work has helped identify key design principles for developing efficient catalysts for oxidation, reduction, and small-molecule activation processes.
- **CO<sub>2</sub> utilisation:** My research in CO<sub>2</sub> utilisation focuses on the computational investigation of catalytic processes that enable the activation and transformation of carbon dioxide into valuable chemicals. Using Density Functional Theory (DFT), I study the mechanisms of metal-based catalysts and molecular systems that facilitate CO<sub>2</sub> fixation, reduction, and conversion reactions. This work aims to identify energetically favourable pathways and key intermediates, contributing to the design of sustainable catalysts for carbon capture and green chemical synthesis.

### Selected Publications:

- Vishakh, M. G.; Painuly, D.; Ragupathy, L.; Kanappally, A.; Vadivelu, P. Boron Nitride and Few Layers Graphene Incorporated Carboxylated Butadiene Nitrile Rubber Hybrid Nanocomposites: Preparation, Properties and Mechanistic Insights. *Polym. Compos.* 2025, 46 (10), 8811–8830.
- Rajeev, A.; Muthuramalingam, S.; Murugan, V. P.; Costas, M.; Vadivelu, P.; Sankaralingam, M. Unveiling the Catalytic Activity of Nickel(II) Complexes of Pentadentate Ligands in Aromatic Oxidations. *ChemCatChem* 2025, 17 (6).
- Vadivelu, P.; Ganesan, K. Density Functional Theory Study on  $[\text{Ni}^0(1,10\text{-Phenanthroline})]$ -Catalyzed Reductive Carboxylation of Alkyl and Aryl Halides with  $\text{CO}_2$ : Effect of the Lewis Acid and  $\beta\text{-H}$  Elimination Side Reaction in the Crucial  $\text{CO}_2$  Insertion Step. *Inorg. Chem.* 2022, 61 (48), 19463–19474.
- Krishnan, S.; M G, M.; Das, A.; Bhargavan, S.; Ganesan, K.; Sivaram, S.; Vadivelu, P.; Ragupathy, L. In-Situ Interfacial Compatibilization via Edge-Sulfurated Few Layer Graphene during the Formation of Crosslinked Graphene-Rubber Nanocomposites. *Sci. Rep.* 2022, 12 (1), 4013.
- Ganesan, K.; Kaliyaperumal, I.; Vadivelu, P. A Density Functional Theory Study on Comparing the Reactivity of  $[\text{Mn}(13\text{-TMC})(\text{OOH})]^{2+}$  and  $[\text{Mn}(13\text{-TMC})(\text{O}_2)]^+$  for the Sulfoxidation of Thioanisole: Elucidation of Substrate and Non-Redox Metal Ion Effects. *Inorg. Chem.* 2021, 60 (17), 13615–13625.

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### Research Group:



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### Research Scholars:



**Ms. Madhuripriya S R**  
NOV 2023



**Ms. M Deepika**  
DEC 2024



**Ms. T Ivana Varshini**  
DEC 2024

## Publications in 2024-25:

- Vishakh, M. G.; Painuly, D.; Ragupathy, L.; Kanappally, A.; Vadivelu, P. Boron Nitride and Few Layers Graphene Incorporated Carboxylated Butadiene Nitrile Rubber Hybrid Nanocomposites: Preparation, Properties and Mechanistic Insights. *Polym. Compos.* 2025, 46 (10), 8811–8830.
- Rajeev, A.; Muthuramalingam, S.; Murugan, V. P.; Costas, M.; Vadivelu, P.; Sankaralingam, M. Unveiling the Catalytic Activity of Nickel(II) Complexes of Pentadentate Ligands in Aromatic Oxidations. *ChemCatChem* 2025, 17 (6).
- Vadivelu, P.; Sivaramkrishnan, M. P.; Ganesan, K. A DFT Study Exploring the Catalytic Efficacy of 13-TMC Bound  $Mn^{III}-O_2/OOH$  and  $Mn^{IV}-O$  Species towards Cyclohexene Epoxidation–Deciphering the Effect of Additives. *Mol. Catal.* 2024, 562 (114189), 114189.
- Ajaykamal, T.; Bharadwaj, V. V. S. S.; Köckerling, M.; Vadivelu, P.; Palaniandavar, M. Copper(II)-Flavonolate Complexes of Sterically Hindering 3N Ligands as Enzyme-Substrate Models for Copper(II) Quercetin 2,4-Dioxygenase: Experimental and Computational Study on the Dioxygenation Reactivity. *New J Chem* 2025, 49 (29), 12861–12874.
- Passi, I.; Abraham, L. M.; Wilfred Raj, A. S. W.; Varadhan, M.; Muthuraman, S.; Sivaramkrishnan, M. P.; Vadivelu, P.; Manoharan, R.; Velusamy, M.; Rajendiran, V. Enhanced Cytotoxicity of Half-Sandwich Ruthenium(II) Complex Containing Nitro- Substituted Salicyllimidazo[1,5-a]Pyridine toward Hormone-Independent Triple- Negative Breast Cancer Cells. *Inorg. Chem.* 2025, 64 (28), 14073–14090.

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## Conferences in 2024-25:

- Prabha Vadivelu, “Role of DFT study in revealing the mechanistic insights of Mn-TMC based bio-mimetic complexes” - 21<sup>st</sup> Modern Trends in Inorganic Chemistry (MTIC-XXI) conducted by IIT Kharagpur during 14<sup>th</sup> – 17<sup>th</sup> December 2024. (Invited Talk, International).
- Madhuri Priya S R and Prabha Vadivelu. “Unravelling the Role of Additives in the Catalytic Efficacy of 13-TMC Bound  $Mn^{III}-O_2/OOH$  and  $Mn^{IV}-O$  Species Towards Cyclohexene Epoxidation: A DFT Study.” – 21st Modern Trends in Inorganic Chemistry (MTIC-XXI) conducted by IIT Kharagpur during 14<sup>th</sup> – 17<sup>th</sup> December 2024. (Poster, International).
- John Santosh and Prabha Vadivelu. “CO<sub>2</sub> capture and conversion on Fe - adsorbed borophene: a DFT study.” – 4-day virtual international conference on ChemConvergence 2025: Multidisciplinary innovations, held by MITS, Andhra Pradesh during 4<sup>th</sup> – 7<sup>th</sup> March 2025. (Poster, International)
- Anusree A and Prabha Vadivelu. “Cis-dihydroxylation of Cyclohexene by Iron peroxo complex – A DFT study.” 4<sup>th</sup> International Conference on Advanced Functional Materials (ICAFM 2025), held by the Department of Materials Science, CUTN, from 21<sup>st</sup> – 22<sup>nd</sup> March 2025. (Poster, International)
- Sruthi S and Prabha Vadivelu. “Bridging Homogeneous and heterogeneous catalysis: A DFT study on 2D material supported  $[Ni^0(1,10\text{-phenanthroline})]$  a catalyst for the reductive carboxylation of alkyl and aryl halides with CO<sub>2</sub>.” 4<sup>th</sup> International Conference on Advanced Functional Materials (ICAFM 2025), held by the Department of Materials Science, CUTN, from 21<sup>st</sup> – 22<sup>nd</sup> March 2025. (Poster, International)

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## Internship in 2024-25:

- Abishek, Bishop Heber College, Thiruchirapalli. (Duration: 01/05/2025 to 31/05/2025)

# Dr. John Prakash

## Assistant Professor

**Contact:**

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**Lab Website** : <https://sites.google.com/view/analytical-fluorimetry>  
**Location** : VRK 218, Department of Chemistry, CUTN

**Connect:**

**Google Scholar** : <https://scholar.google.co.uk/citations?user=IOzg5z8AAAAJ&hl=en>  
**Linkedin** : <https://in.linkedin.com/in/john-prakash-6a954a21>  
**Researchid** : <https://researchid.co/johnprakash>  
**Scopus ID** : 55763790366  
**ORCID** : <https://orcid.org/0000-0003-2109-6251>

John Prakash is a dedicated educator with a strong passion for Physical Chemistry, actively integrating his scientific expertise into teaching to inspire students to think critically and pursue independent research. His commitment to academic excellence has been recognised through several honours, including the Eli Lilly Asia Thesis Award (2013), the FLAIR Award (2016), and the Certificate of Excellence in Reviewing by the Indian Journal of Science & Technology (2021). Alongside his teaching, Prakash's research is focused on the development of advanced spectroscopic tools for biological and analytical applications, with specialised expertise in unconventional fluorescence spectroscopy and instrumentation. He has pioneered innovative methodologies such as White Light Excitation Fluorescence (WLEF) and Angular Sweep Total Fluorescence Spectroscopy (ASTFS). He has made significant contributions to the design of portable and fiber-optic spectrometers. His group is also engaged in creating eco-friendly hydrogel-based sensors for environmental monitoring and biomedical diagnostics. Through his combined dedication to teaching, research, and mentorship, Prakash continues to advance the frontiers of spectroscopy and analytical chemistry while shaping the next generation of scientists.

**Research Focus:**

John Prakash heads the Physical Photochemistry Research Group at CUTN and guides photochemistry aspirants. His research is strongly focused on fluorescence spectroscopy and the creation of innovative tools for biological and analytical applications. He has pioneered unconventional methodologies such as White Light Excitation Fluorescence (WLEF) and Angular Sweep Total Fluorescence Spectroscopy (ASTFS), which have opened new avenues for sensitive and multidimensional fluorescence analysis. A significant part of his work lies in instrumentation and portable device development, where he has designed fiber-optic spectrometers, dip-probe systems, and compact field-deployable fluorescence devices for real-time monitoring of pollutants and biomolecules. His group also emphasises the synthesis of novel molecules and fluorophores with tailored photophysical properties for selective sensing. Beyond molecular design, his research integrates novel strategies in spectroscopy with microbiological applications, including fluorescence-based microbial detection and diagnostic approaches. By combining cutting-edge spectroscopy, portable instrumentation, molecular innovation, and microbiological insight, Prakash advances fluorescence science while addressing critical challenges in environmental monitoring and biomedical diagnostics.

**Key Research Areas:**

- **Novel Fluorescence Concepts:** Development of unconventional methods like White Light Excitation Fluorescence (WLEF) and Angular Sweep Total Fluorescence Spectroscopy (ASTFS) for multidimensional spectral analysis.
- **Advanced Instrumentation & Portable Devices:** Design of fiber-optic spectrometers, dip-probe systems, and multipurpose fluorescence tools for real-time, in-field sensing.
- **Eco-Friendly Sensors & Novel Molecules:** Fabrication of hydrogel-based strips and synthesis of fluorophores for selective detection of heavy metals and pollutants.

- Chemometrics in Spectroscopy: Integration of multivariate calibration and PARAFAC for quantitative and selective analysis of complex fluorescence spectra.
- Environmental & Microbiological Applications: Fluorescence-based detection of PAHs, heavy metals, and microbial systems, bridging spectroscopy with real-world monitoring.

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### Selected Publications:

- Vijayan and J. Prakash Unveiling Angular Sweep Total Fluorescence Spectroscopy: A Novel Multidimensional Technique for Analysis of Complex Multi-fluorophoric Systems, *Talanta* 271, (2024), 125662
- J. Mishra, A. Vijayan, J. Swain and J. Prakash Fluorescence Lifetime of Pyrene Butyric Acid as a Versatile Sensing Tool for Monitoring Self-assembled systems and Microenvironment, *Journal of Photochemistry and Photobiology A: Chemistry* (2024), 11553
- A. Mohan and J. Prakash Fabrication of eco-friendly hydrogel strips for the simultaneous quantification of heavy metal ions in aqueous environment *Dyes and Pigments* 199 (2022) 110045
- J. Prakash and A. K. Mishra, Introduction of a Novel Fluorescence-Based Method for the Composition Estimation of Petroleum Fuel – Biofuel Blends, *Fuel*, 108 (2013), 351-355.

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### Research Group:



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### Research Scholars:



**Ms. Anupama Vijayan**  
JUL 2022



**Mr. Sanjit Haldar**  
DEC 2024

## Publications in 2024-25:

- Stalin, P. R.; Murugesan, S.; Prakash, J.; Kumar, R. R. One-Pot Three-Component Cascade Synthesis of Pyrazolopyrido[2,3-h]quinazolines: Effective Fluorescent Turn-Off Probes for Sensing Pd<sup>2+</sup> Ions. *ChemistrySelect* 2025, 10, e01643.
- Mani, A.; Aarcha, S. M.; Kalangadan, N.; Sundaresan, S.; Ghosh, S.; Prakash, J.; Durairajan, S. S. K.; Rajaram, K. Augmenting Phage Therapy Using Green Nanotechnology for Promising Infection Control, Wound Healing, and Devoiding Phage Resistance in MDR *Pseudomonas aeruginosa*. *Sci. Rep.* 2025, 15, 30439.
- Suku, G.; Vijayan, A.; Prakash, J. Investigations into Bioavailability and Micelle-Assisted Spectroscopic Quantification of Brodifacoum in Natural Samples. *Anal. Methods* 2025, 17, 4158–4166.
- Roja, S. S.; Sunil, P. S.; Darussalam, M. M.; Manoharan, V.; Prakash, J.; Kumar, R. R. Benzo[4,5]imidazole[2,1-b]quinazoline-1(2H)-one: An Efficient Fluorescent Probe for the Selective and Sensitive Detection of Cu(II) Ions. *Spectrochim. Acta A Mol. Biomol. Spectrosc.* 2025, 333, 125853.
- Mary, A. S.; Kalangadan, N.; Prakash, J.; Sundaresan, S.; Govindarajan, S.; Rajaram, K. Relative Fitness of Wild-Type and Phage-Resistant *Pyomelanogenic P. aeruginosa* and Effects of Combinatorial Therapy on Resistant Formation. *Heliyon* 2024, 10 (21), e40076.
- Vijayan, A.; Prakash, J. Unveiling Angular Sweep Total Fluorescence Spectroscopy: A Novel Multidimensional Technique for Analysis of Complex Multi-Fluorophoric Systems. *Talanta* 2024, 271, 125662.
- Vijayan, A.; Prakash, J. Emerging Analytical Methods for Quantitative Determination of Biofuel–Petroleum Fuel Blends Composition. *Anal. Lett.* 2024, 57(18), 3050–3067.
- Mishra, J.; Vijayan, A.; Swain, J.; Prakash, J. Fluorescence Lifetime of Pyrene Butyric Acid as a Versatile Sensing Tool for Monitoring Self-Assembled Systems and Microenvironment. *J. Photochem. Photobiol. A Chem.* 2024, 115531.

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## Conference Presentation in 2024-25:

- Vijayan, A.; J. Prakash. “Angular Sweep Total Fluorescence Spectroscopy: A 3D Fluorescence Tool for Analysis of Multiple Fluorescent Pollutants in River Water” Presented at the Prof. K.V. Thomas Endowment National Seminar: *Frontiers in Materials Science*, 27–28 November 2024. ISBN-978-93-85657-42-9. [Best Oral Presentation Award from *Materials Advances*]
- Vijayan, A.; J. Prakash. [Jan 2024] “Novel Three-Dimensional Tool for Analysis of Complex Food Matrices: Angular Sweep Total Fluorescence Spectroscopy”, *Trombay Symposium on Radiation and Photochemistry-2024*, BARC, Mumbai.
- Manikandan C and J. Prakash; [Jan 2025] Design & Fabrication of Eco-friendly R-PE Incorporated Hydrogen Strips for the Selective Detection of Hg<sup>2+</sup> In Aqueous Media - 16<sup>th</sup> National Symposium on Radiation & Photochemistry (NSRP-2025)
- Jaiyanth S and J. Prakash; [Jan 2025] Designing of four system FRET series & it's Application - 16<sup>th</sup> National Symposium on Radiation & Photochemistry (NSRP-2025)
- Vidhyashree M and J. Prakash; [Jan 2025] Pyrano[3,2-c] Chromene - Based sensor for Detecting of Microbial and Human Contamination in Environmental Samples - 16<sup>th</sup> National Symposium on Radiation & Photochemistry (NSRP-2025)

- Rajesh, A.; J. Prakash [Mar 2025] Fluorescence-Based Detection of Ghee Adulterants: A Rapid and Portable Analytical Approach - International Conference on Materials for Green and Sustainable Chemistry, (ICMGS- 2025)
- Dileep H, Sanjit Haldar and J. Prakash; [Mar 2025], Photochemical and Thermal Stability of Fish oil: A Fluorescence Spectroscopy Investigation - 3rd International Conference on Recent Trends in Material Science and Devices (ICRTMD 2025), JVMGRR College, Charkhi Dadri, Haryana
- Sreelekshmi DV, Amirtha Bharathan.; J.Prakash. [Feb 2025] Exploring the role of alkyl chain length of Photophysical Characteristics of Pyrene acids - Presented at International Conference on Nanotechnology & Materials Sciences (NANO-25), National Seminar on Designing the Future with Chemistry (NSDFC-25), K.S.R. College of Arts and Science, Thiruchengodu, Tamil Nadu. [Best Oral Presentation Award]
- Haldar, S.; J. Prakash; [Feb 2025] "Qualitative and Quantitative Analysis of Composition and Adulterants in Fish Oil Using Total Fluorescence Technique, WLEF & EEMF" Presented at International Conference on Nanotechnology & Materials Sciences (NANO-25), National Seminar on Designing the Future with Chemistry (NSDFC-25), K.S.R. College of Arts and Science, Thiruchengodu, Tamil Nadu.
- Sreelekha A Nair and J. Prakash; [Mar 2025], Experimental analysis of protolytic forms of ESIPT- based molecules using Absorption-Emission Matrix Fluorescence (AEMF) and Chemometrics - 3<sup>rd</sup> International Conference on Recent Trends in Material Science and Devices (ICRTMD 2025), JVMGRR College, Charkhi Dadri, Haryana
- J Prakash [Mar 2025] 'Angular Sweep Total Fluorescence Spectroscopy: Unlocking a New Dimension for Real Sample Analysis' 3<sup>rd</sup> International Conference on Materials Science & Technology (ICMST2025) be held at St. Thomas College, Palai.

#### **Awards & Recognitions:**

- Awarded Certificate of Excellence in Reviewing -2021 by the Indian Journal of Science & Technology.
- Awarded 2nd Prize of "Eli Lilly & Co Asia's Outstanding Thesis Awards-2013".
- Life member of Indian Society for Radiation and Photochemical Sciences (ISRAPS).
- Member of the Royal Society of Chemistry (MRSC).
- Regular Member -ACS, American Chemical Society.

#### **Internship in 2024-25:**

- Ms. Jahaziah J, Nesamani Memorial Christian College, Marthandam, 20.12.2024 to 19.01.2025
- Mr. Ajesh Ram J.J, Nesamani Memorial Christian College, Marthandam, 20.12.2024 to 19.01.2025
- Ms. Priyanka R, Nesamani Memorial Christian College, Marthandam, 20.12.2024 to 19.01.2025
- Ms. Reshma J, Nesamani Memorial Christian College, Marthandam, 20.12.2024 to 19.01.2025
- Mr. Samin Antony, Nesamani Memorial Christian College, Marthandam, 20.12.2024 to 19.01.2025

# Dr. Meenakshi Pahwa

## Assistant Professor



### Contact:

**Phone** : +91-8447317128  
**Email** : meenakshipahwa@cutn.ac.in  
**Website** : <https://cutn.ac.in/staff-members/dr-meenakshi-pahwa>  
**Location** : VRK 120, Department of CHemistry, CUTN

### Connect:

**Google Scholar** : <https://scholar.google.co.in/citations?user=Nqe6vz4AAAAJ&hl=en>  
**Research Gate** : <https://www.researchgate.net/profile/Meenakshi-Pahwa>  
**Scopus ID** : 18038508900  
**ORCID** : <https://orcid.org/0000-0002-6955-5528>

Dr. Meenakshi Pahwa is a supramolecular and nanomaterial chemist, deeply fascinated by the ways in which molecular recognition and nanoscale self-assembly can be exploited to achieve biological applications. Her academic journey—from Delhi University to JNCASR and the University of Warsaw, has inculcated in her a strong interdisciplinary foundation that continues to shape her approach to research. She is currently working as an Assistant Professor at the Central University of Tamil Nadu, where she teaches foundational chemistry and focused on building a multidisciplinary team that merges expertise in organic synthesis and materials chemistry for future biological applications.

### Research Focus:

Her research group is keen to exploit nanomaterials and supramolecular chemistry mediated host-guest interactions to advance a wide array of biological applications in the field of therapeutic, sensing, catalysis and diagnostic.

### Key Research Areas:

- **Chemical and Biological Sensing:** Development of nanomaterials and macrocycle based high throughput sensors for the array based sensing to discriminate various small molecules, ions and bioanalytes.
- **Therapeutics:** Design and development of smart, reversible, self-assembled nanomaterials for applications like catalysis, stimuli responsive drug delivery vehicles.
- **Design and development of bioinspired nanosystems:** for biomedical applications, templated organic synthesis.

### Selected Publications:

- M. Pahwa, P. Jain, N. Das Saha, C. Narayana, S. S. Agasti, Interfacial Tetrazine Click Chemistry Mediated Assembly of Multifunctional Colloidosomes, 2021, Chem. Commun, 57, 9534-9537.
- M. Pahwa, M. Sharma, S. K. Meethal, S. S. Agasti, Reversible Regulation of Esterase Activity via Host-Guest Molecular Recognition at the Nanoparticle Surface, 2020, Bull. Mater. Sci, 43, 1-7.
- S. K. Meethal, R. Sasmal, M. Pahwa, S. Chandrasekhar, N. Das Saha, S. S. Agasti, Cucurbit[7]uril Directed Assembly of Colloidal Membrane and Stimuli Responsive Microcapsules at the liquid-liquid Interface, 2018, Langmuir, 34, 693-699.
- M. Pahwa, Athira M. P. and S. S. Agasti, Organic/Inorganic Hybrid Nanostructures for Biological Imaging and delivery, Encyclopedia of Nanomaterials, Younan Xia, Yadong Yin Eds., Elsevier, 2023, pp 478-495.

## Research Group:



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## Research Scholar:



**Mr. Ashish M Mohammed**

DEC 2024

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## Publications in 2024-25:

- R. Sasmal, A. Som, P. Kumari, R. V. Nair, S. Show, N. S. Barge, M. Pahwa, N. D. Saha, S. Rao, V. Sheeba, R. Agarwal, S. S. Agasti; "Supramolecular Guest Exchange in Cucurbit [7] uril for Bioorthogonal Fluorogenic Imaging across the Visible Spectrum", ACS Cent. Sci., 2024, 10, 1945-1959.
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# Dr. S. Rajkumar

## Assistant Professor



### Contact:

**Phone** : +91-9342228386  
**Email** : rajkumars@acad.cutn.ac.in  
**Website** : <https://cutn.ac.in/staff-members/dr-rajkumar-subramani/>  
**Location** : VRK 219, Department of Chemistry, CUTN

### Connect:

**Google Scholar** : <https://scholar.google.com/citations?user=Ks32v-4AAAAJ&hl=en>  
**Scopus ID** : 57224804062  
**Research Gate** : <https://www.researchgate.net/profile/Rajkumar-Subramani-3>  
**ORCID** : <https://orcid.org/0000-0002-2106-5159>

Dr. S. Rajkumar joined Central University of Tamil Nadu in 2024. He completed his PhD at VIT University under Prof. Thirumanavelan Gandhi, focusing on Ru(II)-catalyzed C–H activation. He pursued postdoctoral work at ShanghaiTech University, China delving into asymmetric enamide functionalization and kinetic resolution reactions and later worked in Kyungpook National University South Korea as a Brain Pool Fellow on radiopharmaceuticals developments. He also served as a Research Fellow at Massachusetts General Hospital, Harvard Medical School, focusing on targeted drug delivery systems for cancer imaging and radiotherapy using advanced radiochemical techniques

### Research Focus:

His research group mainly focuses on the metal catalyst C–H activation reaction for the drug development in cancer diagnosis and therapy. His research group also designs and synthesizes carborane-based organometallic compounds for cancer treatment and diagnosis. By integrating boron-rich carborane clusters with transition metals, they create stable, reactive, and biologically compatible platforms. Using strategies such as C–H activation, asymmetric functionalization, and cyclometallation, they generate diverse molecular libraries. These complexes show promise in anticancer therapy, boron neutron capture therapy (BNCT), radiopharmaceuticals, and antibody–drug conjugates. Additionally, they serve in enzyme-responsive drug delivery and molecular imaging, bridging treatment and early diagnosis. His vision is to advance carborane chemistry into next-generation therapeutics and diagnostics that are both highly effective and minimally invasive.

### Key Research Areas:

- C-H Activation
- Boron Neutron Capture therapy.
- Esterase enzyme responsive tumour-targeted drug delivery.

### Selected Publications :

- Subramani Rajkumar, Mengyao Tang and Xiaoyu Yang. Chiral Phosphoric Acid Catalyzed Kinetic Resolution of 2-Amido Benzyl Alcohols: Asymmetric Synthesis of 4H-3,1-Benzoxazines. *Angew. Chem. Int. Ed.* 2020, 59, 2333–2337.
- Subramani Rajkumar, Shunlong He and Xiaoyu Yang. Kinetic Resolution of Tertiary 2- Alkoxy-carboxamido-Allylic Alcohols by Chiral Phosphoric Acid Catalyzed Intramolecular Transesterification. *Angew. Chem. Int. Ed.* 2019, 58, 10315 –10319.
- Subramani Rajkumar, Jiawen Wang, Sujuan Zheng, Donglei Wang, Xueqian Ye, Xuejiao Li, Qian Peng and Xiaoyu Yang. Regioselective and Enantioselective Synthesis of  $\beta$ -indolyl Cyclopentenamides Through Chiral Anion Catalysis. *Angew. Chem. Int. Ed.* 2018, 57, 13489 –13494.

- Subramani Rajkumar, S.A. Savarimuthu, R. Senthilkumaran, C. M. Nagaraja, and T. Gandhi. Expedient Synthesis of New Cinnoline Diones by Ru-Catalyzed Regioselective Unexpected Deoxygenation-Oxidative Annulation of Propargyl Alcohols with Phthalazinones and Pyridazinones. *Chem. Commun.*, 2016, 52, 2509-251.
- Subramani Rajkumar, S. Karthik and T. Gandhi. Ru(II)-Catalyzed  $\beta$ -Carboline Directed C-H Arylation and Isolation of Its Cycloruthenated Intermediates. *J. Org. Chem.*, 2015, 80, 5532–5545.

#### Research Group:



#### Research Scholar:



**Mr. M Vishal**  
DEC 2024

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#### Awards & Recognitions:

- 2019 - Brain Pool-Korea Research Fellowship, Kyungpook National University, South Korea.
- 2007 - Gold Medallist, B.Sc. Chemistry at Government Arts College, Chennai, University of Madras, India.

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#### Internships 2024-25:

- Ms Iswarya M, V. V. Vanniaperumal College for Women, Virudhunagar, Nov 2024 to Dec 2024.
- Ms Karinga M, V. V. Vanniaperumal College for Women, Virudhunagar, Nov 2024 to Dec 2024.

# Academic Programmes

## 1 Integrated M.Sc. Chemistry (CBCS)

**Eligibility Criteria:** A Pass in the Plus two examination or equivalent of any recognized board in India with 60% marks (Chemistry, Physics, Mathematics or Biology/Botany / Zoology / Biotechnology) for General Category, 55% marks for OBC (NCL)/EWS and 50% marks for SC/ST/PWD candidates.

**Duration of the programme:** Five Years

**Mode of Selection:** CUET Score

**Sanctioned Strength:** 28

## 2 M.Sc. Chemistry (CBCS)

**Eligibility Criteria:** Bachelor's degree in Chemistry (Main) or with Chemistry as one of the major subjects. Candidates should have secured a minimum of 55% marks or 6.0 CGPA (on a 10-point scale) in the qualifying degree examination for General Category, 50% marks or 5.5 CGPA (on a 10 point scale) for EWS/OBC (Non-creamy layer) and 45% aggregate marks or 5.0 CGPA (on a 10-point scale) for SC/ST/PWD candidates.

**Duration of the programme:** Two Years

**Mode of Selection:** CUET Score

**Sanctioned Strength:** 13

## 3 PGDCLT

**Eligibility Criteria:** Bachelor's degree in Chemistry (Main) or with Chemistry as one of the major subjects. Candidates should have secured a minimum of 55% marks or 6.0 CGPA (on a 10-point scale) in the qualifying degree examination for the General Category, 50% marks or 5.5 CGPA (on a 10-point scale) for EWS/OBC (Non-creamy layer), and 45% aggregate marks or 5.0 CGPA (on a 10-point scale) for SC/ST/PWD candidates.

**Duration of the programme:** One Year

**Mode of Selection:** CUET Score

**Sanctioned Strength:** 10

## 4 Ph.D in Chemistry

The doctoral degree in Chemistry at CUTN is an exciting research program with components of course work and advanced research. The department is seeking enthusiastic research scholars to work in frontier areas of Chemistry such as organic synthesis, organic electronic materials, carbohydrate chemistry, polymer chemistry, bioinorganic chemistry, materials chemistry, and asymmetric synthesis. DST INSPIRE fellows, CSIR JRF and other national fellowship holders can approach the faculty based on the research interest at any time.

**Eligibility Criteria and Guidelines:**

A consistently good academic record and possessing a Degree in Chemistry/ Organic Chemistry/ Inorganic Chemistry/ Physical Chemistry or an equivalent degree obtained from a recognised University/Institute or Foreign University equivalent (approved by AIU).

# ChemFam

*- Every molecule of memory, here is bound by the chemistry of togetherness*

**Integrated MSc  
1<sup>st</sup> Year**

2024-2029



**Integrated MSc  
2<sup>nd</sup> Year**

2023-2028



**Integrated MSc  
3<sup>rd</sup> Year**

2022-2027



# ChemFam



**Integrated MSc  
4<sup>th</sup> Year**

2021-2026

**Integrated MSc  
5<sup>th</sup> Year**

2020-2025



**MSc 1<sup>st</sup> Year**

2023-2025

**MSc 2<sup>nd</sup> Year**

2024-2026



# ChemFam



**PGDCLT**

2024-2025

**Ph.D SCHOLARS**



**Faculty & Staff**



# Curricular Achievements

## Gold Medal Winners (2024-25)

Congratulations to our gold medal winners for their outstanding achievement! Your hard work, dedication, and perseverance have brought glory to you and pride to our institution. May your success continue to inspire many more milestones ahead.



**Najiya C K**  
**I190524**  
**Integrated M.Sc. Chemistry**



**Thoudam Bedanta**  
**P220519**  
**M.Sc. Chemistry**



**Riya Krishna**  
**D230504**  
**PGDCLT**

## GATE 2025

The Graduate Aptitude Test in Engineering (GATE) serves as a benchmark for students aspiring to pursue higher studies and research in leading institutions or to secure positions in top PSUs. This year, 17 students have successfully qualified the GATE exam.



**DIYA RENJITH**  
(I190510)



**BOPPURI HUMPI**  
(I190515)



**MADAVI SAI PRASAD**  
(I190520)



**MUHSINA K M**  
(I190523)



**NAJIYA C K**  
(I190524)



**NIVEDITHA N**  
(I190526)



**ANURAG K**  
(P220502)



**ARUN K S**  
(P220503)



**FAIBA T P**  
(P220504)



**ABHIRAM VINOD**  
(I200501)



**S PRAVALLIKA**  
(I200523)



**SIDDARTH K S**  
(I200524)



**SRI RANGANAYAKIT**  
(I200527)



**SRUTHI S**  
(I200528)



**ARJUN SUBHASH**  
(I210503)



**ASWANIDEV S**  
(P240502)



**GOWRI K G**  
(R240509)

## Achievers in National Level Examination

The Department of Chemistry takes immense pride in celebrating the outstanding achievements of our students in some of the most prestigious and competitive national-level examinations this year.

### CSIR - NET 2025

The Council of Scientific and Industrial Research–National Eligibility Test (CSIR-NET) is a significant credential for those pursuing careers in research and academia. It is with great pride that we announce that 18 students from our department have qualified the CSIR-NET this year.

### CSIR - NET – JRF



**ATHIRA K S**  
(P210504)



**RISIM**  
(P210515)



**MADAVI SAI PRASAD**  
(I190520)



**MEGHA V P**  
(I190521)



**DIYA REJITH**  
(I190510)



**NAJIYA C K**  
(I190524)



**ANURAG K**  
(P220502)



**SIDDARTH K S**  
(I200524)

### CSIR - NET – Assistant Professor



**ASIT HAIT**  
(P210503)



**NIVEDITHA N**  
(I190526)



**FAIBA T P**  
(P220504)



**BHUKYA KISHAN**  
(I200508)



**S. PRAVALLIKA**  
(I200523)

## CSIR - NET – Ph.D



**GAYATHRI DEVIR**  
(I190513)



**HAMSAVARTHINI S**  
(I200511)



**VIKRAM YADAV**  
(P230512)



**DHIVYA S**  
(I210506)



**SUJITHRAJ A**  
(P240510)

## IIT JAM 2025

Clearing the IIT-JAM (Joint Admission Test for Masters) opens doors to premier institutes like IITs and IISc for postgraduate studies in chemistry. We are proud to announce the success of two students who have qualified the IIT-JAM-2025



**BHUKYA RAJENDER**  
(I220506)



**PRANESH K P**  
(I220526)

# Ph.D Awardees

Dr. R Gayathri was awarded her Ph.D on November 22, 2024, under the guidance of Prof. S. Nagarajan. Her research was focused on Strategic design and synthesis of functionalised triarylamine and ferrocenes for organic WORM memory devices and has contributed significantly to advancements in the field.



Currently, she is engaged in Postdoctoral research at IIT Bombay, continuing to explore and expand her expertise through cutting-edge research. Her dedication, innovation, and scholarly achievements mark her as a rising leader in their discipline.

## Dr. R Gayathri

Dr. S Bharani was awarded her Ph. D on March 12, 2025. Under the guidance of Dr. M. Shiva Prasad, she pursued her research in the field of Asymmetric synthesis.

Her dedication and scientific insight have led to valuable contributions in her field. She is currently continuing her academic journey as a Postdoctoral Fellow at IISER Pune, where she aims to expand the impact of her work further.

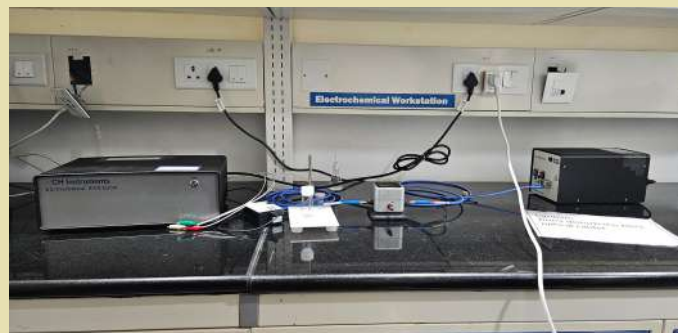


## Dr. S Bharani

# Instrumentation Facility



**FT-IR**



**Electrochemical Workstation**



**Gas Chromatography with Flame Ionization Detector**



**Gas Chromatography with Mass Spectrometry**



**Gel Documentation**



**Gel Permeation Chromatography**

# Instrumentation Facility



**Sputtering Unit**



**Ultrasonicator**



**Microwave synthesizer**



**UV-VIS Spectrophotometer**



**Spectrofluorometer**



**Differential Scanning Calorimeter**

# Instrumentation Facility



**UV-VIS-NIR  
spectrophotometer**



**Multipurpose  
spectrophotometer**



**High Performance Liquid  
Chromatography**



**Spectrofluorometer**



**UV-VIS Spectrophotometer**



**Electrochemical Analyzer**

# Instrumentation Facility



**Polarimeter**



**Thermal Evaporation Unit**



**Nuclear Magnetic Resonance Spectrometer**



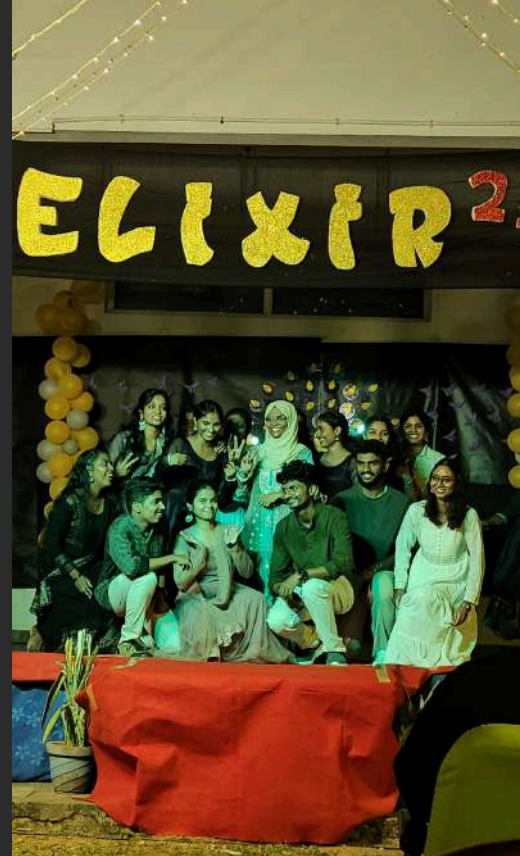
**UV-VIS (DAD) Spectrophotometer**



**Glovebox**

# Departmental Activities

- SPARGERE
- ELIXIR
- BIG BITE HOUR
- TEACHER'S DAY
- EL CAZADOR
- pH-AREWELL
- WORKSHOPS



# SPARGERE '25

Celebrating Science & Innovation



SPARGERE 2025 was the Department of Chemistry's grand celebration of National Science Day at the Central University of Tamil Nadu. The name "SPARGERE" comes from the *Latin* word meaning "to scatter", symbolizing both the Raman Effect the scattering of light discovered by Sir C.V. Raman in 1928 and the department's mission to spread scientific knowledge. Every year on February 28, National Science Day is celebrated to commemorate Sir C.V. Raman's Nobel discovery in Physics (1930). The 2025 theme, "*Empowering Indian Youth for Global Leadership in Science & Innovation for VIKSIT BHARAT*", highlighted the critical role of young people in shaping India's scientific future and contributing to the nation's vision of becoming a developed country by 2047.

Organized by the fourth-year Integrated M.Sc., first-year M.Sc., and PGDCLT students, SPARGERE 2025 spanned three days. It featured quizzes, competitions, interactive science games, and the official National Science Day function. The events were designed to encourage curiosity, teamwork, and a passion for research among students from across the university. Programs included Intra-University Quiz Competition, Sci-Canvas Poster Competition, Atomic Race, Chem Glimpse, Sequence that matters and Click Chemistry.

# ELIXIR '25

Blending Art, Culture & Camaraderie



On May 16, 2025, the Department of Chemistry at the Central University of Tamil Nadu witnessed one of its most anticipated and vibrant events, Elixir 2025. Organized by the Fourth-Year Integrated MSc and First-Year MSc students, this celebration was more than just a cultural fest; it was a heartfelt gathering that brought together students and faculty to appreciate the richness of creativity, teamwork, and joy. The term Elixir itself, symbolizing a magical potion that heals, energizes, and revitalizes, perfectly captured the spirit of the evening.

Elixir 2025 was designed as a much-needed break from academic routines, offering a refreshing outlet for artistic expression, friendly competition, and community bonding. The planning began weeks in advance, with students taking charge of logistics, scheduling, publicity, and decorations with enthusiasm. Their teamwork ensured the event would be remembered as a shining example of unity and dedication within the department.

Before the cultural evening, the organizers conducted a series of outdoor games like badminton and indoor events such as chess and carrom. These activities served as icebreakers, bringing together participants from different batches in a spirit of friendly rivalry. The matches were marked by laughter, encouragement, and healthy competition. Even those who didn't win enjoyed the sense of participation and the memories created along the way.

Faculty members later remarked on how smoothly the event was managed, appreciating the organizers for their creativity, leadership, and attention to detail. Elixir 2025 was not just an evening of entertainment; it was a living example of how cultural activities can strengthen bonds, inspire confidence, and create lasting memories.



# Big Bite Hour

Celebrating culture through cuisine

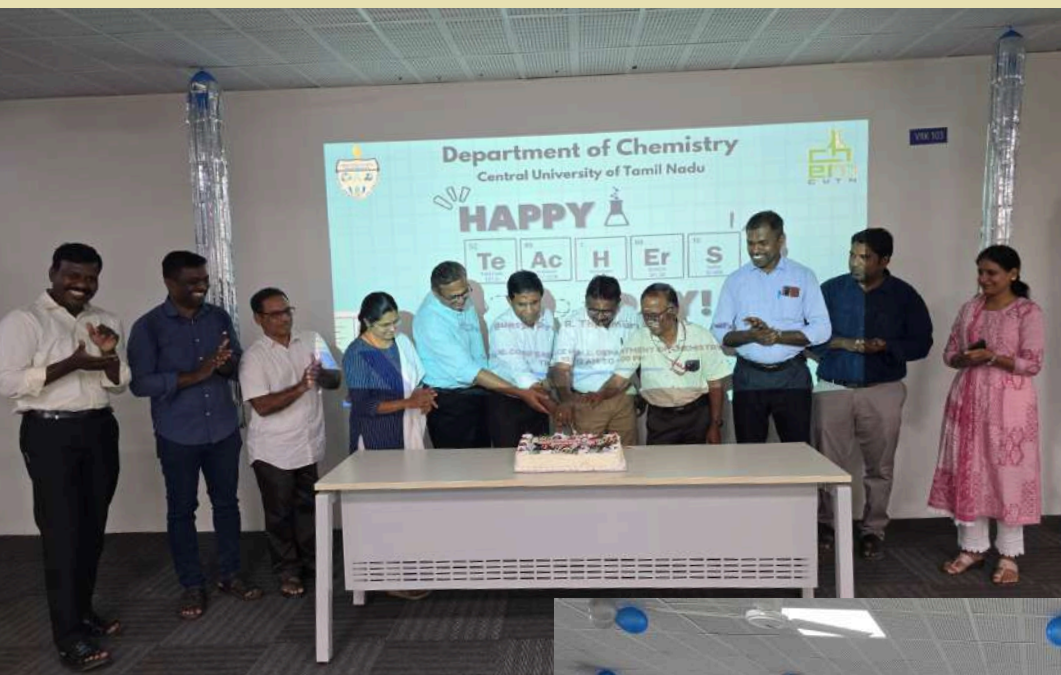


The Department of Chemistry hosted a lively Food Fest, Big Bite Hour on 3<sup>rd</sup> April 2025, celebrating the perfect blend of science and flavour. Students showcased their culinary creativity through a variety of mouth-watering dishes, turning the day into a feast of taste and togetherness. The event highlighted the spirit of teamwork and joy, proving that great chemistry can happen both in the lab and in the kitchen!



# Teacher's Day

A teacher takes a hand, opens a mind, and touches a heart forever.



Teachers' Day was celebrated with great enthusiasm to honor the guidance and dedication of our mentors. The program began with a formal welcome, followed by cultural performances, fun games, and heartfelt tributes by students.

Teachers were showered with gratitude through speeches, poems, and notes of appreciation. The celebration concluded with tokens of respect, making the day memorable and reinforcing the bond between teachers and students.



# El Cazador

A Celebration of Fresh Beginnings



**El Cazador**, a fun-filled event designed to welcome new students with energy, excitement, and enthusiasm, was celebrated on 16<sup>th</sup> Oct 2024. It was more than just a celebration, and was the first step for freshers to bond with their seniors, showcase their hidden talents, and feel the vibrant pulse of the department. With cultural performances, games, and interactive sessions, **El Cazador** created unforgettable memories and set the tone for a joyful journey ahead.



# pH-AREWELL

Farewell - Bidding Goodbye with a Smile!



The **pH-arewell**, one of the most emotional and memorable events of the year, was organised on 16<sup>th</sup> May 2025 for our outgoing batch. It was a beautiful blend of laughter, nostalgia, and gratitude, where juniors expressed their love and appreciation for their seniors through fun performances, heartfelt speeches, and joyful moments. The event marked the end of one chapter and the beginning of another, leaving everyone with memories to cherish and bonds that last a lifetime.



# Workshops

## 1. Organic Semiconductor Innovations: A Faculty Development Initiative

The **Organic Semiconductors Innovations** was a six day faculty development programme hosted by Department of Chemistry, Central University of Tamil Nadu. It was sponsored by AICTE training and learning (ATAL) Academy from 9<sup>th</sup> to 14<sup>th</sup> December 2024. The event brought together around 150 participants from across the country, creating a vibrant platform for knowledge exchange.

Thirteen distinguished resource persons from academia and industry delivered insightful sessions on the latest advancements in organic semiconductors. The programme not only enriched the participants' understanding of the subject but also inspired fresh research ideas and strengthened academic collaborations, marking a proud achievement for the department.

### RESOURCE PERSONS

**Academic(Indian Experts)**

 Prof. Satish Patil IISc, Bangalore	 Prof. Justin Thomas IIT Roerkee	 Prof. D K Goswami IIT Kharagpur	 Prof. S A Hussain Tripura University	 Dr. Suraj Soman Senior Scientist, NIIST
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**Academic(Foreign Experts)**

 Prof. Prashant Sonar Queensland University of Technology, Australia	 Dr. Henri-Pierre J. Universite de Strasbourg France
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**Experts from Industry**

 Dr. R. Bairava Ganesh Head-Process Engineering Tata Power Solar Limited	 Dr. Anshika Anjali Research Scientist Jubilant Biosys Ltd	 Mr. Selvakumara S Product Development Head Research Supporters India	 Mr. Raghuvamshi S Rao Chief Executive Operator Elixir Technologies	 Dr. Pramod M.R Sr.Tech Manager (R&D) Director IISc, Bangalore	 Mr. Ravikant Sharma Director Business Development Impulse Technology
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## 2. International Workshop on Advanced Organic Electronic Materials – 2025 (iWAOEM-25)

Pushing the boundaries of science begins with creating spaces where minds meet, ideas spark, and innovation takes flight. The Department organised the International Workshop on Advanced Organic Electronic Materials-2025 (iWAOEM-25), on 3<sup>rd</sup> & 4<sup>th</sup> February 2025, sponsored by DST-SERB-CRG, Anusandhan National Research Foundation (ANRF).

The workshop featured renowned international experts, who delivered inspiring sessions on emerging trends and innovative research in the field. The highlight of the session was the inspiring inaugural address by **Prof. Tomoyuki Akutagawa** from Tohoku University, Japan, who shared insights on frontier research in organic electronics.



Topics ranged from material design and device fabrication to potential industrial applications. Over two days the workshop featured expert lectures, interactive discussions and knowledge-sharing sessions, gaining valuable insights and forging new collaborations.

By bridging the gap between research and application, iWAOEM-25 not only enriched academic understanding but also strengthened the department's position as a leader in cutting-edge scientific exploration.

### RESOURCE PERSONS



Prof. Tomoyuki Akutagawa  
Tohoku university, Japan



Prof. Prashant Sonar  
QUT, Australia



Prof. K. Sethuraman  
CUTN, India



Prof. (Eme.) P. Pradeep  
Mahatma Gandhi University, India



Prof. S. Nagarajan  
CUTN, India



Prof. P. Ravindran  
CUTN, India

### 3. Two - Day National Workshop on NMR Spectroscopy:

The Department of Chemistry, Central University of Tamil Nadu (CUTN), organised a Two-Day National Workshop on NMR Spectroscopy, on 13<sup>th</sup> & 14<sup>th</sup> November 2024, sponsored by Bruker-India & CUTN. Prof. M.G. Sethuraman of spectroscopic techniques in advancing both academic research and industrial applications, drawing attention to the versatility of NMR in diverse areas of chemistry. Sessions covered NMR fundamentals, instrument handling, data interpretation, and advanced applications in organic, inorganic, and bioinorganic chemistry.

Distinguished experts delivered insightful sessions, covering both theoretical concepts and practical techniques, enabling participants to connect fundamental science with real-world applications. The event strengthened participants skills and reinforced CUTN's role in promoting scientific excellence.

#### RESOURCE PERSONS



**Prof. M. G. Sethuraman**  
Senior Professor,  
Department of Chemistry  
Gandhigram Rural Institute, Dindigal



**Mr. Sachin R Kate**  
Applicant Scientist  
M/s Bruker India Scientific  
Pvt. Ltd., Mumbai



**Dr. Vinesh Vijayan**  
Associate Professor  
IISER, Thiruvananthapuram

### 4. Transition - 2025

The Department of Chemistry, Central University of Tamil Nadu, organized TRANSITION–2025: “Nurturing Aspirants to Advanced Research in Chemistry”, a Two-Day National-Level Lecture Workshop held on 13<sup>th</sup> and 14<sup>th</sup> March 2025. Sponsored under the DST-FIST scheme, Highlight of the workshop was the diverse panel of distinguished speakers from both academia and industry. Technical sessions featured eminent speakers: Dr. Senthilkumar on drug-resistant pathogens, Dr. Muniyandi Sankaralingam (NIT Calicut) on selective C–H bond oxygenation, Prof. Sekar G (IIT Madras) on asymmetric synthesis, and Prof. Mahesh Hariharan (IISER Thiruvananthapuram) on ultrafast spectroscopy. Department faculty also shared their cutting-edge research.

#### RESOURCE PERSONS



**Dr. U. P. Senthilkumar**  
Head, R&D  
3xper Innoventure Ltd.,  
Chennai



**Prof. Sekar G**  
IIT Madras



**Prof. Mahesh Hariharan**  
IISER  
Thiruvananthapuram



**Dr. Muniyandi Sankaralingam**  
NIT Calicut

## 5. Organized Special Lecture Series:



24<sup>th</sup> Jul. 2024

**“Mental health & well-being”**  
**Dr. Mamman Joseph C**  
Associate Professor  
Dept. of Applied Psychology, CUTN

31<sup>st</sup> Jul. 2024

**“Organic Electronic Devices”**  
**Dr. K. Sethuraman**  
Associate Professor & Head  
Dept. of Material Science, CUTN.



7<sup>th</sup> Aug. 2024

**“Engineering Nanoparticle Surface Monolayer via Molecular Recognition for biological applications”**  
**Dr. Meenakshi Pahwa**  
Assistant Professor  
Dept. of Chemistry, CUTN.



14<sup>th</sup> Aug. 2024

**“Drug development via C-H Activation, Asymmetric Catalysis & Radiopharmaceutical Methods for Cancer Diagnosis and Therapy”**  
**Dr. S. Rajkumar,**  
Assistant Professor  
Dept. of Chemistry, CUTN



# The Pride of Uniform, NCC at its Best

The National Cadet Corps (NCC) has always stood as a platform that nurtures discipline, leadership, and patriotism among students. Our cadets have consistently made the institution proud by excelling in some of the most prestigious camps across the country, bringing recognition both at regional and national levels.



## Prakash B

Reg.No. PY22SDA906219

Integrated MSc Chemistry,  
4th Year

Participated in the highly prestigious Thal Sainik Camp (TSC) and, through his exemplary performance, was selected and represented our university with pride, for the **All India Thal Sainik Camp (AITSC) 2024** held at Delhi.



For his remarkable contribution and representation, he was honoured :

- By Commodore S. Ragav, Deputy Director General of the NCC, at the DDG Office, Chennai, on 15<sup>th</sup> Sep 2024.
- By receiving the Lieutenant Governor's medal from Puducherry Governor K. Kailashnathan at Lieutenant Governor's Felicitation on 3<sup>rd</sup> Mar 2025.
- By Puducherry Group Commander at the Group Commander Felicitation on 7<sup>th</sup> Apr 2025 at NCC Group HQ Puducherry.

# The Pride of Uniform, NCC at its Best



## Dancy R

Reg.No.PY22SWA906264  
Integrated MSc Chemistry,  
3rd Year

Represented our university with pride. She participated in the Thal Sainik Camp (TSC) 2024, under the event Judging Distance & Field Signals.

Her journey was a testament to her hard work as she successfully reached the Directorate Training Camp-1 after excelling at the Inter-Group Competition (IGC) 2024.

## A Harinibala

Reg.No.PY22SWA906260  
Integrated MSc Chemistry,  
3rd Year



Harinibala brought honor to our university by taking part in the Thal Sainik Camp (TSC) 2024, where she competed in the event of Judging Distance & Field Signals.

Through her hard work and dedication, she secured a position at the IGC TSC 2024 level, representing our university. From May 23, 2024, to July 27, 2024, she actively took part in training and events, showcasing her unwavering commitment to the ideals of the NCC.

Supriya actively participated in the Thal Sainik Camp (TSC) 2024, competing under the event Health & Hygiene.

Her efforts and dedication earned her a place at the IGC TSC 2024 level, where she represented the university with great enthusiasm. She underwent her training and participation between May 23, 2024, and July 27, 2024, which highlighted her commitment to the spirit of the NCC.

## Supriya Selvi S

Reg.No.PY23SWA906288  
Integrated MSc Chemistry,  
2nd Year



NCC instills courage, discipline, and resilience through national representation

# NSS : *The Power of Youth Service*

National Service Scheme (NSS) has provided a platform for students to serve society and cultivate values of responsibility, empathy, and leadership. The NSS encourages young people to step out of their academic routine and directly contribute to social causes, cultural exchange, and environmental awareness.



In the State Level NSS Youth Festival 2024, held from 12<sup>th</sup> to 17<sup>th</sup> March 2025,

- *Carol Rosary Tina S*  
3<sup>rd</sup> Year Integrated MSc Chemistry
- *Ashwin A*  
3<sup>rd</sup> Year Integrated MSc Chemistry
- *Vishali G*  
2<sup>nd</sup> Year Integrated MSc Chemistry

Participated in cultural competitions.

Their talent and teamwork in the Group Song event earned them the third prize, bringing laurels to the institution and highlighting the cultural vibrancy of NSS volunteers.

## • *Aparna K A*

2<sup>nd</sup> Year Integrated MSc Chemistry

Participated in the State Level Workshop on Environmental Awareness at Tenkasi from February 12<sup>th</sup> to 17<sup>th</sup>, 2025. This workshop focused on sustainable living practices, eco-consciousness, and student-led initiatives to protect the environment, encouraging participants to adopt and promote eco-friendly practices in their communities.



# Sports Glory

“Where passion meets victory”

It gives us immense pride and joy to highlight the enthusiastic participation and remarkable achievements of our department students in various sports events this year. Demonstrating not just academic excellence but also exceptional athletic spirit, our students actively took part in inter-departmental, university-level, and state-level competitions across multiple sports events. Their hard work, discipline and team spirit have not only brought laurels to our department but also served as an inspiration to their peers.



Whether it was on the field, the track, or the court, our athletes showcased exemplary skill, determination and sportsmanship. The students' consistent efforts resulted in several commendable performances, reflecting the all-round development. These achievements stand as a testament to their dedication and the support provided by our faculty and sports coordinators. The unwavering teamwork and enthusiasm displayed by our students also inspired their peers to participate more actively in sporting activities.





## Clinching the Overall Championship at the Inter-Department Annual Sports Competition 2024-25

### CM Trophy District Level Winners 2024-25



**JASIL TOM**  
Int. M.Sc. 5<sup>th</sup> year  
BASKETBALL - Winner



**ASWIN S**  
Int. M.Sc. 5<sup>th</sup> year  
BASKETBALL - Winner



**ABHIRAM VINOD**  
Int. M.Sc. 5<sup>th</sup> year  
FOOTBALL - Winner



**JOHN SANTOSH**  
Int. M.Sc. 5<sup>th</sup> year  
BADMINTON (D) - Winner  
BADMINTON (S) - 2<sup>nd</sup> Runner Up



**ARJUN SUBHASH**  
Int. M.Sc. 4<sup>th</sup> year  
BADMINTON (D) - 2<sup>nd</sup> Runner Up



**DHIYANESHWAR S**  
Int. M.Sc. 4<sup>th</sup> year  
BADMINTON (D) - 2<sup>nd</sup> Runner Up



**DEVIKA NAMBIAR**  
Int. M.Sc. 5<sup>th</sup> year  
BADMINTON (S) - 2<sup>nd</sup> Runner Up  
BADMINTON (D) - 2<sup>nd</sup> Runner Up



**RAMYA**  
M.Sc. 2<sup>nd</sup> year  
BADMINTON (D) - 2<sup>nd</sup> Runner Up



**DANCY R**  
Int. M.Sc. 3<sup>rd</sup> year  
HANDBALL - 1<sup>st</sup> Runner Up



**KRISHNAVENY V K**  
Int. M.Sc. 5<sup>th</sup> year  
HANDBALL - 1<sup>st</sup> Runner Up



**A HARINI BALA**  
Int. M.Sc. 3<sup>rd</sup> year  
BASKETBALL - 2<sup>nd</sup> Runner Up



**VISHYASHREE M**  
M.Sc. 2<sup>nd</sup> year  
BASKETBALL - 2<sup>nd</sup> Runner Up



**AKSHARA S**  
Int. M.Sc. 2<sup>nd</sup> year  
BASKETBALL - 2<sup>nd</sup> Runner Up



**SUPRIYA SELVI**  
Int. M.Sc. 2<sup>nd</sup> year  
ATHELETICS (1500m & 800m)  
1<sup>st</sup> Runner Up

## South Zone Inter University Tournament Participation 2024-25

### Football (M):



**ABHIRAM VINOD**  
Int. M.Sc. 5<sup>th</sup> year



**PRAKASH B**  
Int. M.Sc. 4<sup>th</sup> year

### Basketball (M):



**JASIL TOM**  
Int. M.Sc. 5<sup>th</sup> year

### Badminton (M):



**ARJUN SUBHASH**  
Int. M.Sc. 4<sup>th</sup> year



**DHIYANESHWAR S**  
Int. M.Sc. 4<sup>th</sup> year



**JOHN SANTOSH**  
Int. M.Sc. 5<sup>th</sup> year

### Chess (M):



**JOHN SANTOSH**  
Int. M.Sc. 5<sup>th</sup> year

**Basketball (W):**



**ABHINA K JOY**  
Int. M.Sc. 3<sup>rd</sup> year



**KRISHNAVVENY V K**  
Int. M.Sc. 5<sup>th</sup> year



**A HARINI BALA**  
Int. M.Sc. 3<sup>rd</sup> year



**VISHYASHREE M**  
M.Sc. 2<sup>nd</sup> year

**Thiruvarur Intercollegiate Chess TVKGAC Tournament**



**JOHN SANTOSH**  
Int. M.Sc. 5<sup>th</sup> year  
Winner



