

REPORT ON

Two Days International Seminar

on

Emerging Trends in Science: Challenges and Opportunities

Organised by

Department of Chemistry in collaboration with IQAC, St. Joseph's College, Darjeeling

Date: 7th – 8th April 2025

VENUE: St. Joseph's College, Darjeeling.

1. Brochure



St. Joseph's College Darjeeling

Two Days International Seminar on
Emerging Trends In Science: Challenges and Opportunities
7th and 8th of April 2025

About the Seminar:
 The Seminar aims to discuss the recent emerging trends in science and highlights the increasing importance of interdisciplinary research. Interdisciplinary collaboration fosters innovation by bringing together diverse perspectives, methodologies and technologies leading to more comprehensive and effective solutions. The recent trends in science plays a crucial role in tackling global challenges in the field of energy, human health, medicines, biomedical technologies, sustainable materials etc. By recognising and addressing the challenges while embracing the opportunities presented by these emerging trends, science can continue to drive progress and improve the world.

Organised by the Department of Chemistry in collaboration with the IQAC St. Joseph's College, Darjeeling

Invited Speakers


 Dr. Anand Pariyar
Sikkim University


 Dr. Avinash Chettri,
University of Potsdam, Gollm,
Germany


 Dr. Moumita Rana,
Delft University of Technology/
TU Delft, Netherlands


 Dr. Ranjit Kumar Singh
Physikalisch-Technische Bundesanstalt
Braunschweig, Germany


 Dr. Madhukar Hemamalini,
Mother Teresa Women's
University,
Kodaikanal, Tamil Nadu


 Dr. Kuldeep Mahato,
Department of Nanoengineering
University of California, San Diego


 Dr. Rishabh Shukla,
University of Hawaii, USA


 Dr. Sanjeeta Tamang
School of Medical Sciences
University of Birmingham

Patron
Fr. Dr. Donatus Kujur, S.J.
 Principal, St. Joseph's
 College, Darjeeling

Convenor
 Dr. Rajani Dewan

Joint Convenor
 Dr. Dhiraj Brahman

IQAC Coordinator
 Dr. Anirudra Gurung

Treasurer
 Dr. Suman Chhetri
 Dr. Sailesh Chhetri

Organising Committee
 Dr. Antara Sharma
 Dr. Rajendra Pradhan
 Dr. Upakar Rai
 Mrs. Albina Subba
 Ms. Sweta Mukhia
 Dr. Pravat Dangal

Paper Presenters

1. Fr. Dr. James Antony, Assistant Professor, Department of Microbiology St. Joseph's College, Darjeeling
2. Dr. Ratul Datta Chaudhuri, Assistant Professor, Department of Zoology, St. Joseph's College, Darjeeling
3. Dr. Suman Chhetri, Assistant Professor, Department of Chemistry, St. Joseph's College, Darjeeling
4. Dr. Sailesh Chhetri, Assistant Professor, Department of Chemistry, St. Joseph's College, Darjeeling
5. Mr. Sumiran Tamang, Assistant Professor, Department of Chemistry, St. Joseph's College, Darjeeling
6. Dr. Dibya Gulab Minj, Assistant Professor, Department of Mathematics, Holy Cross Women's College, Ambikapur
7. Dr. Priyam Chakraborty, Assistant Professor, Department of Mathematics, St. Joseph's College, Darjeeling
8. Dr. Nishal Rai, Assistant Professor, Department of Physics, St. Joseph's College, Darjeeling
9. Dr. Rajani Dewan, Assistant Professor, Department of Chemistry, St. Joseph's College, Darjeeling
10. Dr. Antara Sharma, Assistant Professor, Department of Chemistry, St. Joseph's College, Darjeeling
11. Dr. Dhiraj Brahman, Assistant Professor, Department of Chemistry, St. Joseph's College, Darjeeling
12. Dr. Abhijit Chhetri, Assistant Professor, Department of Microbiology, St. Joseph's College, Darjeeling
13. Albina Subba, Assistant Professor, Department of Zoology, St. Joseph's College, Darjeeling
14. Barkha Rai, Assistant Professor, Department of Zoology, St. Joseph's College, Darjeeling
15. Dibyashree Chhetri, Assistant Professor, Department of Microbiology, St. Joseph's College, Darjeeling
16. Sweta Mukhia, Assistant Professor, Department of Microbiology, St. Joseph's College, Darjeeling
17. Shuvam Sharma, Assistant Professor, Department of Zoology, St. Joseph's College, Darjeeling

2. SEMINAR/WORKSHOP DETAILS:

- **Title:** Emerging Trends in Science: Challenges and Opportunities
- **Date:** 7th-8th April 2025
- **Time:** 9:00am
- **Venue:** MR Hall, St. Joseph's College, Darjeeling
- **Funding Agency:** College Fund

3. Keynote Address:

- **Topic:** Emerging Trends in Science: Challenges and Opportunities
- **Name:** Dr. Anand Pariyar
Assistant Professor
Department of Chemistry,
Sikkim University, Gangtok, Sikkim

4. Schedule:

Detailed session schedule:

DAY I
7th April 2025
Venue: M.R. Seminar Hall

- | | | |
|----|---|----------------|
| 1. | Registration | 9:00am-9:25am |
| 2. | Inaugural Session
(MC: Dr. Sailesh Chettri) | 9:25am-9:45am |
| 3. | Introduction of Keynote Speaker: Dr. Antara Sharma, Assistant Professor, Department of Chemistry, St. Joseph's College. | |
| 4. | Keynote Address by Dr. Anand Pariyar,
Assistant Professor,
Sikkim University
Tadong, Gangtok | 9:45am-10:35am |

TEA BREAK

10:35am-10:45am

TECHNICAL SESSION: I (MC: Dr. Sailesh Chettri, Department of Chemistry, St. Joseph's College)

Rapporteur: Mrs. Albina Subba, Department of Zoology, St. Joseph's College

Chairperson: Dr. Dhiraj Brahman, Department of Chemistry, St. Joseph's College

- | | | |
|----|--|-----------------|
| 5. | Invited Talk 1 by Dr. Avinash Chettri
Post Doctoral Researcher,
Institute of Chemistry-Physical Chemistry
University of Potsdam, Golm, Germany | 10:45am-11:25am |
| 6. | Discussion | 11:25am-11:35am |
| 7. | Paper Presentation 1 by Fr. Dr. Poovathumkal James Antony, S.J.
Assistant Professor
Department of Microbiology
St. Joseph's College, Darjeeling | 11:35am-11:55am |
| 8. | Paper Presentation 2 by Dr. Ratul Datta Chaudhuri
Assistant Professor,
Department of Zoology
St. Joseph's College, Darjeeling | 11:55am-12:15pm |
| 9. | Discussion | 12:15pm-12:25pm |

LUNCH BREAK

12:30pm-1:30pm

TECHNICAL SESSION: II (MC: Dr. Sailesh Chettri, Department of Chemistry, St. Joseph's College)

Rapporteur: Dr. Suman Chettri, Department of Chemistry, St. Joseph's College

Chairperson: Dr. Antara Sharma, Department of Chemistry, St. Joseph's College

- | | | |
|-----|--|---------------|
| 10. | Invited Talk 2 (Online) by Dr. Madhukar Hemamalini,
Assistant Professor,
Department of Chemistry,
Mother Teresa Women's University, Kodaikanal | 1:30pm-2:10pm |
| 11. | Discussion | 2:10pm-2:20pm |
| 12. | Invited Talk 3 (Online) by Dr. Moumita Rana,
Assistant Professor,
PVMD Group,
Electrical Sustainable Energy Department,
Electrical Engineering, Mathematics and Computer Science
Delft University of Technology/TU Delft, Netherlands | 2:20pm-3:00pm |
| 13. | Discussion | 3:00pm-3:10pm |

BREAK

3:10pm-3:20pm

**TECHNICAL SESSION III A (MC: Dr. Rajani Dewan, Department of Chemistry, St. Joseph's College
Rapporteur: Dr. Dhiraj Brahman, Department of Chemistry, St. Joseph's College
Chairperson: Dr. Rajendra Pradhan, Department of Chemistry, St. Joseph's College**

- | | | |
|-----|--|---------------|
| 14. | Paper Presentation 3 by Dr. Suman Chhetri,
Assistant Professor,
Department of Chemistry,
St. Joseph's College, Darjeeling | 3:20pm-3:40pm |
| 15. | Paper Presentation 4 by Dr. Sailesh Chhetri,
Assistant Professor,
Department of Chemistry,
St. Joseph's College, Darjeeling | 3:40pm-4:00pm |
| 16. | Paper Presentation 5 by Mr. Sumiran Tamang,
Research Scholar,
Department of Chemistry,
St. Joseph's College, Darjeeling | 4:00pm-4:20pm |
| 17. | Discussion | 4:20pm-4:30pm |

**PARALLEL TECHNICAL SESSION III B (MC: Dr. Antara Sharma, Department of Chemistry, St. Joseph's College
Rapporteur: Ms. Sweta Mukhia, Department of Microbiology, St. Joseph's College
Chairperson: Dr. Anirudra Gurung, Department of Botany, St. Joseph's College
Venue: SFC Seminar Hall**

- | | | |
|-----|---|---------------|
| 14. | Paper Presentation 6 by Dr. Abhijit Chhetri,
Assistant Professor,
Department of Microbiology,
St. Joseph's College, Darjeeling | 3:20pm-3:40pm |
| 15. | Paper Presentation 7 by Albina Subba,
Assistant Professor
Department of Zoology,
St. Joseph's College, Darjeeling | 3:40pm-4:00pm |
| 16. | Paper Presentation 8 by Barkha Rai,
Assistant Professor,
Department of Zoology,
St. Joseph's College, Darjeeling | 4:00pm-4:20pm |
| 17. | Discussion | 4:20pm-4:30pm |

**DAY 2
8th April 2025
VENUE: M.R. Seminar Hall**

- | | | |
|----|--------------|-----------------|
| 1. | Registration | 9:30am-10:00 am |
|----|--------------|-----------------|

**TECHNICAL SESSION: IV A (MC: Mrs. Albina Subba, Department of Zoology, St. Joseph's College
Rapporteur: Dr. Abhijit Chhetri, Department of Microbiology, St. Joseph's College
Chairperson: Dr. Pravat Dangal, Department of Physics, St. Joseph's College**

- | | | |
|----|---|-------------------|
| 2. | Invited Talk 1 (Online) by Dr. Ranjit Kumar Singh
Post Doctoral Researcher
Physikalisch-Technische Bundesanstalt (PTB)
Braunschweig, Germany | 10:00am-10:40am |
| 3. | Discussion | 10:40am-10:50am |
| 4. | Paper Presentation 1 (Online) by Dr. Dibya Gulab Minj
Assistant Professor
Department of Mathematics
Holy Cross Women's College, Ambikapur | 10:50am-11:10am |
| 5. | Discussion | 11:10am-11:20am |
| 6. | Paper Presentation 2 by Dr. Priyam Chakraborty
Assistant Professor,
Department of Mathematics
St. Joseph's College, Darjeeling | 11:20am-11:40am |
| 7. | Paper Presentation 3 by Dr. Nishal Rai
Assistant Professor,
Department of Physics
St. Joseph's College, Darjeeling | 11:40am-12:00noon |
| 8. | Discussion | 12:00noon-12:20pm |

**PARALLEL TECHNICAL SESSION: IV B (MC: Dr. Suman Chhetri, Department of Chemistry, St. Joseph's College
VENUE: SFC SEMINAR HALL**

Rapporteur: Dr. Ratul Dutta Chaudhuri, Department of Zoology, St. Joseph's College

Chairperson: Dr. Dr. Sailesh Chettri Department of Chemistry, St. Joseph's College

- | | | |
|--|--|-------------------|
| 1. Paper Presentation 4 by Dr. Rajani Dewan, | Assistant Professor,
Department of Chemistry,
St. Joseph's College, Darjeeling. | 10:00am-10:20am |
| 2. Paper Presentation 5 by Dr. Antara Sharma, | Assistant Professor,
Department of Chemistry,
St. Joseph's College, Darjeeling. | 10:20am-10:40am |
| 3. Paper Presentation 6 by Dr. Dhiraj Brahman, | Assistant Professor,
Department of Chemistry,
St. Joseph's College, Darjeeling. | 10:40am-11:00am |
| 4. Paper Presentation 7 by Dibyashree Chhetri, | Assistant Professor,
Department of Microbiology,
St. Joseph's College, Darjeeling. | 11:00am-11:20am |
| 5. Paper Presentation 8 by Sweta Mukhia, | Assistant Professor,
Department of Microbiology,
St. Joseph's College, Darjeeling. | 11:20am-11:40am |
| 6. Paper Presentation 9 by Shuvam Sharma, | Assistant Professor,
Department of Zoology,
St. Joseph's College, Darjeeling. | 11:40am-12:00noon |
| 7. Discussion: | | 12:00noon-12:20pm |

LUNCH BREAK

12:30pm-1:30pm

TECHNICAL SESSION: V (MC: Mrs. Albina Subba, Department of Zoology, St. Joseph's College

Rapporteur: Dr. Rajani Dewan Chaudhuri, Department of Zoology, St. Joseph's College

Chairperson: Dr. Suman Chhetri, Department of Chemistry, St. Joseph's College

- | | | |
|---|--|------------------|
| 9. Invited Talk 2 (Online) by Dr. Kuldeep Mahato, | Post Doctoral Researcher,
Department of Nanoengineering,
University of California, San Diego | 1:30 pm- 2:10 pm |
| 10. Discussion | | 2:10pm-2:40pm |
| 11. Invited Talk 3 (Online) by Dr. Rishabh Shukla, | Post Doctoral Researcher,
Civil and Environmental Engineering
University of Hawaii, USA | 2:40 pm-3:20 pm |
| 12. Discussion | | 3:20pm-3:30pm |
| 13. Invited Talk 4 (Online) by Dr. Sanjeeta Tamang | School of Medical Sciences
University of Birmingham | 3:30 pm- 4:10 pm |
| 14. Discussion | | 4:10pm-4:20pm |
| 15. Valedictory Speech: Dr. Anirudra Gurung, IQAC Coordinator | | 4:20 pm-4:35pm |
| 16. Distribution of Certificates | | 4:35pm-4:50pm |
| 17. Vote of Thanks: Dr. Rajani Dewan, Convenor | | 4:50 pm |

List of Invited speakers:

1. Dr. Anand Pariyar, Assistant Professor, Sikkim University, Gangtok, Sikkim.
2. Dr. Moumita Rana, Assistant Professor, Delft University of Technology/TU Delft, Netherlands.
3. Dr. Madhukar Hemamalini, Mother Teresa Women's University, Kodaikanal, Tamil Nadu.
4. Dr. Avinash Chettri, Post Doctoral Researchers, University of Potsdam, Golm.
5. Dr. Kuldeep Mahato, Post Doctoral Researcher, Department of Nanoengineering, University of California, San Diego.
6. Dr. Rishabh Shukla, Post Doctoral Researcher, University of Hawaii, USA.
7. Dr. Sanjeeta Tamang, Post Doctoral Researcher, School of Medical Sciences, University of Birmingham, England.
8. Dr. Ranjit Kumar Singh, Post Doctoral Researcher, Physikalisch-Technische Bundesanstalt, Braunschweig, Germany.

Paper Presenters:

1. Fr. Dr. James Antony, Assistant Professor, Department of Microbiology, St. Joseph's College, Darjeeling, West Bengal.
2. Dr. Ratul Datta Chaudhuri, Department of Zoology, James Antony, Assistant Professor, St. Joseph's College, Darjeeling, West Bengal.
3. Dr. Suman Chhetri, Assistant Professor, Department of Chemistry, St. Joseph's College, Darjeeling, West Bengal.
4. Dr. Sailesh Chettri, Assistant Professor, Department of Chemistry, St. Joseph's College, Darjeeling, West Bengal.
5. Mr Sumiran Tamang, Research Scholar, Department of Chemistry, St. Joseph's College, Darjeeling, West Bengal.
6. Dr. Dibya Gulab Minj, Department of Mathematics, Holy Cross Women's College, Ambikapur.
7. Dr. Priyam Chakraborty, Assistant Professor, Department of Mathematics, St. Joseph's College, Darjeeling.
8. Dr. Nishal Rai, Assistant Professor, Department of Physics, St. Joseph's College, Darjeeling.
9. Dr. Rajani Dewan, Assistant Professor, Department of Chemistry, St. Joseph's College, Darjeeling.
10. Dr. Antara Sharma, Assistant Professor, Department of Chemistry, St. Joseph's College, Darjeeling.
11. Dr. Dhiraj Brahman, Assistant Professor, Department of Chemistry, St. Joseph's College, Darjeeling.
12. Dr. Abhijit Chhetri, Assistant Professor, Department of Microbiology, St. Joseph's College, Darjeeling.
13. Albina Subba, Assistant Professor, Department of Zoology, St. Joseph's College, Darjeeling.
14. Barkha Rai, Assistant Professor, Department of Zoology, St. Joseph's College, Darjeeling.
15. Dibyashree Chhetri, Assistant Professor, Department of Microbiology, St. Joseph's College, Darjeeling.
16. Sweta Mukhia, Assistant Professor, Department of Microbiology, St. Joseph's College, Darjeeling.
17. Shuvam Sharma, Assistant Professor, Department of Zoology, St. Joseph's College, Darjeeling.

5. ABSTRACT

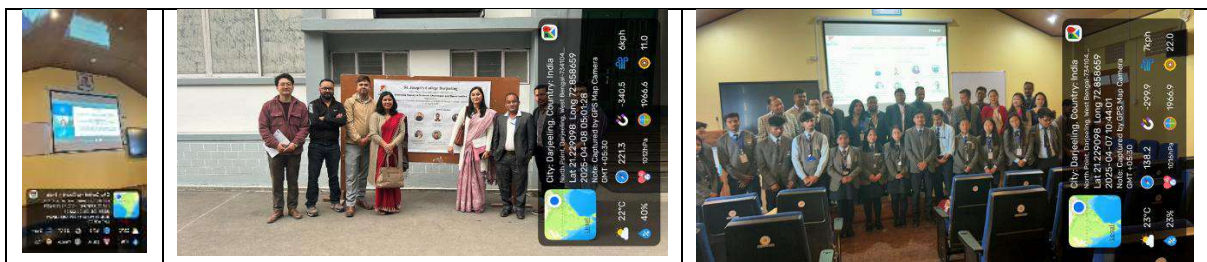
Lists of Abstracts

Sl.No	Abstract	Presenter
1.	Investigating the light-induced dynamics of a phototoxic Ru (II)-based photosensitizer, TLD1433, in biologically relevant environments	Dr. Avinash Chettri
2.	Dietary essential oil components: Preclinical studies on the management of gastrointestinal diseases	Fr Dr Poovathumkal James Antony
3.	Cardiac hypertrophy— the yin and the yang	Dr. Ratul Datta Chaudhuri
4.	Pharmaceutical Cocrystals, Hydrogen Bonding, And Chemistry Career Opportunities For Students	Dr. M.Hemamalini
5.	How Do Charge Carrier Transport and Microstructure Influence Solid State Battery Performance: Solving the Jigsaw	Dr. Moumita Rana
6.	Toward the realization of an innovative desalination technology through solar thermal conversion	Dr. Suman Chhetri
7.	Green Chemistry: The Future of Organic Synthesis	Dr. Sailesh Chettri
8.	Synthesis, Crystal Structure, Hirschfield surface analysis and catalytic activity of New Cobalt (II) complex of 4-Nitrobenzoic acid and 1-Methylimidazole	Mr. Sumiran Tamang
9.	Characterizing Ion Traps for Quantum Science and Beyond	Dr. Ranjit Kumar Singh
10.	Transforming Mathematics Education: A Constructivist Approach to Knowledge and Learning	Dr Dibya Gulab Minj
11.	Generation of Self-Similarity in a metric space	Dr. Priyam Chakraborty
12.	Applied AdS/CFT correspondence in strongly coupled Systems	Dr. Nishal Rai
13.	Smart Sensors, Smarter Health: Exploring Biosensors and Bioanalytical Tools in Modern Medicine	Dr. Kuldeep Mahato
14.	Harnessing microbial Iron redox cycling for nutrient removal in onsite wastewater treatment systems	Dr. Rishabh Shukla
15.	Targeting Replication Challenges to combat Drug Resistance in BRCA-1 linked cancers	Dr. Sanjeeta Tamang
16.	Investigation of Inclusion Complex of Gemcitabine with Beta-Cyclodextrin to decrease cytotoxicity by Experimental and Computational Approach.	Dr. Antara Sharma
17.	Exploration of Various Interactions of Some Essential Amino Acids Prevalent in Aqueous Solutions of a Neurotransmitter (TYH) for Advanced Applications in Pharmaceutical Industries by Physiochemical Methodologies	Dr. Rajani Dewan
18.	Tea Endophytes	Miss. Sweta Mukhia
19.	DCLK1 As A Stem Cell Marker For Cancer Progression And Metastasis	Miss. Dibyashree Chhetri
20.	DFT, Molecular Docking and Pharmacokinetic study of some selected 2, 4, 5-triarylimidazole derivatives	Dr. Dhiraj Brahman
21.	Diversity and Habitat Preferences of Black Crested Bulbul (<i>Rubigula flaviventris</i>) in the Temperate Forest of Darjeeling Himalaya	Mrs. Albina Subba
22.	Induction of Apoptotic Cell Death by Beavurecin, an Active Component of the Fungus <i>Cordyceps tenuipes</i> , in Human Cervical HeLa Cells	Dr. Abhijit Chhetri

23.	<i>A Brief Overview of Microplastic Pollution and Its Impact on Seabird Populations</i>	Mrs. Barkha Rai
24	Monitoring the vulnerable Asian Small-Clawed Otter Populations and Combating Poaching through Stakeholder Participation in the temperate forest of Darjeeling District.	Mr. Shuvam Sharma

Attendance Register



Concluding Remarks

The International Seminar on Emerging Trends in Science: Challenges and Opportunities has been a profound exploration, illuminating the dynamic landscape of scientific advancement. We've delved into groundbreaking discoveries, critically examined the hurdles they present, and collectively envisioned the pathways to harness these trends for the betterment of society. The insightful discussions and collaborative spirit showcased throughout this seminar underscore the critical need for interdisciplinary cooperation, ethical considerations, and robust policy frameworks to navigate the exciting yet complex future of science. As we concluded, the knowledge shared and the connections forged, translated the discussions into actionable strategies that empowered us to embrace the challenges and seize the unparalleled opportunities that lie ahead in the ever-evolving world of science.