

Department of Chemistry

Report: July 2024-June 2025

The new academic session in July 2024 welcomed eleven students in Department of Chemistry for Chemistry Major Courses. Their classes commenced from 29th July 2024. Dr. Rajani Dewan took over the charge as the new Head of the Department on 1st August 2025 after the completion of term of Dr. Antara Sharma as the Head. On 2nd September, 2025, Dr. Sailesh Chettri joined the Department as a permanent faculty. Parent teacher meeting was held on 6th September 2024 for the 1st Semester Students to discuss about the rules and regulation of the college along with the responsibilities of parents and teachers together for the good progress of the students.



On 24th September 2025, Dr. Suman Chhetri too joined as a permanent faculty in the Department.



Dr. Sailesh Chettri



Dr. Suman Chhetri

In the month of March, 2025 the results of the odd semester examination were published. The 5th Semester result was good with pass percentage of 83.33% but the results of 3rd and 1st Semester was not as expected.

Seminar for 6th Semester students (both honours and program courses: total-15 students) was held on 11th March as a Continuous Internal Evaluation of the students.



The Department of Chemistry stood third in the Board work Competition held by the Students Council on 18th March. They had beautifully displayed the culture of Sherpa Tribe.



The Department of Chemistry, St Joseph's College, in collaboration with Internal Quality Assurance Cell, organized a two-day International Seminar on Emerging Trends in Science: Challenges and Opportunities from 7th-8th April 2025.



The seminar was held in hybrid mode, where a pool of researchers and scholars from premier universities within the country and abroad presented their papers. 185 participants registered for the Seminar.



The invited speakers included Dr Anand Pariyar, Sikkim University, Dr. Avinash Chhetri from the University of Potsdam (Germany), Dr. Moumita Rana from the Delft University of Technology (Netherlands), Dr. Kuldeep Mahato from the University of California, San Diego, Dr. Ranjit Kumar Singh from the Physikalisch-Technische Bundesanstalt (Braunschweig, Germany), and Dr. Sanjeeta Tamang (an alumni of St Joseph's College) from the University of Birmingham, UK. The seminar began with the lighting of the lamp by the keynote speaker, Dr. Anand Pariyar, alongside the patron of the seminar, Fr. Dr. Donatus Kujur, S.J., Principal of St Joseph's College, and invited speaker Dr. Avinash Chhetri. Fr. Dr Donatus in his speech acknowledged the speakers for consenting to attend the seminar and he addressed the students to aptly listen to all the speakers and benefit from the talk. Dr. Rajani Dewan, the convenor of the seminar, in her welcome address, succinctly briefed the audience about the event and the purpose of organizing it on an interdisciplinary theme.



In his keynote presentation, Dr. Pariyar comprehensively covered the latest developments in science and how they are reshaping today's growth trajectory. He talked at length about quantum computing, AI, neural networks, and robotics, and provided instances of how robots perform surgery. Dr. Pariyar's talk also highlighted the challenges the current world is facing concerning energy, as well as potential solutions, elaborating on his own research. The lucid and interactive talk presented by Dr Avinash Chhetri delved on ruthenium-based photosensitizer for the treatment of a non-invasive cancer bladder cancer cells. In the first technical session of the day, Dr. Ratul Data Choudhary and Fr. Dr. James Antony from the Department of Zoology and Microbiology presented their research findings, which were highly applauded by the audience, particularly the students. In the second technical session, conducted online, Dr. Moumita Rana from Delft University presented her paper on solid-state batteries, while Dr. M. Hemamalini from Mother Teresa Women's University discussed pharmaceutical cocrystals. Dr. Rana's talk focused on the challenges of emerging battery technologies and potential material engineering solutions. The last technical session of the first day featured presentations by Dr. Suman Chhetri and Dr. Sailesh Chhetri from the

Department of Chemistry, as well as Mr. Sumiran Tamang, a research scholar from the same department, where Dr. Suman talked about the desalination technology, while Dr Sailesh elaborated on green chemistry.

The second day began with two parallel sessions held online and offline. In the online session, Dr. Ranjit Singh spoke about ion traps, while Dr. Dibya G. Minj from Holy Cross Women's College presented a constructive approach to transforming mathematics education.



Dr Priyam Chakraborty from the mathematics department and Dr Nishal Rai from Physics presented their work on metric space and AdS/CFT correspondence. Simultaneously, in the offline session, students from seven departments of St. Joseph's College presented their papers. The active student participation made this seminar a unique event and significantly fostered their interest in pursuing science. In the final technical session of the seminar, Dr. Kuldeep Mahato spoke about wearable biosensors, while Dr. Rishabh Shukla presented solutions for wastewater treatment. The session ended with Dr. Sanjeeta Tamang, who passionately discussed the role of BRCA1 in targeting BRCA-mutant cancers. The seminar concluded with a valedictory speech by Dr. Anirudra Gurung, IQAC coordinator, followed by distribution of certificates to the participants and ended with the vote of thanks from the convenor, Dr. Rajani Dewan. Overall the Seminar was a great success.



City: Darjeeling, Country: India

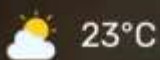


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Research Publications and Seminars Attended by the Faculties

Dr. Rajani Dewan

1. Mahendra Nath Roy*, Dhruba Jyoti Roy, Maksuda Khatun , Jay Gopal Mondal , **Rajani Dewan** , Dina Bandhu Das , Buban Adhikary , Biswajit Sinha , Sourav Basu Neogi, 'Physico-chemical studies of l-proline and l-leucine in aqueous tetrabutylphosphonium p-toluene sulphonate solutions at different temperatures with the manifestation of solvation consequences', *wjert*, 2024, Vol. 10 Issue 10, 14-28
2. Sagarmani Rasaily, Shivanand Chettri, Debesh Sharma, Khanindram Baruah, **Rajani Dewan**, Sudarsan Tamang, Anand Pariyar*, 'MOF-Derived Ni/NiO-C nanocomposites as bifunctional electrocatalysts capable of driving both ORR and OER', <https://pubs.acs.org/doi/abs/10.1021/acs.inorgchem.4c02856>
3. Paper presentation on the title ' Physico-Chemical Studies of L-Proline and l-Leucine' in two days International Conference on Sustainable Development and Research on 23rd March 2025 organised by Department of Chemistry, K.G. Arts and Science College Raigarh(C.G.)
4. Attended a three-day training of 'Trainers Program on AI tools for Higher Education' organised by St. Xavier's College, Jaipur in collaboration with St. Joseph's College, Darjeeling and held at St. Joseph's College, Darjeeling from 25th-27th November, 2024

Dr. Dhiraj Brahman

1. Munna Mukhia, Sagar Rai, Yachna Rai, Koushik Chakraborty, Sangita Dey, Bipranch Kumar Tiwary, **Dhiraj Brahman**, Anoop Kumarb and Kiran Pradhan, 'Scalable ultrasound-assisted synthesis of hydroxy imidazole N-oxides and evaluation of their antiproliferative activities; mechanistic insights into the deoximation of dioximes' *RSC Adv*, 2025, 15, 938

Dr. Antara Sharma

1. Attended a three-day training of 'Trainers Program on AI tools for Higher Education' organised by St. Xavier's College, Jaipur in collaboration with St. Joseph's College, Darjeeling and held at St. Joseph's College, Darjeeling from 25th-27th November, 2024

Dr. Sailesh Chettri

1. Invited talk on the title 'Green approach to the synthesis of nitrogen containing heterocyclic compounds using copper borate as a catalyst' in two days International Conference on Sustainable Development and Research on 23rd March 2025 organised by Department of Chemistry, K.G. Arts and Science College Raigarh(C.G.).

2. Attended a three-day training of 'Trainers Program on AI tools for Higher Education' organised by St. Xavier's College, Jaipur in collaboration with St. Joseph's College, Darjeeling and held at St. Joseph's College, Darjeeling from 25th-27th November, 2024.

Dr. Suman Chettri

1. Invited talk on the title 'Tuned heterostructure of bismuth sulphide/iron sulphide interface for simultaneous overall water splitting, urea oxidation and methanol oxidation' in two days International Conference on Sustainable Development and Research on 23rd March 2025 organised by Department of Chemistry, K.G. Arts and Science College Raigarh(C.G.)
2. Attended a three-day training of 'Trainers Program on AI tools for Higher Education' organised by St. Xavier's College, Jaipur in collaboration with St. Joseph's College, Darjeeling and held at St. Joseph's College, Darjeeling from 25th-27th November, 2024