Departmental Report: 2023-2024

Department of Chemistry

Ms. Antara Sharma continued as head of the department for the session 2023-2024. This year our department welcomed the fresh batch of 9 students in the first semester. An orientation programme was organized between the faculties and the parents of the 1st semester students to aware them about the rules and regulations of the college. College session for the academic session has started from 1st August 2023 as per Government order. The activities undertaken of Department of Chemistry, St. Joseph's College, Darjeeling during the year 2023-24 are as follows:

Administrative Activities:

The faculties of the department have been actively involved in different administrative responsibilities. In this session, Dr. Antara Sharma is a member of the Internal Complaints Committee (ICC) and the admission committee. Dr. Rajani Dewan is a member of Internal Quality Assurance Cell (IQAC), Cultural Committee, Internal Complaints Committee (ICC), Academic Calendar Committee and Staff Welfare Committee. Dr. Dewan is also the Coordinator of Cultural Committee. Dr. Dhiraj Brahman is the member of Games and Sports Committee and Media (Film, photography and Videography) Club. Dr. Brahman is also the A.N.O of NCC (Men). Dr. Sailesh Chettri is the member of Science and Research Club.

Departmental Activity

Academic Activities:

The department organised an orientation program for the new students, at the beginning of the session. Students were informed about the four years undergraduate course (syllabus), the history and motto of the college.

Dr. Dhiraj Brahman participated in a UGC sponsored refresher course on "New Frontier of Chemical Sciences" from 23-08-2023 to 05-09-2023 organised by HRDC, University of North Bengal.

Dr. Dhiraj Brahman has completed a refresher course SD Pt-145 at Kamptee from 21-11- 2023 to 20-12-2023 leading to the promotion of A.N.O from lieutenant to captain.

Dr. Antara Sharma is awarded PhD from the University of North Bengal on 05-04-2024.

From this year the college started FYUGP as adopted by the university of North Bengal.

Apeksha Thakuri, a student of 6th semester, from the department of chemistry, participated in the Trailblazer Fellowship offered by the Eastern Himalayan Foundation. The fellowship provides a monthly stipend of

3,000 rupees and focuses on empowering young leaders to address community issues through innovative projects.As part of her fellowship, Apeksha led a community project named 'Fun Viyan'.

Throughout the fellowship, Apeksha and her peers were equipped with several critical skills:

1. 21st Century Skills: Emphasizing creativity, critical thinking, communication, and collaboration.
2. Project Design: Learning the fundamentals of designing and implementing effective community projects.
3. Perspective Building: Engaging in discussions to broaden their understanding of various social issues and contexts.
4. Understanding Local History: Gaining insights into the local historical context to better address community needs.
5. Effective Communication: Developing skills to communicate effectively with different stakeholders in the community.

The exposure visit to Bengaluru was a significant part of the fellowship, providing the fellows with an opportunity to interact with different organizations and experts. This visit aimed to broaden their horizons, inspire innovative thinking, and expose them to diverse ways of problem-solving.

Apeksha Thakuri's participation in the Trailblazer Fellowship has been an enriching experience, enhancing her skills and knowledge. Her project, Fun Viyan, stands as a testament to the impact that practical, engaging educational initiatives can have on young minds. Through this fellowship, Apeksha has not only contributed to her community but also gained invaluable experience that will aid her in her future endeavors.

Ms Yachna Rai (Chemistry Hons. BSc batch 2016-2019) qualified CSIR-UGC NET December 2023 under UGC-JRF scheme.

Challenges

With the implementation of NEP2020 the university has done some severe changes in the curriculum. Hence, the department has experienced many challenges like updating the library books and the laboratory equipments. With the increase in the number of seats in the new academic session due to the implementation of Four Year Under-Graduate Program, it is very challenging for the department to provide enough equipment to the students. This switch in the curriculum and in the course opens an opportunity to update the books in the local repository of the department. The department feels that it is challenging to conduct CBCS and FYUG program simultaneously as it demands more human resource. The result of the past academic year is satisfactory as many students have qualified MSc entrance test such as IITJAM, PGCUET and joined many institutes of national reputes for pursuing higher education.

Future Plans

As the department needs sufficient human resource, the college has already initiated the recruitment process of the vacant posts. With six permanent and two part-time teachers the department is planning to execute

an environment of learning and research exposure for the students which ultimately leads to the development of the scientific temperament among our students. The department is hopeful to add more books and study materials to departmental book repository for the students. The department aims to introduce improved and innovative teaching and learning methods for the students such as seminars, presentations, field-work, projects, excursions etc., to promote academic and social understanding among students to have a higher achievement.

Research Activities:

Dr. Rajani Dewan and Dr.Sailesh Chettri participated in a seminar cum training program on " Importance of AI in Education" on 27-03-2024 organized by The International Centre of Excellence for DS,AI and FT, Higher Education Department, Govt. of West Bengal, Quantum learnings and Microsoft (TSP).

List of Publications

1. Binary Mixtures of 2-Ethyl-1-hexanol and 1, 2-Disubstituted Ethanes: Thermophysical, Ultraacoustic and Computational, ***Rajendra Pradhan***, Dhruba Jyoti Roy, Soumik Das, Sudarshan Pradhan, Anmol Chettri, Biswajit Sinha, Journal of Solution Chemistry https://doi.org/10.1007/s10953-023-01360-6
2. Studies Exploring the Inclusion Complex of an Anticancer Drug with *β*-Cyclodextrin for Reducing Cytotoxicity Toward the Normal Human Cell Line by an Experimental and Computational Approach ***Antara. Sharma***, Pranish Bomzan, Niloy Roy, Vikash Kumar Dakua, Kanak Roy, Abhinath Barman, Rabindra Dey, Abhijit Chhetri, Rajani Dewan, Ankita Dutta, Anoop Kumar, Mahendra Nath Roy , ACS Omega (2023) 8, 29388−29400. DOI: https://doi.org/10.1021/acsomega.3c02783
3. An efficient and green protocol for the synthesis of 1-hydroxy-2-arylimidazole-3-oxide derivatives under solvent-free condition using inexpensive copper borate (CuB_4O_7) catalyst. ***Sailesh Chettri,*** *Sumiran Tamang, Biswajit Sinha and Dhiraj Brahman.,* Monatshefte für Chemie - Chemical Monthly, 154, 635–643, 2023. DOI: https://doi.org/10.1007/s00706-023-03068-1
4. Synthesis, physico-chemical characterization and theoretical exploration of some 2,4,5-triaryl imidazole derivatives. ***Salesh Chettri****, Sumiran Tamang, Prasansha Rai, Yachna Rai, Uttam Kumar Singha, Kiran Pradhan, Dhiraj Brahman and Biswajit Sinha.,* Journal of Heterocyclic Chemistry, 60(8), 1-22, 2023. DOI: https://doi.org/10.1002/jhet.4670
5. Copper borate (CuB_4O_7)-promoted multicomponent green synthesis of 2,4,5-triarylimidazole derivatives and evidence of in situ conversion of copper borate (CuB_4O_7) into $Cu(OAc)_2$ in the

presence of NH_4OAc. ***Sailesh Chettri,*** *Sumiran Tamang, Kiran Pradhan, Biswajit Sinha and Dhiraj Brahman.,* RSC Advances 13, 19846-19855, 2023. DOI: https://doi.org/10.1039/d3ra03183g

6. Synthesis, crystal structure, Hirshfeld surface analysis and catalytic activity of new Cobalt (II) complex of 4-Nitrobenzoic acid and 1-Methylimidazole. *Sumiran Tamang, Prasansha Rai,* ***Sailesh Chettri****, Kiran Pradhan, Biswajit Sinha, Purak Das and Dhiraj Brahman*., Journal of Molecular Structure, 1291(2023), 136072, 1-9, 2023. DOI: https://doi.org/10.1016/j.molstruc.2023.136072