

Dr. NEHA RANI KUMAR

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Google Scholar: <https://scholar.google.co.in/citations?user=aMQ1pcwAAAAJ&hl=en>

College profile: <https://www.dhemajicollege.in/chem.php>

Summary

Focused chemist well acquainted with organic synthesis and purification techniques for application in organic electronics. Especially skilled in catalytic reactions and multistep process protocols based on functionalized heterocyclic compounds. Also skilled in the techniques involved in the conjugated porous polymer chemistry. I can learn new techniques and processes effectively. My aim is to establish myself as a researcher and educator in Chemistry.

Academic Profile

- **Feb 2020 - present**
Assistant Professor, Department of Chemistry, Dhemaji College, Dibrugarh University, Assam, India.
 - **2014 – 2021**
Doctor of Philosophy, IISER Kolkata, West Bengal, India
 - **2012 - 2014**
Master of Science, Gauhati University, India
 - **2009 - 2012**
Bachelor of Science, Lakhimpur Girls' College (Dibrugarh University), India
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Research and Technical Skills

- **August 2014-December 2020:** Doctor of Philosophy
Supervisor: Prof. Sanjio S. Zade
Department of Chemical Sciences, Indian Institute of Science Education and Research Kolkata
Thesis title: Exploring Azulene and Thienyltriazine Systems in the Realm of Organic Electronics
Specific topics worked on:
 - Methods for regioselective synthesis of substituted azulenes and effect of connectivity variation on azulene based small molecules.
 - Synthesis of 2,4,6-tri(thiophen-2-yl)-1,3,5-triazine based porous organic polymers and their applications (CO₂ adsorption, Dye adsorption and Heterogeneous catalysis)

- Radical mediated synthesis of cyclopenta[c]thiophene (CPT) via metal free, economically viable method.
 - Synthesis of donor-acceptor fused heteroacenes and study of their structure property relationship.
 - Synthesis of selenium containing acenes by alkyne annulations method, Formazan chemistry
 - **January 2014 - July 2014:** Master's dissertation
Supervisor: Prof. Dibakar Chandra Deka
Department of Chemistry, Gauhati University
Project title: Extraction and characterization of non-edible vegetable oils from some easily available seeds
 - **June 2013 - August 2013:** Summer Program
Supervisor: Prof. R. Nagarajan
UGC Networking Resource Centre, School of Chemistry, Hyderabad Central University
Project title: Attempted formal synthesis of Bruceolline-E
 - **Technical Skills**
 - Spectroscopic tools: ^1H , ^{13}C , UV-Vis, FT-IR, Fluorescence, MALDI-TOF MS, ESI-MS, EI-MS
 - TGA, DSC, GPC, SEM, TEM
 - Cyclic Voltammetry, Chronoamperometry, Spectro electrochemistry
 - Column Chromatography
 - Single Crystal XRD, PXRD, Gas adsorption analysis (BET)
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Teaching Experience

- **February 2020 to present**
Teaching organic chemistry, green chemistry, organic spectroscopy to undergraduate students
Teaching organic chemistry to students of 11th and 12th class
 - **August 2019 to December 2019**
Teaching Assistant for CH4104, Important Perspectives of Organic Chemistry (Theory), BS-MS, Integrated PhD and Research Scholar Coursework, Department of Chemical Sciences, IISER Kolkata
 - **January 2019 to June 2019**
Teaching Assistant for CH2203, Synthesis and Characterization Laboratory (Laboratory), BS-MS course, Semester 4, Department of Chemical Sciences, IISER Kolkata
 - **August 2018 to December 2018**
Teaching Assistant for CH1102, Chemistry Lab I (Laboratory), BS-MS course, Semester I, Department of Chemical Sciences, IISER Kolkata.
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Achievements

Academics

- **2021:** Article shortlisted for final evaluation in Augmenting Writing Skills for Articulating Research, 2020 a popular story writing competition organized by Department of Science and Technology
- **April 2015 to Jan 2019:** INSPIRE Fellowship from DST for pursuing PhD
- **2014:** ONGC Merit Scholarship for M.Sc. Chemistry topper
- **2013:** Qualified State Level Eligibility Test (SET) Exam under North East (Assam) for the post of Assistant Professor
- **2012-2014:** Gold Medalist in M.Sc., Department of Chemistry, Gauhati University
- **2012:** Gold Medalist in B.Sc. (Secured 1st class 1st position in the B.Sc. Chemistry Examination conducted by Dibrugarh University, India)
- **2012:** Best Graduate (Science Stream) under Dibrugarh University
- **2009-2014:** DST- Inspire Scholar
- **2012:** UGC Rank Holder Scholarship for securing 1st rank in B.Sc. Exam conducted by Dibrugarh University
- **2009-2012:** LIC Golden Jubilee Scholarship
- **2007:** Anundoram Borooh award by Assam Government, HSLC

Conference Awards

- **2022:** S. S. Bhatnagar Young Scientist Award for Best Oral Presentation in International Seminar on Recent Trends in Chemistry and Material Science, organized by Indian Chemical Society, 30th – 31st July and 02nd – 3rd August, 2022
 - **2021:** RTCS-OBS 2021 Young Scientist Award for Best Flash Presentation in International Conference on Recent Trends in Chemical Sciences, Organic and Biochemistry Section organized by Indian Chemical Society in association with IIT Kharagpur and IISER Kolkata, 22nd - 24th December, 2021
 - **2020:** Best Oral Presentation Award in International Conference on Recent Trends in Chemical Sciences, Organic and Biochemistry Section organized by Indian Chemical Society and IISER Kolkata, 26th - 29th December, 2020
 - **2019:** Best Poster Prize in Chemical Science in India: Leaders in the Field Symposium from 18th - 20th October, 2019 at IISER Kolkata.
 - **2019:** Best Poster Prize in Symposium on Polymer Science, IISER Kolkata, 05th - 06th July, 2019.
 - **2019:** Best Oral Presentation award at International Conference on Emerging Trends in Chemical Sciences, Department of Chemistry, Gauhati University, 13th - 15th February, 2019
 - **2019:** Best Poster Prize in Department of Chemical Sciences Day (8th March, 2019) at IISER Kolkata.
 - **2018:** Best Oral Presentation award in Frontiers in Chemical Sciences, Department of Chemistry, IIT Guwahati, 6th - 8th December, 2018.
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Conferences Organized/Volunteered

- **2022:** Member of Organizing committee for workshop on Introductory Methods in Computational Chemistry organized by Department of Chemistry, Dhemaji College in association with IQAC Dhemaji College, 2nd April, 2022
 - **2020:** Member of Organizing committee for 7-day National Level Faculty Development Program on Aspects of Pedagogical Re-design and Online Teaching Learning Process from 15th - 21st June, 2020, IQAC Dhemaji College
 - **2020:** Convenor of National Webinar on Interdisciplinary Topics in Chemistry for Budding Chemists, 18th June, 2020, Department of Chemistry, Dhemaji College in association with IQAC, Dhemaji College
 - **2019:** Co-convenor of National Chemistry Scholars' Colloquium (7th March, 2019) at Department of Chemical Sciences (8th March, 2019) at IISER Kolkata. (A symposium organized by the students and for the students)
 - **2015:** Volunteer in India-Bangladesh Structural Chemistry Conference, 18th - 19th September, 2015, IISER Kolkata.
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Conferences Attended

Poster presentation

- **2022:** International Conference on Empowering Women in Organic Chemistry 2022 held on 24th June, 2022, USA (**Poster Presentation, virtual**)
- **2021:** Systems Chemistry Symposium, 7th to 9th July, 2021 (**Poster Presentation, virtual**)
- **2021:** International Conference on Empowering Women in Organic Chemistry 2021 organized on 24th and 25th June 2021 by Philadelphia Chapter, USA (**Poster Presentation, virtual**)
- **2020:** First Virtual JOST Conference (JNOST-16) For Research Scholars organized by Indian Institute of Science, Bangalore during October 31-November, 2020 (**Poster Presentation, virtual**)
- **2020:** ChemSci 2020: Leaders in the Field Symposium organized by IISER Kolkata during 07-10 December, 2020 (**Poster presentation, virtual**)
- **2020:** Young Chemists Summit 2020 from 21st-23rd September, 2020 organized by Austrian Young Chemists Network (**Poster Presentation, virtual**)
- **2020:** International Conference on Empowering Women in Organic Chemistry - 2020 organized on 13th and 14th August 2020 by Philadelphia Chapter, USA (**Poster Presentation, virtual**)
- **2019:** Chemical Science in India: Leaders in the Field Symposium From 18-20 October, 2019 at IISER Kolkata (**Poster Presentation**)
- **2019:** Young Scientists Colloquium, MRSI, Kolkata Chapter, 17th September, 2019 held at Indian Association for the Cultivation of Science (**Poster Presentation**)
- **2019:** Symposium on Polymer Science, IISER Kolkata, 05th-06th July, 2019 (**Poster Presentation**)
- **2019:** National Chemistry Scholars' Colloquium (7th March, 2019) and Department of Chemical Sciences (8th March, 2019) at IISER Kolkata (**Poster Presentation**)

- **2019:** Selected for **poster presentation** at 14th International Symposium on Functional π -Electron Systems (F π 14) in Berlin, Germany from June 2nd-7th, 2019 (did not attend due to financial problem)
- **2019:** Selected for **poster presentation** at 18th International Symposium on Novel Aromatic Compounds (ISNA-18) in Sapporo, Japan from July 21-26, 2019 (did not attend due to financial problem)
- **2018:** 23rd CRSI National Symposium in Chemistry (CRSI-NSC-23), 13-15th July, 2018, IISER Bhopal **(Poster Presentation)**
- **2018:** Young Scientists Colloquium, MRSI, Kolkata Chapter, 21st September, 2018 held at Indian Association for the Cultivation of Science **(Poster Presentation)**
- **2018:** MACRO 2018: International Symposium on Polymer Science and Technology, December 19-22, 2018, IISER Pune **(Poster Presentation)**
- **2015:** International Conference on Advanced Nanomaterials and Nanotechnology, December 8-11, 2015, Organized by Centre for Nanotechnology, IIT Guwahati **(Poster Presentation)**

Oral presentation

- **2022:** International Seminar on Recent Trends in Chemistry and Material Science, organized by Indian Chemical Society, 30th – 31st July and 02nd – 3rd August, 2022 **(Oral Presentation)**
- **2021:** International Conference on Recent Trends in Chemical Sciences, Organic and Biochemistry Section organized by Indian Chemical Society in association with IIT Kharagpur and IISER Kolkata, 22nd-24th December, 2021, **(Oral Presentation)**
- **2021:** International Virtual Conference on Frontiers in Chemical Sciences organized by Department of Chemistry, Mohanlal Sukhadia University, Rajasthan, 25th June, 2021, **(Oral Presentation)**
- **2020:** International Virtual Conference on Green Chemistry for Clean Environment organized by Department of Chemistry and Department of PG Studies, Pacific Academy of Higher Education and Research University, Udaipur in association with Indian Chemical Society on October 3-4, 2020, **(Oral Presentation)**
- **2020:** International Conference on Recent Trends in Chemical Sciences organized by Indian Chemical Society, Kolkata West Bengal during December 26-29, 2020, **(Oral Presentation)**
- **2019:** International Conference on Emerging Trends in Chemical Sciences, Department of Chemistry, Gauhati University, 13th-15th February, 2019, **(Oral Presentation)**
- **2018:** Frontiers in Chemical Sciences, Department of Chemistry, IIT Guwahati, 6th -8th December, 2018, **(Oral Presentation)**

Participation

- **2020:** 6th International Fall School on Organic Electronics (IFSOE 2020) from 13th-17th September, 2020 organized by Russian Federation, Moscow. (Participant, virtual)
- **2018:** IISER Kolkata Industry-Academia Meet, 7-8 February, 2018

- **2018:** CAFM Lecture Series on an interdisciplinary topic of Electronic Structure and Property held at IISER Kolkata, 23-25, 29-31 January, 2018
 - **2015:** India-Bangladesh Structural Chemistry Conference, 18-19 September, 2015, IISER Kolkata
 - **2015:** MACRO 2015: International Symposium on Polymer Science and Technology, January 23-26, 2015, IACS Kolkata
 - **2011:** National Conference on ground water mitigation and its health hazards (Lakhimpur Girls' College), 2011
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Publications and Book Chapters

Publications

First Author Articles

- Thienyltriazine based conjugated porous organic polymers: tuning of the porosity and band gap, and CO₂ capture, **Neha Rani Kumar**, Prasenjit Das, Abhijeet R. Agrawal, Sanjay Kumar Mandal and Sanjio S. Zade* *Mater. Adv.*, **2021**, 2 (22), 7473-7481.
- The effect of base and nucleophile on the nucleophilic substitution on methoxytropone derivatives: An easy access to 4- and 5-substituted multifunctional azulenes, **Neha Rani Kumar**, Abhijeet R. Agrawal, Aditya Choudhury and Sanjio S. Zade* *J. Org. Chem.*, **2020**, 85, 14, 9029–9041.
- Abnormal nucleophilic substitution on 2-methoxytropone derivatives: Steric strategy to synthesize 5-substituted azulenes, **Neha Rani Kumar**, Abhijeet R. Agrawal and Sanjio S. Zade* *Chem. Eur. J.*, **2019**, 25, 14064-14071. (**Hot article, selected for frontispiece**)
- Radical cascade avenue for direct access to 3,4 fused thiophenes with 2,5-positions free for substitution, **Abhijeet R. Agrawal**^a, **Neha Rani Kumar**^a, Sashi Debnath, Sarasija Das, Chandan Kumar and Sanjio S. Zade* *Org. Lett.*, **2018**, 20, 4728–4731 (^a **ARA and NRK have equal contribution**).

Co-authored Articles

- Cyclopenta[c]thiophene- and diketopyrrolopyrrole-based red-green-blue electrochromic polymers, Sashi Debnath, Ganesh Masilamani, Abhijeet R. Agrawal, **Neha Rani Kumar**, Chandan Kumar, Sanjio S. Zade, Anjan Bedi* *Organic Materials*, **2022**, 4 (04), 268-276.
- Polycyclic Arene-Fused Selenophenes via Site Selective Selenocyclization of Arylethynyl Substituted Polycyclic Arenes, Himadri S. Karmakar, Chandan Kumar, **Neha Rani Kumar**, Sarasija Das, Abhijeet R. Agrawal, Nani Gopal Ghosh, Sanjio S. Zade* *J. Org. Chem.*, **2021**, 86 (18), 12494-12506.

- Synthesis of bent-shaped π -extended thienoacenes from 2,5-distannylated 3,4-dialkynethiophene, Abhijeet R. Agrawal, **Neha Rani Kumar**, Aditya Choudhury, and Sanjio S. Zade* *Chem. Commun.*, **2021**, 57 (75), 9538-9541.
- Triazole fused indolo[2,3-*a*]carbazoles: synthesis, structures and properties, Sirina Ghosh, Sarasija Das, Chandan Kumar, **Neha Rani Kumar**, Abhijeet Agrawal, Himadri Karmarkar, Nani Gopal Ghosh and Sanjio S. Zade* *J. Heterocyclic Chem.*, **2020**, 57, 2561–2569.
- Boron difluoride formazanates with thiophene and 3,4-ethylenedioxythiophene capping and their electrochemical polymerization, Chandan Kumar, Abhijeet R. Agrawal, Nani Gopal Ghosh, Himadri S. Karmakar, Sarasija Das, **Neha Rani Kumar**, Vishal W. Banewar and Sanjio S. Zade* *Dalton Trans.*, **2020**, 49, 13202-13206.
- Effect of chalcogen atom variation in chalcogenadiazole fused indolo[2,3-*a*]carbazoles, Sirina Ghosh, **Neha Rani Kumar** and Sanjio S. Zade* *New J. Chem.*, **2018**, 42, 6889- 6895.
- Effect of heteroatom (S/Se) juggling in donor–acceptor–donor (D–A–D) fused systems: synthesis and electrochemical polymerization, Sirina Ghosh, Sarasija Das, **Neha Rani Kumar**, Abhijeet R. Agrawal and Sanjio S. Zade* *New J. Chem.*, **2017**, 41, 11568-11575.

Books and book chapters

- **2021**: Chapter Title: Conjugated Porous Polymers: Design, Synthesis, Applications and Structural Control, Book Title: Recent Research Trends in Chemistry (Volume 2), Author: **Neha Rani Kumar**, ISBN: **978-93-93502-02-5**, Editor: D. T. Sakhare, Integrated Publications, Delhi, India
- **2022**: Chapter Title: Synthesis and Applications of BODIPY based Conjugated Polymers, Book Title: Advances in Materials Science Research, Volume 58, Author: **Neha Rani Kumar**, ISBN: **979-8-88697-488-1**, Editor: Maryann C. Wythers, Nova Science Publishers, New York, USA
- **2022**: Chapter Title: Nitrogen Containing Conjugated Building Blocks for use in Organic Electronics, Book Title: Advances in Chemistry Research, Author: **Neha Rani Kumar**, ISBN: **978-93-93502-02-5**, Editor: J. C. Taylor, Nova Science Publishers, New York, USA
- **2022**: Book Title: Research Methodology for Chemistry, As per undergraduate CBCS syllabus of DSE paper in Chemistry, Author: **Neha Rani Kumar**, **Tarun Kumari**, ISBN: **9789355402257**, Kalyani Publishers, New Delhi, India

Leadership Skills

- Co-guided 3 students for MS thesis project. (Indian Institute of Science Education and research Kolkata) during PhD
- Co-guided 4 students for summer project. (Indian Institute of Science Education and research

Kolkata) during PhD

- Guided B.Sc. 6th semester students (Chemistry) for project (Dhemaji College)
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Other Activities

- SPOC for SWAYAM-NPTEL courses, Dhemaji College, Dhemaji-Assam
 - Assistant Officer in Charge for B.A./B.Sc. 6th Semester Non CBCS and B.A/B.Sc. 2nd and 4th Semester Backlog Non CBCS Examination, 2021
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Professional Association with Organizations

- Member of American Chemical Society (Awarded for best oral presentation in ETCS, Guwahati, 2020) (*Membership No.: 30643382*)
 - Elected as fellow of Indian Chemical Society in May, 2021/Life Member (*Life Membership No.: 8407*)
 - Life member of Society of Polymer Science, India (*Life Membership No.: 576*)
 - Life member of Chemical Research Society of India (*Life Membership No.: 2177*)
 - Life member of Materials Research Society of India (*Life Membership No.: LMB3251*)
 - Life member of Association of Chemistry Teachers, India (*Life Membership No.: 2348*)
 - Life member of Catalysis Society of India (*Life Membership No.: LM1075*)
 - Life member of Indian Women Scientists Association (*Life Membership No.: 256*)
 - Life member of Organization for Women in Science for the Developing World (*Life Membership No.: 10967*)
 - Life member of Indian Science Congress Association (*Life Membership No.: L40874*)
 - Life member of Society for Chemical Education, Assam (*Life Membership No.: L/2021/01*)
 - Life member of Assam Science Society (*Life Membership No.: 6421*)
 - Life member of Society for Material Chemistry (*Life Membership No.: 1323*)
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References

- **Prof. Sanjio S. Zade**
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IISER Kolkata
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- **Prof. Venkataramanan Mahalingam**

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- **Prof. Simon Higgins**

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