

# Sangeeta

Department of Chemistry, Hindu College  
University of Delhi, New Delhi, India 110007

☎ (+91) 9650087790

✉ [sangee34\\_sit@jnu.ac.in](mailto:sangee34_sit@jnu.ac.in)  
[sangeeta.24phd@gmail.com](mailto:sangeeta.24phd@gmail.com)



## Professional Profile

Jan 2025 - **Guest Assistant Professor**,  
*Hindu College, University of Delhi, New Delhi, India.*

## Education

- July 2019 - **Doctor of Philosophy in Science (Prime Minister's Research Fellow)**,  
Feb 2025 *School of Computational & Intergrative Sciences, Jawaharlal Nehru University, New Delhi, India.*  
**Supervisor:** Dr. Arnab Bhattacharjee  
**Topic:** Understanding the Transport of Proteins on DNA Track using *in silico* Modeling  
**Thesis Submitted on 21 October, 2024. Ph.D. Viva-voce on 21 February, 2025**  
**Examiners:** Prof. Athi N. Naganathan (IIT Madras, India), Prof. Anand Srivastava (Indian Institute of Science - Bangalore, India)
- 2016 - 2018 **Masters in Science (Chemistry)**,  
*Department of Chemistry, University of Delhi, New Delhi, India.*  
Physical Chemistry Specialization
- 2013 - 2016 **Bachelor in Science (Hons in Chemistry)**,  
*Kalindi College, University of Delhi, New Delhi, India.*

## Research Experience

- July 2019 - **Ph.D.**, *Jawaharlal Nehru University, New Delhi.*  
Feb 2025 My research investigated the intricate interplay between proteins and DNA, encompassing how DNA-binding proteins navigate the genome to locate their target sites amidst diverse sequences, chromatin organization, and DNA dynamics. My doctoral work specifically delved into protein-DNA interactions, employing coarse-grained molecular dynamics simulations to study the kinetics and thermodynamics of DBP search processes, while also utilizing all-atom simulations to explore protein-ligand interactions.
- April 2019 - **Junior Research Fellow, CSIR**, *Jawaharlal Nehru University, New Delhi.*  
June 2019 Supervised by Dr. Arnab Bhattacharjee, my research aimed to explore the protein search on different DNA tracks.
- July 2018 - **Project Assistant**, *Jawaharlal Nehru University, New Delhi.*
- March 2019 My research, supervised by Dr. Arnab Bhattacharjee, explored how DNA's flexibility impacts the ability of proteins to recognize and bind to specific DNA sequences.
- July 2017 - **Masters Dissertation**, *University of Delhi, New Delhi.*  
May 2018 Masters Dissertation on "*Polymeric Nanoparticles in Cancer Therapy*" under the supervision of Prof. Indrajit Roy, Department of Chemistry, University of Delhi.
- Sept 2015 - **Project Assistant**, *University of Delhi, New Delhi.*  
May 2016 Contributed to the development of an innovative Microbial Fuel Cell for wastewater treatment as a Project Assistant in Project ID: KC-302 (Microbial Fuel Cell: An efficient benign set up for Electrochemical Cell for removing of impurities from laboratory generated waste water,), guided by Dr. Tarkeshwar and Dr. Amit Kumar.

## Publications

- 2025 • **Sangeeta** and Arnab Bhattacharjee\*, "Exploring the ssDNA sequence specificity through Multisequence Hybrid Monte Carlo approach", *Manuscript under Preparation*, 2025.
- Babita Bisht, **Sangeeta**, Pinki Dey, Praveen Kujur, Avinash Singh, Shahnoor Ali, Sandeep, Sanjay Pant, Rana P. Singh, Mohan S. Mahata, "Insight into mechanism of non-radiative energy transfer via DY8-BSA complex: In vitro cytotoxicity studies" *Communicated*, 2025.
  - **Sangeeta**<sup>‡</sup>, Shrawan Kumar Choudhary<sup>‡</sup>, Pinki Dey, and Arnab Bhattacharjee\*, "Modeling Facilitated Diffusion of Proteins in Crowded Environment", communicated, Springer, 2025 (<sup>‡</sup>**These authors contributed equally**) (*Book Chapter*).
- 2024 • **Sangeeta** and Arnab Bhattacharjee\*, "Nick Induced Dynamics in Supercoiled DNA Facilitates Protein Target Search Process", *The Journal of Physical Chemistry B*, 128(34):8246-8258, 2024.
- **Sangeeta**, Sujeet Kumar Mishra and Arnab Bhattacharjee\*, "Role of shape deformation of DNA binding sites in regulating the efficiency and specificity in their recognition by DNA binding proteins", *JACS Au*, 4(7):2640-2655, 2024.
  - Sujeet Kumar Mishra, **Sangeeta**, Dieter W. Heermann and Arnab Bhattacharjee\*, "The Role of Nucleotide Opening Dynamics in Facilitated Target Search by DNA-Repair Proteins", *BBA - Gene Regulatory Mechanisms*, 1867(2):195026, 2024.
  - Sumiran Kumar Gurung, **Sangeeta**, Priyanka Dubey, Abhik Saha, Fatima Akhtar, Arnab Bhattacharjee\* and Suman Kumar Dhar\*, "Unusual weak and delayed GTPase activity of FtsZ from human pathogenic bacteria *Helicobacter pylori*", *The Journal of Biochemistry*, 75(4):405–417, 2024.
- 2023 • **Sangeeta** and Arnab Bhattacharjee\*, "Interdomain dynamics in human Replication Protein A regulates kinetics and thermodynamics of its binding to ssDNA", *PLoS ONE*, 18(1):e0278396, 2023.
- **Sangeeta**, Shilpi Khurana, Amit Kumar, "Translational transport of e-waste and implications on human well beings and the environment", Elsevier, 2023, 125-142 (*Book Chapter*).
- 2022 • Anupam Mondal, **Sangeeta**, Arnab Bhattacharjee\*, "Torsional behaviour of supercoiled DNA regulates protein–DNA recognition", *Nucleic Acids Research*, 50(12):6671–6686, 2022.
- 2021 • **Sangeeta**, Poorna Khanna, Kapinder, Tarkeshwar, Amit Kumar, "Microbial fuel cell: a greener way to protect the environment", Academic Press, 2021, 575-584 (*Book Chapter*).

## Research Skills

- Capable of Carrying Independent and Collaborative Research
- Skilled in Presentations, Paper Writing, Project Conception and Project Implementation
- Demonstrated Leadership in Organizing Conferences and Facilitating Discussions.
- Strong Reading, Writing and Speaking Competencies for English and Hindi
- **Programming Language:** C language, Python
- **Operating Systems:** Linux, Windows, macOS.
- **Simulation:** All-atom and Coarse-grained Molecular Dynamics, Umbrella Sampling, Normal Mode Analysis
- **Softwares:** Gromacs, Pymol, VMD, Chimera, Gnuplot, Latex, Pymol, Microsoft Office, WIX website design

## Teaching

- Teaching Chemical Thermodynamics and Thermochemistry at Hindu College, University of Delhi.
- Taught Chemical Kinetics and Catalysis at Hindu College, University of Delhi.

## Awards/Honours/Fellowships

- **Received International Travel Grant** under SERB International Travel Scheme for attending 21<sup>st</sup> IUPAB Congress 2024 at Kyoto, Japan in June, 2024 (**May, 2024**).
- **CHPHI Elsevier Award** for best poster presentation at Physical Chemistry Symposium - 2023 (SoPhyC-2023) organized by Society of Physical Chemistry (SoPhyC) and Department of Chemistry, IIT Kanpur (**October, 2023**).
- **Best Oral Presentation Award** at 4th Annual Ph.D. Symposium held at School of Computational & Integrative Sciences, Jawaharlal Nehru University, New Delhi (**October, 2023**).
- Prime Minister Research Fellow, Ministry of Human Resource Development (MHRD), Government of India (**September, 2020 - July, 2024**).
- Junior Research Fellow, Council of Scientific & Industrial Research (CSIR) (**2019-2020**).
- **Ranked 58 in JRF** in Chemical Science, Council of Scientific & Industrial Research (CSIR) (**June, 2018**).
- Received offer letter for DST – Inspire fellowship under Assured Opportunity for Research Careers (**2018**).
- **Scored 1<sup>st</sup> Rank in Bachelors in Chemistry**, Kalindi College, University of Delhi (**2013-2016**).
- **First Prize** in Poster Presentation at National Symposium on “Trends in Research and Innovations in Life Sciences at Undergraduate Level” held at Deen Dayal Upadhyaya College, University of Delhi (**2016**).
- **DST – Inspire Scholarship** (during Bachelors and masters) for acquiring good academic marks in 12th standard in Haryana Board (**2013 - 2018**).

## Conferences and Workshops

- 2025** • **Invited talk** at Symposium cum Workshop held at Jawaharlal Nehru University, New Delhi (**March, 2025**)
- 2024** • **Poster Presentation** at IUPAB Congress 2024 held at Kyoto International Conference Centre, Kyoto, Japan (**June, 2024**)
- 2023** • **Poster Presentation** at Physical Chemistry Symposium - 2023 (SoPhyC-2023) organized by Society of Physical Chemistry (SoPhyC) and Department of Chemistry, IIT Kanpur (**October, 2023**)
- **Oral Presentation** at 4th Annual Ph.D. Symposium held at School of Computational & Integrative Sciences, Jawaharlal Nehru University, New Delhi (**October, 2023**)
- **Poster Presentation** at Biophysical Society (BPS) Annual Meeting 2023 held at San Diego Convention Center, San Diego, United State of America (**February, 2023**)
- 2022** • **Student Talk** at *Molecular Simulation: Focus on Method* held at Tata Institute of Fundamental Research, Hyderabad, India (**December, 2022**)
- **Short Talk** at *Statistical Biological Physics: From Single Molecule to Cell Program* held at International Centre for Theoretical Sciences, Tata Institute of Fundamental Research, Bengaluru, India (**October, 2022**).
- **Flash Talk and Poster Presentation** at India | EMBO Lecture Course *Functional nucleic acids: Recent landscapes and therapeutic applications* held at Regional Centre of Biotechnology, Faridabad, India in the hybrid mode (**August, 2022**).
- **E-Poster Presentation** at the Conference IBS–2022 *Conceptual Advances in Biophysics and its Applications* held at ACTREC, Tata Memorial Centre, Navi Mumbai in the hybrid mode (**March, 2022**).
- 2020** • **Participated** in a **workshop** on *DNA Bubble Formation: From Physics to Biological Functions* held at Department of Physics, Banaras Hindu University, Varanasi (**February, 2020**).

- 2019 • Paper Presentation** at National Conference on *Recent Advances in Agriculture, Food Tech and Human Health* held at Sam Higginbottom University of Agriculture, Technology and Sciences, Prayagraj (**November, 2019**).
- **Participated in Pre-Conference workshop** on *Multiscale Simulation & Mathematical Modelling of Complex Biological Systems* held at Jawaharlal Nehru University, New Delhi (**January, 2019**).
- **Poster Presentation** at International Conference cum workshop on *Multiscale Simulation & Mathematical Modelling of Complex Biological Systems* held at Jawaharlal Nehru University, New Delhi (**January, 2019**).
- 2017 •** Participated in a 7 day workshop on *Skill Training Programme in Science Communication, Science Journalism and Scientific Writing* organized by University of Delhi, New Delhi and NISCAIR, New Delhi (**2017**).
- **Poster Presentation** at National Seminar on *A Paradigm Shift Towards Empowerment of Women* held at Kalindi College, University of Delhi, New Delhi (**2017**).
- 2016 •** **Poster Presentation** at National Symposium on “*Trends in Research and Innovations in Life Sciences at Undergraduate Level*” held at Deen Dayal Upadhyaya College, University of Delhi (**2016**).
- **Participated** in National Symposium on *Environment: Greener Future & Awareness* held at Deshbandhu College, University of Delhi, New Delhi (**2016**).

## Extra Curricular Activities

- April, 2024 - **Teaching Assistant, Kendriya Vidyalaya, Old JNU Campus.**
- July, 2024 Taught **Science** at Kendriya Vidyalaya, New Mehrauli Road, J.N.U, Old JNU Campus, New Delhi.
- March, 2024 **Student Coordinator, Jawaharlal Nehru University, New Delhi.**  
Student Coordinator of One-day Symposium titled *Simulations of Physical and Biological Systems* held at Jawaharlal Nehru University, New Delhi.
- April, 2023 - **Teaching Assistant, Department of Chemistry, Jamia Millia Islamia, New Delhi.**
- March, 2024 Taught **Chemistry** at the Department of Chemistry, Jamia Millia Islamia (A Central University), New Delhi.
- Oct, 2023 **Convener, Jawaharlal Nehru University, New Delhi.**  
Convener of 4th Annual Ph.D. Symposium held at School of Computational & Integrative Sciences, Jawaharlal Nehru University, New Delhi.
- Sept, 2022 **Participation in IFP Season 12.**  
Participated in World's Largest Filmmaking Challenge - IFP 50 Hour Filmmaking Challenge at IFP Season 12.
- April, 2022 - **Teaching Assistant, Ramjas College, University of Delhi, New Delhi.**
- March, 2023 Taught **Physical Chemistry** to undergraduate students at Ramjas College.
- May, 2022 **Volunteer, Jawaharlal Nehru University, New Delhi.**  
Participated as volunteer in *Scientegration 2022* held at School of Computational & Integrative Sciences, Jawaharlal Nehru University, New Delhi (**2022**).
- Sept, 2021 - **Teaching Assistant, Hansraj College, University of Delhi, New Delhi.**
- March, 2022 Taught **Research Writing and Communication Skill Management** course to undergraduate students at Hansraj College.
- March, 2021 **Student Coordinator, Jawaharlal Nehru University, New Delhi.**  
Student Coordinator of International Conference on *Multiscale Simulation and Mathematical Modelling of Complex Biological Systems (MSMM'21)* held at Jawaharlal Nehru University, New Delhi in online mode.
- Jan, 2019 **Student Coordinator, Jawaharlal Nehru University, New Delhi.**  
Student Coordinator of International Conference cum Workshop on *Multiscale Simulation and Mathematical Modelling of Complex Biological Systems (MSMM'19)* held at Jawaharlal Nehru University, New Delhi.
- 2015 - 2016 **Society President, Biochemical Society, Kalindi College.**  
Worked as President at Biochemical Society, Kalindi College, University of Delhi, New Delhi.