

Dr. Gurpreet Kaur

M. Sc & Ph. D.

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Ph. D.: Panjab University, 2023**Specialization:** Bioorganic Chemistry, Materials Chemistry, Applied Chemistry**Research Area:** Peptides, Nucleic acids, Nanomaterials, and Sensors

Education:

Degree	Division	Year	University	Field of Study
Ph. D.	-	2023	Panjab University	Chemistry
M. Sc	1	2017	Guru Nanak Dev University	Chemistry Honors School
B. Sc	1	2015	Guru Nanak Dev University	Chemistry Honors School

Academic Achievements:

2018: Qualified Graduate Aptitude Test (GATE) in Chemical Sciences with all India rank 1721.

2017: Qualified National Eligibility Examination (NET-JRF) in Chemical Sciences with all India rank 80 conducted by the Council of Scientific and Industrial Research and University Grant Commission (CSIR-UGC).

Research Experiences:

2018-2023: Design and fabrication of biosensing devices using peptide and nucleic acid based strategies (Ph. D Thesis).

2022-2023: Fabrication of an ultrasensitive smart kit for detection of toxic lead traces in water, food, and soil samples (**RUSA Project**).

2016-2017: Synthesis and usage of zinc oxide nanoparticles for the removal of triclosan from aqueous solution (M. Sc Dissertation).

Research interest:

- Synthesis of novel peptides for application in the field of sensing, chemistry, and biology.
- Synthesis and characterization of novel metallic nanoparticles along with their applications in diverse fields.
- Development of novel strategies for the detection of hazardous materials and proteins using peptides and nucleic acids.

Research Publications:

- **Gurpreet Kaur Soni.**; Nishima Wangoo and Rohit Kumar Sharma. Smartphone-Based Ultrasensitive Colorimetric Aptasensing Platform for the Detection of Serine Protease Thrombin. *Microchem. J.* **2024**, *199*, 109906. <https://doi.org/10.1016/j.microc.2024.109906>.
- **Gurpreet Kaur Soni** and Rohit Kumar Sharma. One-Pot Rapid and Ultrasensitive Sensing Strategy for Endocrine Disruptor Bisphenol A Using Cationic AuNPs and Aptamer. *Sens Actuators B Chem* **2023**, *390*, 133968. <https://doi.org/10.1016/j.snb.2023.133968>.
- **Gurpreet Kaur Soni.**; Saima.; Priya Manhas and Rohit Kumar Sharma. Peptide-Based Optical Biosensors: A Promising Approach for Early-Stage Cancer Detection. *Biosens Bioelectron X* **2022**, *12*, 100259. <https://doi.org/10.1016/j.biosx.2022.100259>.
- **Gurpreet Kaur Soni.**; Nishima Wangoo.; Ceren Cokca.; Kalina Peneva and Rohit Kumar Sharma. Ultrasensitive Aptasensor for Arsenic Detection Using Quantum Dots and Guanylated Poly(Methacrylamide). *Anal Chim Acta* **2022**, *1209*, 339854. <https://doi.org/10.1016/j.aca.2022.339854>.
- **Gurpreet Kaur Soni.**; Nishima Wangoo and Rohit Kumar Sharma. Portable Smartphone-Based Fluorescent Aptasensor for Thrombin Using Red Emitting Cysteamine Quantum Dots. <https://dx.doi.org/10.2139/ssrn.4505389>.
- Surinder Kaur Brar.; **Gurpreet Kaur Soni.**; Amit Bharti.; Neelam.; Nishima Wangoo.; and Rohit Kumar Sharma. Self-assembled fibrils based on novel N-aryl pseudo-peptoids for effective adsorption of cationic dyes from wastewater. *Mater Sci Eng B* **2025**, *318*, 118248. <https://doi.org/10.1016/j.mseb.2025.118248>.
- Manju Solra.; Rajni Bala.; Nishima Wangoo.; **Gurpreet Kaur Soni.**; Munish Kumar and Rohit Kumar Sharma. Optical Pico-Biosensing of Lead Using Plasmonic Gold Nanoparticles and a Cationic Peptide-Based Aptasensor. *Chemical Communications* **2020**, *56* (2), 289–292. <https://doi.org/10.1039/C9CC07407D>.

Book Chapters:

- Saima Malik.; Maitryee Umeshbhai Trivedi.; **Gurpreet Kaur Soni**, and Rohit Kumar Sharma. Elucidation of Protein Function Using Raman Spectroscopy. In *Analytical Techniques for the Elucidation of Protein Function*; Wiley, 2022; pp 69–100. <https://doi.org/10.1002/9781119886358.ch3>.

Collaborations:

1. **Collaborator:** Prof. Kalina Paneva, Institute of Organic Chemistry and Macromolecular Chemistry (IOMC), Friedrich Schiller University Jena, Lessingstrasse, 8 Jena D, 07743, Germany.
Research Work: Ultrasensitive Aptasensor for Arsenic Detection Using Quantum Dots and Guanylated Poly(Methacrylamide)
2. **Collaborator:** Prof. N. Sujata, Department of Applied Mechanics, Biomedical Engineering Group Indian Institute of Technology Madras, Chennai, India.
Research Work: Fabrication of an ultrasensitive smart kit for detection of toxic lead traces in water, food, and soil samples.

Conferences and Workshops Attendant:

1. Participated and presented a poster on **Aptasensors for the Colorimetric Monitoring of Organophosphorus Pesticide Ethyl Parathion** at the Professor Ram Chand Paul National Symposium organized by the Department of Chemistry & Centre of Advanced Studies in Chemistry during 1st-2nd March 2019.
2. Participated in the Pre-CHACON **Science Communication Workshop** held under the aegis of Indian National Young Academy of Science (INYAS) at the Panjab University, Chandigarh on 12th March 2019.
3. Participated in the SPARC international workshop entitled **Peptide and Nanotechnological Approaches for Novel Theranostics** conducted by the Department of Chemistry, Panjab University, Chandigarh in collaboration with Osaka University, Japan on 31st October 2019.
4. Participated and presented a poster on **Aptasensors for Rapid Naked-Eye Detection of Organophosphorus Pesticides- Malathion, Phorate and Ethyl Parathion** at the 1st CRIKC Chemistry Symposium co-organized by the Department of Chemical Sciences, IISER Mohali with Panjab University, IIT Ropar, INST Mohali, NIPER Mohali during 2nd and 3rd November 2019.
5. Participated in the SPARC-sponsored international course on the **Chemistry of Peptides and Proteins** coordinated by the Institute for Protein Research (IPR), Osaka University, Japan, and held at the Department of Chemistry, Panjab University, Chandigarh from 4th -7th November 2019.
6. Participated and presented a poster on **Plasmonic Gold Nanoparticles and Cationic Peptide Based Sensor for Optical Pico-Biosensing of Lead** in ICONICA 2020 A Global Summit on Next-Gen Paradigms in Health Care organized by Panjab University, Chandigarh from 12th -14th February 2020.
7. Participated and presented a poster on **Cationic Peptide Mediated Ultrasensitive Colorimetric Aptasensor for Rapid and Naked Eye Detection of Pb²⁺ Ions** in the 8th Indian Peptide Symposium held at Indian Institute of Science, Bengaluru, Karnataka, India, during 24th - 26th March 2021.
8. Participated in the seven days training programs on **X-Ray and Chromatography Based Techniques for Academic & Industrial Innovations** under STUTI-Synergistic training program utilizing the scientific and technological infrastructure organized by the Department of Chemistry and Centre of Advanced Studies, Panjab University, Chandigarh in association with Sophisticated Analytical Instrumentation Facility (SAIF), Panjab University, Chandigarh during 27th May to 3rd June 2022.
9. Participated in and poster presentation on the **Ultrasensitive Detection of Arsenic in Food, Water, and Soil Samples Using a Ternary Nanosensing Platform** at the 15th Chandigarh Science Congress conference organized by Panjab University, Chandigarh, in association with CRIKC during the 15th-17th September 2022.
10. Participated and poster presented on **Cationic Gold Nanoparticles Mediated Colorimetric Aptasensor for the Rapid Detection of Bisphenol A** at the Recent Advances in Bioorganic and Medicinal Chemistry Symposium organized by NIPER S.A.S Nagar on 19th November 2022.

11. Attendant ACS science talk on **Affordable Clean Water using Advanced Materials** organized by the American Chemical Society on 30th November 2022.

Computer Knowledge:

Microsoft Office (MS Word, MS PowerPoint, MS Excel), Google Workspace (Docs, Sheets, Slides)

Software for the data analysis:

ChemDraw, Chem3D, Origin, Image J, and MestReNova

Languages Known:

Punjabi, Hindi, and English

Administrative Responsibilities:

Assistant Dean (School of Sciences): Product Development Cell

Assistant Dean (School of Sciences): Skill Competitions Cell

Google Scholar Link:

<https://scholar.google.com/citations?user=OZb9L5QAAAAJ&hl=en>

Teaching Experience: Two Year