Vaishali Singh, Ph.D

Assistant Professor, Department of Chemistry

B.L.J. Govt. (P.G.) College Purola, Uttarkashi

India-247667

Contact- +91 7055528342

vs2040491@gmail.com; vaishalisingh.phd19@nituk.ac.in

Personal

Date of Birth : Sep 19, 1993
Nationality : Indian
Home Address : Ward no 1, Bansipur, near Old Rice mill, Herbertpur, Dehradun, Uttarakhand 248142

Educational Qualifications

PhD

Year of Completion – 2025
National Institute of Technology, Uttarakhand, India.
Thesis title : **"Synthesis of Fluorescent Ligands and their Metal Complexes for Gelation and Molecular Detection Studies"**
Principal Investigator- Dr. Rampal Pandey.

Msc in Chemistry

Year of Completion - 2016
Veer Sahid Kesharichand Govt. P.G. College, Dakpathar-Vikasnagar, (HNB Garhwal university), India.
Area of Specialization – Inorganic Polymers, Molecular Spectroscopy, Bioinorganic Chemistry, Organometallic Chemistry, Supramolecular Chemistry , Analytical Chemistry and Environmental Chemistry.

BEd

Year of Completion – 2014
Govt. P.G. College, Dakpathar-Vikasnagar, (HNB Garhwal university), India.
Area of Specialization – Teacher in Emerging Indian Society, Learner and teaching learning process, Development of education System in India, Educational Technology and Management and Methods of Teaching (Mathematics and Teaching of Science).

BSc

Year of Completion – 2013

Govt. P.G. College, Dakpathar-Vikasnagar, (HNB Garhwal university), India.
Area of Specialization – Physics, Mathematics and Chemistry.

Advance Diploma in Software Engineering

Year of Completion – 2012
APTECH-SHIKHAR project by HNB Garhwal university, India.
Area of Specialization – HTML, Programming fundamentals, Programming in C++, VB.NET, JAVA, MS-Access 2000 and SQL-Server 2000.

AISSCE (12th)

Year of Completion – 2010
Doon Global School, CBSE Board, India.
Area of Specialization – Physics, Mathematics, Chemistry, English and Physical Education.

AISSE (10th)

Year of Completion – 2008
St. Thomas Academy, CBSE Board, India.
Area of Specialization – Mathematics, Science, English, Hindi and Social Science.

Awards/Certificates and Scholarships.

1. DST-SERB (India) International Travel Scheme (ITS) Grant for attending and presenting research paper in ACS Fall 2023 (Harnessing the power of data) at San Francisco, California, United States (2023).
2. Institute JRF/SRF Fellowship (Feb 2019- Feb 2024)
   Awarding Agency: Ministry of Education, India.
3. Council of Scientific and Industrial Research- University Grants Commission National Eligibility Test Lectureship (CSIR-UGC NET (LS)) in Chemical Sciences (December 2017).
4. Council of Scientific and Industrial Research- University Grants Commission National Eligibility Test Lectureship (CSIR-UGC NET (LS)) in Chemical Sciences (June 2017).
5. Central Teacher Eligibility Test (CTET Paper-II) conducted by Central Board of Secondary Education (February 2016).

Research Experience

PhD (Feb 2019- Jan 2025)
Title : **"**Synthesis of Fluorescent Ligands and their Metal Complexes for Gelation and Molecular Detection Studies''.
Advisor - Dr. Rampal Pandey, National Institute of Technology, Uttarakhand, India.

Teaching Experience

1. Currently working as Assistant Professor in the Department of Science at B.L.J. Govt. (PG) College Purola, Uttarkashi since **February 2025**.

2. Took tutorials and Laboratory of B.Tech. students of Applied Chemistry at NIT Uttarakhand (**2020-2024**)

Publications

1. **Singh V**, Kala S, Rom T, Paul AK, Pandey R. "A multi-cation responsive Ni(II)-supramolecular metallogel mimics a molecular keypad lock *via* reversible fluorescence switching". *Dalton Trans.*, **2023**, 52, 7088. https://doi.org/10.1039/D2DT03714A
2. Sharma H†, **Singh V**†, Tamrakar A, Nigam KK, Pandey MD, Tiwari KK, Pandey R. "Development of highly selective fluorescent ferrocenyl-iminopyridine chemosensor for biologically relevant Fe^{3+}". *Luminescence*, **2023**, 38(7), 1132. (†Both authors have equally contributed) https://doi.org/10.1002/bio.4243
3. **Singh V**, Dwivedi AD, Pandey R. "Anti-Counterfeiting Feature of a Writeable and Self-erasable Ni(II)-Metallogel Pad *via* Fluorescent 'Turn-ON' Detection of Cyanide". *Langmuir*, **2024**, 40(10), 5121. https://doi.org/10.1021/acs.langmuir.3c03036
4. **Singh V**, Srivastava A, Pandey MD, Pandey R. "Ni(II)-/Yb(III)-Metallogels for distinct fluorescent '*Turn-On*' Detection of *m*-phenylenediamine: Towards Constructions of multiple logic gates". *Journal of Photochemistry & Photobiology, A: Chemistry*, **2025**, 459, 116003. https://doi.org/10.1016/j.jphotochem.2024.116003
5. **Singh V**, Chauhan DK, Pandey R. "Supramolecular Ni(II)-Selective Gel Assembly Towards Construction of Schottky Barrier Diode". *ACS Omega*, **2025**, 10(1), 378. https://doi.org/10.1021/acsomega.4c06387
6. **Singh V**, Rom T, Paul AK, Pandey R. "A Straightforward Comparative Ion Detection Behavior of Imidazole-carboxamide appended Schiff base Fluorescent Probes". (Manuscript submitted)
7. **Singh V**, Pandey R. "Recent Developments in 3d-Cations Based Supramolecular Metallogels". (Manuscript ready for communication)
8. **Singh V**, Pandey R. "Stimuli-responsive and functional Supramolecular Zn(II)-Hydrogel". (Manuscript in preparation).

Research Grant

S.No.	Title	Sponsored Agency	Project Type	Total Outlay
1.	Development of Fluorescent Molecular Gels for Biological, Medicinal and Industrial Applications	NIT Uttarakhand (TEQIP-III)	Seed Money Grant	Rs. 20 thousand

Presentations and Posters presented in International/National Conferences

1. **Singh V** and Pandey R. "*Recent Advancements in Fluorescent Molecular Gels: A Short Review"* 1st National Conference on "Recent Advancement in Physical Sciences"-(NCRAPS 2019) at NIT, Uttarakhand through offline mode (Abstract and Talk).
2. **Singh V** and Pandey R. "*Recent Advancements in the Metallogels and their applications"* 2nd National Conference on "Recent Advancement in Physical Sciences"-(NCRAPS 2020) at NIT Uttarakhand through online mode (Abstract and Talk).

3. **Singh V** and Pandey R. "*N,O donor systems for structural, gelation and molecular detection studies"* 3rd National Conference on "Recent Advancement in Physical Sciences"-(NCRAPS 2021) at NIT, Uttarakhand through online mode (Abstract and Talk).
4. **Singh V** and Pandey R. "*Rheological and Morphological investigations of a Supramolecular assembly of Ni(II)-selective Gel containing N,O-donor Schiff base derivative"* 5th International Conference on "Soft Materials"-(ICSM 2022) at MNIT, Jaipur through offline mode (Abstract and Talk).
5. **Singh V** and Pandey R. "*Fabrication of $Ni^{2+}$and Yb^{3+}-induced heat-set supramolecular gel: Rheological and Luminescence properties"* 4th National Conference on "Recent Advancements in Physical Sciences"-(NCRAPS 2022) at NIT Uttarakhand through online mode (Abstract and Talk).
6. **Singh V** and Pandey R. "*Fabrication of efficient of Ni(II) and Yb(III)-selective supramolecular gel with Morphological and Rheological investigations"* International Conference on "Molecules and Materials Technology"-(MMT 2023) at NIT Kurukshetra through offline mode (Abstract and Poster).
7. **Singh V** and Pandey R. "*Fabrication of imidazolecarboxamide-vanillin based functional Ni(II)-metallogel for unprecedented cyanide detection via fluorescence readout* " ACS Fall 2023 (Harnessing the power of data) at Moscone Center, San Francisco, California United States through offline mode (Abstract and Talk).

Reviewer of Journals

- ACS Omega (Published by American Chemical Society)

Attended Workshops/ Short Terms Courses

1. One Week Short Term Course on "*Research Methodology*" (under twinning program) conducted by NIT Uttarakhand, MNIT Jaipur and SLIET Longowal during 27-31 May 2019.
2. *"Synthesis and Characterization of Multifunctional Materials"* conducted by NIT Uttarakhand during 11-15 November 2019.
3. "*Writing Research Papers & Grand Proposals: Scientific, Technical and Ethical Practices & Conduct"* conducted by NIT Uttarakhand during 24-28 August 2020.
4. Online Short-Term Training Program (STTP) on "*Soft Skills and Personality Development"* conducted by NIT Uttarakhand and NIT Tiruchirappalli during 17-21 September 2020.
5. *"Smart Materials: Concept, Design and Applications"* conducted by NIT Uttarakhand during 7-11 September 2020.
6. Webinar of the Wiley Analytical Science Spring 2022 Conference : *Characterization of Optical Layers Using UV-vis/ NIR Spectroscopy* on 28 April 2022 (Online mode).

Technical Expertise

- **Organic and Inorganic Synthesis**
- **Structural investigations of molecules**

1. Different spectral techniques are utilized to ensure the purity of molecules (ligand and metal complexes) such as

- Mass (ESI-MS/HRMS) spectrometry
- Nuclear magnetic resonance ($^{1}H/^{13}C$- NMR) spectroscopy
- Infrared (IR) spectroscopy

2. Powder and single-crystal X-Ray Diffraction (XRD)
   - Solving the single crystal diffraction data of molecules by using OLEX software and Mercury software.
   - Determination of non-covalent interactions (H-bonding, Metal-ligand interactions and π-π stacking) by using the Powder-XRD data.
3. Rheological Investigations
4. Morphological Investigations
5. Absorption and Emission Studies
6. Computational data analysis
   - Confocal microscopy image analysis (Zeiss)
   - UV/vis and Fluorescence data analysis using M Wave Professional and Perkin FL WinLab^{TM} , respectively .
   - NMR data analysis using MNOVA/MestRenova and Bruker Topspin software.
   - Solving the crystal data and its parameter by using SHELEX, Avogadro, Mercury and OLEX (enCIFER) software.
   - Adobe Photoshop, Image J, ChemDraw, Mendeley, Origin Pro and MS office application (Word, Excel , PowerPoint).

I hereby declare that all information provided by me is true and correct.

Place: Dehradun Name : Vaishali Singh