

**Dr. Karishma Tiwari**

Assistant Professor  
Division of Chemistry  
Department of Basic Sciences,  
School of Basic and Applied Sciences,  
Galgotias University, Greater Noida-  
201310, Uttar Pradesh, India

✉ [k.tiwari10@gmail.com](mailto:k.tiwari10@gmail.com)  
Contact No.: 7227881018

**EDUCATION & QUALIFICATIONS**

High School	:	2000, <i>first division</i> with <b>78.8%</b> marks, C.B.S.E., JNV, Farrukhabad
Intermediate	:	2002, <i>first division</i> with <b>76.2 %</b> marks, C.B.S.E., JNV, Farrukhabad
B. Sc.	:	2005, <i>first division</i> with <b>71.6 %</b> marks, CSJM. University Kanpur, Uttar Pradesh, India.
M. Sc.	:	2007, <i>second division</i> with <b>58.1%</b> marks, CSJM University Kanpur, Uttar Pradesh, India.
M.Phil.	:	2009, <i>first division</i> with <b>76.6 %</b> marks CSJM University Kanpur, Uttar Pradesh, India.
Title of Thesis	:	<i>“Pharmacophoric features of long acting bronchodilators”</i>
Project Supervisor	:	Dr. ArpitaYadav
Ph. D.	:	2015, (Session 2014, <i>coursework</i> with <b>76.4%</b> marks), Department of Chemistry, Institute of Science, Banaras Hindu University, India.
Title of Thesis	:	<i>“Synthesis and Characterization of some Schiff bases as Chemosensors for the Detection of Al<sup>3+</sup> and water content”</i>
Thesis Supervisor	:	Prof. Vinod P. Singh

## FELLOWSHIP/AWARDS

- Selected for CSIR-RA, (New Delhi) Post-doctoral Fellowship **2017**.
- Selected for Dr. D. S. Kothari Post-doctoral Fellowship (New Delhi)**2016**.
- Selected for SERB Project Scientist, Indian Institute of Technology, Kanpur, **2015**.
- Selected for CSIR-Senior Research Fellowship, (New Delhi)**2014**.
- Selected for CSIR-Junior Research Fellowship (Project), Banaras Hindu University, Varanasi, **2011**.
- Qualified National Eligibility Test (NET) two times in *Chemical Sciences* conducted by CSIR-UGC, New Delhi, **2010** (December and June).
- Selected for UGC-CRET Fellowship, Banaras Hindu University, Varanasi,**2009**.
- Rank 3<sup>rd</sup> in the Kanpur University (CSJM University) M.Phil. Entrance Exam**2008**.

## POST-DOCTORAL RESEARCH/ TEACHING EXPERIENCE

Name of Fellowship	Funding Agency	Period	Name of the Institution
Project Scientist	SERB	16-07.2015 – 31-12.2015	IIT Kanpur, UP, India
DSK-Postdoctoral Fellow	UGC	01-03.2016 – 30-04.2017	GNDU Amritsar, Punjab, India
CSIR-Research Associate	CSIR	08.2017 – 31-08-2020	CSIR-CSMCRI, Bhavnagar, Gujarat, India
Assistant Professor	Galgotias University	01-12-2021 – till date	Galgotias University, Greater Noida-201310, Uttar Pradesh, India

## MEMBERSHIP IN SCIENTIFIC ASSOCIATION

1. American Chemical Society (ACS)- Annual membership(2019-2020)

## RESEARCH HIGHLIGHTS

- Synthesis of Schiff bases and their characterization by FT-IR, UV-visible,  $^1\text{H}/^{13}\text{C}$  NMR, ESI-MS, single crystal X-Ray crystallography.
- Investigation of solvatochromism of Schiff bases.
- Application of Schiff bases towards  $\text{Al}^{3+}$  ions sensing in aqueous and organic medium.
- Utilization of deprotonated Schiff bases in the colorimetric determination of water content in aprotic organic solvents.
- Energy optimization of molecules by Density Functional Theory (DFT).
- Synthesis of azine based sensor for the selective colorimetric detection  $\text{Cu}^{2+}$  and its copper complex for sensing of phosphate ions in physiological conditions and in living cells.
- Preparation of ultrathin polyiminenanofilms at the liquid-liquid interface and their morphological characterization by SEM, TEM and AFM.
- Preparation of thin film composite membrane of polyiminenanofilms to utilize them for selective separation of dyes and salts.

## PROFESSIONAL COMPETENCE

- Capable of both independent and collaborative research.
- Proficiency in synthesis and characterization of complex molecules, their separation through thin layer, column chromatography.
- Interpretation of Routine Spectroscopic Data such as XPS, NMR, FTIR, UV/Vis, HRMS, MALDI-TOF, XRD, DSC, TGA, dynamic light scattering (DLS) and single crystal structure data, etc.
- Photophysical Studies: UV/Vis-NIR spectrophotometer and spectrofluorimeter, etc.
- Morphological Characterization through SEM, AFM and TEM measurements.
- Handling of equipment such as NMR, FT-IR, UV/Vis and Fluorescence Spectrophotometer.
- Crystal structure solution and refinement through SHELXL-97 Program for Crystal Structure Refinement, University of Gottingen, Germany, 1997.

Competent in doing molecular modeling work at the level of density functional theory (DFT) and TD-DFT using Gaussian 09 and Gauss View, Computer proficiency: ChemDraw, ORIGIN, SciFinder Scholar,

## LIST OF PUBLICATIONS

1. Interfacial synthesis of large-area ultrathin polyiminenanofilms as molecular separation membrane, Karishma Tiwari; Solagna Modak; Pulak Sarkar; Santanu Ray; Vasista Adupa; K. Anki Reddy; Sumit Kumar Pramanik; Amitava Das; Santanu Karan, *iScience*, 2022, Accepted (IF = 5.109).
2. The Colorimetric Signaling of Water Content by a Deprotonated Schiff Base in some Aprotic Organic Solvents, **Karishma Tiwari**, Monika Mishra, Saumya Singh and Vinod P. Singh, *ChemistrySelect*, 2020, 5, 9547–9553 (IF = 2.109).
3. Large Area Self-Assembled Ultrathin Polyimine Nanofilms Formed at the Liquid-Liquid Interface Used for Molecular Separation, **Karishma Tiwari**, Pulak Sarkar, Solagna Modak, Harwinder Singh, Sumit Kumar Pramanik, Santanu Karan, and Amitava Das, *Advanced Materials* 2020, 32, 1905621 (IF = 30.85).
4. Small Molecule as Fluorescent Probes for Monitoring Intracellular Enzymatic Transformations, Harwinder Singh, **Karishma Tiwari**, Rajeshwari Tiwari, Sumit Kumar Pramanik and Amitava Das, *Chemical Reviews*, 2019, 119, 22, 11718-11760 (IF = 60.62).
5. Two photon excitable graphene quantum dots for structured illumination microscopy and imaging applications: lysosome specificity and tissue-dependent imaging, Harwinder Singh, Sreejesh Sreedharan, **Karishma Tiwari**, Nicola H Green, Carl Smythe, Sumit Kumar Pramanik, Jim A Thomas, Amitava Das, *Chem. Commun.* **2019**, 55, 521-524 (IF = 6.222).
6. Mitochondria Targeting Non-isocyanate-based Polyurethane Nanocapsules for Enzyme-Triggered Drug Release, S. K. Pramanik, S. Sreedharan, H. Singh, M. Khan, **Karishma Tiwari**, A. Shiras, C. G. W. Smythe, J. A. Thomas, and A. Das, *Bioconjugate Chem.*, **2018** Bioconjugate chemistry 29 (11), 3532-3543 (IF = 4.349).
7. An azine based sensor for selective detection of Cu<sup>2+</sup> ions and its copper complex for sensing of phosphate ions in physiological conditions and in living cells, **Karishma Tiwari**, S. Kumar, V. Kumar, J. Kaur, S. Arora, R. K. Mahajan, *Spectrochim. Acta A*, **2018**, 191, 16–26 (IF = 3.232).
8. Versatile coordination behaviour of a multi-dentate Schiff base with manganese(II), copper(II) and zinc(II) ions and their corrosion inhibition study, M. Mishra, **Karishma Tiwari**, A. K. Singh and V. P. Singh, *Inorg. Chim. Acta*, **2015**, 425, 36-45 (IF = 2.046).
9. Synthesis, characterization and corrosion inhibition property of nickel(II) and copper(II) complexes with some acylhydrazine

- Schiff bases, M. Mishra, **Karishma Tiwari**, P. Mourya, M. M. Singh, V. P. Singh, *Polyhedron*, **2015**, 89, 29–38 (IF = 2.108).
10. Synthesis, structural investigations and corrosion inhibition studies on Mn(II), Co(II), Ni(II), Cu(II) and Zn(II) complexes with 2-amino-benzoic acid (phenyl-pyridin-2-yl-methylene)-hydrazide, P. Singh, D. P. Singh, **Karishma Tiwari**, M. Mishra, A. K. Singh and V.P. Singh, *RSC Advances*, **2015**, 5, 45217-45223 (IF =3.36).
  11. 8(E)-4-[[2-(2,4-dinitrophenyl)hydrazono}benzene-1,3-diol] as a solvatochromic Schiff base and chromogenic signaling of water content by its deprotonated form in acetonitrile, **Karishma Tiwari**, M. Mishra and V. P. Singh, *RSC Advances*, **2014**, 4, 27556–27564 (IF =3.36).
  12. Synthesis, structural investigation, DNA and protein binding study of some 3d-metal complexes with N-(phenyl-pyridin-2-yl-methylene)-thiophene-2-carboxylic acid hydrazide, M. Mishra, **Karishma Tiwari**, S. Shukla, R. Mishra, and V. P. Singh, *Spectrochim. Acta A*, **2014**, 132, 452–464 (IF =3.232)..
  13. Synthesis, structural and corrosion inhibition studies on Mn(II), Cu(II) and Zn(II) complexes with a Schiff base derived from 2-hydroxypropiophenone, M. Mishra, **Karishma Tiwari**, A. K. Singh, and V.P. Singh, *Polyhedron*, **2014**, 77, 57–65 (IF =2.108).
  14. Synthesis, spectroscopic (electronic, IR, NMR and ESR) and theoretical studies of transition metal complexes with some unsymmetrical Schiff bases, V. P. Singh, S. Singh, D. P. Singh, **Karishma Tiwari**, M. Mishra, *J. Mol. Struct.*, **2014**, 1058, 71–78 (IF =2.011).
  15. 5-[[{(2-Hydroxynaphthalen-1-yl)methylene}amino]pyrimidine-2,4(1H,3H)-dione as Al<sup>3+</sup> selective colorimetric and fluorescent chemosensor, V. P. Singh, **Karishma Tiwari**, M. Mishra, N. Srivastava, S. Saha, *Sens. Actuator B-Chem.*, **2013**, 182, 546–554 (IF =7.335).
  16. A highly sensitive and selective fluorescent sensor for Al<sup>3+</sup> ions based on thiophene-2-carboxylic acid hydrazide Schiff base, **Karishma Tiwari**, M. Mishra and V. P. Singh, *RSC Advances*, **2013**, 3, 12124–12132 (IF = 3.36).
  17. Structural investigations on bis-(semicarbazido)dihydrazine nickel(II) complex synthesized by using uracil and hydrazine hydrate, V. P. Singh, M. Mishra, **Karishma Tiwari**, *Inorg. Chim. Acta*, **2013**, 398, 89–97 (IF =2.046).

18. Synthesis, spectral and single crystal X-ray diffraction studies on Co(II), Ni(II), Cu(II) and Zn(II) complexes with o-amino acetophenone benzoyl hydrazone, V. P. Singh, S. Singh, D. P. Singh, P. Singh, **Karishma Tiwari**, M. Mishra, R. J. Butcher, *Polyhedron*, **2013**, 56, 71–81 (IF = 2.108).
19. Synthesis, spectral and thermal studies of some polymeric mixed ligand uracil–hydrazide complexes with transition metal ions, V. P. Singh, **Karishma Tiwari**, and M. Mishra, *Des Monomers Polym.*, **2012**, 1–9 (IF = 2.650).

#### LIST OF PATENTS

Sl No.	Title	Country	Filed on (Date)	(Date) Granted	Name of other inventors
1	A compound for the detection of 2,4,6-trinitrophenol and its method for preparation thereof	India	Provisional Application No: IN201811020002; 29-05-2018		Harwinder Singh, Karishma Tiwari, Sumit Kumar Pramanik and Amitava Das
2	A compound for live imaging of lysosome and process for preparation thereof	India	Provisional Application No: IN201811020009; 30-08-2018		Rajeshwari Tiwari, Karishma Tiwari, Sumit Kumar Pramanik and Amitava Das

#### CONFERENCES

1. “Ferrocene Derived Two New Schiff Bases: Synthesis, Structural, Electrochemical and Corrosion Inhibition Properties, Karishma Tiwari, M. Mishra and V. P. Singh, 17<sup>th</sup> CRSI National Symposium In Chemistry, CSIR-NCL, Pune, India, February 05-08, 2015.
2. “Synthesis, spectral and thermal studies of some polymeric mixed ligand uracil–hydrazide complexes with transition metal ions” Karishma Tiwari, M. Mishra and V. P. Singh, *National Symposium on Chemistry and Environment* (NSCE-2013), March, BHU, Varanasi, 15-16, 2013.

3. "Structural investigations on bis-(semicarbazido)dihydrazine nickel(II) complex synthesized by using uracil and hydrazine hydrate" Karishma Tiwari, M. Mishra and V. P. Singh, 15<sup>th</sup> *CRSI National Symposium In Chemistry*, BHU, Varanasi, India, Jan. 31<sup>st</sup> – Feb.03,2013.
4. Attended the 7<sup>th</sup> RSC-CRSI Symposium in Chemistry, 31<sup>st</sup> January2013.
5. "Structural studies on Co(II), Ni(II), Cu(II) and Zn(II) complexes with 2-acetyl thiophene benzoyl hydrazone, Karishma Tiwari, M. Mishra and V. P. Singh, 14<sup>th</sup> *CRSI National Symposium In Chemistry*, CSIR-NIIST, Thiruvananthapuram, India, February 03-05, 2012.
6. Attended the Science Academies Lecture workshop, Molecular Spectroscopy: Theory, Instrumentation and Applications, Department of Chemistry, BHU, Varanasi March 02-03 2012.
7. "Structural studies on Co(II), Ni(II), Cu(II) and Zn(II) complexes with 2-acetyl thiophene benzoyl hydrazone" Karishma Tiwari, M. Mishra, and V. P. Singh 13<sup>th</sup> *CRSI National Symposium In Chemistry*, NISER, Bhubaneswar, February 04-06, 2011.
8. Attended the *International Conference on Chemistry: Frontiers and Challenges*, Department of Chemistry, AMU, Aligarh, March 05-06, 2011.
9. Attended the "National Symposium on Emerging Trends in Chemistry", Department of Chemistry, BHU, Varanasi; 11-12 February 2011.
10. Attended the "National Symposium-cum-Workshop on Single Crystal XRD", Department of Chemistry, BHU, Varanasi; 08-09 March 2010.

## **REFERENCES**

- **Prof. Amitava Das (IISER Kolkata)**  
Ex. Director CSMCRI  
Indian Institute of Science Education and Research Kolkata  
Mohanpur, Nadia - 741246, West Bengal, India  
Email: [das.amitava1@gmail.com](mailto:das.amitava1@gmail.com), Contact: 3361360000
- **Prof. Vinod P. Singh**  
Department of Chemistry, Institute of Science,  
Banaras Hindu University, Varanasi-221005,

Uttar Pradesh, India

Email: [singvp@yahoo.co.in](mailto:singvp@yahoo.co.in); Contact: +91 5426702478

- **Prof. Rakesh Kumar Mahajan, FNASc**

Chemistry Department GNDU, Amritsar

Ex. Vice-Chancellor, DAV University, Jalandhar

Ex. Dean Faculty of Sciences, GNDU

Ex. Dean, Colleges, GNDU

Ex. Prof. & Head Department of Chemistry,

GNDU, Amritsar-143005 INDIA

Email: [rakesh\\_chem@yahoo.com](mailto:rakesh_chem@yahoo.com), Mobile: 9872856579

*Karishma*

**Karishma Tiwari**