

**Proforma for information to be provided by the Teaching/ Academic/  
Research Staff**



1. **Name:** Roop Shikha Singh
2. **Designation:** Assistant Professor
3. **Academic Qualifications:**

Sr.	Degree	Institution	Year
1.	Ph.D	Banaras Hindu University	2016
2.	M.Sc.	Banaras Hindu University	2010
3.	B.Sc.	Banaras Hindu University	2008

4. **Area of Specialization:**

I have research interests in two main areas that I specialize in: the one involving design, synthesis and characterization of luminophores based on boron-dipyrromethenes (BODIPYs), its metal (Ru, Rh and Ir) analogues and donor-acceptor molecules. The other one contemplates the investigation of morphologically controlled self assembly/nano-aggregation and photochemistry of these systems in solution and solid state. Theme of the work lies on the interface of organic/inorganic and organometallic chemistry and relays the significance of structure-property relationship in achieving functional inorganic materials. The broad area of my research work requires extensive experience in organic/organometallic synthesis and characterization. Synthetic versatility, steric hindrance, aromaticity, and asymmetry can be used as effective tools to alter the structural and photophysical properties of such luminophores. In addition, I have also worked on the exploration of coordination driven self assembly and solid state emission in zinc and cyclometalated iridium complexes for applications in optoelectronics.

Currently I am interested in developing multifunctional nanoarchitectures to attain high FRET efficiency and their possible application in artificial light harvesting systems.

5. **Contact Information:** Mobile No. +918004930089  
Email: [roopshikha22singh@gmail.com](mailto:roopshikha22singh@gmail.com),  
[roopshikha.singh1@bhu.ac.in](mailto:roopshikha.singh1@bhu.ac.in)
6. **Projects Undertaken as PI/ Co PI:** NA
7. **Awards/ Recognitions if any:**

- SERB INDO-US Postdoctoral Fellowship-2017 (Host: Prof. J. S. Lindsey, North Carolina State University, USA).
- National Postdoctoral Fellowship-2017.
- CSIR-UGC NET; qualified Junior Research Fellowship from CSIR, New Delhi, India, (December 2010).
- Late Sumant Singh Memorial Gold Medal for securing highest marks in B.Sc. (Hons.) Chemistry Exam, 2008. (Banaras Hindu University)
- Late Prof. Sanat Kumar Basu Cash Prize for securing highest percentage of marks in aggregate at the B. Sc. (Hons.) Chemistry Examination, 2008. (Banaras Hindu University)
- BHU Prize for standing First in B.Sc. (Hons.) Part III Chemistry Examination, 2008. (Banaras Hindu University)
- Best Student Award of year 2007-2008. (Banaras Hindu University)
- Certificate of Merit for standing Fourth at the B. Sc. (Hons.) II Examination of 2007. (Banaras Hindu University)
- Certificate of Merit for standing First in Chemistry at the B.Sc. (Hons.) II Examination of 2007. (Banaras Hindu University)
- Certificate of Merit for standing First in Zoology at the B.Sc. (Hons.) I Examination of 2006. (Banaras Hindu University)
- Poster Presentation prize on First Institute Day Celebration (2016), Institute of Science, Banaras Hindu University, Varanasi.

#### 8. List of 10 major Publications: (in order of importance)

1. \*An Unconventional Mechanistic Insight on Aggregation Induced Emission in Novel Boron Dipyrromethenes and Their Rational Biological Realizations.  
**Roop Shikha Singh**, Ashish Kumar, Sujay Mukhopadhyay, Gunjan Sharma, Biplob Koch and Daya Shankar Pandey  
**J. Phys. Chem. C.**, 120, 22605-22614, 2016.
2. \*Exquisite 1-D assemblies arising from rationally designed asymmetric D–A architectures exhibiting aggregation induced emission as a function of auxiliary acceptor strength.  
**Roop shikha Singh**, Sujay Mukhopadhyay, Arnab Biswas and Daya Shankar Pandey  
**Chem. Eur. J.**, 22, 753–763, 2016.
3. \*Morphological tuning *via* structural modulations in AIE luminogens with the minimum number of possible variables and their use in live cell imaging.  
**Roop Shikha Singh**, Rakesh Kumar Gupta, Rajendra Prasad Paitandi, Mrigendra Dubey, Gunjan Sharma, Biplob Koch, and Daya Shankar Pandey  
**Chem. Comm.**, 51, 9125- 9128, 2015.
4. \*Triazole-appended BODIPY–piperazine conjugates and their efficacy toward mercury sensing.  
**Roop Shikha Singh**, Rakesh Kumar Gupta, Rajendra Prasad Paitandi, Arvind Misra, and Daya Shankar Pandey  
**New J. Chem.**, 39, 2233- 2239, 2015.
5. \*Luminescent N,O-chelated chroman-BF<sub>2</sub> complexes: structural variants of BODIPY.  
**Roop Shikha Singh**, Mahendra Yadav, Rakesh Kumar Gupta, Rampal Pandey, and Daya Shankar Pandey  
**Dalton Trans.**, 42, 1696- 1707, 2012.

6. Solvent-Dependent Self-Assembly and Aggregation-Induced Emission in Zn(II) Complexes Containing Phenothiazine-Based Terpyridine Ligand and Its Efficacy in Pyrophosphate Sensing.  
Vishwa Deepak Singh, **Roop Shikha Singh**, Rajendra Prasad Paitandi, Bhupendra Kumar Dwivedi, Biswajit Maiti, and Daya Shankar Pandey  
**J. Phys. Chem. C**, 122, 5178–5187, 2018.
7. Fine-Tuning of Saponification Triggered Gelation by Strategic Modification of Peripheral Substituents: Gelation Regulators.  
Ashish Kumar, **Roop Shikha Singh**, Amit Kumar, Afsar Ali, Arnab Biswas, and Daya Shankar Pandey  
**Chem. Eur. J.**, 22, 13799–13804, 2016.
8. Photochemical water oxidation by cyclometalated iridium(III) complexes: A mechanistic insight.  
Sujay Mukhopadhyay, **Roop Shikha Singh**, Arnab Biswas, Daya Shankar Pandey  
**Chem. Comm.**, 52, 3840-3843, 2016.
9. Time dependent aggregation induced emission enhancement and the study of molecular packing in closely related azo-phenol BODIPY species.  
Rajendra Prasad Paitandi, **Roop Shikha Singh**, Bhupendra Kumar Dwivedi, Vishwa Deepak Singh and Daya Shankar Pandey  
**Dalton Trans.**, 47, 3785-3795, 2018.
10. Spacer length dependent architectural diversity in bis-dipyrrin copper(II) complexes.  
Rajendra Prasad Paitandi, **Roop Shikha Singh**, Sujay Mukhopadhyay, Ashish Kumar, and Daya Shankar Pandey  
**Dalton Trans**, 46, 5420-5430, 2017.

9. **Additional Information/ Achievements:**

**Postdoctoral Research Experience:**

1. SERB INDO-US Postdoctoral Fellow, North Carolina State University, USA (Prof. J.S. Lindsey).
2. Research Associate in SERB sponsored project entitled “Designing and synthesis of metal based aggregation induced emission (AIE) luminogens and their properties” (Department of Chemistry, Institute of Science, Banaras Hindu University).

10. **Full List of Publications:**

1. \*An Unconventional Mechanistic Insight on Aggregation Induced Emission in Novel Boron Dipyrromethenes and Their Rational Biological Realizations.  
**Roop Shikha Singh**, Ashish Kumar, Sujay Mukhopadhyay, Gunjan Sharma, Biplob Koch and Daya Shankar Pandey  
**J. Phys. Chem. C.**, 120, 22605-22614, 2016.
2. \*Exquisite 1-D assemblies arising from rationally designed asymmetric D–A architectures exhibiting aggregation induced emission as a function of auxiliary acceptor strength.  
**Roop shikha Singh**, Sujay Mukhopadhyay, Arnab Biswas and Daya Shankar Pandey  
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3. \*Morphological tuning *via* structural modulations in AIE luminogens with the minimum number of possible variables and their use in live cell imaging.  
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**Roop Shikha Singh**, Mahendra Yadav, Rakesh Kumar Gupta, Rampal Pandey, and Daya Shankar Pandey  
**Dalton Trans.**, 42, 1696- 1707, 2012.
6. Manipulating metallogel properties by luminogens and their applications in cell imaging.  
Arnab Biswas, Sujay Mukhopadhyay, **Roop Shikha Singh**, Ashish Kumar, Nishant Kumar Rana, Biplob Koch, and Daya Shankar Pandey  
**ACS Omega**, 3, 5417–5425, 2018.
7. Time dependent aggregation induced emission enhancement and the study of molecular packing in closely related azo-phenol BODIPY species.  
Rajendra Prasad Paitandi, **Roop Shikha Singh**, Bhupendra Kumar Dwivedi, Vishwa Deepak Singh and Daya Shankar Pandey  
**Dalton Trans.**, 47, 3785-3795, 2018.
8. Solvent-Dependent Self-Assembly and Aggregation-Induced Emission in Zn(II) Complexes Containing Phenothiazine-Based Terpyridine Ligand and Its Efficacy in Pyrophosphate Sensing.  
Vishwa Deepak Singh, **Roop Shikha Singh**, Rajendra Prasad Paitandi, Bhupendra Kumar Dwivedi, Biswajit Maiti, and Daya Shankar Pandey  
**J. Phys. Chem. C**, 122, 5178–5187, 2018.
9. Anticancer Activity of Iridium(III) Complexes Based on a Pyrazole Appended Quinoline-BODIPY  
Rajendra Prasad Paitandi, Sujay Mukhopadhyay, **Roop Shikha Singh**, Vinay Sharma, Shaikh M Mobin, and Daya Shankar Pandey  
**Inorg. Chem.**, 56, 12232-12247, 2017,
10. Polymerization of 1-(2-Propynyl)-3-methylimidazolium Bromide using Cyclometalated Pd(II) Catalysts and Study of the Interaction of Ensuing Oligomer with BSA.  
Sujay Mukhopadhyay, Kheyath Mitra, Rajendra Prasad Paitandi, **Roop Shikha Singh**, Shikha Singh, Biswajit Ray and Daya Shankar Pandey  
**ChemistrySelect**, 2, 6000-6008, 2017.
11. Influence of substituents on DNA and protein binding of cyclometalated Ir(III) complexes and anticancer activity  
Sujay Mukhopadhyay, **Roop Shikha Singh**, Rajendra Prasad Paitandi, Gunjan Sharma, Biplob Koch, and Daya Shankar Pandey  
**Dalton Trans**, 46, 8572-8585, 2017.
12. Spacer length dependent architectural diversity in bis-dipyrrin copper(II) complexes.

- Rajendra Prasad Paitandi, **Roop Shikha Singh**, Sujay Mukhopadhyay, Ashish Kumar, and Daya Shankar Pandey  
**Dalton Trans**, 46, 5420-5430, 2017.
13. Fine-Tuning of Saponification Triggered Gelation by Strategic Modification of Peripheral Substituents: Gelation Regulators.  
Ashish Kumar, **Roop Shikha Singh**, Amit Kumar, Afsar Ali, Arnab Biswas, and Daya Shankar Pandey  
**Chem. Eur. J.**, 22, 13799–13804, 2016.
  14. Strong luminescence behavior of mono- and dimeric imidazoquinazolines: Swift OLED degradation under electrical current  
Rampal Pandey, Gábor Méhes, Ashish Kumar, **Roop Shikha Singh**, Amit Kumar, Chihaya Adachi, Daya Shankar Pandey  
**J. Lumin.**, 181, 252–260, 2017.
  15. Achieving Molecular-/Nano-aggregation in Cyclometalated Iridium(III) Complexes via Structural Modification  
Sujay Mukhopadhyay, **Roop Shikha Singh**, Arnab Biswas, Biswajit Maiti and Daya Shankar Pandey  
**Eur. J. Inorg. Chem.**, 4199–4206, 2016.
  16. Heteroleptic arene Ru(II) dipyrinato complexes: DNA, protein binding and anti-cancer activity against the ACHN cancer cell line.  
Rakesh Kumar Gupta, Amit Kumar, Rajendra Prasad Paitandi, **Roop Shikha Singh**, Sujay Mukhopadhyay, Shiv Prakash Verma, Parimal Das and Daya Shankar Pandey  
**Dalton Trans.**, 45, 7163-7177, 2016.
  17. Photochemical water oxidation by cyclometalated iridium(III) complexes: A mechanistic insight.  
Sujay Mukhopadhyay, **Roop Shikha Singh**, Arnab Biswas, Daya Shankar Pandey  
**Chem. Comm.**, 52, 3840-3843, 2016.
  18. Small Organic Non-gelators Evincing Radical Control over Morphology and Rheology of a Weak Metallogel.  
Arnab Biswas, Sujay Mukhopadhyay, **Roop Shikha Singh** and Prof. Daya Shankar Pandey  
**Chemistry Select**, 1, 1904–1909, 2016.
  19. Synthesis, characterization, DNA binding and cytotoxicity of fluoro-dipyrin based arene ruthenium(II) complexes.  
Rajendra Prasad Paitandi, **Roop Shikha Singh**, Sujay Mukhopadhyay, Gunjan Sharma, Biplob Koch, Pratap Vishnoi and Daya Shankar Pandey  
**Inorganica Chimica Acta**, 454, 117–127, 2017.
  20. Interaction of ferrocene appended Ru(II), Rh(III) and Ir(III) dipyrinato complexes with DNA/protein, molecular docking and antitumor activity.  
Rajendra Prasad Paitandi, Rakesh Kumar Gupta, **Roop Shikha Singh**, Gunjan Sharma, Biplob Koch, Daya Shankar Pandey  
**Eur. J. Med. Chem.**, 84, 17-29, 2014.
  21. Heterobimetallic Complexes based on 5-Ferrocenyldipyrromethene and Dithio-carbamates as Co-ligands: Selective Redox and Chromogenic Probes.  
Rakesh Kumar Gupta, Rampal Pandey, **Roop shikha Singh**, Nitin Srivastava, Satyen Saha, Biswajit Maiti, Peizhou Li, Qiang Xu, and Daya Shankar Pandey  
**Inorg. Chem.**, 51, 8916–8930, 2012.

22. Fluorogenic dual click derived bisglycoconjugated triazolocoumarins for selective recognition of Cu(II) ion  
Divya Kushwaha, **Roop Shikha Singh**, Vinod K. Tiwari  
**Tetrahedron Lett.**, 55, 4532-4536, 2014.



Signature

Date: 16.07.2018

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