# BIO-DATA of Dr. Roli Verma

1. **Name:** ROLIVERMA
2. **Designation**: Assistant Professor
3. **Full correspondence address**: Department of Physics,UniversityofLucknow, University Road, Lucknow, Uttar Pradesh, Pin-226007,India
4. **Email(s):** [roliverma10@gmail.com,](mailto:roliverma10@gmail.com)[verma\_r@lkouniv.ac.in](mailto:verma_r@lkouniv.ac.in)

**and contact number(s):** 7309658222, 7991200574

1. **Institution:** University of Lucknow (Department of Physics)
2. **Date of Birth:** 20 MAY1984
3. **Gender**: FEMALE
4. **Academic Qualification** (Undergraduate On wards)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **S.**  **No.** | **Degree** | **Year** | **Subject** | **University/Institution** | **%Marks** |
| 1 | Ph. D. | 2014 | Physics | IIT Delhi | NA |
| 2 | M. Sc. | 2006 | Physics | CSJM University,  Kanpur | 62.75 |
| 3 | B. Sc. | 2003 | Physics, Chemistry, Mathematics | CSJM University, Kanpur | 70.66 |

**Citation: 1617, h index - 14 i-10 index- 16**

## Ph.D;

**Thesis Title;** Theoretical and experimental studies on surface plasmon resonance based chemical and bio-sensors

**Institute/Organization/University;** Indian Institute of Technology Delhi

1. **Research experience** (in chronological order).

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| S.  No. | Position Held | Name of the Institute | From | To | Pay Scale |
| 1 | Assistant | University of | 25-05- | Till date | 15600-39100/ level 11 |
|  | Professor | Lucknow, | 2016 |  |
|  |  | India |  |  |
| 2 | Post Doctoral Fellow | Tel Aviv  University, Israel | 01-05-  2014 | 24-05-  2016 | 100000 ILS PA |
| 3 | Senior Research Fellow | IIT Delhi | 01-01-  2012 | 22-04-  2014 | 180000 PM |
| 4 | Junior Research  Fellow | IIT Delhi | 04-01-  2010 | 31-12-  2011 | 16000 PM |
|  |  |  |  |  |  |

## ProfessionalRecognition/Award/Prize/Certificate,Fellowshipreceivedby theapplicant.

|  |  |  |  |
| --- | --- | --- | --- |
| **S.**  **No.** | **Name of the Award** | **Agency** | **Year** |
| 1. 1 | Listed top 2% scientist of the field | Stanford University | 2022 and 2023 |
| 1. 3 | Best poster Award | CSIR-CSIO | 2016 |
| 1. 4 | SJSS SODHA | Department of Physics, IIT Delhi | 2015 |
| 1. 5 | PBC Fellowship | Council of Higher  Education Israel | 2014 |
| 1. 6 | SPIE Travel Grant | SPIE | 2014 |
| 1. 7 | DST Grant for Conference | DST | 2014 |
| 1. 8 | CSIR Partial travel grant | CSIR | 2012 |
| 1. 9 | Partial support grant attending the conference | INSA | 2012 |

1. **Project**

* Colorimetric Sensing of E-Waste Contamination lead ions in water by grapheme modified paper probe, **CSIR-ASPIRE,**  **April 2024**, (sanctioned, ~32 lakhs, fund is not received yet)
* Fiber Optic plasminc sensor for the pesticide detection and its removal by natural methods for safe drinking water, **UP-CST, India, October, 2023**. (14.36 lakhs).
* Self-referenced SPR bio-sensors based on molecular imprinting, **UGC-BSR Start-Up Grant**, awarded 2017, implemented 2018-2020- Rs. 100000/-
* Optical Fiber Nanoantenna Enhanced Fiber Optic SPR Sensors, **Teaching Associateship Research Excellence (TARE), SERB-2018**

(I did not avail due to some technical issues)

|  |
| --- |
|  |

1. **Invited**:
2. “Sensors modeled for environmrental and health concern”, Training school on environmental cyber physicsl systems, IIT Indore, June 2024.
3. “Colorimetric Sensor for environmental monitoring”, OPTICS+Sencity workshop February 2024 at IIT roorkee.
4. “The Role of Molecularly Imprinted Polymer in Biosensing: Sodium Benzoate and TBBPA” COPAQ conference, November 2022, Department of Physics IIT Roorkee
5. “Importance of nano Science” on the occasion of Science Day in November 10, 2021, Mahila College, Lucknow.
6. “Sensing properties on polymer and chitosan” International conference on diverse emerging materials and their application ICDEMA, February 2021, Lucknow University.
7. **Other relevant Information** 
   * Life member of Optical Society of India
   * Life member of Indian Science Congress
   * Review editor of journal “colloidal material andinterfaces”
   * Organised: IONS-1,India(Delhi)conference,1-2December2011withmy teammembers,
   * Reviewerofjournals: Analyst, SensorandactuatorB:chemical, Applied Optics, OpticsCommunication, Frontier in Physics, Sensors, IEEE sensors Journal, ACS Nano, Optical and Quantum Electronics, Optics Express, Material research, Journal of Fluorescence etc.
   * Founded UoL Optica Student Chapter and Faculty adviser of UoL Optics Student Chapter

*[Administrative Responcibilites]*

* + Assistant provost; Kailash Girls Hall, University of Lucknow.
  + Member of Sanskritiki, University of Lucknow.

*[Teaching Experience]*

* + - Assistant professor in Department of Physics,Lucknow University, [May 2016-tilldate]

*[Technical skills]*

* + Absorption and fluorescence based sensors.
  + Fabrication of nano structure, nanocomposite, andcharacterization.
  + Molecular optical cavity fabrication
  + Fabrication of multi-channel optical fiber sensor
  + Thin film coating
  + Surface immobilization with different techniques
  + Molecular imprinting

[Event Organized]

* Organized International Light Day “LIGHTFESTIVAL” at Department of Physics, University of Lucknow, May 2024.
* Organized a one-day symposium on “OPTICS AND PHOTONICS” at Department of Physics, University of Lucknow, march 2024.
* Webinar Series on “popular Topics in Physics” 17-19 may 2020.
* Organized a lecture on “Innovative Physics teaching methods” by Prof. H. C. Verma (Retired Prof. IIT Kanpur), in July 2019. (Padam Shri)
* Organized half day Seminar to celebrate International Day of Light in May 2019.
* Inter-hostel (girls) sports competition in February 2020 and January 2023
* Organized first IONS-OSA conference in IIT Delhi, in Dec 2011

***Thesis Supervised***

PhD: Ongoing

1. Pratiksha Maurya (Pre. PhD. Viva done)
2. Shivani Maurya (Pre. PhD. Viva done)
3. Anupam Kushwaha
4. Akanksha Mishra

M.Sc. Students: Thesis Submitted

1. Pooja
2. Suryamani Verma
3. Unnati Mishra
4. Somit Dwivedi
5. Ayushi Rawat
6. Roshini
7. Ankit Vishwakarna

**Publications**:

*Journal Articles*

1. A. Kushwaha, A. Mishra, **R. Verma**, “Plasmonic Sensor with BaTiO3 and Si Layers for Dual Application in Environmental monitoring” (Accepted).
2. P. Maurya, S. Verma, S. Srivastava, A. Mishra, **R. Verma**, “Plasmonic Metribuzin Sensor by using synthesized CuO NPs decorated graphene oxide nanocomposite” *Microchemical Journal* 207(112008), 2024.
3. Maurya, Pratiksha, Anupam Kushwaha, and **Roli Verma**. "High Performance SPR Gas Sensor by Using Heterostructure of 2D Materials Graphene/Black Phosphorous/MoS 2." *Sensing and Imaging* 25, no. 1 (2024): 66
4. Shivani Maurya, **R. Verma**, “Facile green synthesis of silver nanoparticles: Relevance in localized surface plasmon resonance and molecular imprinted polymer sensor for detection of Tetrabromobisphenol A in electronic waste, Microchemical Journal, 201 (110602), 2024.
5. A. Mishra, A. Kushwaha, P. Maurya, **R. Verma,** Colorimetric and absorbance based sensor for sulfide and bicarbonate ions by dye doped polymer composite,Spectrochimica Acta Part A: Molecularand Biomolecular Spectroscopy, 305, 123554 **(2024)**
6. P. Maurya, **R. Verma**, MIP Integrated Surface Plasmon Resonance based in Vitro Detection of Sodium Benzoate, Analyst, **148, 1141-1150, 2023**, IF: **5.2**, citations: 01
7. S. Maurya, P. Maurya, **R. Verma**, Optical Quantum Electronics,**55,405, 2023**, IF:**2.71**, citations:**2**
8. P. Maurya, S. Maurya, **R.Verma**, Sensitivity Enhancement of SPR Based Refractive Index Sensor in VIS-NIR Region by Using ZnS and PVP, Results in Optics,**8,1002-46,2022**, IF:**1.2**, citations:**6**
9. A. Kushwaha, A. Mishra, **R. Verma**, Axisymmetric Metal and Metal-Oxide Grating Structured Self-reference Fiber Optic SPR Sensor, Journal of Optics, **25, 7, 2023**, IF:**2.1** Citations: 01
10. S. K. Srivastava, **R. Verma**, B.D. Gupta, theoretical modeling of a self-referenced dual mode SPR sensor utilizing indium tin oxide film, Optics Communications,**369, 131-137, 2016**,IF: , Citations: **48**
11. S. Roy, B.Kumar, Tripuramallu,Hatem M. Titi,**R. Verma**, N.Bhunia and I. Goldberg, Silver coordination polymers based on newly designed bis-(cyanobenzyl) biopipyridine ligand: synthesis,anion exchange,guest inclusion, electrochemical and photoluminescence properties, Crystal Growth and Design, **16,2814-2825,2016**,IF: **4.01**, Citations:**42**
12. V. Semwal, A. M. Srivastava, **R. Verma**, B. D. Gupta, Surface Plasmon resonance based fiber optic ethanol sensor using layers of silicon hydrogel entrapped with ADH/NAD, Sensors and Actuators **B,230, 485-492,2016**, IF:**9.22** Citations:**68**
13. B.Kumar Tripuramallu, Hatem M. Titi, S.Roy, R. Verma,and I.Goldberg, Ameliorated synthetic methodology for crystalline lanthanoid-metallopoporphyrin open frameworks based on a multi-topic octacarboxy-porphyrin scaffold:structural, gas sorption and photophysical properties, CrystEngComm,**18,515-520,2016**,IF:,Citations:
14. S. K. Srivastava, **R.Verma**, B.D. Gupta, I. Khaiaila,I. Abdulhalim, SPR based fiber optic sensors for the detection of vitellofgenin: An endocrine disruption biomarker in aquatic environment, Biosensors Journal, **4(1), 1100114,201, IF:5.743**, Citations:**10**
15. G.Seniutinasa,G.Juodkazisa,Gervinaskasa,**R.Verma**, B.D. Gupta, F. Lapierred,P.R.Stoddarta, F.Clarka, S.L.McArthura, Versetitle, SERS sensing based on black silicon, Optics Express,**23(5), 6763-6772,2015**, IF: **3.833**,Citations: **71**
16. **R. Verma**, B. D. Gupta, Detection of heavy metal ions in contaminated water by surface plasmon-based optical fiber sensor using conducting polymer and chitosan, Food Chemistry,**166, 568- 575**,2015, IF**: 9.2**, Citations: **261**
17. **R.Verma**, B.D.Gupta, A novel approach for simultaneous sensing of urea and glucose by SPR-based optical fiber multi-analyte sensor, Analyst, **139,1449-1455, 2014**,IF: **5.2**, Citations: **83**
18. **R.Verma**, B.D.Gupta, Optical fiber sensors for the detection of tetracycline in food by using surface plasmon resonance and molecular imprinting, Analyst, **138, 2013,7254-7263**, IF: **5.2**, Citations: **75**
19. **R.Verma**, B.D.Gupta, Fiber optic SPR sensor for the detection of 3- pyridinecarbox

Amide (Vitamin B3) using molecular imprinting hydrogel, Sensors and Actuators **B, 177, 279-285, 2017** , IF:**9.221**, Citations:**73**

1. **R.Verma**, B.D.Gupta, Fiber optic surface plasmon resonance - based three channels multi- analytesensor, Chemical Sensors, **3,1-8,2013**,IF: Citations:**9**
2. **R. Verma**, S.K. Srivastava, and B. D. Gupta, Surface plasmon resonance based fiber optic sensor for the detection of low-density lipoprotein, IEEE Sensors Journals, **12, 3460-346 6,2012**,IF: **4.325**, Citations: **49**
3. S. K. Srivastava, **R. Verma** and B.D. Gupta, Surface plasmon resonance based fiber optic sensor for the detection of low water content inethanol, Sensors and Actuators B, **153,194-198, 2011**, IF:  **9.221**, Citations:**188**
4. **R. Verma**, B. D. Gupta, andR. Jha, Sensitivity enhancement of a surface plasmon resonance based biomolecules sensor using grapheneandsiliconlayers, Sensors and Actuators B, **160, 623-631,2011**, IF: **9.221**, Citations:**307**
5. **Books/Reports/Chapters/General articlesetc.**
6. Symposium on Optics and Photonics (Edited), R. Verma and N. Pandey, aryabhat publication House, Lucknow, 2024, **ISBN 978-93-95463-44-7**. (4 book chapters in this book)
7. Fiberoptics,sensors basedon plasmonics, B. D. Gupta, S. K. Srivastava, R. Verma, World Scientific publishing Ltd, Singapore, **2015 , ISBN 978-981-4619547**

**16. Conference Proceedings:**

1. **R. Verma,** S. K. Srivastava, “Self-Referenced Dual Mode SPR Sensing using Sandwiched ITO Layer: Long Range vs. Short Range SPR Referencing” Proc. OSA, Th 3A, 79, The international conference on fiber optics and photonics, December 2016
2. **R. Verma**, B. D. Gupta, “Surface plasmon resonance based three channel fiber optic sensor for aqueous environment”, Proc. **SPIE**, 8992, 89920A-89920A-8, SPIE Photonics West, San Francisco USA, 01-06 February 2014.
3. **R. Verma**, B. D. Gupta, “Fiber Optics surface plasmon resonance based ethanol sensor”, Proc. **SPIE**, 8992, 899209-899209-8, **SPIE** Photonics West, San Francisco USA, 01-06 February-2014.
4. G Gervinskas, P Michaux, G Seniutinas, JS Hartley, ELH Mayes, **R. Verma**, B. D. Gupta, P. R.Stoddart, D.Morrish, N. F.Fahim, M. S. Hossain, S.Juodkazis, “Black-Si as a platform for sensing” Proc. **SPIE**, 892305-892305-9, SPIE Micro+Nano Materials, Devices, and Applications, Melbourne, Victoria, Australia, 08-11 December, 2013.
5. **R. Verma** and B. D. Gupta, Surface plasmon resonance based optical fiber riboflavin sensor by using molecularly imprinted gel, Proc. **SPIE**, 8794, 87941D1-87941D6, 5th European workshop on optical fiber sensors, Krakow Poland, 19-22 May, 2013.
6. **R. Verma** and B. D. Gupta, “SPR based fiber optics two channel sensor in near infrared (NIR) region”, Proc. **AIP**, 1526, 1316-1317, Recent trend in applied physics and material science, Rajasthan India, 01-02 February, 2013.
7. **R. Verma**, S. K. Srivastava and B. D. Gupta, “Surface plasmon resonance based multi-channel and multi-analyte fiber optic sensor,” Proc. **SPIE**, 8351, 83512D1-83512D8, 3rd Asia Pacific Optical Sensors (APOS) conference, Sydney, Australia, 31 Jan-03 February, 2012.
8. S.K. Srivastava, **R. Verma** and B.D. Gupta, “Surface plasmon resonance based fiber optic glucose biosensor,” Proc. **SPIE**, 8351, 83511Z1-83511Z6, 3rd Asia Pacific Optical Sensors (APOS) conference, Sydney, Australia, 31 Jan-03 February, 2012.

***17. Conferences/Workshop/Symposium***

1. R. Verma, "Synergistic Sensors for Safe Drinking Water" WOPI, IIT Bombay, Mumbai, 2024.
2. A. Mishra, R. Verma, Regional Young Investigators’ meet (RYIM), “Application of Green copper Oxide for Lead Nitrate detection”, CDCRI-Lucknow, September, 2023.
3. **R. Verma**, The role of molecular imprinted polymer in biosensing: Sodium Benzoated and TBBPA, conference COPAQ, IIT Roorkee, 10-13 Dec 2022.
4. A. Mishra, R. Verma, “Effect of dispersive and non-dispersive prism on SPR sensor with an emitter layer ” OPTCT 2022, IIT DELHI.
5. A. Kushwaha, R. Verma, “Theoretical Simulation to Study the Effect of Grating Element on the axixsymmetric grating based fiber optic surface plasmon resonance sensor” OPTCT 2022, IIT DELHI.
6. P. Maurya, **R. Verma**, “Detection of High Concentration of Metribuzin by using Graphene Oxide-Capped Gold Nanocomposite” conference COPAQ, IIT Roorkee, 10-13 Dec 2022.
7. A. Mishra, **R. Verma**, Sucrose Sensor by using Absorption of Rhodamine and Polymer, conference COPAQ, IIT Roorkee, 10-13 Dec 2022.
8. S. Maurya, **R. Verma**, MIP fiber optic sensor for the detection of Tetrabromobisphenol-A in water samples, conference COPAQ, IIT Roorkee, 10-13 Dec 2022
9. A. Kushwaha, **R. Verma**, “Axisymmetric Metallic Grating Based Self-Referenced Fiber Optic Refractive Index (RI) Sensor, conference COPAQ, IIT Roorkee, 10-13 Dec 2022
10. P. Maurya, R. Verma, Theoretical design for hazardous gas sensor based on surface plasmon resonance in NIR-region, Optics and Photonics: theory and computational Techniques (OPTCT), IIT Delhi, December 2021.
11. A. Kushwaha, R. Verma, “Theoretical modelling of self-reference SPR sensor using Tantalum Pentaoxide (Ta2O5) with improved detection Accuracy, OPTCT, IIT Delhi, December-2021.
12. S. Maurya, P. Maurya and R. Verma, SPR based dual model optical sensor, 6th International Conference on Nanoscience and Nanotechnology (ICONN-2021), SRMIST, February 2021.
13. P. Maurya, S. Maurya and R. Verma, SPR based Optical sensor by using ZnO and PVP, 6th International Conference on Nanoscience and Nanotechnology (ICONN-2021), SRMIST, February 2021.
14. P. Maurya, R. Verma, P. Chuadhry, B. C. Yadav, Iodine Sensor for water contamination by using nanocomposite, ICDEMA, February 2021, in Lucknow University.
15. P. Maurya, S. Maurya and R. Verma, Iodide sensor in aqueous medium by using PVP-ZnS, Innovative methods for teaching, Shia PG college Lucknow, March 2020.
16. S. K. Srivastava, R. Verma, Theoretical Modeling of a Self-Referenced Fiber Optic Refractive Index Sensor in NIR Region, ICOL Dehradun 2019.
17. **R. Verma**, S. K. Srivastava, Influence of An Emitter Layer on The Performance of SPR Sensing, International conference on fiber optics and photonics, IIT Delhi, December 2018.
18. **R. Verma,** B. D. Gupta, “Mercury ions detection by SPR based optical fiber sensor using conduction polymer.” Symposium on Optics and Photonics based Technologies & Instruments for Civil Society, CSIR-CSIO, Chandigarh, October-2016.
19. **R. Verma**, T. Schwartz, “Strong coupling of Phosphorescent PtOEP Molecules in Metallic Microcavities” Nano Israel-2016, 22-23 February-2016.
20. **R. Verma** and B. D. Gupta, “Molecularly imprinted optical fiber sensor for the monitoring of tetracyclines in aqueous medium”, International Conference on Optics and Optoelectronics (ICOL), Dehradun, India, March 2014. 05-08 march
21. **R. Verma** and B. D. Gupta, “Surface plasmon resonance based three channel fiber optic sensor for aqueous environment”, SPIE Photonics West (OPTO), San Francisco, USA, February 2014.
22. **R. Verma** and B. D. Gupta, “Fiber optic surface plasmon resonance based ethanol sensor”, SPIE PHOTONICS WEST (OPTO), San Francisco, USA, February 2014.
23. **R. Verma** and B. D. Gupta, “Molecularly imprinted optical fiber sensor for the monitoring of oxytetracyclines in aqueous medium”, Workshop on recent Advantages on Photonics (WRAP 2013), New Delhi, India, December, 2013.
24. **R. Verma**and B. D. Gupta, **“**Surface plasmon resonance based optical fiber sensor for the detection of lead ions in drinking water”, International Conference on Nanotechnology (ICNT 2013), Haldia Regional Centre, Indian Institute of Chemical Engineers, Haldia West Bengal, India, October, 2013.
25. **R. Verma** and B. D. Gupta, “SPR based fiber optics two channel sensor in near infrared (NIR) region”, Recent trend in applied physics and material science (RAM), Bikaner India, February 2013.
26. **R. Verma**, S. K. Srivastava and B. D. Gupta, “Surface plasmon resonance based multi-channel and multi-analyte fiber optic sensor,” 3rd Asia Pacific Optical Sensors (APOS) conference, Sydney, Australia, February 2012.
27. **R. Verma** and B. D. Gupta, “Surface plasmon resonance based biomolecules sensor with enhance sensitivity”, First International OSA Network of Students (IONS-1, Delhi) conference, IIT Delhi, New Delhi, India, December, 2011.
28. **R. Verma** and B. D. Gupta, “Long range surface plasmon resonance sensor using silicon and graphene: sensitivity enhancement” XXXVI OSI symposium on Frontier in Optics and Photonics (FOP), New Delhi, India, December, 2011.

Referees:

1. Prof. (Rt.) B. D. Gupta, Department of Physics, Indian Institute of technology Delhi.

Email: [bdgupta@physics.iitd.ernet.in](mailto:bdgupta@physics.iitd.ernet.in) Ph:9871928770

2. Prof. Anurag Sharma: Department of Physics and Optics and Photonics Center, Indian Institute of technology Delhi.

Email: [asharma@physics.iitd.ernet.in](mailto:asharma@physics.iitd.ernet.in), Ph: 9818355884

3. Prof. Rajan Jha, Department of Physics, School of basic Sciences, Indian Institute of Technology Bhubneshwar

Email: [rjha@iitbbs.ac.in](mailto:rjha@iitbbs.ac.in) Ph: 9556674679

1. Prof. D S Mehta: Department of Physics, Indian Institute of technology Delhi.

Email: [mehtads@physics.iitd.ac.in](mailto:mehtads@physics.iitd.ac.in),

1. Prof. Poonam Tandon, Vice Chancellor, DDU University Gorakhpur and Prof. department of Physcics, University of Lucknow,
2. Email: tendon\_poonam@lkouniv.ac.in

Dr. Roli Verma