

DR RAJNEESH KUMAR VERMA

ASSISTANT PROFESSOR
 DEPARTMENT OF PHYSICS (SCHOOL OF PHYSICAL SCIENCES)
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I. AREA OF INTEREST

FIBER OPTIC SENSORS, PLASMONICS, BIOSENSORS, PLASMA PHYSICS, SURFACE PLASMONS

II. EDUCATION

- | | |
|---|-----------|
| 1. Ph.D., Indian Institute of Technology Delhi, New Delhi | 2006-2010 |
| Supervisor: Professor B. D. Gupta | |
| 2. M.Sc. Physics, University of Lucknow, Lucknow | 2003-2005 |
| 3. B.Sc. University of Lucknow, Lucknow | 2000-2003 |

IV. AWARDS/ SCHOLARSHIPS

1. CSIR-NET (JRF) 2005
2. GATE-2006

III. EMPLOYMENTS

1. Senior Research Fellow: DST Project at IIT Delhi 03 Sept 2010-20 Jan 2011
2. Assistant Professor Physics at AND College University of Delhi 23 Jan 2011-01April 2013
3. Assistant Professor Physics Central University of Rajasthan 02 April 2013-31May 2016
4. Assistant Professor Physics HNB Central University Paudi Garwal (Selected)
5. Assistant Professor Physics University of Lucknow 01June 2016-26 July 2017 (on lien)
6. Assistant Professor Physics Central University of Rajasthan 27 July 2017 onwards

IV. PUBLICATIONS (H-INDEX-09: CITATIONS 606 (GOOGLE SCHOLAR))

1. **Rajneesh K. Verma**, Anuj K. Sharma and B. D. Gupta, "Modeling of Tapered Fiber- Optic Surface Plasmon Resonance Sensor with Enhanced Sensitivity," *Photonics Technology Letters* **19** 22 (2007). **IF 2.11**
Citations: 57
2. **Rajneesh K. Verma**, Anuj K. Sharma and B. D. Gupta, "Surface Plasmon Resonance based tapered fiber optic sensor with different taper profiles," *Optics Communications* **281** 1486 (2008). **IF 1.449**
Citations: 107
3. **R. K. Verma** and B. D. Gupta, "Theoretical modelling of a bi-dimensional U-shaped surface plasmon resonance based fiber optic sensor for sensitivity enhancement," *Journal of Physics D: Applied Physics* **41** 095106 (2008). **IF 2.70**
Citations:53

4. Rajan, **Rajneesh K. Verma** and B. D. Gupta, "Surface Plasmon Resonance based Tapered Fiber Optic Sensor: Sensitivity Enhancement by the Introduction of a Teflon Layer between Core and Metal Layer," *Plasmonics* 10.1007/s 11468-008-9068-9 (2008) 30 (2008). **IF 2.238** **Citations: 33**
5. Smita Singh, **Rajneesh K. Verma** and B. D. Gupta, "Surface Plasmon Resonance based Fiber Optic Sensor with Symmetric and Asymmetric Metallic Coatings: A Comparative Study," *Sensors and Transducers* **100** 116-126 (2009). **IF 0.705** **Citations: 07**
6. Sachin K Srivastava, **Rajneesh K. Verma** and B. D. Gupta, "Theoretical modeling of a localized surface plasmon resonance based intensity modulated fiber optic refractive index sensor," *Applied Optics* **48** (19) 3796-3802 (2009). **IF 1.784** **Citations: 29**
7. B. D. Gupta and **R. K. Verma**, "Surface Plasmon Resonance based Fiber Optic Sensors: Principle, Probe Designs and Some Applications," *Journal of Sensors: 2009*, 979761, (2009). **IF 1.182** **Citations: 214**
8. **R. K. Verma** and B. D. Gupta, "Surface Plasmon resonance based fiber optic sensor for the IR region using conducting metal oxide film" *J. Opt. Soc. Am. A* **27**, 846 (2010). **IF 1.558** **Citations: 60**
9. Sarika Singh, **R. K. Verma** and B. D. Gupta, "LED based Fiber Optic Surface Plasmon Resonance Sensor" *Optical and Quantum Electronics* **42** (1) 15-28 (2010). **IF 0.987** **Citations: 11**
10. **R. K. Verma**, "Theoretical modeling of an end face reflection based tapered fiber optic sensor with different probe designs", *International Journal of Engineering Research and Technology* **3** (6) 1981-1985 (2014). **IF 1.76**
11. **Rajneesh K. Verma**, "Fabrication and characterization of SPR based fiber optic sensor using e beam deposition", *Sensors and Transducers* **182** (11) 53-56 (2014). **IF 0.705**
12. Nidhi Sharma, Angela Joy, Akhilesh K Mishra and **Rajneesh K. Verma**, "FuchsSondheimer–Drude Lorentz model and Drude model in the study of SPR based optical sensors: A theoretical study" *Optics Communications* **357** 120-126 (2015). **IF 1.449** **Citations: 06**
13. **Rajneesh K. Verma** and Akhilesh K Mishra, "Highest Achievable Detection Range for SPR Based Sensors Using Gallium Phosphide (GaP) as a Substrate: a Theoretical Study" *Photonic Sensors* DOI: 10.1007/s13320-015-0266-8 (2015). **IF 1.5**
14. Akhilesh K. Mishra, Satyendra K. Mishra and **Rajneesh K. Verma**, "SPR based sensor with extremely large dynamic range of refractive index measurement in visible region" *Journal of Physics D: Applied Physics* **48** 435502 (2015). **IF 2.70** **Citations: 08**
15. Akhilesh K. Mishra, Satyendra K. Mishra and **Rajneesh K. Verma**, "Graphene and Beyond Graphene MoS₂: A New Window in Surface Plasmon Resonance Based Fiber Optic Sensing" *Journal of Physical Chemistry C* **120** 5 2893-2900 (2016). **IF 4.778** **Citations: 19**
16. Akhilesh K. Mishra, Satyendra K. Mishra and **Rajneesh K. Verma**, "Doped Single wall carbon nanotubes in propagating surface plasmon resonance based fiber optic refractive index sensor" *Plasmonics* 1-7 2016. **Citations: 01**

V. CONFERENCES

1. **Rajneesh K. Verma** and B. D. Gupta, "Surface Plasmon Resonance based Tapered Fiber Sensor with the introduction of the Teflon layer between the metal and fiber core," *International Conference on Optoelectronics & Photonics (Photonics-2008)* at IITD, India, Dec., 2008.

2. Smita Singh, **Rajneesh K. Verma** and B. D. Gupta, "Surface Plasmon Resonance based Fiber Optic Sensor with symmetric and asymmetric metal layer coated on to the fiber core," *International Conference on Optoelectronics & Photonics (Photonics-2008)* at IITD, India, Dec., 2008.
3. B. D. Gupta and **Rajneesh K. Verma**, "Surface Plasmon Resonance based tapered Fiber Optic Sensor," *In Frontiers in Optics (FIO-08)* at Rochester, USA, Oct. 19-23, 2008.
4. **R. K. Verma** and B. D. Gupta, "Surface Plasmon Resonance based Fiber Optic Sensor with different taper profiles," *OECC -2009* at Hong Kong, July. 13-17, 2009.
5. **Rajneesh K. Verma** and B. D. Gupta, "Surface Plasmon Resonance based U-shaped fiber optic sensor," *International Conference on Optics & Photonics (ICOP-2009)* at CSIO, Chandigarh, India, October, 2009.
6. **Rajneesh K. Verma** and B. D. Gupta, "Surface Plasmon Resonance based Indium Tin Oxide (ITO) Coated Tapered Fiber Optic Sensor for IR Region," *Frontiers in Optics (FIO-2010)* at Rochester, New York (USA), 24-28 October, 2010.
7. **Rajneesh K. Verma** and B. D. Gupta, "Surface Plasmon Resonance based Indium Tin Oxide (ITO) Coated Fiber Optic Sensor for IR Region," (*Photonics-2010*), at IIT Guwahati, India, 11-15 December, 2010.
8. **Rajneesh K. Verma**, "Surface Plasmon Resonance based Multichannel Tapered fiber optic sensor", International conference on nanoscience and nanotechnology (ICNN) at BBAU, Lucknow, India, 18-20 November 2013.
9. **Rajneesh K. Verma**, "Fiber Optic Sensors", Winter School on Optics, at ICTP, Trieste, Italy 11 Feb, 2015
10. **Rajneesh K Verma**, Akhilesh K Mishra, and Satyendra K Mishra, "Modelling of surface Plasmon Resonance based gas sensor utilizing Gallium Phosphide/Gold/Graphene/Silicon structure", International Conference on Advances in Light Technologies and Spectroscopy of Materials ICALTSM-2016 at University of Lucknow, Lucknow, India, 16-18 January 2016.
11. Shiva Dixit, P. Kumar and **Rajneesh K Verma**, Localized Surface Plasmon Resonance Based Fiber Optic Ethanol and Methanol Sensor Using UV light based AgNO₃/ZnO Nanorods" International Conference on Fiber Optics and Photonics, IIT Kanpur, 04 Dec 2016 Th3A.58
12. Payal Suwalka, Shiva Dixit, and **Rajneesh K Verma**, SPR based fiber optic sensor for the detection of adulteration in petrol and diesel by kerosene" IONS-Dhanbad OSA 08 September 2016 IONS-DHN/2k16/110

VI. SPONSORED PROJECTS

1. Theoretical studies on surface plasmon resonance based fiber optic sensors utilizing meta materials and experimental realization of SPR based prism and fiber optic sensors UGC Start- up grant
2. Effect of swift heavy ion irradiation on the sensitivity of SPR based fiber optic sensors for biomedical applications IUAC New Delhi Jan 2017

VII. COURSES DONE/TEACHING ASSISTANCE

1. Winter school on optics at ICTP Trieste, Italy 09-20 Feb 2015

2. Orientation Course at Academic Staff College, HRDC, Jawahar Lal Nehru University, New Delhi 24 August-18 September 2015
3. Refresher Course on Experimental Physics at Department of Physics, University of Kota 09-25 January 2014
4. Certificate course on Intellectual Property Rights (IPR) WIPO, Germany 2008
5. Worked as a Teaching Assistant in B.Tech. I Year Laboratory for 3 years at IIT Delhi
6. Worked as a Teaching Assistant in B.Tech. III Year Laboratory for one semester at IIT Delhi
7. Worked as a Teaching Assistant in B.Tech. III Year language course on Matlab at IIT Delhi
8. Partially supervised M.Tech. Applied Optics project students at Department of Physics, IIT Delhi

VIII. RESOURCE PERSONS/LECTURES DELIVERED

1. Lectures in Refresher Course on Experimental Physics, Central University of Rajasthan March 10-25 2015.
2. Experiments Supervision in Refresher course on Experimental Physics, Central University of Rajasthan, March 10-25 2015.
3. Participated in one day workshop on “Best Teaching Practices”, Central University of Rajasthan 04 Oct 2013
4. Felicitated by Central University of Rajasthan for receiving research grant/ Attending International Conference during March 2013-Feb 2014

IX. COURSES TAUGHT

1. Classical Electrodynamics PHY-204
2. Nuclear and Particle Physics PHY-301
3. Fiber Optics and Lasers PHY-402
4. Topics in Physics
5. Research Methodology
6. Undergraduate Laboratory
7. M.Sc.I Physics Laboratory PHY-206
8. M.Sc.II Physics Laboratory PHY-305

X. ADMINISTRATIVE RESPONSIBILITIES

1. Chief Provost and Proctor, Central University of Rajasthan 03 June 2015 to 28 June 2015
2. Hostel Inspection Committee Central University of Rajasthan, 09 June 2015
3. Purchase committee member 2015
4. Assistant Provost, Subhash Hall, University of Lucknow 12 July 2016 – 26 July 2017
5. Ph.D. Program coordinator at Department of Physics, Central University of Rajasthan
6. M.Sc. Program coordinator at Department of Physics, Central University of Rajasthan
7. M.Sc. Lab Incharge at Department of Physics, Central University of Rajasthan
8. Central University Observer at BBAU, Lucknow to conduct CUCET Exam 2016, 21-22 May 2016.
9. University of Lucknow Observer at Iram Degree College to conduct B.Ed. Entrance Exam 03 May 2017

10. University of Lucknow Observer to conduct P.G. Entrance Examination at Vidya Mandir, Charbagh Lucknow
11. Internal and external examiner for B.Sc. I, II, and III examinations

XI. M.SC. PROJECTS STUDENTS (COMPLETED)

1. Sangeeta Choudhary
2. Jeevraj Bhati
3. Angela Joy
4. Nidhi Sharma
5. Heena
6. Payal Suwalka
7. Krishna Prajapati

XII. UNDERGRADUATE (MINOR) PROJECTS COMPLETED

1. Basant Kumar Doot
2. Apoorv
3. Hemant Kumar
4. Vishal Yadav

XIII. MINOR PROJECTS (UNIVERSITY OF KOTA)

1. Girraj Prasad August 2014
2. Dinesh Kumar Suman August 2014

XIV. EVENTS ORGANISED

1. Convener of one day event “Knowledge through light” as a celebration of International Year of Light 06 November 2015
Invited Speakers: Professor Ajoy Ghatak, Professor Y.K. Vijay
2. Organizing Committee Member, National Science Day
3. Organizing Committee Member, DST-SERC School on Nonlinear Dynamics
4. Organized a two days workshop on Introductory Quantum Mechanics by Professor A.K. Ghatak at Department of Physics IIT Delhi 2009

XV. BOOKS/MONOGRAPH

1. Studies on surface plasmon resonance based fiber optic sensors, Reference Book “Scholar’s Press, USA” ISBN-13 978-3639665017, Sept 2014

XVI. COURSES DESIGNED

1. Fiber Optics and Lasers M.SC. PHY-402
2. Optoelectronics PH.D.

3. Research Methodology PH.D.

XVII. REVIEWER OF INTERNATIONAL JOURNALS

1. Plasmonics
2. Applied Optics
3. Optics Express
4. Sensors and Actuators A
5. Sensors and Actuators B

XVIII. MEMBER OF SOCIETIES

1. Life member of Optical Society of India Member ID: L.747
2. Life member of Indian Association of Physics Teachers
3. Former member of Optical Society of America
4. Former member of IEEE Student chapter
5. Member of Editorial Board: Research and Reviews: Journal of Pure and Applied Physics