Roli Verma

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Achievements and Awards

1. Received 'SJSS Sodha' the best Ph.D. award of the year '2014' from Department of Physics, IIT Delhi, India, May 2015.
2. PBC fellowship from the Council for Higher Education, Israel for China and India for three years in October 2014.
3. JRF-SRF from CSIR from January 2010-April 2014.
4. CSIR travel Grant
5. DST travel Grant
6. INSA travel Grant

Teaching Experience

- B.Sc. ; Optics, Circuit fundamental and basic electronics
- M.Sc. Instruments and Devices-I and II, material synthesisi and Characterization techniques.

Teaching Area

- Laser and Optoelctronics
- Plasmonics
- Fiber Optics
- Solid state physics

Affiliations to Professional Bodies

- Review editor of journal "colloidal material and interfaces"
- Held the position of treasurer of IITD Student Chapter of OSA The Optical Society[January 2011- May 2012],
- Organised IONS-1, India(Delhi) conference, 1-2 December 2011 with my team members
- Member of OSA-The Optical Society since 2010 – till present
- Reviewer of journals: Analyst and sensor and actuator B:chemical, Optics communications, frontiers in materials

Projects

1. **UGC(BSR) start-Up Grant- 2017-2019 of Rupees- 100000/-**

Technical skills

- Fabrication and characterization of propagating surface plasmon resonance based sensors for chemical and biochemical applications.
- Fabrication and characterization of nano structure.
- Molecular optical cavity
- Fabrication of multi-channel optical fiber sensor for sensing of multiple biological/chemical parameter
- Thin film coating
- Surface immobilization with chemicals and biomolecules by using various techniques
- Molecular imprinting
- Instrumentation (Thermal evaporator, Vacuum coating unit, sputtering, spin coating, UV-visible – spectrometer, time resolved spectroscopy, TCSPC, Fluorescence spectroscopy, ellipsometer, profilometer, pH meter, etc)

Research Areas of Interest (Photonics, Optics, and Sensors)

- Light –matter interaction; optical cavities and nano structures, excciton-plasmon coupling, interaction of molecules in nano structures
- Surface Plasmon Resonance (SPR) based sensor; chemical and biosensors
- Fluorescent materials, sensors and applications

Book published

1. B. D. Gupta, S. K. Srivastava, **R. Verma**, "Fiber optics sensors based on plasmonics" World Scientific (2015).

Publications in referred international Journal

1. Sadipan Roy, Bharat Kumar Tripuramallu, Hatem M. Titi, **RoliVerma**, NisithBhunia and Israel Goldberg, Silver coordination polymers based on newly designed bis-(cyanobenzyl)bipipyridine ligand: synthesis, anion exchange, guest inclusion, electrochemical and photoluminescence properties, **Crystal growth & design,** 16, (2016) 2814-2825, (**impact factor 4.891**)

2. Bharat Kumar Tripuramallu, Hatem M. Titi, Sadipan Roy, **Roli Verma**, and Israel Goldberg,"Ameliorated synthetic methodology for crystalline lanthanoid–metalloporphyrin open frameworks based on a multitopicoctacarboxy-porphyrin scaffold: structural, gas sorption and photophysical properties", CrystEngComm, **18**, 515-520 (2016) (Impact factor- 4.02).

3. S. K. Srivastava, **R. Verma**, B. D. Gupta "Self-referenced long range SPR sensor using ITO film in a dual mode configuration". Optics Communications**,** 369, 131-137, 2016, (equal contribution), **(impact factor 1.452)**
4. V. Semwal, A. M. Srivastava, **R. Verma**, B. D. Gupta, "Surface plasmonresonnace based fiber optic ethanol sensor using layers of silicon/silicon/hydrogel entrapped with ADH/NAD". Sensors and Actuators B, **230**, 485-492, (2016), (**impact factor 4.097)**.
5. S. K. Srivastava, **R. Verma**, B. D. Gupta, I. Khalaila, I. Abdulhalim, "SPR based fiber optic sensor for the detection of vitellogenin: An endocrine disruption biomarker in aquatic environment, Biosensors Journal, **4** (1), 1000114 (2015)
6. G. Seniutinasa, G. Gervinskasa, **R. Verma**, B. D. Gupta,F. Lapierred,P. R. Stoddarta, F. Clarka,S. L. McArthura, S. Juodkazisa, "Versetile SERS sensing based on black silicon" Optics Express, **23** (5), 6763-6772 (2015). **(Impact factor-3.525), [1094-4087],** ***Indexed***

7. **R. Verma,** B. D. Gupta, "Detection of heavy metal ions in contaminated water by surface plasmon resonance based optical fiber sensor using conducting polymer and chitosan", Food Chemistry, **166**, 568-575 (2015). **(impact factor 3.26)**
8. **R. Verma**, B. D. Gupta, "A novel approach for simultaneous sensing of urea and glucose by SPR based optical fiber multianalyte sensor" Analyst, **139**, 1449-1455 2014.**(Impact factor-3.906)**

9. **R. Verma,** B. D. Gupta, **"**Optical fiber sensor for the detection of tetracycline in food by using surface plasmon resonance and molecular imprinting" Analyst, **138**, 7254-7263, 2013.**(Impact factor-3.906),**
10. **R. Verma**, B. D. Gupta, "Fiber optic surface plasmon resonance - based three channels multi - analyte sensor" Chemical Sensors, **3**, 1-8, 2013.

11. **R. Verma**, B. D. Gupta, "Fiber optic SPR sensor for the detection of 3-pyridinecarboxamaide (vitamin B_3) using molecularly imprinted hydrogel", Sensors and Actuators B, **177**, 279-285, 2013. **(Impact factor-4.097), [ISSN-0925-4005],** ***Indexed***

12. **R. Verma**, B. D. Gupta and R. Jha, "Sensitivity enhancement of a surface plasmon resonance based biomolecules sensor using graphene and silicon layers" Sensors and Actuators B, **160,** 623-631, 2011.**(Impact factor-4.097), [ISSN-0925-4005],** ***Indexed***

13. **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 Journal, **12**, 3460-3466, 2012.**(Impact factor-1.852), [1530-437X],** ***Indexed***

14. S. K. Srivastava, **R. Verma** and B. D. Gupta "Surface plasmon resonance based fiber optic sensor for the detection of low water content in ethanol" Sensors and Actuators B, **153**, 194-198, 2011. **(Impact factor-4.097)**

Conference Proceedings

1. **R. Verma,** S.K. Srivastava, Influence of emitter layer on the performance of SPR sensing, Proceeding OSA
2. **R. Verma,** S.K. Srivastava, Self-Referenced Dual Mode SPR Sensing using Sandwiched ITO Layer: Long Range vs. Short Range SPR Referencing, Procceding OSA. Th3A-79.
3. **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.
4. **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.
5. 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.
6. **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.
7. **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.
8. **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.
9. 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.

Conferences/Workshop/Symposium attended

1. **R. Verma,** S.K. Srivastava, Influence of emitter layer on the performance of SPR sensing, Photonics 2018, IIT Delhi, India, December 2018.
2. **R. Verma,** S.K. Srivastava, Self-Referenced Dual Mode SPR Sensing using Sandwiched ITO Layer: Long Range vs. Short Range SPR Referencing, Photonics 2016, IIT Kanpur, India, Dec.2016,
3. **R. Verma**, T. Schwartz, "Strong coupling of Phosphorescent PtOEP Molecules in Metallic Microcavities" Nano Israel, **Tel Aviv Israel February-2016**.

4. **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.**
5. **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.**
6. **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**.

7. **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.**

8. **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.**

9. **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**.

10. **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.**

11. **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.**