NISHANT KUMAR

CELOS, Photonics Department, Cochin University of Science and Technology, Cochin-682022, Kerala, India
Phone no: +91 9447701904, E-mail: **imnishant.celos@gmail.com**

OBJECTIVE

To obtain a challenging full-time PhD position to enhance my research and quantitative skills.

EDUCATION

Master of Sciences (5 Year Integrated) in Photonics (2005-TILL DATE)
Major: **Photonics**, Current Status: **9th semester**
Percentage of Marks: **80.2%**

RESEARCH INTERESTS

- **NANOPHOTONICS**
- **BIOPHOTONICS**

PROJECTS AND RESEARCH EXPERIENCES

1. Setting up a Near Field Scanning Optical Microscope (NSOM)
Status: Confirmed, Duration: Dec 2009-April 2010
Guide: Dr. Sushil Mujumdar,Nano-Optics & Mesoscopic Optics Laboratory, TIFR, Mumbai, India

2. "Influence of Deposition Temperature and Self Assembled Monolayer on the performance of Organic Field Effect Transistors"
In this project we have grown high quality organic thin films and have characterized them using Atomic Force Microscopy. Using these thin films we have fabricated OFETs and performance of these OFETs was investigated using I-V technique. Further we have shown that the performance of these OFETs depend on the substrate temperature and self assembled monolayer.
Status: Complete, **Duration:** Summer Break (May - July 2009)
Guide: Prof. Subhasis Ghosh, Professor, Nanoelectronics Lab, Jawaharlal Nehru University, New Delhi, India

3. "Exciton-Plasmon Interaction in CdSe-Gold nanoparticle Superstructures"
In this we have studied the interactions between excitons and plasmons. We have described theoretical formalism, experimental validation and the potential practical applications of such nanoscale systems. Using Langmuir-Blodgett method nanocomposite were prepared and then using N-SOM and Absorption Spectroscopy it was characterized.
Status: Completed, **Duration:** Summer Break (May - June 2008)
Guide: Dr. Jaydeep Basu, Soft Nano materials Physics Lab, Department of Physics, IISc, Bangalore, India

4. Curriculum Project: **"Effect of Solvents on the synthesis of zinc oxide nanoparticles and its properties"**
During this study nanocrystals of zinc oxide were prepared by colloidal method in methanol, ethylene glycol and Toluene The effect of solvents on particle size and morphology of ZnO were studied extensively. The optical properties of nano zinc oxide were studied extensively.
Status: Completed, **Duration:** Jan – May 2008
Guide: M.Kailasnath, Lecturer, International School of Photonics, Cochin

5. "Direction dependent transmission characteristics of dye mixture doped polymer optical fibre performs"
In this project we have shown the direction dependant wavelength selective transmission mechanism in PMMA rods doped with C 540 dye and C 540:Rh.B dye mixture as a combination.
Status: Complete, **Duration:** July-Sept 2008
Guide: M.Kailasnath, Lecturer, International School of Photonics, Cochin, India

6. "Energy Transfer in Dye Mixture Doped Polymer rods"
In this work we have done fabrication & fluorescence characterization of dye mixture doped polymer rods, which can be used as polymer optical fiber preforms for multi wavelength operation and Possibility of multi wavelength operation at different intensities was investigated.
Status: Completed, **Duration:** April - Oct 2006
Guide: M.Kailasnath, Lecturer, International School of Photonics, Cochin

PUBLICATIONS (AUTHOR/CO AUTHOR)

Journals

1.M. Kailasnath, **Nishant Kumar**, V.P.N.Nampoori, C.P.G. Vallabhan and P. Radhakrishnan, **"Excitation wavelength dependence of energy transfer in dye mixture doped polymer optical fiber performs".** Journal of Photochemistry and Photobiology A: Chemistry 199236-241 (2008).

Conference Proceedings

2. Bikas Ranjan, M.Kailasnath, **Nishant Kumar**, P. Radhakrishnan, Shivanandan Achari, and V. P. N. Nampoori, "**Influence of Solvent on size and properties of ZnO nanoparticles"**, American Institute of Physics Proceedings, 1147, 287-296 (2009).

3. Bikas Ranjan, M.Kailasnath, **Nishant Kumar**, P. Radhakrishnan, Shivanandan Achari, and V. P. N. Nampoori, "**Influence of Solvent on size and properties of ZnO nanoparticles"**, Proceedings of International conference on Transport and Optical Properties of Nanomaterials (ICTOPON), (5-8 January 2009).

4. Bikas Ranjan, M.Kailasnath, **Nishant Kumar**, P. Radhakrishnan and V. P. N. Nampoori, "**Direction dependent transmission characteristics of dye mixture doped polymer optical fibre performs"** Proceedings of the 9th International Conference on Photonics, "PHOTONICS 2008", IIT Delhi (Dec 13-17, 2008)

5.M.Kailasnath, **Nishant Kumar**, P. Radhakrishnan and V. P. N. Nampoori, **"Energy transfer in dye doped polymer optical fiber performs",** Proceedings of the 8th International Conference on Photonics, "PHOTONICS 2006" University of Hyderabad, Hyderabad , India, (Dec 13-19, 2006)

COMPUTATIONAL SKILLS

- Proficient in Microsoft Office, including Word, Excel and Access
- OPERATING SYSTEM: Windows (98, 2000, XP)

LABORATORY SKILLS

CHARACTERISATION TECHNIQUES: NSOM, AFM, STM, SEM, XRD, Vacuum evaporation, UV-Vis & FTIR
***OPTICS*:** Optics Lab, Optoelectronics Lab & Fiber optics Lab
***ELECTRONICS*:** Basic Electronics Lab, Analog and Digital Electronics Lab, Microprocessor Lab

COURSE WORK

- **Photonics:** Nanophotonics, Biophotonics**,** Laser Physics, Optoelectronics, Photonics Materials, Fiber Optics
- **Optics:** Physical and Geometrical Optics, Applied Optics, Optical Instrumentation, Non-linear Optics.
- **Physics:** Classical Mechanics, Electromagnetic Theory & Relativistic Phenomena, Material Science, Mechanics & Wave Phenomena, Nuclei, Particles & Beams, Quantum Mechanics, Solid State, Statistical Mechanics & Thermodynamics, Structure & Properties of Atoms & Molecules
- **Electronics:** Basic, Digital & Analog Electronics, Electricity & Magnetism, Electronic Instrumentation,
- **Mathematics:** Calculus, Vector Calculus, Matrices & Complex Numbers, Curvilinear Co ordinate, Tensors, Vector Space, Differential Equations, Laplace and Fourier Analysis, Complex Variable, Group Theory, Non-linear Differential Equations, Chaos, Numerical Methods
- **Computing:** Computer Science, Computer Programming.

LANGUAGE SKILLS

English, Hindi, German (Passed 1 year Certificate Course in German)

ACHIEVEMENTS AND EXTRACURRICULUR ACTIVITIES

- Represented ISP-OSA student chapter in Annual Student Chapter Leadership meeting during Frontiers in Optics Conference, San Jose, California, USA (11-15 Oct 09)
- President of ISP-OSA Student chapter.
- Active participation in Optics Fairs, Optics to school, Annual Photonics Workshops, Indo UK Workshops and blood donation camps conducted by ISP–OSA & ISP-SPIE Student chapters.
- Was Selected for Prestigious Summer Fellowship of Indian Academy of Sciences in 2009.
- Bihar Police Education Scholarship, Government of Bihar, (From 2002 to till date)
- Under top 30 students (among 7, 37, 000 students appeared) in the State matriculation examination.

I affirm that the above information is true to the best of my knowledge.

Date Nishant Kumar