

Extreme Light Infrastructure - Nuclear Physics (ELI-NP)
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Vinod Mohanan, Ph.D.

Postdoctoral Research Assistant

<https://scholar.google.com/citations?user=pPIPWC8AAAAJ&hl=en>

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Ph.D. Thesis

“Laser Assisted Synthesis of Gold and Silver Based Colloidal Nanostructures and Their Characterization”

Education

- Apr 2011 – Aug 2016* Doctor of Philosophy (Ph.D.), Optoelectronics
University of Kerala
Thiruvananthapuram, Kerala, India
- Sep 2003 – Dec 2005* Master of Technology (M.Tech.), E&C (Optoelectronics & Optical Communication)
University of Kerala
Thiruvananthapuram, Kerala, India
- Apr 2001 – Mar 2003* Master of Science (M.Sc.), Physics
University of Kerala
Thiruvananthapuram, Kerala, India
- Apr 1998 – Mar 2001* Bachelor of Science (B.Sc.), Physics
University of Kerala
Thiruvananthapuram, Kerala, India

Research and Industrial Experience

- Oct 2018 – present* **PostDoc Position**
Extreme Light Infrastructure - Nuclear Physics, High Power Laser System
Magurele, Ilfov, Romania
Project: High Power Laser System, Laser-Matter Interactions
- Dec 2016 – Oct 2018* **PostDoc Position**
Indira Gandhi Centre for Atomic Research, Material Physics Division
Kalpakkam, Tamilnadu, India
Project: Time-resolved Ultrafast pump-probe Spectroscopic studies using laser pulses in femtosecond time scale
- Apr 2011 – Aug 2016* **PhD Student**
University of Kerala, Department of Opto-electronics
Thiruvananthapuram, Kerala, India
Title of the thesis: LASER ASSISTED SYNTHESIS OF GOLD AND SILVER
BASED COLLOIDAL NANOSTRUCTURES AND THEIR CHARACTERIZATION

- Aug 2006 – Nov 2010* **Senior Engineer** (Industrial Experience)
 Pvt. Laser Industry, Simco Global Technology and Systems LTD, for Innolas Lasers GmbH, Toptica Photonics GmbH, Lavision GmbH and Fusion UV Inc.
 Bangalore, India
 Nature of work: Application and Service support to Lasers and Optoelectronic systems used for Research & Development
- Jan 2006 – Dec 2006* **Master's Student - Project thesis**
 Bhabha Atomic Research Centre, Laser & Plasma Technology Division
 Mumbai, Maharashtra, India
 Title of the Thesis: Pulsed Phothermal Deflection Studies in Liquid Medium

Statistics

<i>Publications</i>	6
<i>Reads</i>	513
<i>Citations</i>	87

Awards & Grants

- Dec 2016* Scholarship: Department of Atomic Energy, Postdoctoral Research Associateship, India
Apr 2011 Scholarship: University Grants Commission-National Fellowship for Doctoral Studies, India

Skills & Activities

<i>Skills</i>	Optoelectronics, Optical Materials, Optics and Lasers, Nanophotonics, Plasmonics, Laser Technology, Femtosecond Lasers, Ultrafast Lasers, Light Scattering, Laser Processing, Ultrashort Lasers
<i>Languages</i>	English, Hindi, Malayalam

Selected Publications

1. M. Vinod, G. Raghavan, V. Sivasubramanian: Fano resonance between coherent acoustic phonon oscillations and electronic states near the bandgap of photoexcited GaAs. *Nature: Scientific Reports* 12/2018; 8(1), DOI:10.1038/s41598-018-35866-7
2. M. Vinod, Ramapurath S. Jayasree, K.G. Gopchandran: Synthesis of pure and biocompatible gold nanoparticles using laser ablation method for SERS and photothermal applications. *Current Applied Physics* 08/2017; 17(11), DOI:10.1016/j.cap.2017.08.004
3. M. Vinod, V. Biju, K.G. Gopchandran: Studies on plasmon characteristics and the local density of states of Au and Ag based nanoparticles. *Superlattices and Microstructures* 12/2015; 89., DOI:10.1016/j.spmi.2015.11.035
4. M. Vinod, K G Gopchandran: Ag@Au core-shell nanoparticles synthesized by pulsed laser ablation in water: Effect of plasmon coupling and their SERS performance. *Spectrochimica Acta Part A Molecular and Biomolecular Spectroscopy* 05/2015; 149., DOI:10.1016/j.saa.2015.05.004
5. M. Vinod, K.G. Gopchandran: Bimetallic Au-Ag nanochains as SERS substrates. *Current Applied Physics* 04/2015; 15(8), DOI:10.1016/j.cap.2015.03.018
6. M. Vinod, K.G. Gopchandran: Au, Ag and Au:Ag colloidal nanoparticles synthesized by pulsed laser ablation as SERS substrates. *Progress in Natural Science* 12/2014; 106(6), DOI:10.1016/j.pnsc.2014.10.003

Conference Proceedings

1. SERS performance of Au, Ag and their bimetallic nanostructures prepared by pulsed laser ablation, National Seminar on Photonics and its applications (NSPA 2015), Vinod M. and K.G. Gopchandran, Department of Optoelectronics, University of Kerala, Thiruvananthapuram, 9-11 December 2015
2. Scanning tunnelling microscopic studies on the Au, Ag and their bimetallic nanostructures, International symposium on Photonics Applications and Nanomaterials (ISPAN 2015), Vinod M. and K.G. Gopchandran, Sree Chitra Tirunal Institute for Medical Sciences & Technology, Thiruvananthapuram, 28-30 October 2015
3. Laser assisted synthesis of Au, Ag and their bimetallic nanochains, M. Vinod and K.G. Gopchandran, National seminar on Advanced materials characterization techniques (AMCT 2015), Department of Physics, University of Kerala, Thiruvananthapuram, 27-28, March 2015
4. Au and Ag nanoparticles prepared by pulsed laser ablation in liquid medium as SERS substrates, M. Vinod and K.G. Gopchandran, 5th International conference on Perspectives in vibrational spectroscopy (ICOPVS 2014), Department of Physics, Mar Ivanious college & The Kerala state higher education council, Thiruvananthapuram, 8-12 July 2014
5. Ag@Au core-shell nanoparticles synthesized by pulsed laser ablation as SERS substrates, M. Vinod and K.G. Gopchandran, National seminar on New frontiers in physics—scope and challenges, Department of Physics, St. Xaviers college, Thiruvananthapuram, 28-30 October 2014
6. Laser assisted synthesis of Ag@Au core-shell nanoparticles in liquid medium, M. Vinod and K.G. Gopchandran, National seminar on Frontiers of Polymers and Advanced materials (FPAM-2014), Department of Chemistry, University of Kerala, Thiruvananthapuram, 5-7 November 2014
7. Plasmonics and Antimicrobial characteristics of gold nanoparticles grown by Pulsed laser ablation in liquid medium, Vinod M. and K.G. Gopchandran, National Seminar on Spectroscopic Techniques and its applications for Material characterization (NSST 2013), Department of Optoelectronics, University of Kerala, Thiruvananthapuram, 3-4 October 2013
8. Raman signature for phase purity analysis of TiO₂ thin films, K.Prathapan, M. Vinod and K.G. Gopchandran, National Seminar on Spectroscopic Techniques and its applications for Material characterization (NSST 2013), Department of Optoelectronics, Thiruvananthapuram, 3-4 October 2013

Hands on Training

- Participated in the 6th INUP hands-on training workshop on nanofabrication technologies held at centre for excellence in Nanoelectronics, Indian Institute of Technology, Mumbai, India on 10-14, October 2011.

During the industrial position as “Senior Engineer”, the company assigned me to work with lasers and optoelectronics instrumentation modules, and provided training on;

- High Energy Nd:YAG Lasers at M/s. Innolas GmbH, Germany
- Single and double cavity Lasers at M/s. Lavision GmbH, Germany
- Tunable Diode Lasers at M/s. Toptica Photonics, Germany
- High energy UV lamps at M/s. Fusion UV Systems, USA (at the manufacturing facility in China)
- Atomic Force Microscopes at M/s. Park systems, South Korea

During the “Postdoctoral positions”, I was working with Nano- and femto- second laser systems, CPA/OPCPA modules, optical parametric amplification units (OPA/NOPA), harmonics generation units, ultrafast pump-probe spectrometer etc.

Computer Skills

- Operating System: Windows and Linux
- Scientific Software Packages: Originlab, Matlab, Labview (starting level), Ultrafast-High Power laser systems (OPCPA) Operation and tuning packages, Ultrafast Pump-Probe Spectroscopy operation and analysis, PIV, Shadowgraphy and image processing, SPM (AFM,STM, EFM, MFM) operation and analysis etc.
- Documentation and Presentation Packages: Microsoft Office, Lyx and Latex (starting level)