Neethish M M

Google scholar: MM Neethish

Summary

A recent Ph.D.graduate in Physics from Pondicherry Central University, Pondicherry, India. Trained in Physics, with strong analytical and experimental skills developed from collaborative research projects. Expertise in the following areas:

- Glass preparation
- Optics
- Structural and Optical characterization of materials
- Hardware interfacing and automation
- Data analysis

Education

- **Pondicherry University** Pondicherry, India *PhD; Physics* *August 2016 - November 2022*

  Title: Supercontinuum generation in Barium Zinc Borate glasses -Supervised by Prof. V V Ravi Kanth Kumar

- **Pondicherry University** Pondicherry, India

  M.Sc; Physics *July 2013 - May 2015*

  Specialisation: Lasers

- **Calicut University (Sree Kerala Varma College)** Kerala, India

  B.Sc; Physics *July 2010 - April 2013*

Skills

- **Experimental**: Melt quench glass preparation, Designing optical experiments with Femtosecond ,Nanosecond, Diode & HeNe lasers
- **Softwares/Packages**: MATLAB, LABVIEW, Origin, Microsoft Office Word, Powerpoint, Excel
- **Material charaterisations**: XRD, Raman, FTIR, UV-Vis Absorption, Photoluminescence spectroscopy
- **Soft Skills**: Leadership, Project management, Data analysis, Multi-tasking, Scientific writing, Collaboration

Research experience

- **Supercontinuum generation in Barium Zinc Borate glasses**

  PhD thesis *August 2016 - November 2022*

  ◦ Barium Zinc Borate glasses prepared through the melt quench method.

  ◦ Structural and optical characterization of Barium Zinc Borate glasses enabled to establish a correlation between structure and nonlinear coefficients.

  ◦ Evolution of supercontinuum generation with composition in Barium Zinc Borate glass has been demonstrated.

  ◦ Proposed a method to overcome bandgap dependency of supercontinuum broadening in bulk, through rare earth doping.

  ◦ Investigations of chirp dependency of supercontinuum generation proved better broadening for zero chirp.

- **Bismuth silicate glasses -Linear and Nonlinear optical studies**

  DST-SERB Project Assistant (Junior Research Fellow) *January 2019 - October 2021*

  ◦ Prepared Bismuth silicate glasses through the melt quench method.

  ◦ Luminescence from Bismuth silicate glasses has been analysed and controlled by controlling the amount of various bismuth valances.

  ◦ Prepared annual progress reports of the project.

- **Automation of Z-scan experimental setup using LABVIEW**

  M.Sc thesis *December 2014 - April 2015*

  ◦ Integrated motion controller (Model: XPS Q8, M/s. Newport) and power meter (Model: 842-PE, M/s. Newport) using a LABVIEW program.

  ◦ Successfully demonstrated open and closed aperture Z-scan curves using the developed LABVIEW program for a microscopic glass slide.

Job experience

- **Subject Matter Expert, Physics**

  SPI Global India Pvt. Ltd. *May 2015 - August 2016*

  ◦ Authored solutions online, to the Physics related questions raised by students up to the Master's level.

Future research interests

- Preparation and characterization of novel functional materials like glass/glass ceramics, nano composites etc.
- Interactions of ultrafast laser pulses with matter and its applications.
- Fundamental investigations of materials and their properties through various spectroscopic techniques.

Invited talks, Conferences and Workshops

- **National Conference on Recent Advances in Physics**

  Sullamussalam Science College *March 2023*

  ◦ Delivered an invited talk titled "Shining light on the glass edge" at the National conference on "Recent Advances in Physics (RAP-23)".

- **National Laser Symposium**

  IIT Kharagpur *December 2022*

  ◦ Presented a poster titled "Supercontinuum generation from Barium Zinc Borate glasses" at the National Laser Symposium.

- **International Conference on Advances in Glass & Glass-Ceramics**

  CGCRI, Kolkata *August 2022*

  ◦ Delivered an oral presentation titled "Supercontinuum generation in Barium Zinc Borate glasses: Revisiting the bandgap dependency".

- **DAE-Solid State Physics Symposium**

  IIT Jodhpur *December 2019*

  ◦ Presented a poster titled "New candidate for red phosphor applications" at the Solid State Physics Symposium.

- **International Conference on Optics & Electro optics**

  IRDE, Dehradun *October2019*

  ◦ Presented a poster titled "Tailoring glasses for supercontinuum generation" at the International Conference on Optics and Electro-optics.

- **National conference on Light Matter Interaction at Nanoscale**

  IGCAR,Kalpakkam *July 2019*

  ◦ Presented a poster titled "Understanding the Bismuth luminescence through silver doped Bismuth silicate glasses" at the National Conference on Light Matter Interaction at Nanoscale.

- **Winter School on Synchrotron Techniques in Material Science**

  SN Bose Institute, Kolkata *December 2018*

◦ Attended Winter School on Synchrotron Techniques in Material Science (WSSTM) which was meant to familiarise the capabilities of synchrotron sources in material science.

- **Short GIAN course on computational nonlinear optics**

  NIT Goa *Nov 2016*

  ◦ Attended 10 days short course on computational nonlinear optics, which covered numerical simulations of propagation of light and its interaction with matter.

Publications

- Supercontinuum generation from zinc borate glasses: bandgap versus rare-earth doping. **M M Neethish**, V.V.R.K. Kumar, S.A. Nalam, S.S. Harsha, P.P. Kiran, **Opt. Lett.**, 2021, 46, 1201-1204. **(doi:10.1364/OL.418594)**

- Effect of chirp on supercontinuum generation from Barium Zinc Borate glasses. **M M Neethish**, V.V.R.K. Kumar, S.A. Nalam, S.S. Harsha, P.P. Kiran, **Opt. Laser Tech.**, 2022, 149, 107890. **(doi:10.1016/j.optlastec.2022.107890)** • Effect of Zinc Fluoride addition on structure of barium Borate glasses for nonlinear optical applications.

  M M Neethish, J. Nath, G.V. Prakash, V.V.R.K. Kumar **Opt. Mater.**, 2021, 121, 111626. **(doi:10.1016/j.optmat.2021.111626)**

- Structural and optical studies of rare earth-free bismuth silicate glasses for white light generation. M. Laya Krishnan, **M M Neethish**, V.V.R.K. Kumar **J. Lumin.**, 2018, 201, 442-450. **(doi:10.1016/j.jlumin.2018.05.023)**

- Broad white light supercontinuum generation in Barium Zinc Borate glasses. **M M Neethish**, J. Nath, P Prem Kiran, G.V. Prakash, Alok Sharan, V.V.R.K. Kumar **J. Lumin.**, 2022, 251, 119190. **(doi:10.1016/j.jlumin.2022.119190)**. • Wafer-scale silver nanodendrites with homogeneous distribution of gold nanoparticles for biomolecules detection.

  V.S. Vendamani. R Beeram, **M M Neethish**, S.V.S. Nageswara Rao, S. Venugopal Rao **IScience**, 2022, 25, 104849. **(doi:10.1016/j.isci.2022.104849)**.

- Photoluminescence and structural studies of Ag: Alkali Bismuth Silicate glasses. M. Laya Krishnan, **M M Neethish**, V.V.R.K. Kumar, V.S. Vendamani, K. Devarani Devi, D. Bharathi Mohan, P. Nandhagopal, Namita Behera **Optik**, 2023, 273, 170474. **(doi:10.1016/j.ijleo.2022.170474)**.

- Supercontinuum generation in antimony zinc borate glasses—A material perspective. Alan B. Samuel, **M M Neethish**, V.V.R.K. Kumar, S.A. Nalam, S.S. Harsha, P.P. Kiran, **Journal of Applied Physics**, 2023, 133, 093104. **(doi:10.1063/5.0134548)**.

- New candidate for red phosphor applications. **M M Neethish**, M.P. Kishore, V.V.R.K. Kumar, **AIP Conf. Proc.**, 2020, 2265, 030221. **(doi:10.1063/5.0016601)**

Honors and Awards

- Qualified GATE in Physical sciences, a national level exam (78 percentile) - March, 2016
- Qualified NET lectureship in Physical Sciences, a national level exam - June, 2017
- Qualified GATE in Physical sciences, a national level exam (86 percentile) - March, 2019
- Won **Best student paper award** in the International Conference on Optics and Electro-optics (ICOL) at IRDE, Dehradun, India - October 2019

Volunteer or Leadership Experience

- **Representative, SOPCAS** Pondicherry University, India

Elected representative of School of Physical Chemical and Applied Sciences(SOPCAS). *September 2013 - May2014*

- **Student Coordinator,Research Scholars Seminar Series** Pondicherry University, India

  Organized seminars and lectures for research scholars forum, Department of Physics. *June 2019 - March 2020*

- **Student Volunteer,International conference** Pondicherry University, India

  Volunteer in the travel committee of the first World Conference on Solid Electrolytes *September 2017*

- **Student Volunteer,Bio diversity congress** Pondicherry University, India

  Actively involved in the venue management of the Fourth Indian Bio diversity congress *March 2017*

- **Student Volunteer, Annual science day celebrations, Department of Physics** Pondicherry University, India

  Part of the core team which organized various events of the science day celebrations. *February 2014*