

Dhanya P Jacob

Research interests

Nanomaterials,, Bio Sensors, Protein-nanoparticle interaction, Nonlinear Optics, Periodic Structures

Educational details

2022 – Ongoing **Doctor of Philosophy in Physics.**

Center of Excellence in advanced Materials
Cochin University of Science and Technology, Cochin, Kerala,
India

2019 - 2021 **Master of Philosophy in Physics.**

Cochin University of Science and Technology, Cochin, Kerala,
India
8.92/10

2016 - 2018 **Master of Physics.**

Sree Kerala Varma College, University of Calicut, Kerala,
India, 3 / 4

2013 - 2016 **Bachelor of Physics.**

St. Thomas' College, University of Calicut, Kerala, India
3.66 / 4

2011 - 2013 **Higher Secondary Education.**

Ayyapath Kochkutty Memorial Higher Secondary School, Thrissur, Board of Kerala, Kerala,
India 90.8%

2011 **Matriculation.**

St. Sebastain Convent Girls High School, Thrissur, Board of Kerala, Kerala, India
96.6%

Research experience

M.Phil Dissertation **Fluorescence based Sensing of Fe^{3+} ions and Dopamine using Mn_3O_4 Quantum Dots.**

Supervising Guide: Dr. Aldrin Antony, Associate Professor, Cochin University of Science and Technology, Cochin, Kerala, India.

Description: Synthesis of highly luminescent Mn_3O_4 Quantum Dots for sensing biologically relevant analytes, particularly focusing on highly sensitive detection of Fe^{3+} ions and Dopamine

Master's Project **Tape Casting of PZT Ceramics.**

Supervising Guide: Dr. Radhika T, Scientist C, Center for Materials and Electronic Materials, Thrissur, Kerala, India

Description: Fabrication of Lead Zirconium Titanate (PZT) tapes of 100nm size by using doctor blade technique for actuation applications

Undergraduate Low Cost Weather station.

Project Supervising Guide: Dr. Anto Johny T, Assistant Professor, St. Thomas' College, Thrissur, Kerala, India.

Description: A device for weather monitoring has been developed to monitor and display the temperature, air quality and relative humidity of the atmosphere using respective sensors

Dec 2020 - Fabrication of 3D Photonic Crystals using Polystyrene spheres.

May 2021 Supervising Guide: Dr. Aldrin Antony

Description: Monodispersed polystyrene spheres of various size (150nm - 350nm) were synthesized through emulsifier free polymerization and 3D Photonic Crystals with different photonic band gap were fabricated via self-assembly of the synthesized polystyrene beads.

Dec 2020 - Synthesis and characterization of PVP capped ZnS nanoparticles.

Feb 2021 Supervising Guide: Dr. Aldrin Antony

Description: Polyvinylpyrrolidone (PVP) capped ZnS nanoparticles were synthesized through chemical precipitation and its optical properties were optimized.

Research skills

Laboratory Skills Hands-On experience with following instruments;

Photoluminescence Spectroscopy (Horiba QM -8075-11-C Fluorometer)

UV-Vis Spectroscopy (LAMBDA 365 UV/Vis Spectrophotometer)

X-ray Diffraction Technique (Rigaku Miniflex- 600 Benchtop X-ray diffractometer)

Fourier Transform Infra-Red Spectroscopy (JASCO – 4100 FT/IR spectrometer)

Optical Goniometer (Rame-hart)

Ellipsometer (J C Woollam Co: alpha SE)

Microwave Synthesizer (Anton Paar Multiwave PRO)

Rota Evaporator (heidolf)

Dip Coating Unit (Holmarc HO-TH-02MD-A)

Skills in Data Analysis Dynamic Light Scattering (DLS), Scanning Electron Microscope (SEM), Transmission Electron Microscope (TEM)

OS Linux, Windows

Coding Python, MATLAB (Beginner)

Scientific Software Lumerical FDTD Solutions, High Score XRD Analyzer, Match Analyzer, QualX, Origin, ImageJ

Conference presentations

- 1 Virtual presentation on “**Fluorescence probing of Fe³⁺ ions using Mn₃O₄ NPs**” in National Conference on Optoelectronic and Nanomaterials for Advanced Technology held at Department of Physics, Cochin University of Science and Technology, Cochin, Kerala, India, on March 17-18, 2021
- 2 Paper presented on “**Label free detection of Dopamine using Mn₃O₄ NPs**” in International Conference on Advanced Materials (ICAM-2021) held by Department of Physics, University of Calicut, Malappuram, Kerala, India, on July 1-2, 2021.

Conferences and workshops attended

- 1 Participated in DST – SERB Winter Workshop on Luminescent Nanomaterials for Photonic and Biophotonic Applications by INST, Mohali, Punjab, India from 17 – 23 September 2021
- 2 Participated in International Conference on Advanced Materials (ICAM-2021) held by Department of Physics, University of Calicut, Malappuram, Kerala, India, on July 1-2, 2021.
- 3 Participated in the National Conference on Optoelectronic and Nano Materials for Advanced Technology (ncONMAT-2020) organized by Department of Physics and Centre of Excellence in Advanced Materials (CAM), Cochin University of Science and Technology, Kerala held during January 3-4, 2020.
- 4 Attended a workshop on Emergent Gravity Paradigm conducted by IUCAA, Pune and ICARD at Department of Physics, CUSAT, Kochi during November 8-10

Other activities and skills

- * Managed Network Expert for Basic Physics in CheggIndia Pvt.Ltd
- * Served as Department Secretary of Physics at Sree Kerala Varma College (2017-2018) Thrissur, India.
- * Active volunteer in National Service Scheme for 5 years
- * Active volunteer in outreach program for school students
- * Strong verbal, written and communication skills in English
- * Good presentation and public speaking skills

References

Dr. Aldrin Antony

Associate professor

Department of Physics

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Dr. Radhika .T

Scientist C

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