

Alex Shaji

Research Scholar

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Education

August 2017 – Ongoing

IISER Thiruvananthapuram

BS-MS in Physics Major (5-year course)

- Completed 4 years of Bachelors and Masters coursework
- Currently pursuing Final year Major Project (till May 2022)

August 2017 – September 2021

Undergraduate Record – Integrated BS-MS program

- Overall GPA [at the end of 4 years] : 8.55/10

Till March 2017

School Record – CENTRAL BOARD OF SECONDARY EDUCATION (CBSE)

All India Secondary School Exam (AISSE-2015) : 10/10 GPA

All India Senior School Certificate Exam (AISSCE-2017) : 93.8

Research Experience

MAJOR PROJECT

Asst. Prof. Dr.Bikas C Das

IISER Thiruvananthapuram

August 2021 – Ongoing

SEMI-TRANSPARENT SOLAR CELL DESIGN USING SILVER NANOWIRE BASED TRANSPARENT TOP ELECTRODE

Optimising silver nanowires for functioning as the transparent top electrode in a photovoltaic device

- Characterisation techniques such as Scanning Tunneling Microscopy, Atomic Force Microscopy were performed on photovoltaic thin films.
- Techniques learned : Substrate cleaning, Materials preparation, UV-ozone treatment, doctor blading, spin coating, Performance analysis using Solar simulator

RESEARCH INTERN

Prof. Dr.Joby Joseph

IIT Delhi

January 2021 – July 2021

An Overview of Photonic Structures

- Irradiance profiles and Fabrication techniques of Photonic Structures were studied.
- MATLAB software was used for generating these structures

RESEARCH INTERN

Assoc. Prof. Dr.Jobin Cyriac

IIST Thiruvananthapuram

2019 May to 2019 July

Low Energy Cluster Beam Deposition System: A SIMION Approach

- Using SIMION software to study about Ion Beam Deposition.
- This technique is used to prepare thin films, which is different from usual deposition techniques such as spin-coating and drop-casting

RESEARCH INTERN

Asst. Prof Dr. Shadak Alee

IISER Thiruvananthapuram

May 2018 – July 2018

Thin film Characterization Studies

- Synthesis and Optimisation of PDMS, PVA and PVK thin films for Opto-electronic Applications
- Preparation of PDMS, PVA and PVK thin films and optimisation of thickness using spin coating.

Course project

Prof. Dr.Hema Somanathan

IISER Thiruvananthapuram

August 2017 – November 2017

Colour learning in Fish : A Study

- Examine whether Zebra fish can learn colour and associate it with food.
- Measured various parameters and analysed the data graphically

Conferences and Seminars

INTERNATIONAL CONFERENCE

22nd – 23rd July 2019

International workshop on Advances in 2D Materials (IW2DM)

IISER Thiruvananthapuram

WEBINAR

5th September 2021

Semiconductor Nanostructures for Optoelectronics Applications

Speaker: Prof. Chennupati Jagadish, Australian National University

IEEE Photonics Chapter Bombay Section

Experimental Expertise

Nanodevices Fabrication and characterization techniques

- Proficient in : Physical vapour deposition, Magnetron sputtering deposition, Pulsed layer deposition, Spray Pyrolysis, Spin coating, Dip coating, Spray coating, semiconductor electrical characterization, Raman spectroscopy, UV-Vis spectroscopy, Optical Spectroscopy, Scanning Tunneling Microscopy
- Familiar with : TEM imaging, SEM imaging, XRD, XPS, FT-IR

Software and Computational Skills

- Proficient in Python, Matlab, Originlab, Latex, Labview
- Familiar with Comsol, ImageJ
- Familiar with C++, Mathematica, Blender

Field of Interest

- Condensed Matter Physics
- Semiconductor Physics
- Thin-film Characteristics
- Optoelectronic Devices
- Nano-device fabrication and characterization

Important course work

- Condensed Matter Physics
- Advanced Physics Experiments Lab
- Semiconductor Physics and Technology
- Experimental Methods
- Computational Techniques and Programming

References

- 1) Dr Jobin Cyriac
Associate Professor, IIST Thiruvananthapuram
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- 2) Dr Joby Joseph
Professor, IIT Delhi
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- 3) Dr Bikas Das
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