

CAREER OBJECTIVE

A Postgraduate of Physics from IIT GUWAHATI, with proven analytical competencies, mainly interested to learn about Experimental Condensed Matter Physics, Nanotechnology, Quantum Solid State Devices and aiming to dedicate my research career in better understanding of it.

EDUCATION

INDIAN INSTITUTE OF TECHNOLOGY GUWAHATI, ASSAM, INDIA

MASTER OF SCIENCE IN PHYSICS [8.01/10]

2020.08-2022.05

CENTRAL UNIVERSITY OF JHARKHAND, RANCHI, JHARKHAND, INDIA

BACHELOR OF SCIENCE(HONS.) IN APPLIED PHYSICS [83.20%/100%]

2016.07-2019.07

VIDYA BHARATI CHINMAYA VIDYALAYA, JAMSHEDPUR, JHARKHAND INDIA

SENIOR SECONDARY EXAMINATION [88%/100%]

2014.04-2016.03

- Central Board of Secondary Education, New Delhi, India

VIVEK VIDYALAYA, JAMSHEDPUR, JHARKHAND INDIA

SECONDARY EXAMINATION [9.8/10]

2012.04-2014.03

- Central Board of Secondary Education, New Delhi, India

RESEARCH CAREER

INDIAN INSTITUTE OF SCIENCE BENGALURU : November, 2022 - January, 2023

Profile: Research Assistant

Research Experience: " Fabrication and Characterization of Photodetectors "

Supervisor: Dr. Anshu Pandey

Details:-

During my tenure as Project Assistant, I worked on DC and RF Sputtering devices to fabricate thin films of different metal and semiconductor elements. Thermal Evaporation is also used for fabrication of gold films under glove box environment.

I also worked on the low temperature four probe IV measurement setup to verify superconductivity of various fabricated samples.

INDIAN INSTITUTE OF TECHNOLOGY GUWAHATI : July, 2021 - May, 2022

Research Experience: "Doping of Perovskite Nanostructures and its Optoelectronic Applications"

Supervisor: Professor P. K. Giri

Details:-

The work performed during my Masters coursework is titled as "Doping of Perovskite Nanostructures and its Optoelectronic Applications".

During my Project, we utilized an efficient and reproducible solvothermal method to synthesize 2D Perovskite nanosheets in ambient conditions. Doping luminescent rare earth Cerium ions into the host metal halide Perovskite lattice system, we increased its photoluminescence and storage stability. The morphology of as-fabricated samples were studied by high resolution TEM images to conclude the formation of nanosheets. We find the thickness of these nanosheets by AFM analysis. Structural analysis of the fabricated samples were done by XRD. Various optical properties such as absorption and emission spectra were also studied. We determined the optical band gap of nanosheets by UV-Visible absorption spectra. The photoluminescence emission spectra of nanosheets were also studied. Time Resolved Photoluminescence spectra were used to determine carrier lifetime of the as fabricated nanosheets. The stability of different samples were verified by XRD analysis and Photoluminescence spectra of samples recorded after storage of the samples in ambient conditions. We used our doped samples to fabricate highly luminescent and stable white LED.

Hence we fabricated Lanthanide doped 2D metal halide Perovskite nanosheets to fabricate highly energy efficient, stable, reliable and eco-friendly cutting edge optoelectronic devices. Along with this, I gained expertise in nanomaterial synthesis by different other methods such as Ball milling, Spin-coating, Hydrothermal, Physical vapor deposition and Chemical vapor deposition. During my Research work, I also learned about various characterization techniques studied about a fabricated sample.

PROJECTS

Science Academies 99th Refresher course in Experimental Physics

BIT Mesra, Jharkhand, India

June 2018

- Coordinated Laureates with Equipment Developed by Indian Academy of Sciences, Bangalore

Robo Fiesta – International Robotics League

Jamshedpur, Jharkhand, India

November 2015

- Designed innovative Robots by assembling electric circuit Hosted by Technoxian in collaboration with IIT DELHI

SCHOOL/WORKSHOP/CONFERENCE ATTENDED

INUP-i2i Familiarization Workshop on NanoFabrication Technologies

IIT Delhi, India

February 2022

Learning Physics with Conceptual and Problem Based Approach

The National Academy of Sciences India, Delhi Chapter, India

August-October 2020

Publishing Ethics and Research Methodology

Jawaharlal Nehru University, Delhi, India

August 2020

105th Indian Science Congress

Manipur University, Manipur, India

March 2018

- Theme: Reaching the Unreached Through Science & Technology

104th Indian Science Congress

SV University, Tirupati, India

January 2017

- Theme: Science and Technology for National Development

AWARDS AND ACHIEVEMENTS

Qualified JAM(Joint Admission to M.Sc.) 2020 at National Level, India

Organized by IITs and IISc

March 2020

Qualified 6th International Mathematics Olympiad at Zonal Level, Jamshedpur

Organized by IMO

April 2012

Qualified 15th National Science Olympiad at State Level, Jharkhand

Organized by NSO

December 2012

Qualified 14th National Science Olympiad at State Level, Jharkhand

Organized by NSO

April 2011

SKILLS

Computational

- Languages - Python,C,C++,MATLAB: Intermediate
- Web development - HTML: Intermediate
- Technology - LATEX, ORIGIN: Advanced

- **Computational Physics - MATLAB, Python, Gatan Microscopy Suite, Gwyddion, LabVIEW : Intermediate**

Nano-Fabrication and Characterization

- **Device Fabrication - Non-Ideal pn junction on ITO substrates**
- **Nano-material Synthesis -
PVD-Thermal Evaporation, Sputtering (DC & RF) ,Ball milling
CVD- Solvothermal, Hydrothermal, Spin coating, Drop Casting**
- **Structural Characterization - X-ray Diffraction**
- **Electrical Characterization - IV Characteristics**
- **Optical Characterization - UV-VIS Spectroscopy, Photoluminescence, Time Resolved Photoluminescence, Fourier Transform Infrared Spectroscopy, Raman Spectroscopy**

General

- **Language Skills - Hindi as mother tongue, Fluent English**

REFERENCE

- **Prof. P. K. Giri**
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