Roopam Gupta

Curriculum Vitae

Education

2011–2016 **Integrated BS-MS**, *Indian Institute of Science Education and Research*, Kolkata, *CGPA – 7.88*.
Department of Physical Sciences

Masters Thesis

Title *Magneto-optical Kerr effect in correlated electronic systems*

Supervisors Associate Professor Dr. Chiranjib Mitra

Description It is a two semester thesis work. For the first semester I have successfully constructed a MOKE Magnetometer.
Experimental and theoretical work involved the following:

- Application of concepts of Polarimetry to determine the Kerr rotation and ellipticity from the measured intensity of light.
- Development of LabVIEW interface to control all the instruments. The program takes the data from all the instruments as the input and gives the output as the plots of Kerr rotation and ellipticity with respect to external magnetic field.
- Determination of switching fields for Nickel, Cobalt and Permalloy.

Detailed report can be read **here**

Research Experience

2014 **Research Intern**, *Group of Prof. Dr. Junichiro Kono*, Rice University, Houston.
Worked under the guidance of Prof. Junichiro Kono, I worked on pump-probe system to study the coherent phononic excitations in carbon nanotubes.
During the same tenure I also gained understanding of Photoluminescence Spectroscopy.

2015 **Research Intern**, *Group of Prof. Dr. Theo Rasing*, Radboud University, Nijmegen.
Worked under the guidance of Dr. Alexey Kimel and Prof. Dr. Andrei Kirilyuk to characterize the super-paramagnetic magnetic materials using the table top magneto-optical Faraday effect experiment. Report can be read **here**

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2013 **Research Intern**, *Group of Assistant Professor Dr. Prashanth Upadhya*, IISER Kolkata.
Worked under the guidance of Dr. Prashanth C. Upadhya
During this project I gained understanding about the basics of Terahertz Spectroscopy and its applications, Growth of Nano-structures by Bottom-up techniques. I have also studied the basics of Pump-probe technique, Terahertz Generation and detection using Photoconductive Aperture antenna.
Presented Poster with title "Characterization of NanoStructures using Ultrafast Techniques" at ASPC-2013. The poster can be viewed **here**.

2014 **Independent Study course Project**, *Group of Associate Professor Dr. Ayan Banerjee*, Indian Insitute of Science Education and Research, Kolkata.
Worked on the "Concepts of Confocal Miroscopy". The project involved:
- Understood of confocal microscopy.
- Developed a MATLAB code that works on the principle of focus stacking. The program takes the 2D stack of images as the input and gives a 3D motion picture as the output.

2014 **Term Paper**, *Advanced Statstical Machanics*.
Title "Electroweak Theory and its similarities in Superconductivity"
I studied the Higg's Mechanism in Superconductivity.

2015 **Advanced Experimental Physics Course**, *Group of Associate Prof. Dr. Chiranjib Mitra*, Indian Insitute of Science Education and Research Kolkata.
Title "Continous Wave Magneto-Optical Kerr Effect".
This course was designed for the students to have a research laboratory experience.
I learned the working of various noise reduction equipments to be used for the setup of table-top Magneto- Optical Kerr effect and measured the change in Magnetization with respect to external magnetic field for Permalloy thin film. Report can be found **here**

Professional Experience

2015 **Siegman Summer School on Lasers**, *Amberg*, Germany.
This program consists of lectures, networking events, professional development programs, poster presentations and research sharing and brings together the top 100 student applicants from around the world.Details can be found **here**.

2014 **Student Leadership Conference at FiO/LS**, *Tuscon*, USA.
I attended the conference as a student leader nominated by the OSA Student Chapter of IISER Kolkata.

2014 **Organized and Attended Asia Student Photonics Conference**, *Indian Institute of Science Education and Research Kolkata*, Kolkata.
This conference had participants from various parts of Asia and talks by the renowned professors from all around the globe. Details can be found from **here**.
I was one of the members of the organizing committee for the conference, specifically I managed the registration and accommodation services.

2014 **SPIE Photonics West**, San Fransisco, USA.
I attended the SPIE's #1 laser, photonics, and biomedical optics conference in the year 2014 as in agreement to the SPIE Travel and Education scholarship.

2013 **Asia student Photonics Conference**, *Osaka University*, Osaka, Japan.
Presented Poster with title "*Characterization of NanoStructures using Ultrafast Techniques*". Poster can be viewed **here**

Awards

2014 **SPIE Optics and Photonics Education Grant**

2013 **SPIE Travel and Education Scholarship**

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2011–2016 **INSPIRE Fellowship India**, *Department of Science and Technology*, India.
Every year few selected students from all over India are awarded this Fellowship for their excellence in the field of Science.

Computer skills

I am adept at the following languages:

- LabVIEW
- C/C++
- Python
- HTML, JavaScript, PHP, SQL, MySQL
- MATLAB
- FORTRAN
- LaTeX

Relevant courses credited

- *Introduction to Ultrafast Optics*
- Advanced Electrodynamics
- Advanced Statistical Mechanics
- Quantum Information Processing
- *Advanced Condensed matter theory*
- Quantum Many body theory
- Quantum Field Theory

Languages

Hindi **Mothertongue**
English **Fluent**

References

- Dr. Junichiro Kono, Professor - Department of Electrical and Computer Engineering, Physics and Astronomy, and Materials Science and NanoEngineering, Rice University (kono@rice.edu)
- Dr. Alexey Kimel, Spectroscopy of Solids and Interfaces Institute of Molecules and Materials (IMM), Radboud University Nijmegen, (a.kimel@science.ru.nl)
- Dr. Chiranjib Mitra, Associate Professor - Department of Physical Sceinces, IISER Kolkata (chiranjib@iiserkol.ac.in)
- Dr. Prashanth C. Upadhya, Laboratory for Electro-Optics Systems, ISRO, Bangalore(pcupadhya@gmail.com)