OPTICAL WIRELESS COMMUNICATION LABORATORY

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

SRM INSTITUTE OF SCIENCE AND TECHNOLOGY

KATTANKULATHUR – 603203, TAMILNADU, INDIA

This lab was established under the untiring efforts of **Dr. Shanthi Prince**, Professor & Head, Department of ECE. She is also the principal Investigator of different funded projects being executed in this laboratory.

Optical Wireless Communication Laboratory was established in the year 2016 in TP106A in the Department of ECE. Since its inception, the team members in the laboratory are striving hard to set a mark in the field of Optics and Photonics.

Funding Agencies of Government of India sponsoring our laboratory

- ✔ Defense Research and Development Organization (DRDO)
- ✔ Indian Space Research Organization (ISRO)
- ✔ Ministry of Electronics and Information Technology (Meity)

Fund Received from the Funding Agencies

- DRDO: Rs. 60.44 Lakh
- ISRO: Rs. 26.08 Lakh
- Meity: Rs. 5 Lakh

Research Topics

- Design and analysis of Optical Access Networks
- Modeling the free space optical wireless channel under different atmospheric conditions
- Photonic device modeling and Microwave photonics
- Underwater Optical Wireless Communication
- Photonic Beam Forming
- Hybrid FSO/RF Communication
- Spectroscopic based Neonatal Jaundice Detection and monitoring
- Human Visual System based perceptual modeling for the study of vision impairments
- Solar cell modeling and design optimization
- All optical Information Processing
- Non invasive method of Glucose estimation based on diffuse reflectance spectroscopy
- Signal Processing for secured optical networks

Publications

Research work from this lab is published in refereed journals such as IEEE Journal of Oceanic Engineering, Optics Communication, Optics and Laser Technology, Journal of Optical Society of America, Optical Fiber Technology, Optical and Quantum Electronics, Optik, Journal of Modern Optics, Taylor and Francis, Photonic Network Communication, Silicon, to name a few

Patents Filed

- Patent Application No. 201841048886, "System And Method For Nyquist Pulse Generation Based On Microring Resonator**",** filed on 4.12.2018 and published on 28/06/2019 by **Shanthi Prince**, Rohan Katti
- Patent Application No. 201941043740, "System And Method For Generating Multiple Mutually Different Microwave Waveform**",** filed on 29.10.2019 and published on 20/03/2020 by **Shanthi Prince**, Rohan Katti

- Patent Application No. 201941043739, “Concave-Plane Mirror-Based Optical System And Method For Simultaneous Collimation And Steering Of An Optical Beam**”** filed on 29.10.2019 and published on 11/09/2020 by **Shanthi Prince**, Rahul Bosu

Technical Society Chapter under this LAB

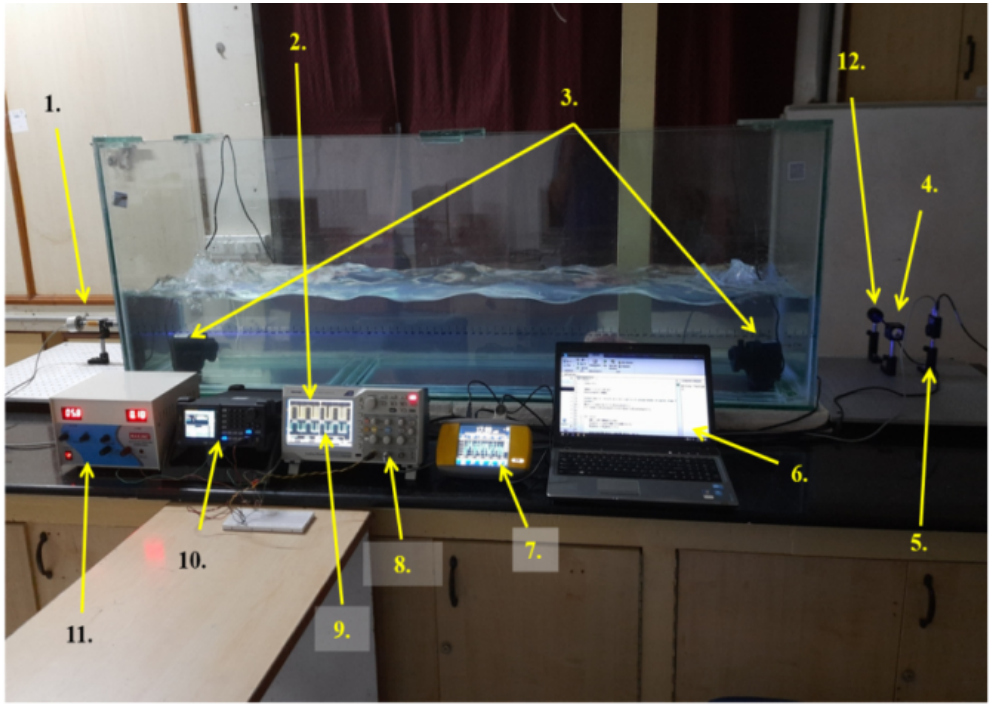
SRM OPTICA Student Chapter

OPTIZEN Student Team

Lab is equipped with the following major equipment

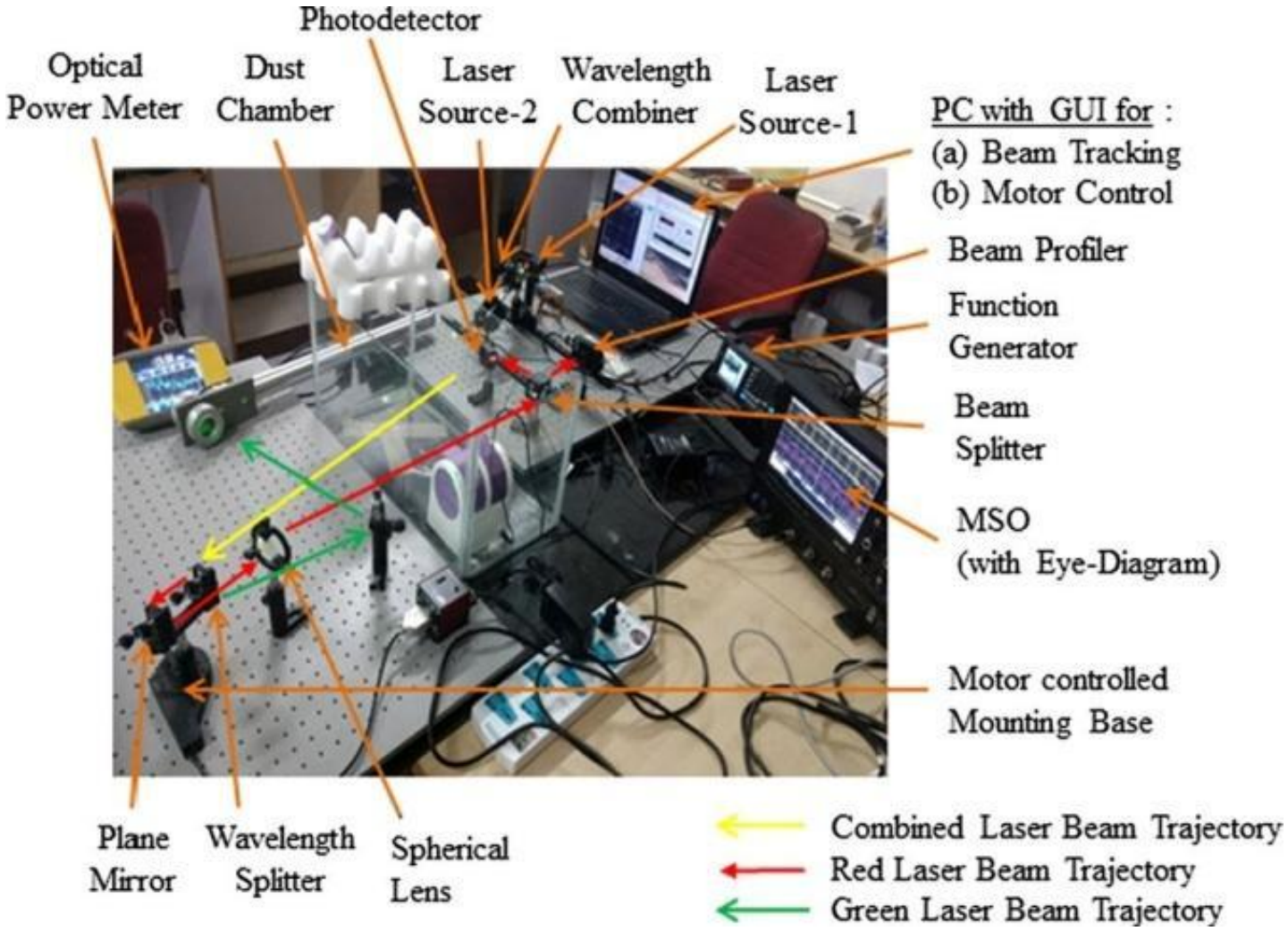
Laser diodes (450 nm, 532 nm, 680 nm, 1550 nm,)
Photodetectors
Modulator
Power/Energy Meter
Beam Splitter
Beam Expander
Beam Profiler
Wavelength Combiner
Spectrometer

Experimental Set up with Major Components



1. Laser Transmitter
2. Transmitted Signal
3. Pumps in Underwater Channel
4. Beam Splitter
5. Photodetector connected to Digital Storage Oscilloscope
6. Signal Processing in Matlab
7. Digital Optical Power Meter
8. Digital Storage Oscilloscope
9. Received Signal
10. Function Generator (Message Signal)
11. Power Supply
12. Photo Detector connected to Optical Power Meter

Experimental Setup for Underwater Wireless Optical Communication Link



Experimental setup for Free space Optical Communication Link

Lab Alumni

Sl. No.	Name	Duration	Area of Research
1.	Dr. Vivek Kachhatiya (CSIR – SRF)	2014 - 2019	Passive Optical Networks
2.	Dr. Rahul Bosu (ISRO Respond – JRF)	2014 - 2019	Free Space Optics
3.	Dr. Rohan Katti (Meity -Visveswaraya PhD Fellowship)	2015 - 2020	Photonic Device Modeling and Microwave Photonics
4.	Mr. G. Santosh Kumar (DRDO JRF)	2017 - 2018	Underwater Optical Communication
5.	UG and PG project students	Over the years	Optical Communication