

# PHOTONICS LABORATORY

(Developed by Dr. Iven Jose, under MRP funding)

Photonics lab is a research laboratory which caters young researchers to explore the field of Light with respect to the Imaging, development of Instrumentations for Biomedical Imaging, Synthesis of Near Infra-Red Fluorescent Dye, Characterization, In-Vivo and In-Vitro studies and Validations. The Photonics laboratory also provides a base and a platform to conduct



experimental research and development on photonics based heterogeneous optical computing. The long term goal is to develop a bed-side diagnostic tool for early detection of cancer and development of optical computing framework so that it can replace the silicon based processor by optical based computing processor in near future.

## Research work in this domain

S.No	Working Topic	Faculty	Project	Funded by	Status
1	Fluorescence Diffuse Optical Tomography: A Noninvasive Imaging Approach for the Early Detection of Cancerous Tissues	PI: Dr Iven Jose	MRP Project	Christ Funded 21 Lakhs Period:3 years	Completed

## Facilities available

### Thor Lab Laser Diode Mount- LDM56

Thorlabs' LDM Series Laser Diode Mounts with Integrated (Thermoelectric Cooler) are ideal for temperature-controlled operation of standard laser diodes in  $\varnothing 3.8$  mm,  $\varnothing 5.6$  mm, or mm TO-can packages.

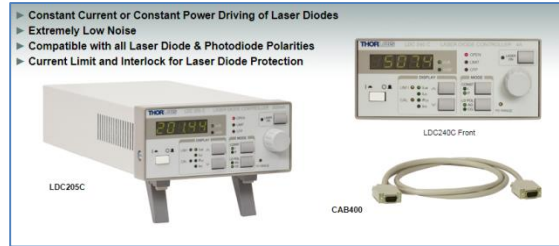


TEC  
 $\varnothing 9.0$

LDM56  
 $\varnothing 5.6$  mm Laser Diode Mount

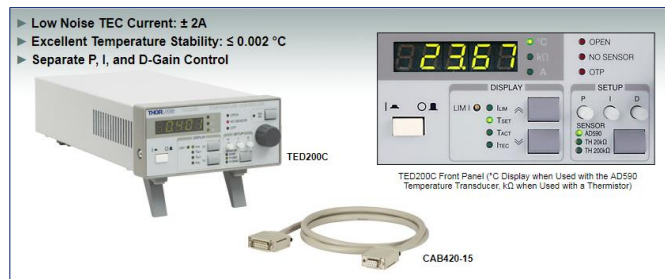
### Thor Lab laser diode controller (current): LDC 205C

Extremely Low Noise (LDC201CU 0.2  $\mu$ A), 5-Digit LED Display, Analog Control Input and Output, Reliable Laser Diode Protection, Operates With All Polarities of Laser Diode and Photodiode, Seven Models With Laser Current Ranges From 20 mA to 4 A



### Thor Lab temperature controller: TED 200 C

The laser diode controllers in the LDC200C series all provide features that ensure outstanding performance. These laser diodes can be driven in constant current (CC) or constant power (CP) mode. The TED200C is a precision temperature controller designed to drive thermoelectric cooler (TEC) elements with currents up to  $\pm 2$ A.



### Hamamatsu make Head-on PMT : R928

R928 has 28mm dia., Side-on type, Multialkali photocathode (Effective area : 8 x 24 mm/Spectral response : 185 to 900 nm) useful in Spectroscopy, Biofluorescence Detection, laser Scanning Microscope, Semiconductor Inspection, Environmental Monitoring.



### ISS Room temperature PMT housing

ISS photomultiplier tubes housings are compact units designed for both photon counting and frequency-domain data acquisition; they are coupled to the ISS spectrofluorometers through a M28x1 threaded flange. An adapter for coupling the PMT housing to a 10 mm fiber bundle is available.



### **Stanford Research System Lock-In Amplifier-SR830**

The SR830 Lock-In Amplifier has input channel, extended dynamic reserve and digital filtering. This amplifier provides high performance at a reasonable cost. The SR830 simultaneously displays the magnitude and phase of a signal

