

Sr No	Brief description of Instrument	Manufacturer & Model	Total Cost Rs Lakh	Justification
1	UV-Visible-NIR spectrophotometer with Reflection facility	PERKIN ELMER, Holland	32.50	This instrument will be used to study the absorption, transmission and reflection spectra of a thin solid layer on various substrates or nanomaterials dispersed in a suitable solvent. Parameters like absorption bands, optical band gaps, refractive index and extinction coefficient can be obtained from such measurements. User Group- Researchers & M.Sc. students.
2	Small Angle (XRD) analysis device and particle size distribution with necessary soft wire. (This item constitutes certain accessories for the existing PANalytical X'Pert PRO MPD 3060)	PANalytical X-ray Company, Netherlands	21.50	XRD studies of thin multiple layer of semiconductor/ insulator layers. X-ray reflectivity studies of such thin layers. User Group- Researchers & M.Sc. Students
3	a) Pulsed Laser Deposition Chamber (Rs 54 lakhs) b) Excimer Laser (Rs 49 lakhs)	PVD Products, Wilmington, MA, USA Nano PLD system	103.00	This is a versatile method for thin film deposition & nanomaterials preparation at elevated temperature on different substrates. This method could be used profitably for the growth of thin films of various materials (insulator, compound semiconductors, composites, CNT, magnetic materials etc.) of our interest.
4	Scanning probe microscopy: Scanning Tunneling microscope (STM) and Atomic Force Microscope (AFM)	Bruker Corporation	120.00	Surface and interface studies
5	XFA-300 (Xenon Flash Thermal Constant Analyzer)	LINSEIS Messgeräte GmbH, Germany	34.00	To measure thermal conductivity and thermal diffusivity of thin film and bulk materials.
6	<b>General Research Laboratory set-up</b>			These units are part of a general research laboratory setup for research scientists, research fellows and postgraduate project students
a)	General Optics set-up: optical benches, lenses, mirrors, beam splitters, mounts, rotators, multi-mode optical fibers, fiber holder and couplers	Holmarc Opto-mechatronics Pvt Ltd, Kochi, Kerala	30.00	The general infrastructure for optical elements for measurements in the laboratory
b)	Diode Lasers with power supply (3 red, 2 green, 5 mW)	Holmarc Opto-mechatronics Pvt Ltd, Kochi, Kerala	9.50	Basic optical source for experiments
c)	Microscopes: general purpose, 2 upright, 2 inverted, Rs 3 lakhs each	Zeiss/Nikon/Olympus	12.00	Basic all-purpose instrument
d)	USB cameras: 5	Laser Science, Navi Mumbai, India	2.50	For recording different stages of an experiment
e)	Spectrometer: general purpose, with gratings, software and control PC	Laser Science, Navi Mumbai, India	15.00	Used for basic spectroscopic analysis across a wide range of experiments
f)	Charge-coupled device camera for spectroscopy	Laser Science, Navi Mumbai, India	11.00	Good quality imager for spectrometer output
g)	Voltage and current sources:6	Stanford Resarch Systems (SRS), USA	2.50	Sources for experiments
h)	Oscilloscopes: 6	Agilent/HP	9.00	General purpose analysers
i)	Broadband distribution amplifier	Stanford Resarch Systems (SRS), USA	2.50	Basic all-purpose instrument
j)	Lock in amplifier: 2	Stanford Resarch Systems (SRS), USA	3.00	Basic all-purpose instrument
k)	Keithley 2400 source meter with interface kits	Keithley, USA	3.00	Electrical characterization of different devices (Multipurpose use)
l)	Solar Simulator & Arc discharge lamp	Oriel Instrument, USA	17.00	To be used for photovoltaic device characterization
m)	Rotary vane vacuum pumps (3 Nos.)	Hind Highvac Co. Pvt. Ltd., India	1.00	To evacuate the vacuum chamber, sample compartment, desiccators etc.
n)	Sonic bath	Remi, Singapore	2.00	To be used for sample preparation
o)	Close cycle cryostat	Oxford Instruments, UK	12.00	This is required to study electrical, optical and related properties at low temperature
p)	Tubular Furnace (Room Temp - 1000 Degree Celsius)	Naskar Ceramics, Howrah	8.00	To be used for growth/synthesize and thermal annealing of the asgrown samples.
q)	Mikro 220R refrigerated centrifuge and Rotor	Sigma Aldrich	4.00	Centrifuge Machine for sample preparation
r)	i) Xenon & Mercury arc Lamp ii) UV- Visible Monochromator	a) Oriel Instruments, USA  b) Jobin Yvon SPEX (Model 1681 B) Minimate 2 Single Grating Monochromator / Spectrograph	24.00	Photoluminescence & Photoconductivity response measurement of various semiconducting/ composites systems. User Group- Researchers & M.Sc. Students
s)	Laboratory computer hardware: 15 PCs, essential software, UPS, printers	University supplier, Kolkata	10.00	Basic computational needs of the instrumentation centre
t)	General laboratory software: Matlab, Labview, Origin, etc	Miscellaneous suppliers, Kolkata	9.00	Basic software to be used in the entire laboratory
		Total cost of items under [8]	187.00	
		<b>GRAND TOTAL</b>	<b>498.00</b>	