Institute of Life Sciences, Bhubaneswar

List of High End Equipment available for various experiments on chargeable basis (the charges includes 18% GST)

Sl. No.	Instruments	Make	Model	Contact person	Rates per Sample/Slide/ Hour *Academic & Research Institutes (INR)*	Rates per Sample/Slide/ Hour *Industry (INR)*	Uses
1	FTIR (Fourier-transform infrared spectroscopy)	Perkin Elmer	RX Spectrum 1	Mr. Priyadarshi Ray Ph: 9861347087, 0674-2304282 Email: raypriyadarshi@gmail.com Faculty-Incharge Dr. S.K. Sahoo, Scientist-E	1000/- per Sample	1800/- per Sample	FTIR: The spectroscopy observed due to absorbance of mid infra-red. This absorbance corrects the bond present in molecule. It provides the information of internal structure. Single bond, double bond of same or different molecule, functional group could be detected. FTIR is sensitive analytical technique particularly for identifying organic chemicals. Both solid and liquid mode of synthesis applicable .Different applications: a)Thin film analysis, b) Identification of organic and inorganic compound, c) Polymer and composite testing, and d) Drug formulations etc.
2	DSC /TGA (differential scanning calorimetry)	Perkin Elmer	STA 6000	Mr. Priyadarshi Ray Ph: 9861347087, 0674-2304282 Email: raypriyadarshi@gmail.com Faculty-Incharge Dr. S.K. Sahoo, Scientist-E	2000/- per Sample	3000/- per Sample	DSC/TGA: This is one of the thermal analytical technique in which sample is scanned with respect to temperature or time. DSC obeys the principle of zero temperature difference between the sample and reference material measured as a function of temperature. Solid, powered, liquid samples be done. It provides vast thermal properties of materials such as a)Melting point, b) phase transformation, c) exothermic or endothermic reaction, and d)specific heat etc.
3	SEM (scanning electron microscope)	Zeiss	EVO 18	Mr. Priyadarshi Ray Ph: 9861347087, 0674-2304282 Email: raypriyadarshi@gmail.com Faculty-Incharge Dr. S.K. Sahoo, Scientist-E	2000/- per Sample	3000/- per Sample	SEM uses high energetic focused beam of electrons to get maximum resolution morphology, topography and crystalline images. Electron microscope has wide range of usages in industrial and research areas. Ceramics, bio-molecules, biofilms, inorganic, conducting etc. in form of powder or pellet could be done. There are diverse range of applications on biology, viz. dry Cells, bacteria, leaf, organism, bone, insects etc. with good clarity and sharpness.
4	AFM (Atomic force microscopy)	JPK	Nano Wizard - II	Mr. Priyadarshi Ray Ph: 9861347087, 0674-2304282 Email: raypriyadarshi@gmail.com Faculty-Incharge Dr. S.K. Sahoo, Scientist-E	3000/- per Sample	4000/- per Sample	This microscope belongs to family of scanning probe microscopy. A physical object will render the image called cantilever which should be most effective and meant with the surface. Dried and completely adhered with substrate essential for imaging. It has vast areas of material science, physical, Nano-technology and Bio-sciences applications. Such are thin film coating, dry and fixed cells, Nano-materials, DNA, bio samples etc. with high resolved accuracy images. This cantilever convulsed images provide a lot of information regarding size, morphology, spatial resolution (3D), histogram, force-distance curve (Tip-surface interaction).
5	Zeta Sizer (Particle size analyzer)	Malvern	Nano-ZS	Mr. Priyadarshi Ray Ph: 9861347087, 0674-2304282 Email: raypriyadarshi@gmail.com Faculty-Incharge Dr. S.K. Sahoo, Scientist-E	100/- per Sample	200/- per Sample	Zeta sizer: The instrument enhances the detection of Nano spheres/nanomaterials dispersed in a solution. It acquired the technique of Brownian motion. The light scattered in a randomly oriented Nano-particles or colloids dispersed in a fluid or solution resulting from their collision with fast moving particles. This instrument also used for zeta potential, thermal conductivity of solution, molecular weight.

6	AAS (Atomic absorption spectroscopy)	Analytik Jena	ZEE nit 700	Mr. Priyadarshi Ray Ph: 9861347087, 0674-2304282 Email: raypriyadarshi@gmail.com Faculty-Incharge Dr. S.K. Sahoo, Scientist-E	1000/- per Sample	2000/- per Sample	AAS: This spectroscopy is one of the most widely used techniques for determination of metals and some few elements at trace levels in a solution. The principle based on that atoms of a metal are volatilized in a flame and the absorption of narrow band of radiation produced by a hallow cathode lamp. Usages are a) Determination of trace elements b) Profiles of biological samples c) Traces in artificial fibres d) Hair analysis heavy metal poisons.
7	Facs Calibur (2 Colour flow Cytometer)	BD BIOSCIENCES	Facs Calibur	Mr. Paritosh Nath Ph:9861014318, 0674-2304299 E.Mail: paritoshnath@gmail.com Faculty-Incharge Dr. Satish Devdas, Scientist-E	1000/- per Hour (Minimum 1Hr)	2000/- per Hour (Minimum 1Hr)	BD FACSCalibur system is compact and easy to use. It is complemented by a broad suite of intuitive software solutions to streamline analysis for a wide range of applications, including enumeration of lymphocyte subsets, stem cells, residual white blood cells, reticulocytes, DNA analysis, immune function studies, bead based immunoassays, multiplexed analysis of signal transduction and phosphorylation targets. Dual-laser design provides the flexibility and sensitivity needed for multicolour analysis on this system. Two lasers an air-cooled argon laser and a red diode laser are spatially separated for high sensitivity, minimal need for compensation, and flexibility in Fluorochrome selection.
8	LSRFortessa (Multi colour Flow cytometer)	BD BIOSCIENCES	LSR Fortessa	Mr. Paritosh Nath Ph:9861014318, 0674-2304299 E.Mail: paritoshnath@gmail.com Faculty-Incharge Dr. Satish Devdas, Scientist-E	2000/- per Hour (Minimum 1Hr)	4000/- per Hour (Minimum 1Hr)	BD LSRFortessa instrument delivers the optimal sensitivity and resolution required for multicolor applications. This cell analyzer can be used to detect up to 16 colours simultaneously and supports 4 lasers. In addition to the reduced size, design innovations make filters and detectors more accessible for easier setup of new experiments. This Flow cytometer can also be used in the field of protein engineering to help identify cell surface protein variants. It mainly use for analysis of cell cycle, DNA damage, Immuno phenotyping, cytoplasmic antigen , surface antigen, phosphorylated proteins, cell preparation, viability, apoptosis, caspase activity, autophagy, necroptosis, calcium flux, dendritic cell, stem cells, translocation assay, Bacteria and mitochondrial studies etc.
9	Amnis (Imaging Flow cytometer)	Amnis	Image stream X	Mr. Paritosh Nath Ph: 9861014318, 0674-2304299 E.Mail: paritoshnath@gmail.com Faculty-Incharge Dr. Satish Devdas, Scientist-E	2000/- per Hour (Minimum 1Hr)	3000/- per Hour (Minimum 1Hr)	Amnis ImageStream x is the powerful combination of quantitative image analysis and flow cytometry in a single platform creates exceptional new experimental capabilities. Imaging flow cytometers can bring more power and insight into research. It equipped with 488 nm (blue), 405 nm (violet), 561 nm(green), and 592 nm (granges), 642 nm (red) and a 785 nm (far red) lasers dedicated for scatter. All of which are solid state and variable power, it also can controlled by user. Amnis applications use high-throughput imaging of events such as internalization, shape change, and cell-cell interactions to obtain novel quantitative data to elucidate cell signaling, chemotaxis, the immunological synapse and more.
10	ABI Genetic Analyser	Applied Biosystem	ABI 3500	Dr. Naga Jogayya.K Ph: 8456988355, 0674-2304284 E.Mail: nagajogayya@ils.res.in Faculty-Incharge: Dr. Soma Chattopadhyay, Scientist-E	300/- per sample	400/- per sample	For Analyzing DNA sequencing, Genotyping (SSR and SNP), Fragment Analysis (AFLP, ISSR, SRAP, etc.), and DNA Polymorphism

11	RT PCR (Real Time PCR)	Applied Biosystem	-	Dr. Naga Jogayya.K Ph: 8456988355, 0674-2304284 E.Mail: nagajogayya@ils.res.in Faculty-Incharge: Dr. Soma Chattopadhyay, Scientist-E.	300/- per Sample	400/- per Sample	For analyzing qPCR data, discover Standard Curve, Genotyping, Relative Quantification and SNP analysis.
12	Micro Array System	Affymetrix	Gene ChipScanner 3000 7GSy	Dr. Soumen Chakraborty, Scientist-E. Ph: 0674-2304327. E.Mail: soumen@ils.res.in	12000/- per sample (does not include chip) minimum 4 samples	18000/- per sample (does not include chip) minimum 4 samples	For analyzing DNA Hybridization, cDNA Hybridization and measuring gene expression and expression profiling.
13	SPR (Surface plasmon resonance)	Bio Rad	ProteOn XPR36	Dr. Narottam Acharya, Scientist-E, Ph: 0674-2304278 E.Mail: narottam_acharya@ils.res.in	Rs. 1000 per day. (Necessary consumables will be procured by the researcher only).	Rs. 2000 per day. (Necessary consumables will be procured by the researcher only).	The ProteOn XPR36 system is a Bio-rad provided SPR (Surface plasmon resonance) optical biosensor that simultaneously measures 36 separate biomolecular interactions. Data are collected from the 6x6 interaction array in real time, and measurement of the 36 interactions is label-free. The system is ideally suited for: Antibody screening; kinetic characterization of protein-protein, protein-peptide, protein-nucleic acid, and protein –small molecule interactions. ProteOn sensor chips that are used with the system are prepared with a modified alginate polymer layer bound to the gold surface of the sensor prism. Each ProteOn chip is suitable for particular applications, including the following: ProteOn GLC sensor chip- for protein-protein interaction analysis. ProteOn GLM sensor chip- for protein-small molecule and protein-protein interaction analysis. ProteOn GLH sensor chip- for protein-small molecule interaction analysis. ProteOn NLC sensor chip- for DNA-protein, and protein-protein interaction analysis. ProteOn HTG sensor chip- for protein-protein and protein-peptide interaction analysis. ProteOn HTE sensor chip- for protein-small molecule interaction analysis. ProteOn LCP sensor chip- for capturing lipid assemblies for lipid-protein, lipid- small molecule, and membrane protein-protein interaction analysis.
14	Robotic Protein Crystalization	Formulatrix	NT8 Crystallization	Dr. Dileep Vasudevan, Scientist-D, Ph: 0674-2304291 E.Mail: dileep@ils.res.in	1000/- per 96 well Plate	2000/- per 96 well Plate	Formulatrix NT8 Crystallization Robot: Macromolecules such as proteins, nucleic acids, and other large biological complexes require optimization of various parameters to get a crystal suitable for X-ray diffraction studies. The success of a crystallization experiment increases multifold by using more screening conditions. With the usage of robotics, larger number of conditions can be screened for any given protein sample and that too at a faster pace, with lesser volumes of precious protein and screen conditions. NT8 is a robotic system from Formulatrix, used for crystallization screening experiments and it can perform the typical hanging drop, sitting drop, micro-batch, additive screening and seeding trials efficiently and can dispense drops from 25 nl to 1.5 µ l. It has a proportionally controlled active humidification chamber to prevent drop evaporation, which also improves experiment reproducibility. The NT8 robot is used extensively in ILS for initial crystallization screening and further optimization through grid screening, additive screening, and seeding experiments to get quality crystals of macromolecules for X-ray diffraction studies.

15	Bio-Plex	Bio-Rad	Luminex	Mr. Paritosh Nath Ph:9861014318, 0674-2304299 E.Mail: paritoshnath@gmail.com Faculty-Incharge Dr. Satish Devdas, Scientist-E	3500/- per Plate (Minimum 1Plate)	5000/- per Plate (Minimum 1Plate)	Bio-Plex Multiplex System quantify over 500 different protein and peptide targets simultaneously in a single sample using, powered by Luminex x MAP technology. It is a bead-based flow cytometric platform dedicated to multiplex analysis. Assays are available for many classes of biomolecules and species including cytokines and growth factors, and as specialized disease state panels such as cancer, acute phase immune response, and diabetes markers. Assays are available in several configurations including all-in-one multiplex kits, singleplex sets, and custom kits including premixed options. It offers high-performance readers, industry-leading software, and nsitive assays in ready-to-use or custom configurations, enabling to obtain high-quality data from limited samples.
16	Cryostat	Leica Microsystem	Leica CM 1850	Mr. Paritosh Nath Ph:9861014318, 0674-2304299 E.Mail: paritoshnath@gmail.com Faculty-Incharge Dr. Satish Devdas, Scientist-E	1000/- per Sample	2000/- per Sample	Cryostat Microtomes is used for sectioning fresh frozen tissues and other materials which are suitable for sectioning. This is used for sectioning fresh frozen tissues without embedding procedures and it also used in plant tissue studies. It has manual mode of operation for sectioning of samples. The specimen feed in manual microtome or manual rotary microtome is mechanically driven using hand wheel rotation. Cryostat delivers diagnostic confidence by reliably producing quality sections to help provide an accurate diagnosis - even with the most complicated tissue types. Cryostat microtome design and features • LCD display shows chamber temperature, Cryo temperature and current time. It can also manually adjust the section and trim thickness in micron/section counter. • Specimen retraction function protects specimen from blade injury. • Motorized function offers intermittent and continuous sectioning, plus user-defined speed control. • Cryo chamber temperature up to -35 deg. and Cryo bar up to -45 deg.
17	Ultra-Centrifuge	HITACHI & SORVALL	CP 100NX & Evolution RC	Dr. Narottam Acharya, Scientist-E, Ph: 0674-2304278 E.Mail: narottam_acharya@ils.res.in	1000/- per Sample (Minimum 2 Tubes)	2000/- per Sample (Minimum 2 Tubes)	ULTRACENTRIFUGATION: It is an important tool in biochemical research which through rapid spinning imposes high centrifugal forces on suspended particles, or even molecules in solution, and causes separations of such matter on the basis of differences in weight. Example- red cells separated from plasma of blood, nuclei from mitochondria in cell homogenates, one protein from another in complex mixtures. And also isolation of macromolecules such as DNA, RNA, Lipids etc. Its rotational speed up to 150,000 rpm. It is creating a centrifugal force up to 900,000 x g.
18	Maldi TOF/TOF	ABSCIEX	5800 tof /tof	Dr. Amol Ratnakar Suryawanshi, Scientist-D, Ph.:0674-2304329 E.Mail: amol@ils.res.in	3000/- Per Sample (w/o Enzyme digested)	5000/- Per Sample (w/o Enzyme digested)	MALDI TOF/TOF mass spectrometers are used to reveal amino acid sequence of peptides. It is used for the rapid identification of proteins isolated by using gel electrophoresis

Experiments	Sample required with signed request form	Process required	**External user charges- Academic** (In INR per sample)	**External user charges- Industry** (In INR per sample)
Intact Mass Identification by MALDI MS from Purified/Desalted lyophilised Sample	Purified/ Desalted lyophilised Samples	MALDI MS	**500**	**1000**
Protein Identification using MALDI MS/MS from Gel based (comassiee stained Spot/Band) or gel free (Purified/Desalted lyophilised) sample	Gel based (comassiee stained Spot/Band) or gel free (Purified/ Desalted lyophilised) sample	Enzyme Digestion + PMF + MS/MS + Database search	**5000**	**10000**
Protein Identification using MALDI MS/MS from Gel based (comassiee stained Spot/Band) or gel free (Purified/Desalted lyophilised) Sample **with enzyme digested and desalted**	Gel based (comassiee stained Spot/Band) sor gel free (Purified/ Desalted lyophilised) Sample with enzyme digested and desalted	PMF + MS/MS + Database search	**3500**	**7000**
Proteins Identification using nLC MALDI MS/MS from peptide mixture (enzyme digested and desalted) (Single fraction / sample)	Peptide mixture (enzyme digested and desalted) (Single fraction / sample)	nLC + MALDI MS/MS + Database search	**8000**	**16000**
Additional charges for Enzyme digestion and desalting for Protein Mixture sample required for nLC MALDI MS/MS	Enzyme digestion and desalting for Protein Mixture sample required for nLC MALDI MS/MS	Enzyme digestion and desalting by C18 tips	**8000**	**16000**