List of Equipment available in CIF

Sr. No.	Name of the equipment	Make	Model	Brief description
1	**Atomic Force Microscope**	Bruker	Multimode-8	AFM is used to analyze surface topology, morphology, estimate surface roughness, atomic manipulation and spectroscopy
2	**FTIR**	Bruker	Tensor 37	FTIR is used for elemental analysis to understand the vibrational bands, surface functionalization etc.
3	**UV-visible spectrophotometer**	Hitachi	U3900	A basic instrument used for obtaining absorption/ transmittance spectra, optical band gap and solute concentration etc.
4	**Contact angle analyzer**	SEO Optics		The system is used for measuring contact angle, surface and interfacial tensions, wettability, and absorption. Characterisation of wetting properties of solid surfaces. Characterisation of surface energy of smooth surfaces. Characterisation of absorption of liquid into porous materials.
5	**DLS**			Dynamic light scattering (also known as photon correlation spectroscopy or quasi-elastic light scattering) is used to determine the size distribution profile of small particles in suspension or polymers in solution. It can also be used to probe the behavior of complex fluids such as concentrated polymer solutions.
6	**Incubator/Shaker**			Bacterial culture and growth at the desired temperature preferable at 37^{o}C.
7	**Robotic Crystallization system**			The machine is used for the purpose of high-throughput protein crystallization**.**
8	**RT-PCR**	Applied Biosystems	7900HT sequence Detection System with TaqMan Low Density Array.	The ABI PRISM 7900HT Sequence Detection System is a high-throughput real-time PCR system that detects and quantitates nucleic acid sequences. The automation accessory combined with 384-well plate and 7900HT Micro Fluidic Card capability make the 7900HT system ideally suited to meet the high-throughput requirements of today's drug discovery process. Key applications include gene expression quantitation and the detection of single nucleotide polymorphisms (SNPs) using the fluorogenic 5' nuclease assay. The TaqMan Low Density Array is an easy-to-use, micro fluidic card for real-time PCR.

				TaqMan arrays can be obtained with customer-selected TaqMan Gene Expression Assays dried into each of the 384 reaction wells.
9	**Spectrofluorimeter**	Agilent	Carry Eclipse	It take advantages of the fluorescent properties of some compounds in order to provide information regarding their concentration and chemical environment in a sample. A certain excitation wavelength is selected, and the emission is observed either at a single wavelength, or a scan is performed to record the intensity versus wavelength, also called an emission spectra
10	**Potentiostat**	IVIUM	Vertex DC	Used for electrochemical characterization of biosensors, solar cells, batteries. A basic instrument for CV, DPV, SWV, EIS etc. Modern electrochemical studies using three electrode systems for investigations of reaction mechanisms related to redox chemistry and other chemical phenomena.
11	**Inductively Coupled Plasma Enhanced Optical Emission Spectroscopy (ICPE-OES)**	Perkin Elmer	AVIO-200	Inductively coupled plasma optical emission spectroscopy (ICP-OES) is the technique of choice for many different applications, including those in the environmental, metallurgical, geological, petrochemical, pharmaceutical, materials, and food safety arenas. It can be applied to varying sample types such as aqueous and organic liquids and solids. The advantages of using ICP-OES over other elemental analysis techniques include its wide linear dynamic range, high matrix tolerance, and the enhanced speed of analysis that can be achieved.
12	**Erbium Doped Fiber Amplifier With Optical Fiber System**	Benchmark Electronic Systems	ETS	Erbium-Doped Fiber Amplifier (EDFA) is an optical amplifier used in the C-band and L-band, where the loss of telecom optical fibers becomes lowest in the entire optical telecommunication wavelength bands. EDFA is now most commonly used technique to ascertain the loss of an optical fiber in long-distance optical communication. Another important characteristic is that EDFA can amplify multiple optical signals simultaneously, and thus can be easily combined with WDM technology.
13	**Fluorescence Activated Cell Sorter System (FACS)**	Becton Dickinson	Aria III	Fluorescence-activated cell sorting (FACS) is a specialized type of flow cytometry. It provides a method for sorting a heterogeneous mixture of biological cells into two or more containers, one cell at a time, based upon the specific light scattering and fluorescent characteristics of each cell. It is a useful scientific instrument, as it provides fast, objective and quantitative recording of fluorescent signals from

				individual cells as well as physical separation of cells of particular interest.
14	**Stopped-Flow Reaction Analyzer, Double mixing system with Abs and Fluorescence detection**	Applied Photophysics	SX20	Typically used to gain an understanding of reaction mechanisms including drug-binding processes, or to determine protein structure, stopped-flow spectroscopy enables the study of fast reactions in solution over timescales in the range of 1 millisecond to hundreds of seconds. A wide range of reactions can be investigated involving, for example, protein-protein interactions, ligand binding, electron transfer, fluorescence resonance energy transfer (FRET), protein folding, as well as enzyme, chemical or coordination reactions.
15	**Zeta Potential Analyzer**	Malvern	Zetasizer Nano ZS	The Zetasizer range provides both exceptionally high performance and entry level systems that incorporate combinations of a particle size analyzer, zeta potential analyzer, molecular weight analyzer, protein mobility and microrheology measurements. Particles and molecules from less than a nanometer in size to several microns can be analyzed by a range of variants to suit your applications and budget. The systems measure size and microrheology using dynamic light scattering, zeta potential and electrophoretic mobility using electrophoretic light scattering, and molecular weight using static light scattering.
16	**TG-DTA/DSC**	Setaram Instrumentation, France	LABSYS EVO 1150°C DSC131 EVO analyzer	Thermogravimetry is a technique measuring the variation in mass of a sample when it undergoes temperature scanning in a controlled atmosphere. This variation in mass can be either a loss of mass (vapour emission) or a gain of mass (gas fixation). Differential thermal analysis is a technique measuring the difference in temperature between a sample and a reference (a thermally inert material) as a function of the time or the temperature, when they undergo temperature scanning in a controlled atmosphere. The DTA method enables any transformation to be detected for all the categories of materials.
17	**Time Resolved Fluorescence Lifetime Measurement Spectrometer**	Horiba	DeltaFlex-01-DD	The fluorescence (or in general photoluminescence) lifetime is characteristic for each fluorescent or phosphorescent molecule and can thus be used to characterize a sample. It is, however, also influenced by the chemical composition of its environment. Additional processes like Förster Resonance Energy Transfer (FRET), quenching, charge transfer, solvation dynamics, or molecular rotation also have an

				effect on the decay kinetics. Lifetime changes can therefore be used to gain information about the local chemical environment or to follow reaction mechanisms.
18	**LC MS/MS**	Waters	Xevo TQD System	Liquid chromatography–mass spectrometry is an analytical chemistry technique that combines the physical separation capabilities of liquid chromatography with the mass analysis capabilities of mass spectrometry.
19	**Electrical Power System Simulator**	OPAL-RT		Electrical power system simulation involves power system modeling and network simulation in order to analyze electrical power systems using design/offline or real-time data. Power system simulation software's are a class of computer simulation programs that focus on the operation of electrical power systems.
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