



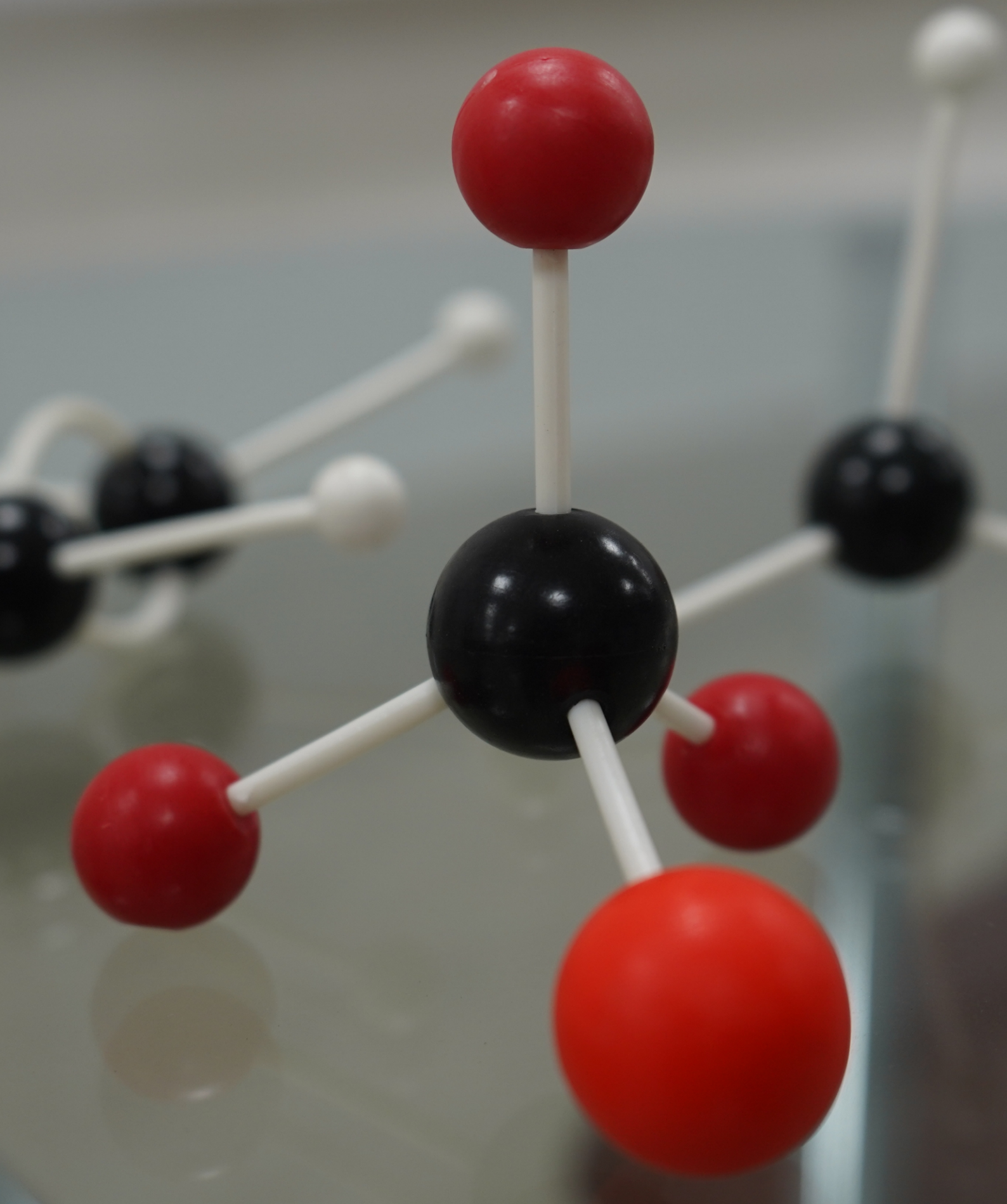
**KALINGA
UNIVERSITY**

Kotni, Near Mantralaya, New Raipur, CG



CENTRAL INSTRUMENTATION FACILITY

www.kalingauniversity.ac.in



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ABOUT KALINGA UNIVERSITY



Kalinga University, Raipur has emerged as a centre of excellence of higher education in Central India. Strategically located in the Smart City of New Raipur, this University has started carving a niche for itself in the education domain and is rising as a shining star on the horizon of quality education.

About Raipur - Raipur is the Capital of Chhattisgarh and New Raipur is the New Capital of CG in the making. New Raipur is the fourth planned city of India with wide roads and miles of greenery and is pollution free . It is the first integrated and smart city of the country. A cosmopolitan city which is also the hub of higher education hosts IIM, IIT, IIIT, National Law University, CIPET, NIT and AIIMS. In addition it also hosts most National and International Brands of Food and Retail Outlets.

Establishment - Established in 2013, this University has been able to win the confidence of over 7000 students. Meritorious students from all over the country and various foreign countries like Afghanistan, Angola, Bangladesh, Cameroon, Gambia, Ivory Coast, Kenya, Lesotho, Liberia, Malawi, Namibia, Nepal, Nigeria, Papua New Guinea, South Sudan, Swaziland, Tanzania, Uganda, Zambia and Zimbabwe etc. have chosen this University for their education and career.

Schools of Excellence - A centre for Doctoral Research Programmes in various fields. Currently the University is serving the student community through various schools offering UG and PG programs namely Arts & Humanities, Biotechnology, Commerce & Management, Design, Engineering, Fashion Design, Information Technology, Interior Design, Journalism & Mass Communication, Law, Library Science, Pharmacy, Science, Yoga.

Academics and Faculty - All schools are headed by senior professors having excellent academic credentials and experience of teaching, publications and research. They are ably supported by the well qualified faculty members who come from top educational institutions and the Industry. Students also get an opportunity to learn from a distinguished panel of experts drawn from various industries, who regularly come for guest lectures.

Infrastructure - Kalinga boasts of World Class Infrastructure and student facilities with student centric approach. Highest attention is paid to hands on learning approach and students are encouraged to come up with innovative ideas for projects and practicals. The University has more than 75 laboratories and workshops, all well equipped with the latest, state of the art apparatus and tools. Special emphasis is given to the development of communication skills through the language lab. More than 1000 computers are available for the use of the students.

The Library has a collection of over 80,000 books and also offers digital content through membership of DELNET, National Digital Library and NPTEL. Various magazines and journals are available for the use of the faculty and students. Infrastructure consists of Student Hostel facilities, Green Acres, Canteen, Food Mess, Gymnasium, Fully Wi-fi Campus, ATM, Mini Market, Student hangout Areas, Sports Complex, Recreation Halls with Indoor Games and Music and recreation activities.

Industry Orientation and Leadership - Industry interaction is an integral part of the curriculum and industrial visits, internships on live projects and mentoring by the Industry leaders are regular features. The University has developed excellent connections with the top Industries of the region by taking memberships of leading industrial associations like Confederation of Indian Industries, PHD Chamber of Commerce and Industry, Federation of Indian Chamber of Commerce and Industry, Indian Importers Chamber of Commerce and Industry etc. The University has an active chapter of Young Indians in which students get an opportunity to interact extensively with the Industry leaders and attend various corporate seminars and events.

Life Changing Experience - Kalinga is a Life Changing Experience where the focus is on over all development of students . NCC, NSS and various other clubs and societies offer opportunities to students to showcase their talent and learn under the guidance of experts. Music, Dance and Martial Arts trainers are available for the students. Coaches of different games and sports like Cricket, Football, Basketball, Volleyball and Athletics are also available for sharpening the skills of the students.



ABOUT

Central Instrumentation Facility

The Central Instrumentation Facility (CIF), Kalinga University is well equipped with state of the art instrument like X-Ray Diffractometer, Scanning Electron Microscope (SEM), High Performance Liquid Chromatography (HPLC), Thermal Cycler (PCR), Horizontal Mini Gel Electrophoresis Unit, UV Transilluminator, FT-IR Spectrophotometer, Bio-Chemistry Analyzer, Touch Screen Viscometer, Digital Viscometer, UV-Visible Spectrophotometer, Digital Turbidity Meter, Digital Flame Photometer, Rotary Tablet Press.

The CIF provides all the Students, Researcher, Faculty of the Kalinga University and external users the platform to use all the sophisticated instrument under one roof at nominal cost. It also ensures the proper implementation and promotion of research culture amongst all the stake holders in the University.



X-RAY DIFFRACTOMETER

DESCRIPTION

The Central Instrumentation Facility (CIF) of Kalinga University house, X-Ray Diffractometer (XRD 3010). It is a high end machine mainly used for the phase characterization, quantitative analysis, crystal structure, material structure, crystal orientation, macroscopic and microscopic stress determination, crystal size, crystallinity determination, etc. By the principle of Scherrer, High precision is assured. Widely used in geology, oceanology, biology, chemistry, nuclear station research as well as industrial and institute research.



SPECIFICATIONS

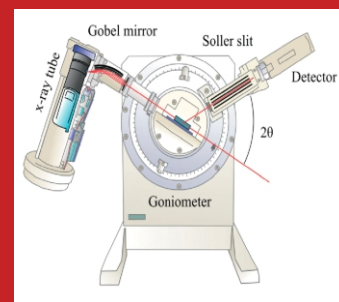
- ❖ X-Ray Tube, Tube Type: Ceramic or glass tube are optional
Target: Cu, Fe, Co, Cr, Mo, Ti, W
- ❖ Default : Cu Focus size: 1×10mm Power : 2KW
- ❖ X-ray Generator: Tube voltage: 10-30KV or 10-40KV Tube current : 5-20mA or 5-30mA Filament current : DC 0-3A Stability: ±0.001%, Voltage deviation 10% Max power: 600W or 1200W, Vertical Goniometer: Radius: 150mm Scan Type: $\theta/2\theta$ linkage 2θ Scan range: $-3^\circ - 150^\circ 2\theta$ Detecting range: $+2^\circ - 150^\circ$ Position Speed: 1000°/min (2θ) Scan Speed : 0.01 - 100°/min 2θ Min stepping : 0.0002° Accuracy: 0.001° 2θ Repeatability accuracy : 0.0005
- ❖ Software
- ❖ Data Collecting Software, Data Analysis Software Data Calibration

FEATURES & BENEFITS

- ❖ X-Ray crystallography provides a two-dimensional view that gives an indication of the three-dimensional structure of a material
- ❖ Relatively inexpensive and simple
- ❖ Useful for large structures: Not limited by size or atomic weight.
- ❖ Can yield high atomic resolution.

APPLICATIONS

- ❖ Pharmaceutical Industry
- ❖ Forensic Science
- ❖ Geological Applications
- ❖ Microelectronics Industry
- ❖ Glass Industry



SCANNING ELECTRON MICROSCOPE

DESCRIPTION

The Central Instrumentation Facility (CIF) of Kalinga University is equipped with Scanning Electron Microscope (SEM-3069), it is an analytical testing method that captures high resolution images of objects as small as 15 nanometers. Scanning Electron Microscopy produces images by scanning samples with a focused beam of electrons. The electrons interact with the atoms on the surface of the sample, and collect information about the sample's topography and composition.



SPECIFICATIONS

- ❖ SEM - 3069 Std Tungsten Filament SEM:
- ❖ Resolution: 3nm 30KV(SE) 6nm 30KV(BSE)
- ❖ Magnification: Negative Magnification: 6x~300000x
Screen Magnification: 12x~600000x
- ❖ Electron Gun: Tungsten Heated Cathode-Pre Centered
Tungsten Filament Cartridge Accelerating Voltage: 0~30KV
- ❖ Lens System: Three-level Electromagnetic Lens
(Tapered Lens) Objective Aperture: Molybdenum Aperture
Adjustable Outside Vacuum System
- ❖ Specimen Stage: Five Axes Stage

FEATURES & BENEFITS

- ❖ Magnification and higher resolution – as electrons rather than light waves are used, it can be used to analyze structures which cannot otherwise be seen. The resolution of electron microscopy images is in the range of up to 0.2 nm, which is 1000x more detailed than light microscopy.
- ❖ Diverse applications – Electron microscopy has a diverse range of applications in many different fields of research including technology, industry, biomedical science and chemistry.
- ❖ Plays important role in semiconductor inspection, computer chip manufacture, quality control and assurance, analysis of atomic structures, and drug development.
- ❖ High-quality images – electron microscope uses the system to produce highly detailed images of structures which are of a high quality, revealing complex and delicate structures that other techniques may struggle to reproduce

APPLICATIONS

- ❖ Scientific and industry-related fields, especially where characterizations of solid materials is beneficial.
- ❖ Topographical, morphological and compositional information,
- ❖ Detect and analyze surface fractures, provide information in microstructures, examine surface contaminations, reveal spatial variations in chemical compositions, provide qualitative chemical analyses and identify crystalline structures.
- ❖ Research tool in fields such as life science, biology, gemology, medical and forensic science, metallurgy.

HIGH PERFORMANCE LIQUID CHROMATOGRAPHY

DESCRIPTION

The Central Instrumentation Facility (CIF) of Kalinga University gives importance to high end analytical instruments. High performance liquid chromatography is one of the most powerful tools in analytical chemistry. It has the ability to separate, identify, and quantitate the compounds that are present in any sample that can be dissolved in a liquid. HPLC is a popular and versatile technique that provides affordable solutions on separation, identification, and quantification of constituents of complex organic samples. The speed and sensitivity of HPLC are much higher than that of Liquid Chromatography due to the application of high pressure.



SPECIFICATIONS

Flow Range	0.001-9.999 ml/min
Delivery Method	Double piston(Main &Auxillary)
Pump Head.	10m 1 SST/Peek analytical
Accuracy	±1% or ±2µl/min, whichever is greater ±1% or ± 1µl/min, whichever is greater (Micro)
Flow rate setting	0-0.10ml/ min 0.001 inc. 0.10-0.90 ml/min 0.010 inch. 1.0ml/min +0.10 inc.
Precision	0.25% from 0.1 ml/min. to 10 mL/min at 20°C 0.25% from 0.05mL/min. to 4 mL/min.
Pmax	6000psi
System connections.	1/16" capillaries
Control	Stand-alone mode using front panel

FEATURES & BENEFITS

- ❖ The small amount of sample (Gram, PPM, and ng/ml) can be detected by this chromatography.
- ❖ It is a rapid and precise method of separation.
- ❖ Very few sample volume/quantity is required for analysis.
- ❖ It works on a broad range of samples.
- ❖ In some chromatography techniques, it is possible to separate different components of a complex mixture.
- ❖ Continuous operation possible on a large scale
- ❖ The separation of components can be achieved in different methods.

APPLICATIONS

- ❖ Qualitative analysis - Separation of thermally unstable chemical and biological compounds, e.g., drugs (aspirin and ibuprofen), salts (sodium chloride), proteins (egg white or blood), organic chemicals (polystyrene and polyethylene), herbal medicines, and plant extracts.
- ❖ Quantitative analysis - To determine the concentration of a compound in a sample by measuring the height and area of the chromatographic peak.
- ❖ Preparation of pure substances for clinical and toxicology studies and in organic synthesis. This is also called preparative chromatography.
- ❖ Trace analysis – this is the analysis of compounds present in very low concentrations in a sample. This is very useful in pharmaceutical, toxicology, environmental, and biological studies.

THERMAL CYCLER (PCR)

DESCRIPTION

The Central Instrumentation Facility (CIF) of Kalinga University has a dedicated section for Molecular Biology related experiments. A Thermal Cycler is used to amplify a specific region of a DNA strand (the DNA target). Most PCR methods amplify DNA fragments of between 0.1 and 10 kilo base pair (kbp) in length, although some techniques allow for amplification of fragments up to 40 kbp. The amount of amplified product is determined by the available substrates in the reaction, which becomes limiting as the reaction progresses.



SPECIFICATIONS

- ❖ Instrument Features Block ramp rate: 5.0°C/Sec.
Adjustable ramp rate Sample ramp rate: 4.4°C/S
Temperature range 4-99°C/S
- ❖ Temperature accuracy: $\pm 0.2^\circ\text{C}$ uniformity: $\pm 0.3^\circ\text{C}$
(20-72°C) Temperature Gradient Technology

FEATURES & BENEFITS

- ❖ Once amplified, the DNA produced by PCR can be used in many different laboratory procedures. For example, most mapping techniques in the Human Genome Project (HGP) relied on PCR.
- ❖ PCR is also valuable in a number of laboratory and clinical techniques, including DNA fingerprinting, detection of bacteria or viruses and diagnosis of genetic disorders.

APPLICATIONS

- ❖ Polymerase Chain Reaction is used in Medical, Forensic and Applied Sciences
- ❖ In Gene expression, Mutagenesis, Cloning & Gene expression studies
- ❖ In mycology and parasitology, PCR technology favors the early identification of microorganisms

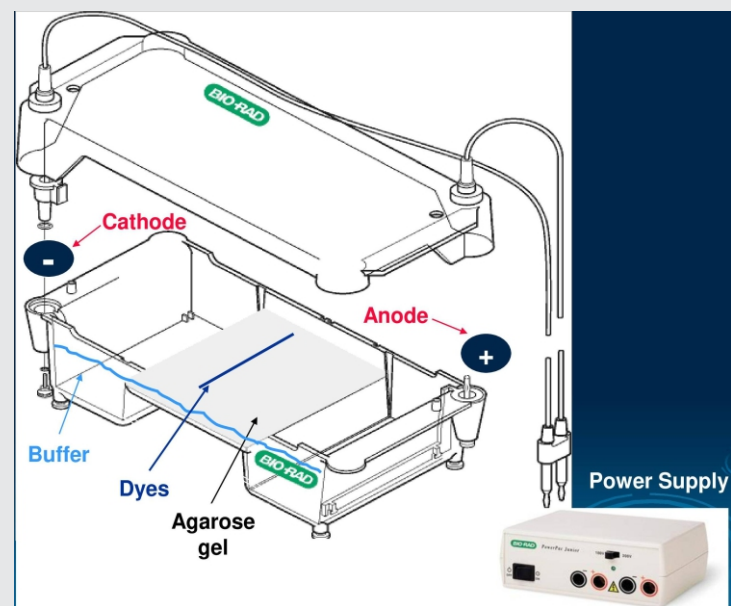
HORIZONTAL MINI GEL ELECTROPHORESIS UNIT

DESCRIPTION

The Central Instrumentation Facility (CIF) of Kalinga University is equipped with horizontal gel electrophoresis unit. This submerged gel electrophoresis unit helps in the separation of DNA fragments amplified in PCR based on the molecular weight

SPECIFICATIONS

- ❖ Complete Set - Including base gel running unit, safety lid, at least two casting trays and combs. Gel Casting Tray: Standard form; Combs sizes: 1.0 mm -4 wells, 8 wells & 12 wells; 2.0 mm - 4 wells, 8 wells & 12 wells
- ❖ Power Supply suitable for vertical (mini and standard) and horizontal gel electrophoresis, semi-dry and mini tank blotting.
- ❖ Constant voltage and constant current modes
- ❖ Output Voltage: Adjustable from 0/5/10V to 500V/600V with an increment of 1 V or less
- ❖ Output Current: up to 800/1000 mA with increment of 1 mA
- ❖ Output power : 300W or more
- ❖ Terminals/ Sockets : 4 Pairs/4
- ❖ Safety: All necessary safety provisions like Over load, No load, Sudden change in load, power failure indication, Over Temperature and safe plugs and sockets
- ❖ Input Voltage: 230V \pm 10VAC, 50Hz



FEATURES & BENEFITS

- ❖ It is meant for Nucleic Acid (DNA-RNA) characterization.
- ❖ Submerged Electrophoresis Unit/Agrose Gel (Mini size)
- ❖ The unit is joint less, moulded of transparent Polycarbonate to avoid leakage.
- ❖ It is fitted with 2 Platinum Electrodes and supplied with transparent joint less safety lid which is also made of polycarbonate.
- ❖ It is completed with Buffer chamber, safety lid with cables.

APPLICATIONS

- ❖ Gel electrophoresis allows for the separation of nucleic acids (DNA or RNA) and proteins based on their size.
- ❖ Electrophoresis is used by labs studying vaccines, medications, forensics, DNA profiling or other life science applications.
- ❖ The technique is also used in industry such as molecular biology or food sciences.

UV TRANSILLUMINATOR

DESCRIPTION

The Central Instrumentation Facility (CIF) of Kalinga University has facility to visualize the PCR product run on a gel. The ultra-violet (UV) transilluminator equipment is used, it emits high levels of UV radiation through the viewing surface by directly placing it on the UV transilluminator.



SPECIFICATIONS

- ❖ U.V. Transilluminator, (High Accuracy Research Grade), Wavelength 302 and 365nm, No. of tubes 6, Wattage, Detection Limit View area Filter, Body, UV Protection shield, 1ngm of stained DNA 210X260cm Quartz UV filter, Aluminium pressure die body furnished in black powder coating.

FEATURES & BENEFITS

- ❖ Provision of UV protecting shield.
- ❖ Best suitable for viewing fluorescent stationary gel. 3. Gel viewing filter provides high quality performance by facilitating sharpened gel view.
- ❖ Compact in size and light in weight.
- ❖ Provision of working in both high and low intensities with an aid of simple switch system.
- ❖ Many compatible DNA stains can be used

APPLICATIONS

- ❖ Analytical gel documentation, i.e. acquisition of images for printing/storage on files
- ❖ Preparative work, i.e. excision of DNA bands from gels, e.g. for cloning purposes
- ❖ These two applications require transilluminators with different characteristics. Short wave or medium wave UV light (UV C and B) is crucial for analytical gel documentation to enhance the image brightness and to reach a maximum of contrast. On the other side, long wave UV light (UV A) is recommended
- ❖ For preparative work, as short and medium wave UV light can cause severe damages to the DNA. During UV irradiation, two adjacent thymine bases can be covalently crosslinked so that thymine-dimers are formed. These can cause mutations or the replication may be interfered.

FT-IR SPECTROPHOTOMETER

DESCRIPTION

The Central Instrumentation Facility (CIF) of Kalinga University is equipped with FT-IR Spectrophotometer. The basic principle is that each compound absorbs or transmits light over a certain range of wavelength. In this method FT-IR is used to measure how much a chemical substance absorbs light by measuring the intensity of light as a beam of light passes through sample solution.



SPECIFICATIONS

Spectral Range -	7800 to 350 cm^{-1}
Resolution -	Better than 0.85 cm^{-1}
Wavelength Precisions -	+ 0.01 cm^{-1}
Scanning speed-5-	step adjustable for different applications.
Signal to noise ratio -	Better than 15,000:1 (RMS Value, at 2100 cm^{-1} , resolution: 4 cm^{-1} , detector DTGS. 1 minutedata collection)
Beam Splitter –	Ge COATED KBr
Infrared source -	Air Cooled, high efficiency, Reflex sphere module
Detector -	DTGS
Datasystem -	Compatible computer
Software -	FT-IR software contains all routines needed for basic spectrophotometer operations, including library search, quantitation and spectrum export.
IR Library -	11R libraries included
Dimensions -	54 x 52 x 26 cm
Weight -	28 Kgs.

FEATURES & BENEFITS

- ❖ Improved optical throughput due to a slit-free optical design, resulting in a high signal-to-noise ratio.
- ❖ The ability to obtain data at multiple wavelengths simultaneously without the need for scanning using a moving grating/prism.
- ❖ Improved wave number resolution by using laser source for accurate digital signal sampling and extending the mirror movement distance in the interferometer.
- ❖ Extended wave number measurement range by changing the light source, beam splitter and detector for the specific purpose, either far-IR or near-IR.

APPLICATIONS

- ❖ Analysis of thin films and coatings
- ❖ Quality verification of incoming/outgoing materials
- ❖ Monitoring of automotive or smoke stack emissions
- ❖ Microanalysis of small sections of materials to identify contaminants
- ❖ Deformulation of polymers, rubbers, and other materials through thermogravimetric infra-red (TGA-IR) or gas chromatography infra-red (GC-IR) analysis

BIO-CHEMISTRY ANALYZER

DESCRIPTION

The Central Instrumentation Facility (CIF) of Kalinga University is equipped with Semi-Automated Biochemistry Analyzers. The Semi-Automatic analyzers are used in laboratories and medical practices. This provides tremendous flexibility for sample analysis and it uses the Colorimetry, Photometry and Absorbance principles for working under the optical techniques.



SPECIFICATIONS

Automation Grade	Semi-Automatic
Programmable Test Memory	248 Tests
Features	Bench-Top
Optical support	340, 405, 450, 505, 546, 578, 630 nm
Display	7" tft lcd with touch screen
Memory	300 programs, 200000 results
Temperature control	Peltier control, room temperature, 25 degree c , 30 degree c & 37 degree c
Optical	340,405,450,505,546,578,630 nm 2 extra filters are optional.
Room Temperature	25 Degree c, 30 Degree c & 37 Degree c
Photometric Range	0. 0000 - 3. 0000 ABS
Resolution	0. 0001 abs
Light source	6v/10 w halogen lamp
Keyboard	Connectivity
Power requirement	Wide power supply ac -100 - 240 v, 50/60 hz.
Interface	4 usb slave, 1 usb host, 1 ethernet port
Printer	Build in thermal printer

FEATURES & BENEFITS

- ❖ Significantly reduces repetitive tasks
- ❖ Handles loading, tube cleaning, mechanical control, and data processing
- ❖ Easy to operate (easy insertion of samples and automated programs)
- ❖ Speed up complex analysis
- ❖ Helps in streamlining daily laboratory activities
- ❖ To enable early detection as well as diagnosis of disease
- ❖ Comply with safety standards of the healthcare industry
- ❖ Provides a report as soon as possible (means, it provides the best quality of diagnostic information).

APPLICATIONS

- ❖ Perform tests on whole blood, serum, plasma, or urine samples to determine concentrations of analytes (e.g., cholesterol, electrolytes, glucose, calcium),
- ❖ To provide certain hematology values (e.g., hemoglobin concentrations, prothrombin times),
- ❖ To do assay of certain therapeutic drugs (e.g., theophylline), which helps diagnose and treat numerous diseases, including diabetes, cancer, HIV, STD, hepatitis, kidney conditions, fertility, and thyroid problems.

TOUCH SCREEN VISCOMETER

DESCRIPTION

The Central Instrumentation Facility (CIF) of Kalinga University is equipped with Touch Screen Viscometer. This advanced Viscometer features a 5-inch color display to guide users fast and easy viscosity measurements. It also offers powerful new programming capabilities and results analysis including data averaging and QC limits with alarms. User instructions with multi-step test protocols can be created using the new Program Generator Software for the varieties of samples. Test Data can be recorded directly on a local printer or sent to a PC for data collection and analysis.



SPECIFICATIONS

Measuring Range(mPa.s)	20-2,000,000 m.pas
RPM	0.3, 0.6, 1.5, 3, 6, 12, 30, 60
No of Standard Spindles	#1,#2,#3,#4 is standard configuration ,(#0 is for option)
Measurement Accuracy	±1.0% of range
Repeatability	±0.5%
Display	LCD Touch Screen
Temperature RTD Monitoring Sensor Probe	Yes
Output	RS 232 Interface
Power Supply	AC 220V/50Hz
Dimension LxWxH (mm)	400 x 350 x360
Weight	9 Kg

FEATURES & BENEFITS

The new Touch Screen Viscometer features a 5-inch color display to guide users through test creation and data gathering for fast and easy viscosity measurements. The Touch Screen Viscometer also offers powerful new programming capabilities and results analysis including data averaging and QC limits with alarms. User instructions with multi-step test protocols can be created using the new Program Generator Software and uploaded through a USB Flash Drive (both included with instrument). Test Data can be recorded directly on a local printer or sent to a PC.

- 5-inch full color, touch screen display supports multiple languages.
- Displayed info includes: viscosity (cP/mP·s), temperature (°C/°F), shear rate/stress, % torque, spindle/speed, step program status.
- Enhanced Security provides enhanced security with customizable user levels & password access to comply with regulatory requirements.
- Built-In options include timed tests, data averaging, programmable QC limits/alarms, customizable speed/spindle lists, on screen data comparison.
- Auto range shows maximum viscosity measured with any spindle/speed combination.
- USB PC interface provides optional computer control and automatic data gathering capability, Download custom test programs with included PG Flash software.
- Front-facing bubble level for convenient viewing.
- Built-in temperature probe.
- Accuracy of ±1.0% of range with displayed test data.
- Repeatability of ±0.2%.
- NIST traceable viscosity standards available.

APPLICATIONS

- ❖ Dairy Products
- ❖ Juices
- ❖ Pharmaceuticals
- ❖ Coatings Solvents
- ❖ Polymer Solutions Oils Paints
- ❖ Inks Latex Adhesives(Solvent base)



DIGITAL VISCOMETER

DESCRIPTION

The Central Instrumentation Facility (CIF) of Kalinga University is equipped with Digital Viscometer, it is a new digital product used for determining the liquid viscose capacity and the absolute viscosity. Comparing with other similar products, this instrument has the following features: It is widely used to determine and measure the liquid viscosity in many applications such as grease, painting, pharmacy and adhesives. - High measuring accuracy - Stable in measured display - Easy operation and read-out - Excellent in Anti- interference. Viscometers are used to determine the viscosity of a fluid under specific flow and atmospheric conditions. Viscometers are used for a range of applications including product development, research and quality control. There are several types of viscometers, including rotational, capillary, falling ball (sphere), and kreb, among others. Each type of viscometer can come in several formats. For example, a viscometer may come in a digital or analog format and there are handheld, bench top and inline configurations. Rotational viscometers may come with a cone and plate, or with a spindle. Viscometers are designed with a purpose based on configuration along with other key specifications such as viscosity range (low, medium and high), and sample size. Together, these specifications determine the type of material that can be tested, depth of analysis, and throughput. For testing small samples of adhesives, creams, or varnishes, consider a bench top rotational viscometer with a medium viscosity range.



FEATURES & BENEFITS

- Spindle used.
- Torque measurement accuracy: 1% of full scale range.
- Repeatability: 0.2% of full scale range.
- Select all functions from user-friendly keypad.
- Choice of 18 rotational speeds.
- Optional RTD temperature probe.
- Auto-zero function to ensure precision torque measurement.
- Auto-range function to define full scale range (FSR) for all spindle/speed combinations.
- Warns of under- or over-range torque measurement condition.
- Printing to Dymo® capability.
- Timed Stop feature to measure viscosity at precise user specified time interval.
- Time to Torque feature to measure the time interval for sample to reach user defined torque value.
- Compatible with all Brookfield accessories.
- NIST traceable viscosity standards available.

SPECIFICATIONS

Measuring Range(mPa.s)	20-2,000,000 m.pas
RPM	0.3, 0.6, 1.5, 3, 6, 12, 30, 60
No of Standard Spindles	#1,#2,#3,#4 is standard configuration ,(#0 is for option)
Measurement Accuracy	±1.0% of range
Repeatability	±0.5%
Display	LCD
Temperature RTD Monitoring Sensor Probe	Yes
Output	RS 232 Interface
Power Supply	AC 220V/50Hz
Dimension LxWxH (mm)	400 x 350 x360
Weight	9 Kg

APPLICATIONS

- ❖ Dairy Products
- ❖ Juices
- ❖ Pharmaceuticals
- ❖ Coatings Solvents
- ❖ Polymer Solutions Oils Paints
- ❖ Inks Latex Adhesives(Solvent base)



UV-VISIBLE SPECTROPHOTOMETER

DESCRIPTION

The Central Instrumentation Facility (CIF) of Kalinga University is equipped with UV-Visible Spectrophotometer, it works on Beer-Lambert law, which states that the absorbance of a solution is directly proportional to the concentration of the absorbing species in the solution and the path length. Thus, for a fixed path length, UV/Visible spectroscopy can be used to determine the concentration of the absorber in a solution. The absorbance changes with concentration. This can be taken from references (tables of molar extinction coefficients), or more accurately, determined from a calibration curve.



SPECIFICATIONS

Brand	LABTRONICS
Wavelength Range	190-1100 nm
Country of Origin	Made in India
Noise	+0.001A
Stray Light	0.05% T @ 220nm, 360 nm)
Data Output Port	USB
Baseline Flatness	+ 0.001 A
Photometric Display Range	0-200 % T, -0.3 - 3.0 A, 0-9999 C
Wavelength Reproducibility	0.1 nm
Bandwidth	0.5, 1,2,4,5
Detector	Silicon Photodiode
Dimensions(L*W*H)	630 x 430 x 206 mm
Display	Graphic LCD (320*240 Dots)
Lamps	Deuterium Lamp & Tungsten Halogen Lamp
Net Weight	26 Kg

FEATURES & BENEFITS

- ❖ The core advantage is the accuracy of the UV-VIS spectrophotometer
- ❖ The UV-VIS spectrophotometer is easy to handle and use
- ❖ Provide robust operation
- ❖ UV-VIS spectroscopy is simple to operate
- ❖ Cost effective instrument
- ❖ Cover the entire of ultraviolet and visible
- ❖ It can be utilized in the qualitative and quantitative analysis
- ❖ The Derivative graph can be obtained by UV-VIS spectrophotometer
- ❖ It can be used in the degradation study of drug
- ❖ Only possible for the analytes which have a chromophore

APPLICATIONS

- ❖ Detection of Impurities in organic molecules
- ❖ Structure elucidation of organic compounds
- ❖ In the quantitative determination of compounds that absorb UV radiation
- ❖ Detection of the presence or absence of functional group in the compound
- ❖ UV spectrophotometer may be used as a detector for HPLC
- ❖ Kinetics of reaction can also be studied using UV spectroscopy

DIGITAL TURBIDITY METER

DESCRIPTION

The Central Instrumentation Facility (CIF) of Kalinga University is equipped with Turbidity meter which measures the decrease in intensity of the transmitted light due to scattering of particles suspended as precipitates or aggregates in a medium. The light passes across the filter creating a light of known wavelength, which is further directed to pass across the unknown sample. Photoelectric cell collects the light and displays it in numerical values on the screen.



SPECIFICATIONS

Range :	0 to 1000 NTU
Accuracy :	3% of full scale deflection in 0 – 1000 NTU.
Test Tube System :	30 mm clear glass test tube.
Light Source :	6 V, 1 Amp. Tungsten lamp.
Display :	3½ digit red LED display
Detector :	Photocell/ Photodiode
Calibration :	With formazine solution
Power Supply :	230 V \pm 10% AC, 50Hz with Built-in voltage stabilizer
Dimensions :	275L x 195W x 105H mm

FEATURES & BENEFITS

- ❖ A turbid liquid has the property of scattering and reflecting light incident on it. The intensity of the reflected light provides information about the degree of turbidity.
- ❖ The turbidity meter indicates the turbidity in FTU (Formazine Turbidity Unit), this unit is identical to NTU (Nephelometric Turbidity Unit).
- ❖ The turbidity meter is often used in drinking water treatment. From a hygienic point of view, the limit value is below 1 FTU.

APPLICATIONS

- ❖ Turbidity meter for the detection of turbidity of liquids and aqueous solutions can be found here.
- ❖ The accurate turbidity meter is used in suspensions.
- ❖ There are hand-held turbidimeters or bench-top units.
- ❖ The turbidity meter for water works by infrared method or with the USEPA measuring technique.
- ❖ Turbidity is caused by undissolved, finely dispersed substances in a liquid.

DIGITAL FLAME PHOTOMETER

DESCRIPTION

The Central Instrumentation Facility (CIF) of Kalinga University is equipped with Digital Flame Photometer. When a metal salt solution is burned, the metal provides a coloured flame and each metal ion gives a different coloured Flame tests, therefore, can be used to test for the absence or presence of a metal ion.



SPECIFICATIONS

Weight	Main Unit : 7.5 Kg. (Approx.)
Curve Fit Accuracy	+ 2% FS
Resolution	0.1 ppm/meq
Dimensions	365 x 245 x 220 mm (L x B x H) (Approx.)
Power	230 V + 10% AC, 50 Hz
Atomiser	Axial flow type
Ignition System	Auto Ignition
Calibration	Upto 5-Point Calibration with curve fitting software
Detector	Silicon Photodiode

FEATURES & BENEFITS

- ❖ Simple & Easy to Operate
- ❖ Narrow Band Interference Filters
- ❖ Accurate Na, K, Ca, & Li Determination
- ❖ Mixing Chamber Designed For Stable Flame
- ❖ Concentric Non-Corrosive Nebulizer
- ❖ Auto Ignition
- ❖ The oil free compressor with regulator maintains a stable airflow.
- ❖ After signal conditioning of the photodiode output, it is sent to digital converter and the results are displayed directly in ppm/meq units.

APPLICATIONS

- ❖ Pharmaceutical Industry
 - ❖ Determining the concentration of sodium and potassium ions in infusion solutions, such as NaCl solution, Ringer solution or others. Product control and indirect quality testing of various substances over sodium, potassium or lithium. Concentration determination in pharmaceutical reagents. In the production of blood collection tubes, the finished products are checked for correct chemical composition by means of flame photometry.
- ❖ Beverage Industry
 - ❖ Determination of the content of sodium, potassium and calcium in various liquids, such as fruit juices, vegetable juices and soft drinks.
- ❖ Food Industry
 - ❖ Monitoring compliance with sodium and potassium limits in foods. In the production of pre-milk, pre-food and milk powder, the quality can also be controlled and monitored with a flame photometer.

Rotary Tablet Press

DESCRIPTION

The Central Instrumentation Facility (CIF) of Kalinga University is equipped with Rotary Tablet Press. The main principle is the compressing of the upper and lower punch in a die hole, the hydraulic pressure plays a key role. This pressure is transmitted unreduced through the static fluid. Any externally applied pressure is transmitted via static fluid to all the direction in same proportion. It also makes possible to multiply the force as needed. If we increase the hydraulic pressure more compressing force on tablet then it becomes more hard.



SPECIFICATIONS

- ❖ No. of Stations 37
- ❖ Type of tooling D
- ❖ Output (Tablets/Hour*) 222000 (Maximum) Max. operating pressure-Main(kN) 100
- ❖ Max. tablet diameter (mm) 25
- ❖ Max. depth of fill(mm) 20
- ❖ Upper punch entry-main(mm) 3 to 6 Power-Total(kW/hp) 6.70/9.00
- ❖ Main Motor (kW/hp) 5.50/7.50 Force feeder motor (kW/hp) 0.18/0.25

FEATURES & BENEFITS

- ❖ Filling- Formulation is overfilled at the compressing station
- ❖ Metering- Overfill is removed
- ❖ Compression- Tablet is formed by pressure of punches within die
- ❖ Ejection- Tablet is ejected from die

APPLICATIONS

- ❖ The tablet press forms the tablets based on a pre-determined design.
- ❖ Punches and dies in the device help to shape the tablets.
- ❖ These equipment produce tablets for various industries; nonetheless, the most extensive application of rotary tablet presses is pharmaceuticals and vitamins.
- ❖ Tablets produced for human consumption require a design that looks attractive and easy to ingest.
- ❖ Tablet compression tooling as well applies tablets coatings to make them easier to consume to prevent dissolution.
- ❖ Even though the pharmaceutical industry is the biggest recipient of tablet compression machines, there are a variety of high-speed industrial rotary presses.

Cost of Sample Analysis

Sr. No.	Facilities	Students	Others Educational Institutions	R & D Labs	Industries
1	X-RAY DIFFRACTOMETER	Rs 500/per Sample	Rs 800/per Sample	Rs 1000/per Sample	Rs 2000/per Sample
2	SCANNING ELECTRON MICROSCOPE (SEM)	Rs 500/per Sample	Rs 800/per Sample	Rs 1000/per Sample	Rs 1500/per Sample
3	HIGH PERFORMANCE LIQUID CHROMATOGRAPHY	Rs 500/per Sample	Rs 800/per Sample	Rs 1000/per Sample	Rs 1500/per Sample
4	THERMAL CYCLER (PCR)	Rs 500/per 10 Samples	Rs 800/per 10 Samples	Rs 1000/per 10 Samples	Rs 1500/per 10 Samples
5	HORIZONTAL MINI GEL ELECTROPHORESIS UNIT	Rs 200/per 10 Samples	Rs 250/per 10 Samples	Rs 500/per 10 Samples	Rs 800/per 10 Samples
6	UV TRANSILLUMINATOR	Rs 100/per 10 Samples	Rs 150/per 10 Samples	Rs 200/per 10 Samples	Rs 250/per 10 Samples
7	FT-IR SPECTROPHOTOMETER	Rs 250/per Sample	Rs 300/per Sample	Rs 350/per Sample	Rs 400/per Sample
8	BIO-CHEMISTRY ANALYZER	Rs 150/per Sample	Rs 200/per Sample	Rs 200/per Sample	Rs 300/per Sample
9	TOUCH SCREEN VISCOMETER	Rs 50/per Sample	Rs 100/per Sample	Rs 150/per Sample	Rs 200/per Sample
10	DIGITAL VISCOMETER	Rs 50/per Sample	Rs 100/per Sample	Rs 150/per Sample	Rs 200/per Sample
11	UV-VISIBLE SPECTROPHOTOMETER	Rs 50/per Sample	Rs 100/per Sample	Rs 150/per Sample	Rs 200/per Sample
12	DIGITAL TURBIDITY METER	Rs 50/per Sample	Rs 100/per Sample	Rs 150/per Sample	Rs 200/per Sample
13	DIGITAL FLAME PHOTOMETER	Rs 50/per Sample	Rs 100/per Sample	Rs 150/per Sample	Rs 200/per Sample
14	ROTARY TABLET PRESS	Rs 100/per Sample	Rs 150/per Sample	Rs 200/per Sample	Rs 250/per Sample

Student Centric initiatives by Kalinga University



1.Kalinga University Innovation and Incubation Centre :-

Kalinga University has setup Kalinga University Innovation and Incubation Centre (KUIIC) to promote innovative and executable ideas from various disciplines of Life Sciences, Engineering and Technology and other fields to help students, research scholars and faculty members of Kalinga University to execute the ideas into products, processes or services for the benefit of society as well as industry. The goal of KUIIC is to promote technology based entrepreneurship and there by facilitate practical application of knowledge for public use.

The main aim of KUIIC is to provide support and training for students and innovators who are interested in converting their ideas into startups. KUIIC is working on igniting the ideology of starting own ventures amongst India's youth. The youth of today needs to be more inclined towards creating jobs, rather than getting one. So in order to assist the youth to become self-employed and create employment opportunities the University has come forward to provide support in every possible manner.

2. Corporate Training Division :-

Kalinga University has established a Corporate Training Division to train and equip corporate managers, administrators, government officers, entrepreneurs and academicians, with the skills to synthesize managerial theory and practice, and respond to the ever increasing complexities of managerial issues confronting governments, industrial enterprises, and non-governmental organizations.

Objectives of Corporate Training Division:-

- To be a think tank for policy inputs and to build the capabilities of practicing professionals in the management of government and business enterprises.
- To serve the academia, society, industry, governments, and public and to do good for them.
- To focus on policy, strategy, management, governance, regulation and socio-economic impact evaluation, and thereby bring knowledge inputs, informed advice, best practice and innovative ideas to bear on its training, policy advocacy, advisory and implementation-assistance services.
- To provide opportunities to State and Central Government Departments and Ministries in India and abroad and the industry in India, to develop sustainable policies, devise inclusive strategies and deploying robust plans towards improved economic performance, human development and social progress.
- To enjoy the trust and confidence of the academia, society, government and industry, and to be relied upon and entrusted with assignments of varied scale, scope, sweep, spread and specialization.

Activities/Events under CTD :-

1. Training and Capacity Building Programmes:-

Corporate Training Division (CTD) will conduct Online and On-campus Training Programmes/Management Development Programmes(MDPs)/Capacity Building Programs on a variety of functional management areas, theme-specific domains, and sectoral disciplines.

2. Consulting Projects/Assignments:-

CTD will undertake Consulting Projects/Assignments of all possible areas/domains for government, industry, society, and academia.

3. Applied Research Studies and Action Research Projects:-

CTD will undertake Applied Research Studies and Action Research Projects for governments, industry, society and academia.

4. Integration and addressing issues:-

It will integrate economic, social, cultural, financial, technological, regulatory, human organizational, and environmental aspects into its management training, action research and consulting initiatives for addressing issues of topical interest and current concern to the governments, industry, society and academia.

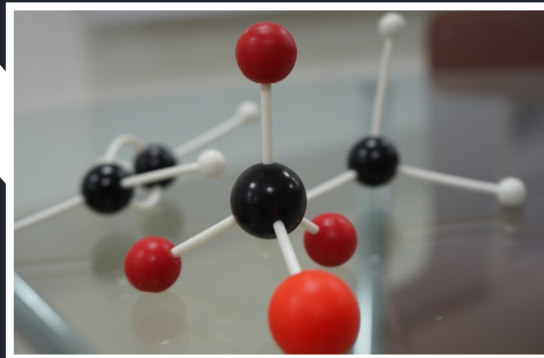
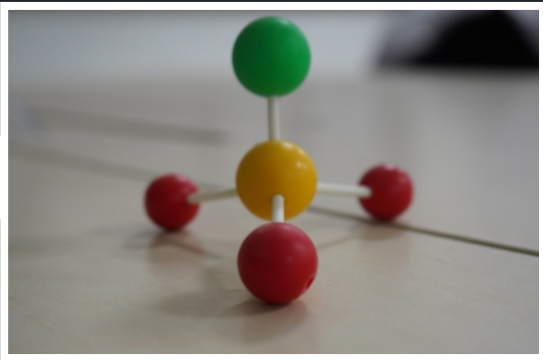




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