Real time PCR

Instrument Name: StepOne™ Real-Time PCR System

Instrument Details

Make: Applied Biosystems™

Model: Applied Biosystems™ StepOne™ Real-Time PCR System

Brief specification:

The StepOne™ (48 well) , Three-color Real-Time PCR Systems are remarkably simple to use. Specifically designed with a user friendly, yet powerful interface, they are ideal for both new and experienced real-time PCR researchers. Despite their simplicity, the advanced technology will deliver you precise and reliable results every time.

Details:

The StepOne™ Systems bring advanced real-time PCR technology to a new level of accessibility—even for first-time users. It measures amplification as it occurs, cycle by cycle, allowing for precise and quantitative measurements during the exponential phase of PCR. Beginning at the homepage, you can navigate seamlessly through all aspects of the real-time PCR process including sample and reaction setup, thermal cycling, and fluorescent detection. Focused application software analyzes and interprets experimental results. The system provides 2-fold discrimination with 99.7% confidence, along with 9 logs of dynamic range. Highly sensitive, these systems detect 10 copies of RNase P in a 30-µL reaction. Additionally, for laboratories with the StepOne ™ System that require greater throughput, an upgrade kit is available. The StepOne™ Systems software contains unique features not available in other real-time PCR instruments. For example, data can be analyzed from multiple perspectives in the Multiple Plots view. The software constructs four-plot, side-by-side views of all data aspects including theamplification plot, standard curve, multi-component data plots, and raw data. It also displays this data next to the plate layout for easier analysis.

Instrument photographs: (**Files are attached**)

	StepOnePlus™ Real-Time PCR System

Working Principles:

Applied Biosystems has developed two reagent types (chemistries) that can be used to detect PCR products on the Applied Biosystems StepOne ™ Real-Time PCR Systems:

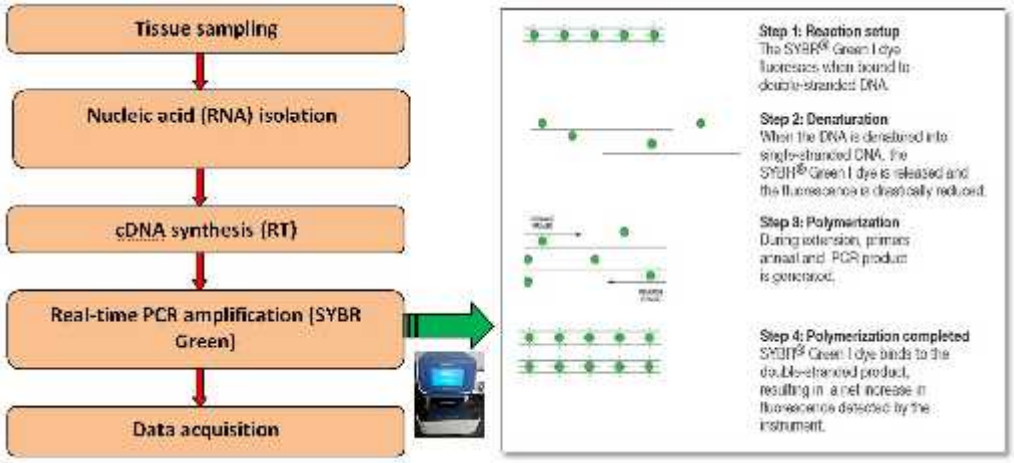
- SYBR ® Green reagents (using)
- TaqMan® reagents

The SYBR Green reagents use the SYBR Green I dye to detect PCR products by binding to double-stranded DNA formed during the PCR.

Here is how it works:

- Step 1
  When added to a sample, SYBR Green I dye immediately binds to all double-stranded DNA.
- Step 2
  During the PCR, AmpliTaq Gold® DNA Polymerase amplifies the target, which creates the PCR product, or "amplicon." The double-stranded DNA is denatured to single-stranded molecules and the SYBR Green I dye is released.
- Step 3
  The primers anneal to the single-stranded DNA and the Amplitaq Gold DNA Polymerase amplifies the target, creating more double stranded DNA. As the PCR progresses, more amplicon is created.
- Step 4
  The SYBR Green I dye then binds to each new copy of double-stranded DNA that is generated during each PCR cycle. Since the SYBR Green I dye binds to all double-stranded DNA, the result is an increase in fluorescence intensityproportional to the quantity of double-stranded PCR product produced.

Workflow photographs:



Applications:

The StepOne ™ Systems support any real-time PCR application. Predesigned or custom assays exist for the following applications:

- Gene expression profiling
- Gene detection
- MicroRNA expression
- Mutation scanning
- HRM analysis

User instructions:

Contact Us

Contact No: 04994232090

Email Id: director.cpcri@gmail.com

Fee and charges detail: in INR

Industry	**University**	**National/R&D's Lab**
5000	2000	2500

Remarks

PCR with automatic Electrophoresisunit

Instrument Name: Microchip Electrophoresis System for DNA/RNA Analysis

Instrument detail

Make: Shimadzu Corporation Analytical & Measuring Instruments division

Model: MCE-202 MultiNA

Brief specification:

MCE-202 MultiNA has 96 wells (12 x 8) capacity with 25bp to 500bp (DNA-500Kit), 100bp to 1000bp (DNA-1000Kit) Separation size range.

Details:

Bringing together Shimadzu microchip technology and automatic analysis technology provides an alternative to agarose gel electrophoresis that is cheaper, faster, and more sensitive than ever before. Combined with even greater analytical precision, this easy-to-use equipment lifts electrophoresis systems to a new level. This next-generation microchip electrophoresis system will bring about revolutionary changes in life science laboratories.

Instrument photographs: (**Files are attached**)

Microchip Electrophoresis System (MultiNA) for DNA/RNA Analysis

Working principles: This system uses microchip technology to conduct fully automated high-speed electrophoresis separation (capillary forces), and fluorescence detection to perform high-sensitivity analysis.

Step 1: Sample preparation

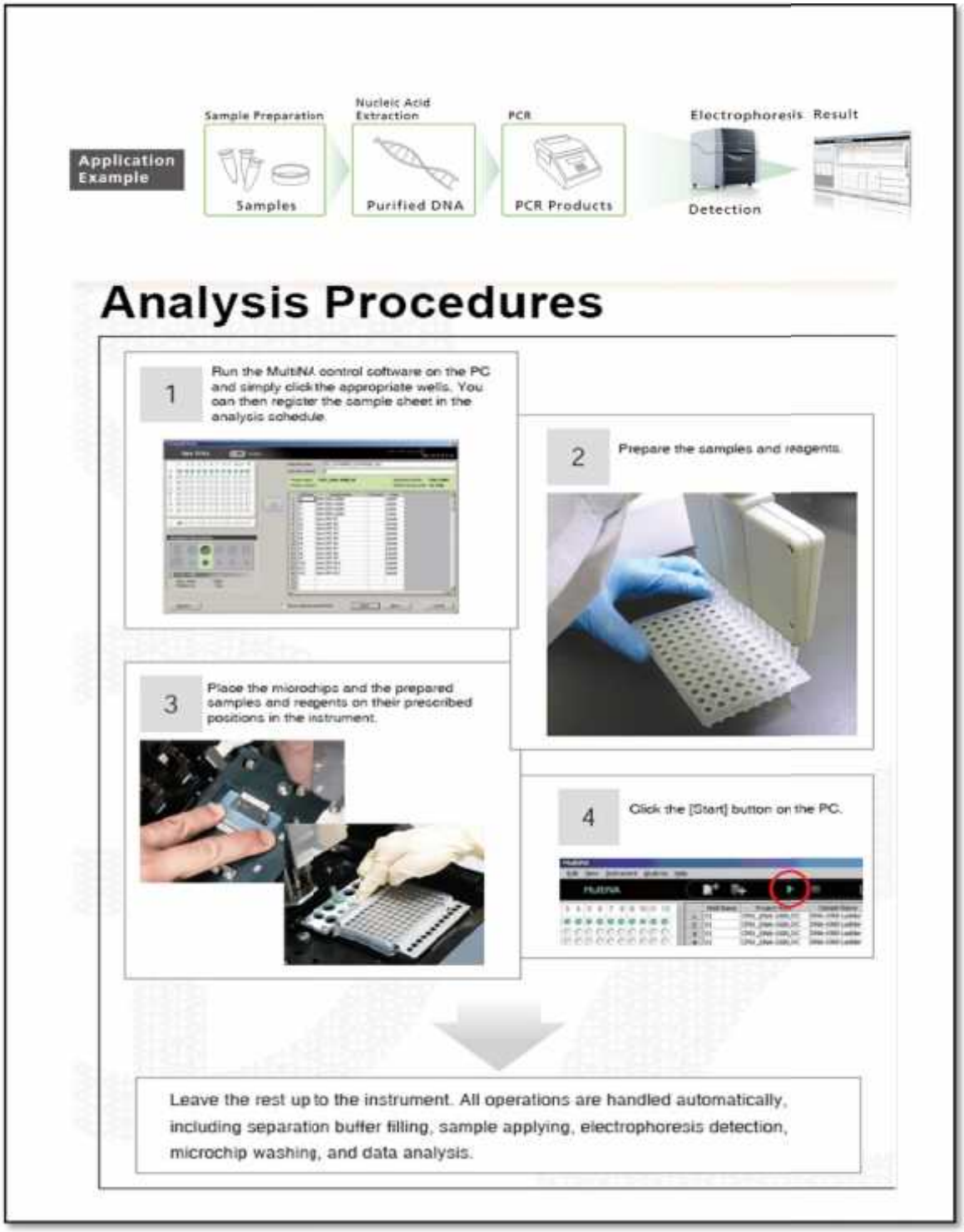
Step2: Nucleic acid extraction

Step3 : PCR

Step4: automated electrophoresis

Step5: Documentation

Workflow photographs:



Applications: Widely used for genetic research , genotyping, microbiological analysis and DNA/RNA analysis

User instructions:

Contact Us

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Email Id: director.cpcri@gmail.com

Fee and charges detail: in INR

Industry	University	National/R&D's Lab
3000	1000	2000

Remarks

Atomic Absorption Spectrometer (AAS)

Instrument Name: **Atomic Absorption Spectrometer (AAS)**

Make: Thermo Scientific

Model: iCE 3000

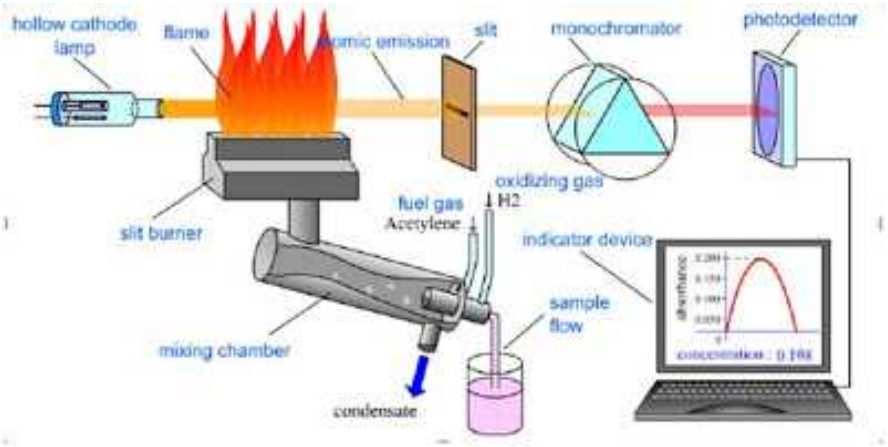
Brief Specification: iCE 3000 series AAS are completely automatic with full elemental capacity.

Details:

1. Standard or wide range of photomultipliers
2. 6 lamp auto-aligning carousel
3. Fully automatic gas system

Photo:

Schematic diagram of working:



Working Principles:

1. The instrument uses the basic principle that the free atoms generated in an atomizer absorb radiation at specific frequency.

2. AAS quantify the absorption of ground state atoms in the gaseous state.

3. The atoms absorb UV/Visible light and make transition to higher energy levels. The analyte concentration is determined from the amount of absorption.

4. The instrument works based on Beer-Lamberts law

Applications: Determination of small amounts of metals (Fe, Mn, Cu , Zn etc) and used in Environmental studies like drinking water, soil, plant, ocean etc. Also used in food and pharmaseutical industries.

User Instructions:

1. Check the power supply before start.

2. Check the gas pressure and working condition of exhaust fan

3. Follow the steps in the user manual

4.Elements Available :Fe, Mn, Cu, Zn, Ca, Mg

Contact Us

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Fee and charges detail: in INR

Industry	University	National/R&D's Lab
8000	3000	5000

Remarks

Flame Photometer

Make: ELICO

Model: CL 378 Flame photometer

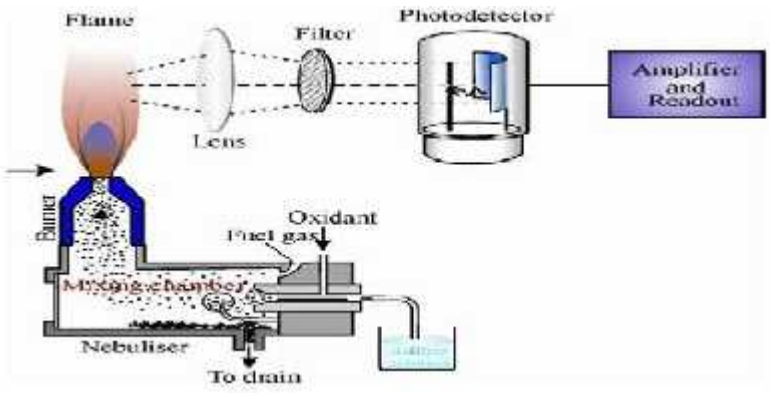
Brief Specification: CL-378, flame photometer that is designed for the routine determination of sodium and potassium concentrations in the given sample.

Details:

- Automatic ignition
- Automatic gas shut off in case of power failure
- Calibration curve programmability can be done using a maximum of 20 standards in the range of interest of the user, data processing through optional curve fitting techniques like segmental and quadratic.
- Analysis made much more simpler because of the multiple calibration curves saving facility.
- Storage of 700 samples
- Optional PC compatibility with RS232C interface.
- Microprocessor based, user friendly, Menu driven with printer interface
- Saving data and retrieval of standards and samples.

Photo:

Schematic diagram of working :



Working Principles:

1. It involve the analysis of metal present in the sample on the basis of radiations emitted by it, when the sample is atomised into the flame.

Applications:

- The technique is used in agriculture field for testing of water, soil,and plant materials.
- In medical science for testing of urine and blood samples
- In industries for detection of elements in fuel ,glass and cement ,etc.

User Instructions:

1. Check the power supply before start.
2. Check the gas supply and air pressure
3. Check the standard concentrations used.
4. Follow the steps in the user manual.
5. Elements : K, Na

Contact Us
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Fee and charges detail: in INR

Industry	University	National/R&D's Lab
4000	1500	2000

Remarks

Microtome sectioning and microscope photography

Analytical instrument detail

Instrument Name: Microtome and compound microscope for image capturing

Instrument detail

Make: Leica (Microtome) Leitz Diaplan (Compound Microscope)

Model: RM2145 (Microtom) DM2500 (Compound Microscope)

Brief specification:

a. Micrtotome: The Leica RM 2145 is a semi-motorized rotary microtome with sectioning thickness of 5 µm to 60 µm. It has 27 mm ±1 mm via step motor total horizontal specimen feed and 70 mm vertical specimen stroke. Instrument is provided with 0 - 100 µm, in 5 µm increments specimen retraction mode.
b. Compound microscope: Leitz diaplan microscope consists of lamphousing 103 Z, coarse and fine focus controls, binocular observation tube, PL fluotar objectives, field diaphragm, aperture diaphragm, stage rotation button, lamp holder mount cover.

Details:

Micrtotome: The Leica RM 2145 is a semi-motorized rotary microtome. The specimen feed system with zero-backlash and maintenance-free cross roller guides and the step motor operated coarse feed system are located in a dustproof plastic housing. Sectioning is performed by manually rotating the extremely smooth-running handwheel. The handwheel is lockable in any position via a mechanical quick locking system. All settings, LED indications and control functions are centralized in a separate control panel. Control buttons and indications are logically arranged in functional groups. The specimen retraction can be set in different thicknesses and can also be entirely switched off. The retraction phase is visually indicated. The motorized coarse feed operates at two speeds. In the trimming mode, the coarse feed buttons have a TRIM-STEP function. The instrument offers two different manual sectioning modes: conventional sectioning by complete handwheel rotations and sectioning in the ‘Rocking Mode’, where the handwheel only needs to be moved back and forth over a small distance in each direction. The instrument also has a number of special functions, such as the programmable horizontal specimen stop function, and the sectioning and trimming program.

Compound microscope: The Diaplan was a model introduced by Leitz. Diaplan DM2500 consists of 10x, 25x, 40x and 100x with oil immersion objectives and phase contrast facility for live observation of specimen. The compound microscope is fitted with camera connected to PC for capturing images through *Leica* Application Suite Version 4.3.0 (LAS) software.

Instrument photographs: (**Files are attached**)

		
Microtome	Microscope	LAS software

Working principles:

Microtome use steel blades to prepare sections of plant tissues for light microscopy histology. Microtome is a sectioning instrument that allows the cutting of extremely thin slices of a material known as section. Microtome is used in microscopy, allowing for the preparation of sample for observation under transmitted light or electrons radiation. A compound microscope magnifies the size of the object by a complex system of lens arrangement. It has a series of two lenses; (i) the objective lens close to the object to be observed and (ii) the ocular lens or eyepiece, through which the image is viewed by eye. Light from a light source (mirror or electric lamp) passes through a thin transparent object. The objective lens produces a magnified 'real image' first image) of the object. This image is again magnified by the ocular lens (eyepiece) to obtain a magnified 'virtual image' (final image), which can be seen by eye through the eyepiece. As light passes directly from the source to the eye through the two lenses, the field of vision is brightly illuminated. That is why; it is a bright-field microscope.

Applications:

Microtome: Histological study of various tissues.

Microscope: Observing cells for mitotic activity and identification of cellular storage components.

Contact Us

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Fee and charges detail: in INR

Industry	University	National/R&D's Lab
10000	4000	5000

Remarks

Microscope with image analyzer

Instrument Name: compound microscope for image capturing

Instrument detail

Make: Leitz Diaplan

Model: DM2500

Brief specification:

Leitz diaplan microscope consists of lamphousing 103 Z, coarse and fine focus controls, binocular observation tube, PL fluotar objectives, field diaphragm, aperture diaphragm, stage rotation button, lamp holder mount cover.

Details:

The Diaplan was a model introduced by Leitz. Diaplan DM2500 consists of 10x, 25x, 40x and 100x with oil immersion objectives and phase contrast facility for live observation of specimen. The compound microscope is fitted with camera connected to PC for capturing images through *Leica* Application Suite Version 4.3.0 software. Captured images can be analyzed using *Leica* Qwin software.

Instrument photographs: (**Files are attached**)

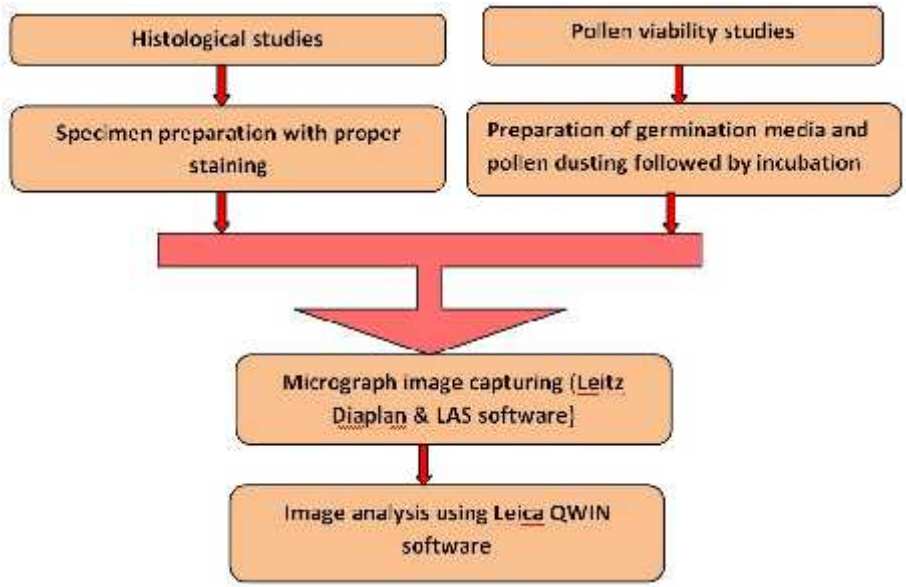
	
Microscope	QWIN software

Working principles:

A compound microscope magnifies the size of the object by a complex system of lens arrangement. It has a series of two lenses; (i) the objective lens close to the object to be observed and (ii) the ocular lens or eyepiece, through which the image is viewed by eye. Light from a light source (mirror or electric lamp) passes through a thin transparent object. The objective lens produces a magnified 'real image' first image) of the object. This image is again magnified by the ocular lens (eyepiece) to obtain a magnified 'virtual image' (final image), which can be seen by eye through the eyepiece. As light passes directly from the source to the eye

through the two lenses, the field of vision is brightly illuminated. That is why; it is a bright-field microscope.

Workflow photographs:



Applications:

Observing cells for mitotic activity and identification of cellular storage components. Viability and morphological details of pollen and its germination can also be assessed.

Contact Us

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Fee and charges detail: in INR

Industry	University	National/R&D's Lab
2000	1000	1000

Remarks

Flow Cytometer

Instrument Name: **Flow Cytometer**

Instrument details

Make: Accuri

Model: C6

Brief specification:

Laser Excitation : 488 nm and 640 nm.

Laser Power : 14.7 mW 640 nm Diode Red Laser , 20 mW 488 nm Solid State Blue Laser

Scatter detection : Forward (0 degrees, +/-13Side (90 degrees, +/-13)

Emission Detection: 4 colors, standard optical filters

Minimum Detectable Particle Size:0.5 µm
Minimum Sample Volume:300 µL (in 12 x 75 mm tube)
Data Acquisition Rate:10,000 events/second, maximum
Typical Power Consumption :154 VA
Heat Output:240 Btu/h
Signal Processing :24-bit datapath
Computer Interface:USB 2.0

Details:

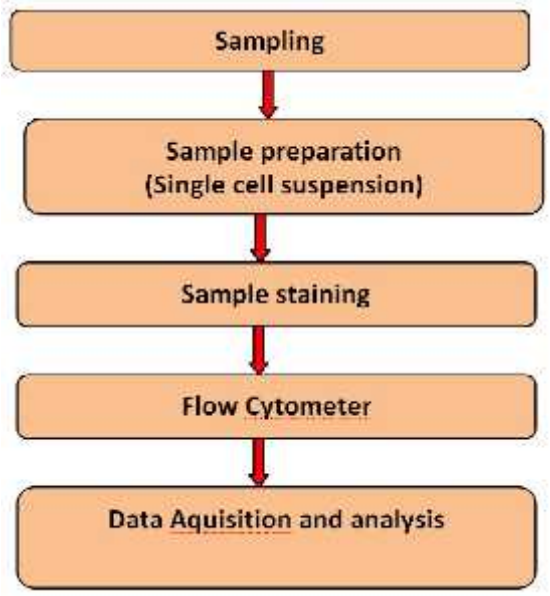
The cytometer is composed of fluidics, optics, and electronics subsystems that work together to analyze cell populations. Each particle passes through one or more beams of laser light. Scattered light and fluorescence emission provide information about the particle's properties. Information is gathered from the manner in which a particle scatters light or by the light emitted by fluorochromes attached to, or contained in, the particle. Light scattered in the forward direction of a laser beam is focused by a confocal lens and detected by a light detector which converts it into an electrical signal that is digitalised to generate a parameter known as Forward Scatter (FSC). The FSC signal will give information about the size and shape of the cell, and information can also be gathered by a side confocal lens and detected by a detector reading side scattered light. The Side Scatter (SSC) signal gives information about the granularity of the cell. As FSC and SSC are unique for each type of particle, the combination of the two can help identify different types of cells.

Instrument photographs: (**Files are attached**)

Working principles:

Flow Cytometer uses sophisticated technology that makes use of the principles of light scattering by particles crossing a beam of light, and excitation and fluorescence emission of fluorochromes attached to specific molecules or expressed by cells, to identify, analyse, and/or sort different populations of cells

Workflow photographs:



Applications:

The ability of flow cytometers to analyse cells at high flow rate (up to 100,000 events per second) and to detect low signals make it possible to count cells and simultaneously analyse several cell physical and chemical properties with high sensitivity and in a very short period of time. Flow cytometry is also the technology of choice when it comes to purification of cells and separation of complex mixtures of cell populations.

Contact Us

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Fee and charges detail: in INR

Industry	University	National/R&D's Lab
10000	4500	5000

Remarks

Nitrogen Estimation System

Instrument Name: **Kelplus Nitrogen Estimation System**

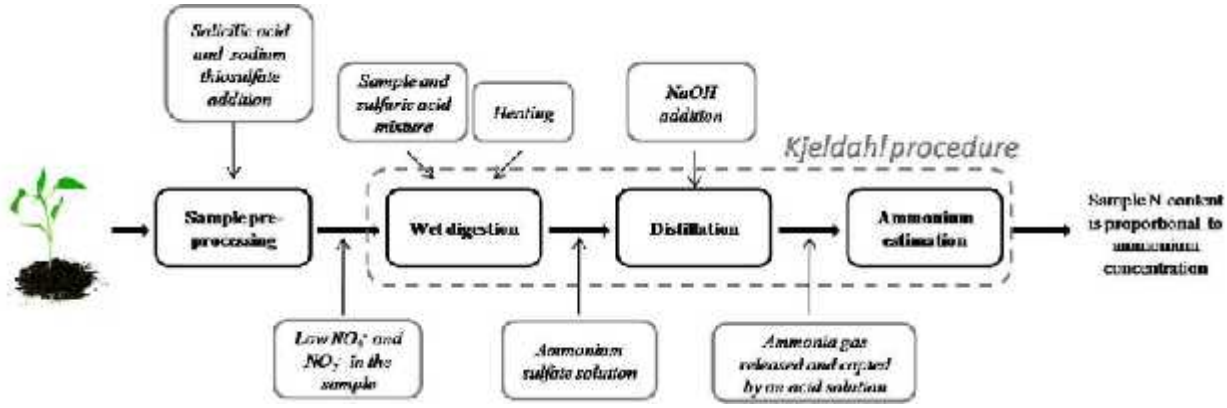
Make: Pelican

Model: Classic DX

Specification Details: Fully auto run completely programmable Microtech PC compatible autosequencing distillation system

Photo:

Schematic diagram:



Working Principles: During digestion step all amino-N is converted to ammonical radical.

During distillation ammonia is distilled out and collected in 4 % boric acid as trapping medium

Applications: Total nitrogen of plant, soil and manure sample can be analyzed. Protein estimation also possible.

User Instructions: Set temperature correctly. Check the water level. Check power supply and use chemicals in required concentration and follow user manual instructions.

Contact Us

Contact No: 04994232090

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Fee and charges detail: in INR

Industry	University	National/R&D's Lab
4000	1500	2000

Remarks

Moisture Analyzer

Make: A & D Company Ltd.

Model: MX 50

Brief Specifications:
Measurement method: 400 W halogen lamp, thermogravimetric analysis
Drying temperature range at sample pan (Increments): 50°C to 200 °C
Sample weight range: 0.1 g to 51 g
Measurement unit: W.B, D.B., dry content, ratio,
Communication function: RS-232C serial interface
Operation environment: 5°C to 40°C (41°F to 104°F), 85%RH or less (no condensation)
Sample pan: φ85 mm

Details (300 words):
The moisture analyzer was designed using a super hybrid sensor (S.H.S.) adopted in an analytical balance. Therefore, the results are more precise and get greater repeatability. An analyzer using the S.H.S. has high sensitivity, needs only a sample quantity of a few grams, and the analysis time becomes shorter. A 400W halogen lamp is used as the heating source and the temperature on the sample pan can reach 200°C within two minutes. The analyzer displays the current change of moisture content per minute [%/ min] in real-time. It can be used for the reference to find the analyzing mode. The glass fiber sheets can be used for quick and precise measurement of a liquid sample. (The glass fiber sheets are a part of the standard accessories except for the ML-50)

Instrument Photograph

Working Principle (300 words)
The moisture analyzer, based on the principle of thermogravimetric analysis, dries a sample using a halogen lamp and obtains the moisture content in % and other results by the difference between the wet weight and dry weight.

Workflow Photograph

1. Turn on the analyzer. The gram unit (of weighing mode) is displayed.
2. Use a proper sample quantity. If the quantity is small, precise results may not be possible. If the moisture content of the sample (example: plastic) can be estimated that is less than 1%, the mass of moisture is not enough for the measurement, when measuring light sample, the result may not be accurate.
3. Consider the following sample mass for the measurement. An estimate of moisture content 1%, 0.5%, 0.1%, the necessary mass for measurement at least 2 g, 5 g, and 20 g, respectively.
4. Crush grain samples to a small, uniform powder for a quick drying process. Spread the sample as evenly as possible.
5. The analyzer is designed to measure the moisture content of the sample by its weight change. If the sample includes volatile matter, it may vaporize during drying causing a measurement error. When measuring a liquid or liquid state sample that may make a film on the surface, we recommend you use a glass fiber sheet.

Applications (150 words)

Moisture analyzer can be used for rapid measurement of moisture content in food samples including grains, fruits, vegetables, leaves, ready to eat products, etc.,

User Instructions (100 words):

Operate the analyzer using the following procedure.

1. Put the sample pan in the correct position. 2. Handle the grip of the heater cover to open and close it. 3. Use the pan handle to move the sample pan. 4. Do not touch hot parts around the grass-housing, when the cover is opened. 4. The glass-housing is very hot. It may cause a burn, if touched. 5. The sample pan and pan handle is very hot, when finishing measurement. Allow them cool down. 6. Use the tweezers or spoon to move the sample.

Note: Do not use an explosive, flammable or noxious substance as a sample. Do not use a sample that makes a dangerous substance by drying it. Turn off the power switch if a sample catches fire.

Contact Us

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Fee and charges detail: in INR

Industry	University	National/R&D's Lab
1000	500	500

Remarks

Spectrophotometer

Make: Shimadzu

Model: UV-1601

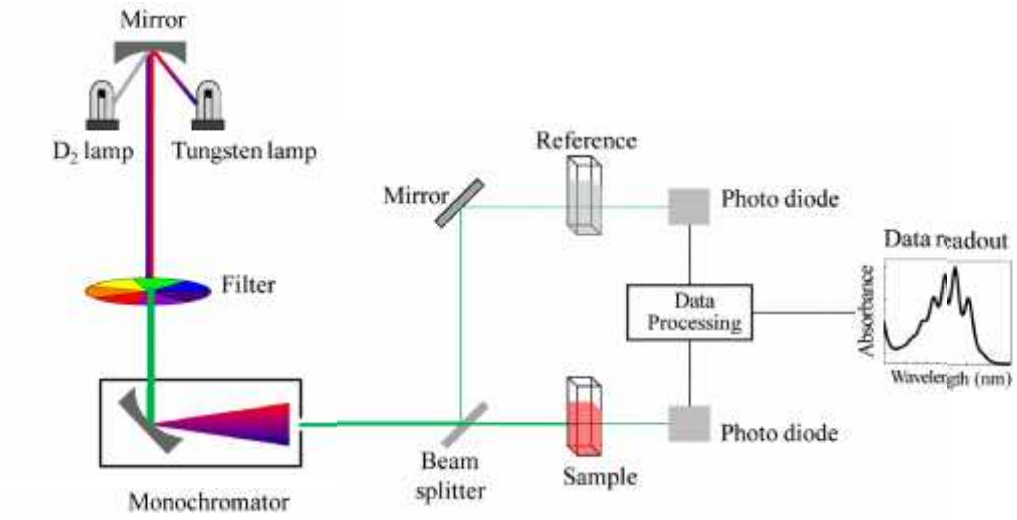
Brief Specification: The Shimadzu UV-1601 PC is a UV/Visible double beam spectrophotometer. It provides high performance with an optical bench that is equipped with a monochromator allowing for trouble-free operation.

Details:

- Lighting: 50W halogen lamp (long-life 2000 hour), Deuterium lamp (sockettype), On-board automatic light source positioning mechanism.
- Stray Light: Photometric System: double beam optics
- Wavelength Range: 190-1100 nm
- Operating Conditions: Room temperature 15-35°C, Humidity 45-80%
- Bandwidth: 2 nm
- Scanning Speed: 3200nm/min to 160nm/min
- Detector: Silicon photodiode
- Optical System: Monochromator uses aberration-correcting concave blazed holographic grating
- Photometric Range: Absorbance of -0.5~3.999 Abs / Transmittance of 0.0~300%
- Sample Compartment: Interior dimensions: 110Wx230Dx105H (mm)
- Distance between beams: 100mm
- Removable type 2-screw attachment Beam dimensions: 1x10mm (WxH) (at center of sample compartment)
- Additional Specifications Wavelength Accuracy: +/- 0.5 nm
- Wavelength Reproducibility: +/- 0.1 nm
- Wavelength Display: readable to 0.1 nm
- Wavelength Setting: 0.1 nm increments
- Wavelength Slew Rate: about 6000nm/min
- Photometric Accuracy: +/- 0.004 Abs at 1.0 Abs
- UV Probe Software not included

Photo:

Schematic diagram of working :



Working Principles:

1. Ultraviolet–visible spectroscopy or ultraviolet-visible spectrophotometry (UV-Vis or UV/Vis) refers to absorption spectroscopy or reflectance spectroscopy in the ultraviolet-visible spectral region. This means it uses light in the visible and adjacent (near-UV and near-infrared (NIR)) ranges.

2. UV/Vis spectroscopy is routinely used in analytical chemistry for the quantitative determination of different analytes, such as transition metal ions, highly conjugated organic compounds, and biological macromolecules.

3. UV/Vis spectrophotometer measures the intensity of light passing through a sample (I), and compares it to the intensity of light before it passes through the sample (I0). The ratio is called the transmittance, and is usually expressed as a percentage

4. The instrument works based on Beer-Lamberts law

Applications:

- Spectrophotometer is commonly used for measuring the concentration of coloured as well as colourless compounds by measuring the optical density or its absorbance.
- It can be used for the determination of course of the reaction by measuring the rate of formation and disappearance of the light absorbing compounds in the range of the UV-Visible range of the electromagnetic spectrum.
- By spectrophotometer, a compound can be identified by determining the absorption spectrum in the visible region of the light spectrum as well as the UV region of the electromagnetic spectrum.

User Instructions:

1. Check the power supply before start.

2. Set correct wavelength for the element to measure

3. Check the standard concentration used.

3. Follow the steps in the user manual.

Contact Us

Contact No: 04994232090

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Fee and charges detail: in INR

Industry	University	National/R&D's Lab
1000	500	500

Remarks

LICOR Portable Photosynthesis System.

Instrument Name : Portable Photosynthesis System.

Make : LICOR

Model : 6400XT

Brief Specification :

1. CO_2 Analyzer

Range: 0-3100 µmol mol-1; Accuracy:Maximum deviation: ± 5 µmol mol-1 from 0 to1500 µmol mol-1 ± 10 µmol mol-1 from 1500 to 3100 µmol mol-1; Sensor: Solid state.

2. H_2O Analyzer

Range: 0-75 mmol mol-1, or 40 °C dew point; Accuracy: Maximum deviation: ± 1.0 mmol mol-1 from 0-75 mmol mol-1.

3. Temperature

Sensor Type: 3-wire thermistor; Range: -10 to 50 °C; Accuracy: Maximum error < ± 0.5 °C; Leaf Temperature; Thermocouple:Type: E;Range: ± 50 °C of reference;Reference: Optical housing block thermistor.

4. Air Flow

Flow rate: 0 to 700 µmol s-1

5. Pressure

Pressure Range: 65 to 115 kPa absolute

6. System Console

Processor: 400 MHz Intel XScale; Power Requirement: 10.5 to 15 VDC 4A

7. Light Measurement

Range: 0 to > 3000 µmol m-2 s-1.; Resolution: < 1 µmol m-2 s-1 .;Calibration Accuracy: ± 5% of reading, traceable to NIST.

8. Details:

9. Instrument Photograph:

10.Working principles:

The LI-6400XT is an open system, which means that measurements of photosynthesis and transpiration are based on the differences in CO2 and H2O in an air stream that is flowing through the leaf cuvette. The LI-6400 improves upon traditional open systems by having the gas analyzers in the sensor head. This eliminates plumbing-related time delays, and allows tight control for responding to leaf changes. For example, if stomata close, the control system immediately detects the drop in water vapor and can compensate. Similarly, a sudden change in light level will cause an immediate change in photosynthetic rate, which will be detected as a change in the CO2 concentration. The speed of detection is not a function of the system's flow rate, as in traditional systems, since the sample IRGA is in the cuvette. There is a second advantage of having the IRGAs in the sensor head. The traditional system has the potential for concentration changes (because of water sorption and CO2 diffusion) as the air moves from the reference IRGA to the chamber, and again from the chamber back to the sample IRGA. This is not a problem for the LI-6400, because the IRGA measurements are made after the air has travelled through the tubing.

11. Workflow Photograph:

12.Applications:

13.User Instructions: Portable System to measure PR, Stomatal Conductance.

Contact Us

Contact No: 04994232090

Email Id: director.cpcri@gmail.com

Fee and charges detail: in INR

Industry	University	National/R&D's Lab
10000	4000	5000

Remarks