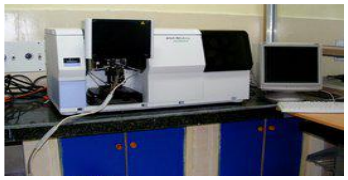
CENTRAL INSTRUMENTATION CELL

Sant Gadge Baba Amravati University, Amravati-444602

Maharashtra, India.


Central Instrumentation Cell (C.I.C.) has been established and started functioning since January 2002 in the University as an Academic Service Unit.

DIRECTOR : - Dr. P.A. Gawande
[Professor Department of Botany]

CO-COORDINATOR : - Dr. Mrs. Ranjana D. Raut
[Professor Department of Applied Electronics]

ACADEMIC SERVICE UNIT

The administration of CIC is controlled and monitored by Academic Services Unit (ASU) of Sant Gadge Baba Amravati University,Amravati, specifically constituted for CIC under the Chairmanship of Hon'ble Vice Chancellor. The ASU meets at least twice in a year to discuss the budgetary requirements, procurement of new equipments, update of old equipments and organization of short-term training courses, workshops, seminars and conferences for the benefit of users.

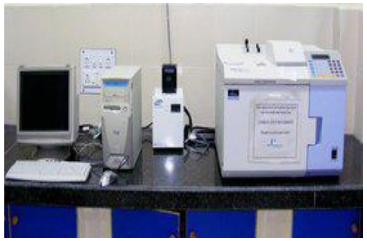
OBJECTIVES

- To acquire and maintain sophisticated instruments, computers software for undertaking quality research programs under one roof.
- To render analytical services / research facilities to the researchers, students and industrial personnel.
- To facilitate testing, calibration and standardization to the aspirant users.
- Organization of training programs, workshops and expert lectures with a view to foster repair and maintenance of scientific instruments and electronic hardware.
- To avoid duplication of costly equipments in various departments

S.N.	Name	Designation	Position
1.	Dr. Dileep Malkhede	Hon'ble Vice-Chancellor	Chairman
2.	Vacant	Dean, Faculty of Science and Technology	Member
3.	Dr. S. V. Dudul	Professor and Head, Department of Electronics	Member
4.	Dr. S. F. R. Khadri	Professor and Head, Department of Geology	Member
5.	Dr. P. A. Wadegaonkar	Professor and Head, Department of Biotechnology	Member
6	Shri Kiran Paturkar	Member other than University employee	Member
7	Vacant	One nominee of funding agency	Member
8	Dr. P.A. Gawande	Director C.I.C. & Professor, Department of (Botany)	Secretary

ANALYTICAL INSTRUMENTATION FACILITIES

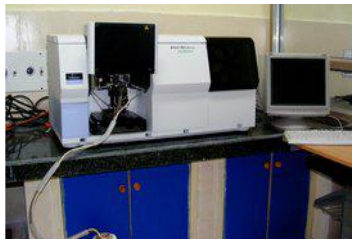
(1) **GAS CHROMATOGRAPH**
(MODEL: AUTO SYSTEM XL, M/S PERKIN ELMER, USA).



Gas chromatography is a technique used for separation of volatile substances, or substances that can be made volatile, from one another in a gaseous mixture at high temperatures. This method depends upon the solubility and boiling points of organic liquids in order to separate them from a mixture. It is both a qualitative (identity) and quantitative (how much of each) tool.

Applications: Analysis of pesticide, Headspace gas chromatography analysis, the forensic analysis of blood and urine alcohol levels, quality and production control of diesel fuel and beer constituents. Aromatic flavors and trace volatiles in foods and soft-drinks are also readily analyzed, Food analysis, identify nitro-compounds in trace quantities, identification of drugs, Pyrolysis gas chromatography, identification of Metal chelates and inorganic materials, Environmental analysis

(2) **ATOMIC ABSORPTION SPECTROMETER**
MODEL: AA300, M/S PERKIN ELMER, USA)



The Analyst 300 is a computer controlled atomic absorption system providing automatic sequential multi element analysis capabilities. An Atomized elements each absorb energy of a wavelength that is peculiar to that element. The atomic absorption method uses as its light source a hollow cathode lamp which emits light of a wavelength that is peculiar to each element. Elements within a solution are heated in a flame or electrically (2000K to 3000K) and subsequently determined using the fact that the degree of absorption will vary with its concentration.

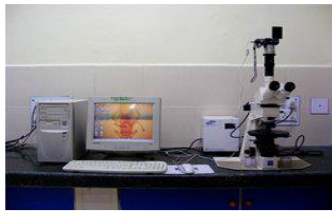
Applications: Major and trace element analysis in Agriculture, Environment, Food product, Forensic science, Geochemistry, Metallurgy, Petrochemicals, Paints, Oils, Plastics, fibers, Pharmacological and Cosmetics.

(3) UV-VISIBLE SPECTROMETER
(MODEL: LAMBDA 25, M/S PERKIN ELMER, USA)

The Lambda 25 UV-visible spectrometer is provided with double beam optics, which incorporates concave holographic grating along with a proven optical design to minimize stray radiation with accurate results. The system has a noise specification of 0.0003A peak to peak, which means that 0.0003A is the lowest usable absorbance reading. The optical performance of the lambda series ensures that you will get dependable results at high and low absorbance values with consistently good quality data. The system is PC controlled by UV-winlab software, which makes it easy to perform analysis. its wavelength range is 200-1100 nm.

Applications: Identify an unknown compound by a comparative analysis. Determine the concentration of a chromaphore compound, Absorbance of the unknown can be measured, Transmission of the unknown can be measured.

(4) TRINOCULAR POLARISINGMICROSCOPE
(MODEL: AXIO LABPOL, M/S CARL-ZEISS, GERMANY)



The Axiolab Trinocular polarizing microscope has superb true quality eyepieces providing brilliant, flawless images created by the best optics Carl-Zeiss can offer. ICS, the infinity colour corrected system with objectives for transmitted and reflected light and an eye friendly 20mm field of view. The optional objective provides an overview of a specimen area as large as 16 mm. The ICS objectives ranges from low priced Achromat P01 for teaching use to the research grade plan.

Applications: Polarization contrast lets you characterize hair, earth and fiber microstructure in forensic examinations of criminological samples. You analyze lacquer and paint chips using bright field, fluorescence and polarization microscopy. If you work as a geologist, you examine rock sections and mineral samples, for example, for oil production. In environmental protection, you identify the microstructure of materials such as asbestos fibers.

(5) TRINOCULAR FLUORESCENCE MICROSCOPE
(MODEL : AXIOSTAR PLUS, M/S CARL-ZEISS, GERMANY)

The Axiostar plus fluorescence module has linear slider with three-filter position, which is ideal for single and double stained fluorescence in immune fluorescence, or with simple FISH applications. HBO light source provide the right spectral light intensity and the integrated light trap guarantees high contrast images.

Applications: They are used in the study of both organic and inorganic matter. It uses the release of light by a stained substance that has taken in either light or other electromagnetic radiation. Fluorescence Microscopes are most commonly used for biological research, environment monitoring, public health and medicine. One of the greatest advantage of Fluorescence Microscopes is that it enables the viewer to obtain faster laboratory results that would not be seen under a routine light microscope.

(6) FTIR SPECTROPHOTOMETER
(MODEL: 8400S, SIMADZU. Singapore)

FTIR spectroscopy provides structural information of the samples. The low energy infra red radiations are appropriate to execute molecular vibrations. The absorption of energy causes the bonds between atoms to be executed to higher energy levels. This results in absorption bonds of specific frequencies. From these characteristic bands, one can determine a great deal about the structure of a molecule. Thus, IR spectra provide strong evidence for compound. Solid samples are analyzed in KBr matrix. Liquid samples in decomposable cells and gases in gas cells at required pressure. Sample required is 50mg.

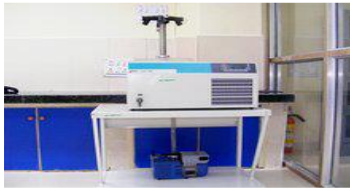
Applications: Identification of compounds, their purity composition of mixtures. The system can be utilized for Pharmaceutical research, Forensic investigations, Polymer analysis, Lubricant formulation and fuel additives. Also Foods research, Quality assurance and control , Environmental and water quality analysis methods , Biochemical and biomedical research, Coatings and surfactants

(7) MINI SPIN SPINNER MAGNETOMETER
(MODEL: MS1, MIS MOLSPIN LTD, UK)

The Mini spin is a low cost, high sensitivity portable slow speed fluxgate magnetometer. It is of rugged construction, battery or mains powered and it may therefore be used either in the field or in the laboratory. Specimens are spun at 6 Hz about a vertical axis inside a triple - shielded, annulus - shaped fluxgate, the output from which may be integrated over 6 or 24 seconds. The results are displayed as two orthogonal components of magnetization on a 5-digit liquid crystal panel. Integration is effected digitally and the magnitude and phases of the signal are extracted by Fourier analysis Specimen size upto 1- inch (2.54 cm) cylindrical specimen integration time either 6 seconds (24 spins) or 24 seconds (120 spins).

Applications: Mini spin spinner magnetometer is useful in determining the various parameters like declination, inclination and magnetic intensity which are necessary for determining Natural remnant Magnetization of a natural solid materials (i.e., Rocks).

(8) LYOPHILIZER
(MODEL: LYOLAB 3000, M/S HETO HOLTEN, DENMARK).



LYOLAB 3000 is a new generation freezer dryer with unique twin capillary tube system based on a twin cooling performance thus giving fastest drying times. The full condenser surface is used optimally securing extra-ordinarily high throughput. The digital temperature readout provides easy to read and accurate indication of condenser temperature below - 55CC on the Lyolab 3000 front panel. Combined with the multi-colour Alarm wait OK indicator, it ensures a safe and optimal run thus avoiding possible loss of samples.

Applications: The Lyolab 3000 is the first in a new generation featuring state of the art laboratory freeze drying technique perfectly suitable for Pharmaceutical preparations, food materials (eg. Beverages- fruit) dairy products, museum objects, microorganisms (e.g. bacteria, yeast), virus, vaccines and antitoxins, blood fractions, enzymes, vitamins, biological reagents and standards.

(9) BINOCULAR STEREO ZOOM MICROSCOPE
(Model No.: SZ-30, M/S OLYMPUS, JAPAN)

This model, developed primarily for mounting onto bonders and probers, offers excellent cost performance. The combination of a long working distance (110mm) and large zoom range of 0.9X to 4X means the user can expect superb optical performance and maneuverability.

Applications: The binocular stereo zoom microscope is a piece of precision equipment from Olympus, Japan utilized for studying the detailed morphological characters of various specimens which is widely used in clinics, laboratories, biology, chemistry, environmental science, geology, medicine and pharmacology, precision-oriented semi-conductor other industries .

(10) PRECISION IMPEDANCE ANALYZER
(MODEL: 4294A M/S AGILENT, USA)

The 4294A covers a broader test-frequency range (40 Hz to 110 MHz) with Basic impedance accuracy:+/-0.08 %. Excellent High Q/Low D accuracy enables analysis of low-loss components. The wide signal-level ranges enable device evaluation under actual operating conditions. The test signal level range is 5m V to 1 Vrms or 200 uA to 20m Arms, and the DC bias range is 0 V to +/-40 V or 0m A to +/-100m A. Advanced calibration and error compensation functions eliminate measurement error factors when performing measurements on in-fixture devices.
Applications: The 4294A is a powerful tool for design, qualification and quality control, and production testing of electronic components. Circuit designers and developers can also benefit from the performance/functionality offered.

(11) FLOID CELL IMAGING STATION
(LIFE TECHNOLOGIES **U.S.**)

The FLoid® Cell Imaging Station is an affordable, user-friendly imaging solution for the quick detection and verification of fluorescently-labeled samples. The FLoid® Cell Imaging Station captures transmitted light and three-color fluorescent images of your cells and samples right at your bench top. An uncomplicated user interface, streamlined image acquisition process, and real-time, multicolor display allow even imaging novices to produce high-quality images with a few mouse clicks.
Applications: Cell Analysis, Cell Culture & Transfection, Cell Engineering & Genome Editing, Cloning, DNA & RNA Purification, Gene Expression Analysis & Genotyping, PCR, Protein Expression & Analysis, Real-Time PCR RNAi Sequencing

(12) CYTOMETER
(LIFE TECHNOLOGIES **U.S.**)

The Tali® Image-Based Cytometer is a benchtop assay platform that produces highly accurate, statistically significant three-parameter population analysis and cell counting in typically less than 1 minute per sample. Using state-of-the-art optics and image analysis software, the Tali® Image-Based Cytometer performs suspension cell-based assays, including cell counting, cell viability, fluorescent protein expression, and apoptosis assays.
Applications: Biosynthesis, Cell Biology, Cell Health, Immunology, Screening, Stem Cells, Immunophenotyping , Cell Sorting , Cell Cycle analysis, Apoptosis, Cell Proliferation Assays, Intracellular Calcium Flux

(13) HIGH PERFORMANCE THIN LAYER CHROMATOGRAPHY
(MODEL: CAMAG , SWITZERLAND)

The separation of the components of mixture is due to their affinities for a stationary phase such as a solid or a liquid and their differential solubility in a moving phase such as a liquid or gas.

Applications of HPTLC include phytochemical and biomedical analysis, herbal drug quantification, active ingredient quantification, fingerprinting of formulations, and check for adulterants in the formulations. HPTLC is also useful in detecting chemicals of forensic concern.
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(14) DNA SEQUENCER
(MODEL: ABI 3500 , JAPAN)

The 3500 or 3500xL analyzer is a fluorescence-based DNA analysis system that uses proven capillary electrophoresis technology with 8- or 24-capillaries. The 3500 or 3500xL analyzer is fully automated, from sample loading to primary data analysis, for sequencing, fragment analysis, and HID (human identification) analysis.

Applications: Genetic analyzers are automated systems capable of sequencing DNA or analyzing fragments for a variety of applications. In capillary electrophoresis-based systems, DNA fragments bound to probes migrate through a polymer and the fluorescence emissions are measured. An array of multiple capillaries allows for sample loading in a convenient 96-well micro plate format. Other analyzers utilize pyrosequencing technology for rapid sequencing. These instruments are especially suited for applications such as Sanger Sequencing, De Novo Sequencing, Re-sequencing, HLA Typing, Fragment Analysis, Microsatellite Analysis, SNP Analysis, Capillary Electrophoresis

Annexure-A

CENTRAL INSTRUMENTATION CELL,
AMRAVATI UNIVERSITY, AMRAVATL

Requisition for Sample/Slide analysis

1) Name of User with designation:

2) Name of the Organization:

3) Type of analysis to be done:

3) Purpose:

5) No. of Samples/elements:

6) Payment details:
(By Cash/DD with date)

7) Any other details:

8) Address for correspondence:

Signature of the user with date

Signature of the Head of the Organization with seal.

Annexure-B

CENTRAL INSTRUMENTATION CELL,
AMRAVATI UNIVERSIT' AMRAVATI

UNDERTAKING (by the user)

I hereby give undertaking that, I will take necessary care in handling the sophisticated instrument/s and I shall pay the cost decided by the Competent Authority of the University, if a part or parts of the equipment is damaged during handling of Instrument/s. I have paid the prescribed charges before utilizing the equipment in CIC. I shall maintain the discipline while working in CIC for the analysis.

Date: Signature:

Place: Name of User

Institution:

Sample Submission Procedure

1. Samples should be submitted separately packed for each technique.
2. The standard format (Annexure-A and B) to be filled by the user which is available in the CIC office for the individual techniques.
3. If more than one measurement is required for a sample, please send separate packets by registered post.
4. Payment should be made by cash or crossed demand draft in advance along with the request letter of analysis in favour of The Registrar, Sant Gadge Baba Amravati University, Amravati' and should be mailed to 'The In-Charge, Central Instrumentation Cell, Sant Gadge Baba Amravati University, Amravati."
5. An official receipt will be sent on the receipt of payment.
6. The spectral data or analysis report will be sent to the user within one week of the completion of the analysis.
7. Users presence is required in case of hazardous samples such as carcinogens, explosives, biologically active material etc.
8. For measurements in-person, inform us well in advance and start the trip after getting written appointment.
9. If not specifically mentioned, the samples will be discarded after the measurements.
10. Be specific with respect to the nature of measurements to be made indicating the solvents, temperature range and other details if any.
11. Acknowledge the services rendered by the CIC, Sant Gadge Baba Amravati University, Amravati in all your publications and thesis to expose the facilities to other users.

For more information
Please address all your correspondence to

Director
Central Instrumentation Cell
Sant Gadge Baba Amravati University,
Amravati - 444 602 (MS)
Tel :0721 -2662358 Ext. 230/ (Off.) 0721- 2664729 (R.)
Fax: 0721 - 2662135/2660949
Email : cic@sgbau.ac.in

Sr. No.	Name of the Equipment with make and model	Parameters	Analytical charges in Rupees		
			University staff/ Research students/ University projects/ Affiliated colleges	Other Universities	Industry / Public
1	Gas Chromatograph (GC) M/S. Perkin Elmer, USA. Model No.: Auto system XL	Per sample. Prepared solutions should be brought to CIC for analysis as per the technique to be used.	300	600	900
2	Atomic Absorption Spectrometer M/S. Perkin Elmer, USA. Model No.: AA300	Per element with 10 Samples or Per Sample Prepared solutions should be brought to CIC for analysis as per the technique to be used.	100	200	300
3	UV-VIS Spectrometer M/S. Perkin Elmer, USA. Model No.: Lambda 25	Per sample. Prepared solutions should be brought to CIC for analysis as per the technique to be used.	100	200	300
4	Trinocular Polarizing Microscope M/S. Carl-Zeiss, Germany. Model: Axio lab pol	Per Slide Per Hr / role, whichever is earlier	10 50	20 100	40 150
5	Trinocular Fluorescence Microscope M/S. Carl-Zeiss, Germany. Model: Axio star plus	Per Slide Per Hr / role, whichever is earlier	10 50	20 100	40 150
6	FTIR Spectrophotometer M/S. Simadzu Singapore Model: 8400S	Per spectrum / sample. Prepared sample should be brought to the CIC	200	250	500
7	Mini-spin Spinner Magnetometer M/S. Molspin, UK Model No.: MS1	Per hour. Drilled cores with North marking be brought to the CIC	100	200	300
8	Lyophilizer M/S. Heto Holten, Denmark Model No.: Lyolab 3000	Per sample. Prepared broth culture / solution should be brought to the CIC	100	200	500
9	Stereo-zoom Binocular Microscope M/S. Olympus, Japan , Model No.:SZ-30	Per Slide	10	20	50
10	Precision Impedance Analyzer M/S. Agilent, USA Model No.: 4294A	Per sample. Prepared sample should be brought to the CIC	100	200	300
11	Floid Cell Imaging Station M/S. Life Technologies,U.S Serial No. A1513-FLD2-017	Per sample/ Slide Prepared sample should be brought to the CIC	100	200	300
12	Cytometer M/S. Life Technologies,U.S Serial No.130205-001	Per sample/ Slide Prepared sample should be brought to the CIC	100	200	300
13	ABI 3500 Genetic analyser M/S. Life technologies, Japan	As per Services Below			
14	HPTLC CAMAG Switzerland	As per Services Below			

13. ABI 3500 Genetic analyser M/S. Life technologies, Japan

ANALYTICAL CHARGES FOR DNA SEQUENCING SERVICES

SERVICE	SPECIFICATION	SIZE	PRICE	REMARK
Sequencing of Unpurified Plasmid/ PCR product	< 100 reactions	Per reaction	400	Primers are required
	>100 reaction	Per Reaction	350	
	Linking sequencing plates	Per plate	9500	
	< 100 reactions using Exo Sap	Per reaction	500	
	>100 reaction	Per Reaction	450	
Sequencing of purified Plasmid/ PCR product/clones	< 100 reactions	Per reaction	400	
	>100 reaction	Per Reaction	350	
Primer Walking	Single Stranded primer w/o synthesis of primer	Per base	25	
	Single Stranded primer with synthesis of primer	Per base	550	
	Double Stranded primer w/o synthesis of primer	Per base	25	
	Double Stranded primer with synthesis of primer	Per base	950	
16S rDNA/18S rDNA/ITS sequencing (Genomic DNA isolated and PCR performed by the user)	Aligned sequences upto 500 bp	Per 500 bp	1800	DNA isolated and PCR should be performed for sequencing and analysis provide primers
	Aligned sequences upto ~1500 bp	For `1500 bp	4300	
16S rDNA/18S rDNA/ITS sequencing (Genomic DNA isolated and PCR will be performed at our end)	Aligned sequences upto 500 bp	Per 500 bp	3000	Bacterial/Sample /Fungal culture should be provided
	Aligned sequences upto ~1500 bp	For `1500 bp	5500	

Note:- Above charges may be variable with respective

1. Type of analysis and type of sample preparation material cost .
2. Postage charges extra

14. Analytical Charges for HPTLC (CAMAG Switzerland)

S. No.	Name of the Test	Analysis Charges (in INR)		
		Industries / Govt. R&D Organizations	Students from other University	Students / Researcher from Home University
1	Method Development (per standard/ 6 samples)	Rs.5000	Rs.3000	Rs.2000
2	Class of compound (11 types)	Rs. 1500	Rs.1000	Rs.600
3	Quantification (per marker /upto 6 sample)	Rs.6000	Rs.3000	Rs.2000
4	Validation of Method (per marker/ upto 6 sample)	Rs.12000	Rs.7000	Rs.5000
5	Finger print (per plant)	Rs.2000	Rs.1500	Rs.1000
6	Identification per Standard upto 6 samples	Rs1000	Rs.700	Rs.500
7	Stability studies (upto 6 samples)	Rs.1800	Rs.1200	Rs.800

Note : Requirements for Sample Analysis

1. Prepared sample should be submitted for analysis.
2. Marker compound 5-10mg (purity > 98%) should also be submitted along with samples (unused may be collected back)
3. Postage charges extra

Monitoring / Working Groups for various equipments of CIC

1. Gas Chromatograph

Dr.Jagruti Barabde	Chemistry	Group Leader
Shri. J.S. Wadatkar	Lab. Assistant, Chemistry	Member

2. Atomic Absorption Spectrometer

Prof. A. L. Rathod	Chemical Technology	Group Leader
Shri. S D Gawande	C.I.C	Member

3. UV-VIS Spectrophotometer

Dr. P.A. Gawande	Botany	Group Leader
Shri S. D. Gawande	C.I.C.	Member

4. Trinocular Polarizing Microscope

Shri Vinod Nagle	Zoology	Group Leader
Shri Sham Chahakar	Lab. Attendant, Botany	Member

5. Trinocular Fluorescence Microscope

Shri K. C. More	Botany	Group Leader
Shri V.S.Kale	Lab. Attendant, Zoology	Member

6. FTIR

Dr. Prashant Shingwekar	Chemical Technology	Group Leader
Shri S. D. Gawande	C.I.C.	Member

7. Minispin Portable Magnetometer

Dr. S.F.R. Khadri	Geology	Group Leader
Shri S.P. Pundkar	Lab. Attendant, Geology	Member

8. Lyophilizer

Dr. P.A. Gawande	Botany	Group Leader
Shri J. A. Ukey	Lab. Attendant, Botany	Member

9. Binocular Stereo zoom Microscope

Dr. A.K. Shrivastava	Geology	Group Leader
Shri S.P. Pundkar	Lab. Attendant, Geology	Member

10. Precision Impedance Analyzer

Dr. Sandip Wghule	Physics	Group Leader
Shri. Nitin Lavhale	Lab. Atendent, Physics	Member

11. Floid Cell Imaging Station

Dr. P.A. Wadegaonkar	Biotechnology	Group Leader
Shri R.R. Dubey	Lab. Attendant, Biotech.	Member

12. Cytometer

Dr. P.A. Wadegaonkar	Biotechnology	Group Leader
Shri R.R. Dubey	Lab. Attendant, Biotech.	Member

13. Genetic analyser

Dr. P. V. Thakare	Biotechnology	Group Leader
Shri J. S. Wadatkar	Lab. Assistant, Chemistry	Member

14. HPTLC

Dr. P.A. Gawande	Botany	Group Leader
Shri S. D. Gawande	C.I.C.	Member