SOPHISTICATED INSTRUMENTATION CENTRE FOR APPLIED RESEARCH AND TESTING (SICART)

(Under SAIF- Sophisticated Analytical Instruments Facility by DST, New Delhi)



(Sponsored by Department of Science & Technology, Govt. of India, New Delhi) NABL Accredited Laboratory, Certificate No. TC-5124 Sardar Patel Center for Science & Technology Charutar Vidya Mandal Vallabh Vidyanagar – 388120, Dist. Anand, Gujarat, India Phone: +91-2692-234966, +91-2692-238355 E-mail: sicart_cvm@hotmail.com sicartcvm@sicart.res.in Website : www.sicart.res.in

Inauguration Picture of SICART



Major Objectives of SICART

A. Vision:

- 1. To create better societal impact by providing scientific analytical services to the industry and academic institutes perusing scientific research.
- 2. Expansion of basic research areas to its explicit applications.
- 3. To help in technical analysis for institutionalization or developing, standardization and validation of developing methods in order to promising usage of unexplored resources.
- 4. To organize short- and long-term training workshops/programs on the applications and uses of various analytical techniques for researchers/ industrial users with purpose to sort out their academic task on their focused areas.
- 5. To motivate young researchers for generating innovative ideas from the experimental findings.

B. Mission:

- 1. To acquire newfangled sophisticated analytical instruments.
- 2. To develop capability for preventive maintenance, upgradation of the high-end instruments and timely replacement of old facilities.
- 3. Exploring new MOUs and agreements with industries, academic and research centers.
- 4. To carry out industrial or government sponsored research projects.
- 5. To provide consistent consultative approach and help towards solving analytical problems.
- 6. To contribute in effective networking and dissemination of Institute's sophisticated instruments to the scientific community across the state and country in general.

Authorization

- 1. Sophisticated Analytical Instruments Facility Supported by Department of Science & Technology (Govt. of India).
- 2. Recognized by DSIR as a Research Centre.
- 3. Recognized by Gujarat Pollution Control Board as Environmental Auditor, Schedule- I.
- 4. Accredited by National Accreditation Board for Testing and Calibration Laboratories (NABL)
- 5. Recognized by Charutar Vidya Mandal University and Sardar Patel University as Research Centre for Ph.D. study.

Sr. No.	Employee Name	Designation	Qualification
1	Prof. (Dr.) A. R. Jani	Hon. Director	M.Sc. (Physics), Ph.D. (Physics)
2	Dr. S. V. Patel	Sr. Scientific Officer	M.Sc. (Chemistry), Ph.D. (Polymer Chemistry)
3	Dr. K. K. Tiwari	Sr. Scientific Officer	M.Sc (Environment Science) Ph.D. (Ecotoxicology)
4	Dr. M. R. Tiwari	Sr. Scientific Officer	M.Sc. (Inorganic Chemistry) Ph.D. (Industrial Chemistry)
5	Dr. G. R. Chauhan	Sr. Scientific Officer	M.Sc. (Analytical Chemistry) Ph.D. (Chemistry)
6	Mr. Vipul J. Patel	Jr. Scientific Officer	M.Sc. (Solid State Physics)
7	Mr. Vikas A. Patel	Jr. Scientific Officer	M.Sc. (Electronics) PhD Pursuing
8	Ms. Dhanvi Patel	Technical Assistant	M. Sc. (BioTechnology)
9	Mr. Dipen Patel	Technical Assistant	M.Sc. (Analytical Chemistry)
10	Ms. Daxa Patel	Technical Assistant	M.Sc. (Organic Chemistry)
11	Mr. Kartik Patel	Technical Assistant	M. Pharm (Quality Assurance)
12	Dr. Hiral Soni	Technical Assistant	M.Sc., Ph.D. (Biotechnology)
13	Mr. Savan Patel	Trainee Technical Assistant	M.Sc. (Industrial Chemistry) PhD Pursuing
14	Mr. Hardik Parekh	Trainee Technical Assistant	M.Sc. (Environmental Biotechnology), PhD Pursuing

List of Technical Staff

Field Emiss	sion Gun Scanning Electron Microsc	copy (FEG-SEM)
¹ . Make: FEI	Ltd Model: Nova Nano SEM 450	
Desolution	1.0nm at 15kV,1.4nm at 1kV,	
Resolution.	3.5nm at 100V	Field Emission Gun Scannin Electron Microscopy (FEG-
Accelerating Voltage:	20V to 30kV	FEI Ltd Model: Nova Nano SE
Beam current:	up to 200nA	
Magnification:	X25 to X10,00,000	Son I
Field Emission Cun.	Ultra-high brightness Schottky	
Field Emission Gun.	emitter	
	Detection and quantification of	
	elements down to boron.	
	Surface analysis of samples such	
Major Applications:	as semiconductor, metals,	
	geological, pharmaceutical, bio-	
	materials, ceramics, etc.	
	Mapping of different metals in	
	samples can be analyzed	

Sophisticated Instrumentation Facility Available in SICART

2. Transmission Electron Microscope (TEM) 200 kV Technai-20, Phillips, Holland

Electron Source:	LaB6 and Tungsten Filament
Accelerating Voltage:	200KV
Point Resolution:	0.27nm
Magnification:	25x to 7,50,000x
Sample holder	Single tilt
Sample preparation	Illtramicrotome and ultracutter
accessories	entumerotome and unracutter

Major ApplicationsMorphology, crystal structure,
particle size, interface structure,
crystal defects, Single crystal
Diffraction, biological microbes
can be studied.



3. FEG - T Talos F20	RANSMISSION ELECTRON MICRO	SCOPE (HR-TEM), Thermo Fisher Scientific,
Electron Source:	Schottky Field emitter (Field Emission Gun)	
Resolution:	Line Resolution 0.10 nm, Point Resolution less than 0.25 nm or less	
Magnification:	FEG-TEM Magnification 50x to 1Mx	
STEM Detector:	High Angle Annular Dark Field Detector (HAADAF)	
STEM Resolution:	less than 0.16nm	
STEM Magnification	: Up to 330 Mx	
EDS or EDAX:	Bruker X Flash 6 30 EDS Detector	
Camera:	4K X 4K Ceta 16M Camera	
Major Application	Morphology, crystal structure, particle size, interface structure, crystal defects, Single crystal Diffraction, biological microbes, pharma samples, thin films, catalysts, Nanoparticles, polymer samples can be studied. Quantitative Elemental	
	analysis and elemental Mapping can be done on this facility.	
4. USA, Av	analysis and elemental Mapping can be done on this facility. rely Coupled Plasma Optical Emission rio 200	Spectrometer (ICP- OES) Perkin Elmer,
4. USA, Av	analysis and elemental Mapping can be done on this facility. rely Coupled Plasma Optical Emission rio 200 40MHz	Spectrometer (ICP- OES) Perkin Elmer,
4. Inductiv USA, Av RF frequency: RF power:	analysis and elemental Mapping can be done on this facility. rely Coupled Plasma Optical Emission vio 200 40MHz 1000 to 1500 watts (Power efficiency greater than 81%)	Spectrometer (ICP- OES) Perkin Elmer,
4. Inductiv USA, Av RF frequency: RF power: Pump:	analysis and elemental Mapping can be done on this facility. rely Coupled Plasma Optical Emission 40MHz 1000 to 1500 watts (Power efficiency greater than 81%) 4 Channel peristaltic pump; 0.2 to 7.0 ml/min in 0.1ml increments	Spectrometer (ICP- OES) Perkin Elmer,
4. Inductive USA, Av RF frequency: RF power: Pump: Spectrometer:	analysis and elemental Mapping can be done on this facility. rely Coupled Plasma Optical Emission 40MHz 1000 to 1500 watts (Power efficiency greater than 81%) 4 Channel peristaltic pump; 0.2 to 7.0 ml/min in 0.1ml increments Charged Coupled Device (CCD) Array Detector	Spectrometer (ICP- OES) Perkin Elmer,
4. Inductive USA, Ave RF frequency: RF power: Pump: Spectrometer: Range:	analysis and elemental Mapping can be done on this facility. rely Coupled Plasma Optical Emission 40MHz 1000 to 1500 watts (Power efficiency greater than 81%) 4 Channel peristaltic pump; 0.2 to 7.0 ml/min in 0.1ml increments Charged Coupled Device (CCD) Array Detector 165 – 900 nm	<section-header></section-header>
4. Inductiv USA, Av RF frequency: RF power: Pump: Spectrometer: Range: Resolution:	analysis and elemental Mapping can be done on this facility. rely Coupled Plasma Optical Emission fio 200 40MHz 1000 to 1500 watts (Power efficiency greater than 81%) 4 Channel peristaltic pump; 0.2 to 7.0 ml/min in 0.1ml increments Charged Coupled Device (CCD) Array Detector 165 – 900 nm <0.009 nm @200nm	<section-header></section-header>
4. Inductiv USA, Av RF frequency: RF power: Pump: Spectrometer: Range: Resolution: Major Applications	analysis and elemental Mapping can be done on this facility. rely Coupled Plasma Optical Emission fo 200 40MHz 1000 to 1500 watts (Power efficiency greater than 81%) 4 Channel peristaltic pump; 0.2 to 7.0 ml/min in 0.1ml increments Charged Coupled Device (CCD) Array Detector 165 – 900 nm <0.009 nm @200nm Analysis of cation elements from	<section-header></section-header>
4. Inductiv USA, Av RF frequency: RF power: Pump: Spectrometer: Range: Resolution: Major Applications	analysis and elemental Mapping can be done on this facility. rely Coupled Plasma Optical Emission fio 200 40MHz 1000 to 1500 watts (Power efficiency greater than 81%) 4 Channel peristaltic pump; 0.2 to 7.0 ml/min in 0.1ml increments Charged Coupled Device (CCD) Array Detector 165 – 900 nm <0.009 nm @200nm Analysis of cation elements from various samples (Environment,	<section-header></section-header>
4. Inductiv USA, Av RF frequency: RF power: Pump: Spectrometer: Range: Resolution: Major Applications	analysis and elemental Mapping can be done on this facility. rely Coupled Plasma Optical Emission 40MHz 40MHz 1000 to 1500 watts (Power efficiency greater than 81%) 4 Channel peristaltic pump; 0.2 to 7.0 ml/min in 0.1ml increments Charged Coupled Device (CCD) Array Detector 165 – 900 nm <0.009 nm @200nm Analysis of cation elements from various samples (Environment, metal alloys, chemicals, minerals,	<section-header><section-header></section-header></section-header>
4. Inductiv USA, Av RF frequency: RF power: Pump: Spectrometer: Range: Resolution: Major Applications	analysis and elemental Mapping can be done on this facility. rely Coupled Plasma Optical Emission 40MHz 40MHz 1000 to 1500 watts (Power efficiency greater than 81%) 4 Channel peristaltic pump; 0.2 to 7.0 ml/min in 0.1ml increments Charged Coupled Device (CCD) Array Detector 165 – 900 nm <0.009 nm @200nm Analysis of cation elements from various samples (Environment, metal alloys, chemicals, minerals, pharmaceuticals, polymers,	<section-header></section-header>

5. X- Ray Diffractome	eter (XRD) Philips, Holland, X-pert MPD
Source:	Cu target X-Ray tube
X-Ray Power:	2KW
Detector:	Xe-filled Proportional detector
Software:	JCPD data base for powder diffractometry
2 O Measurement range:	2 to 136
Diffractometer radius:	130 to 230mm
Major Applications	X-ray diffraction is widely used to identify crystalline phases, measure crystallite sizes, lattice parameters, orientation and provide quantitative phase analysis and atomic coordinates.

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6. X- Ray Diffractom	eter (XRD), Bruker, D8 Advance	
Source:	Cu target X-Ray tube	
X-Ray Power:	2KW	X- Ray Diffractometer (XRD) Perken 10 Advance
Dotoctor	LYNXEYE XE-T is based on	Di Liker, DJ Alfence
Detector.	silicon strip technology	· 10
Software:	DIFFARAC. EVA	
20 Measurement		
range:	130 to 230mm	
	2 107	
Diffractometer	2 to 136,	
radius:		
Major Applications	: The D8 Advanced is all-purpose	
	Ray analyzer which is configured	
	for all powder diffraction	
	application, Including phase	
	identification, quantitative phase	
	analysis, reitveld refinement and	
	structure analysis.	

7. Wavelength D	ispersive-X-Ray Fluorescence (WD-XRF)	
Description:	4Kw WD-XRF sequential basic system		Wavelangth-Dispersive X-ray Fluerescence Spectrometry (VID-XR Model AriseMAX: Make PAthebrical
X ray tube:	Ultra thin Be window (75µm)		
Detectors:	Scintillation and flow counter detection		
	Omnian software		
Software:	TOXAL module		
	WROXI Mineral and mining Modules.		A and L
Major Applications:	XRF can be used to analyze elemental		
	composition from metals, cement, Soil		
	samples, Mining, Steel, Ceramic and		
	glass manufacturing, Metallurgy,		
	Hazardous waste analysis, Petroleum		XIL- L
	industry, geological samples, ceramic,		
	glass industries, pharmaceuticals,	7	
	plastics and food industries.		XXX
8. 400 MHz FT-NN Switzerland, Av	IR Spectrometer (FT-NMR) Model- Bruk ance III. Topspin 2.1	ker,	
8. 400 MHz FT-NN Switzerland, Ava Liquid and Solid multir	IR Spectrometer (FT-NMR) Model- Bruk ance III, Topspin 2.1 nuclei probe	ker,	400 MHz FT-NMR Spectrometer
8. 400 MHz FT-NM Switzerland, Av Liquid and Solid multi r Single Chip RF generati	IR Spectrometer (FT-NMR) Model- Bruk ance III, Topspin 2.1 nuclei probe on	ker,	400 MHz FF-NMR Spectrometer (FF-NMR) Model- Bruker, Avance III, Topspin 2.1
8. 400 MHz FT-NM Switzerland, Ava Liquid and Solid multi r Single Chip RF generati Timing Resolution	IR Spectrometer (FT-NMR) Model- Bruk ance III, Topspin 2.1 nuclei probe on 12.5 ns	xer,	400 MHz FF-NMR Spectrometer (FT-NMR) Model- Bruker, Avance III, Topspin 2.1
8.400 MHz FT-NM Switzerland, AvailableLiquid and Solid multi rSingle Chip RF generatiTiming ResolutionMinimum event time	IR Spectrometer (FT-NMR) Model- Brulance III, Topspin 2.1 nuclei probe on 12.5 ns 25 ns	ker,	400 MHz FF-NMR Spectrometer (FT-NMR) Model: Bruker, Avance III, Topspin 2.1
8.400 MHz FT-NM Switzerland, AvailableLiquid and Solid multi rSingle Chip RF generationTiming ResolutionMinimum event timeHighest Phase	IR Spectrometer (FT-NMR) Model- Brulance III, Topspin 2.1 nuclei probe on 12.5 ns 25 ns (0.0055%)	ker,	400 MHz FF-MMR Spectrometer (FT-MMR) Model: Bruker, Avance III, Topspin 2.1
8.400 MHz FT-NM Switzerland, Ava Switzerland, Ava Liquid and Solid multi r Single Chip RF generati Timing ResolutionMinimum event timeHighest Phase resolution	IR Spectrometer (FT-NMR) Model- Brulance III, Topspin 2.1 nuclei probe on 12.5 ns 25 ns (0.0055°)	ker,	400 MHz FT-MMR Spectrometer (FT-MMR) Model- Bruker, Avance III, Topspin 2.1
8.400 MHz FT-NM Switzerland, AvailableLiquid and Solid multi rSingle Chip RF generationTiming ResolutionMinimum event timeHighest PhaseresolutionHighest Frequency	IR Spectrometer (FT-NMR) Model- Brulance III, Topspin 2.1 nuclei probe on 12.5 ns 25 ns (0.0055°)	ker,	400 MHz FF-MMR Spectrometer (FT-MMR) Model- Bruker, Avance III, Topspin 2.1
8.400 MHz FT-NM Switzerland, AvailableLiquid and Solid multi rSingle Chip RF generationTiming ResolutionMinimum event timeHighest PhaseresolutionHighest Frequencyresolution	IR Spectrometer (FT-NMR) Model- Brulance III, Topspin 2.1 nuclei probe on 12.5 ns 25 ns (0.0055°) (0.005 Hz)	ker,	400 MHz FT-MMR Spectrometer (FT-MMR) Model- Bruker, Avance III, Topspin 2.1
8.400 MHz FT-NM Switzerland, AvailableLiquid and Solid multi rSingle Chip RF generationSingle Chip RF generationMinimum event timeHighest PhaseresolutionHighest Frequencyresolution	IR Spectrometer (FT-NMR) Model- Brulance III, Topspin 2.1 nuclei probe on 12.5 ns 25 ns (0.0055°) (0.005 Hz) (31P ,29Si ,23Na ,27Al ,51V,71Ga,	ker,	400 MHz FF-NMR Spectrometer (FT-MMR) Model- Bruker, Avance III, Topspin 2.1
8.400 MHz FT-NM Switzerland, Ava Switzerland, Ava Liquid and Solid multi r Single Chip RF generati Timing ResolutionMinimum event timeHighest Phase resolutionHighest Frequency resolutionSolid nuclei	IR Spectrometer (FT-NMR) Model- Brulance III, Topspin 2.1 nuclei probe on 12.5 ns 25 ns (0.0055°) (0.005 Hz) (31P ,29Si ,23Na ,27Al ,51V,71Ga, 119Sn ,201Pb)	ker,	400 MHz FT-HMR Spectrometer (FT-HMR) Model- Bruker, Avance III, Topspin 2.1
8.400 MHz FT-NM Switzerland, Ava Switzerland, Ava Liquid and Solid multi r Single Chip RF generati Timing ResolutionMinimum event fime Highest Phase resolutionHighest Phase resolutionBighest Frequency resolutionSolid nuclei	IR Spectrometer (FT-NMR) Model- Brulance III, Topspin 2.1 nuclei probe on 12.5 ns 25 ns (0.0055°) (0.005 Hz) (31P ,29Si ,23Na ,27Al ,51V,71Ga, 119Sn ,201Pb) NMR is useful for structure	ker,	400 MHz FT-MMR Spectrometer (FT-MMR) Model- Bruker, Avance III, Topspin 2.1
8.400 MHz FT-NM Switzerland, Ava Switzerland, Ava Liquid and Solid multi r Single Chip RF generati Timing ResolutionMinimum event fime Highest Phase resolutionHighest Frequency resolutionSolid nucleiMajor Applications :	IR Spectrometer (FT-NMR) Model- Brulance III, Topspin 2.1 nuclei probe on 12.5 ns 25 ns (0.0055°) (0.005 Hz) (31P ,29Si ,23Na ,27Al ,51V,71Ga, 119Sn ,201Pb) NMR is useful for structure identification of organic inorganic and	ker,	400 MHz FT-NMR Spectrometer (FT-MMR) Model: Bruker, Avance III, Topspin 2.1
8.400 MHz FT-NM Switzerland, Ava Switzerland, Ava Liquid and Solid multi r Single Chip RF generati Timing ResolutionMinimum event fimeHighest Phase resolutionHighest Frequency resolutionSolid nucleiMajor Applications :	IR Spectrometer (FT-NMR) Model- Brulance III, Topspin 2.1 nuclei probe on 12.5 ns 25 ns (0.0055°) (0.005 Hz) (31P ,29Si ,23Na ,27Al ,51V,71Ga, 119Sn ,201Pb) NMR is useful for structure identification of organic, inorganic and polymer compounds	ker,	400 MHz FT-NHR Spectrometer (FT-NMR) Model: Bruker, Avance III, Topspin 2.1

9.	Fourier Transfe USA: Spectrum	orm Infrared Spectrometer (FTIR) Perki a-GX	n Elmer,
Nor	mal range:	4000-400 cm ⁻¹	
Ope	rating Mode:	MIR	
Scar	nning range:	4000-400 cm ⁻¹	
Scar	n time:	20scan/second	
Reso	olution:	0.15cm ⁻¹	
Sing	le Beam/Ratio:	Single, Detector: MIRTGS	
Maj	or Applications:	It is used for qualitative and quantitative analysis for organic and inorganic and pharmaceutical samples.	



10.	UV-VIS-NI	R Spectrometer, Perkin Elmer, USA, Lambda 19
Way	alangth	185-3200 nm for
Done	tiengtii	Absorbance/Transmission and 200-
Naliş	30.	2500 for Reflectance
Ratio Lam	o Recording p:	Halogen (VIS/NIR)
Dete	ctors:	Photomultiplier tube for UV/Vis
Solid	l sample	Tungsten-
attac	chment:	Lead-Sulphide cell (PbS) for NIR
Doul	ble Beam	Double Monochromator, Deuterium (UV)
Majo	or	To find out wavelength maxima, unknown
Appl	lications :	sample concentration, band gap of the
		semiconductor crystal, optical density,
		materials optical properties and its
		concentration.



11.	LC-MS-MS Thermo fis	5 (LCQ Fleet, TSQ Quantum Access) her scientific, USA	
LCQ	fleet and TS	Q Quantum Access with Surveyor plus HPLC	LI-MS-MS (LC) Feet TS2
System	m		Buentum Access) Thermo Rister Scientific
Mass	range	LCQ Fleet: 50-2000 Daltons,	
1111105	i ungei	TSQ Quantum Access: 30-3000 Daltons	
Pumr):	Dual piston delivery system, built-in vacuum	
		degasser.	
Press	ure range:	0 to 5800 PSI (0 to 400 bar) at flow rates up to	
	8	2 ml/min.	
Opera	ating	5°C to 95°C.	
temp	erature:		
		Compound detection and structural	
		identification of drugs, organic intermediate	
Majo	r	compound and non-volatile compounds,	
Appli	cations:	natural products, pharmaceuticals,	
		environmental samples, clinical and forensics	
		research samples.	
12	High Perfo	rmance I jauid Chromatography (HPLC) Perk	in Elmer USA
	Series-200	mance Enquite enromatography (III EC) Ferk	
Quate	Series-200 ernary gradier	nt system	
Quate Flow	Series-200 ernary gradien rate	nt system 1 to 2 ml/min	
Quate Flow Varia	Series-200 ernary gradien rate ble operatin	1 to 2 ml/min 6200 PSI	
Quate Flow Varia press	Series-200 ernary gradien rate ble operatin ure	I to 2 ml/min 6200 PSI	
Quate Flow Varia press	Series-200 ernary gradien rate able operatin ure nn	1 to 2 ml/min 6200 PSI C-18, C-8 column	
Quate Flow Varia press Colui	Series-200 ernary gradien rate able operatin ure nn	It system 1 to 2 ml/min ag back 6200 PSI C-18, C-8 column Photo Diode Array (PDA), UV-	
Quate Flow Varia press Colur Detec	Series-200 ernary gradien rate able operatin ure nn etors:	It system 1 to 2 ml/min ag back 6200 PSI C-18, C-8 column Photo Diode Array (PDA), UV- Visible and Fluorescence Detector	
Quate Flow Varia press Colun Detec	Series-200 Series-200 Ernary gradier rate able operatin ure nn Etors:	It system 1 to 2 ml/min ag back 6200 PSI C-18, C-8 column Photo Diode Array (PDA), UV- Visible and Fluorescence Detector tor 190nm to 800nm	
Quate Flow Varia press Colun Detec UV- V Rang	Series-200 Series-200 ernary gradier rate able operatin ure nn etors: Visible detec e:	It system 1 to 2 ml/min ag back 6200 PSI C-18, C-8 column Photo Diode Array (PDA), UV- Visible and Fluorescence Detector tor 190nm to 800nm	
Quate Flow Varia press Colun Detec UV- V Rang PDA	Series-200 Series-200 ornary gradien rate ble operatin ure nn ctors: Visible detec e: detector ran	Interview 1 to 2 ml/min Int system 6200 PSI C-18, C-8 column C-18, C-8 column Photo Diode Array (PDA), UV- Visible and Fluorescence Detector tor 190nm to 800nm ge 200 to 800nm	
Quate Flow Varia press Colun Detec UV- V Rang PDA Flore	Series-200 Series-200 ornary gradien rate ble operatin ure nn ctors: Visible detec e: detector ran scence Detec	Interview 1 to 2 ml/min Int system 1 to 2 ml/min Int system 6200 PSI Image 6200 PSI Image C-18, C-8 column Photo Diode Array (PDA), UV- Visible and Fluorescence Detector Image 200 to 800nm Image 200 nm to 900nm	
Quate Flow Varia press Colui Detec UV- V Rang PDA Flore range	Series-200 Series-200 ornary gradien rate ble operatin ure nn etors: Visible detec e: detector ran scence Detec	Interview 1 to 2 ml/min Int system 6200 PSI C-18, C-8 column C-18, C-8 column Photo Diode Array (PDA), UV- Visible and Fluorescence Detector tor 190nm to 800nm ge 200 to 800nm etor 200nm to 900nm	
Quate Flow Varia press Colun Detec UV- V Rang PDA Flore range	Series-200 Series-200 rmary gradien rate able operatin ure nn etors: Visible detec e: detector ran scence Detec c tivity range	Interview 1 to 2 ml/min Int system 6200 PSI C-18, C-8 column C-18, C-8 column Photo Diode Array (PDA), UV- Visible and Fluorescence Detector tor 190nm to 800nm ge 200 to 800nm ctor 200nm to 900nm 0.0001 to 2.0 AUS	
Quate Flow Varia press Colun Detec UV- V Rang PDA Flore range	Series-200 Series-200 rmary gradien rate able operatin ure nn etors: Visible detec e: detector ran scence Detec etivity range	Introduct Chromonatography (III DC) Ferrer It system 1 to 2 ml/min It of 2 ml/min	
Quate Flow Varia press Colun Detec UV- V Rang PDA Flore range Sensi	Series-200 Series-200 renary gradien rate able operatin ure nn etors: Visible detector e: detector ran scence Detector tivity range r Applicatio	Int system 1 to 2 ml/min Image back 6200 PSI C-18, C-8 column C-18, C-8 column Photo Diode Array (PDA), UV- Visible and Fluorescence Detector tor 190nm to 800nm ge 200 to 800nm ctor 200nm to 900nm 0.0001 to 2.0 AUS Non- volatile compound detection ns: from pharma, environment, forensic,	

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13. Gel Permeation Perkin Elmer, U	Chromatography (GPC) JSA, Series-200	
		Manager and the second
Column:	PL gel, Mixed-B, Mixed-D.	
Molecular Weight distribution	Range: 500-300000gm/mol	
Detector:	Refractive Index (RI)	
Major Applications:	Determinations of Molecular weight of Polymer samples (Mn & Mw), Polydispersity.	
High Performant14.Camag-SwitzerAutomatic applicator (Interpretent)	ice Thin Layer Chromatograph (HP) land WinCat Linomat-5) of selectable sample	FLC)
volume.	mana alata anana 2 and	
documentation (reprost	mage plate scaliner-3 and	100 10
documentation (reprost	er_3) system	
Scan range.	er-3) system	
Scan range: Lamp	er-3) system 190nm to 800nm Deuterium lamp tungsten lamp and mercury lamp	

	Gas Chromatog	graphy with Head Space Perkin Elmer,	USA, Auto System XL
Detec	tor:	FID (100 °C - 450°C), TCD (100 °C - 350°C) Detector NPD and ECD Detector	
Majo	r Applications:	Useful for finding % purity and impurity profile in solvents, gases (like methane, carbon dioxide, nitrogen, etc.) Petroleum products, Flavors, Drugs, Pesticides, etc.	
16.	Gas Chromatog System XL with	graph with mass spectroscopy (GC-MS) 1 NIST Library	Perkin Elmer, USA,
16. Analy	Gas Chromatog System XL with yser:	graph with mass spectroscopy (GC-MS) NIST Library Single Quadrupole with prefilter	Perkin Elmer, USA,
16. Analy Mass	Gas Chromatog System XL with yser: range:	graph with mass spectroscopy (GC-MS) NIST Library Single Quadrupole with prefilter 20-610 Daltans (amu)	Perkin Elmer, USA,
16. Analy Mass Mass stabil	Gas Chromatog System XL with yser: range: ity	graph with mass spectroscopy (GC-MS) <u>NIST Library</u> Single Quadrupole with prefilter 20-610 Daltans (amu) 0.1m/z mass accuracy over 48 hours	Perkin Elmer, USA,
16. Analy Mass Mass stabil Ioniz	Gas Chromatog System XL with yser: range: ity ation modes:	graph with mass spectroscopy (GC-MS) <u>NIST Library</u> Single Quadrupole with prefilter 20-610 Daltans (amu) 0.1m/z mass accuracy over 48 hours Electro ionization positive / negative, chemical ionization	Perkin Elmer, USA,

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17.	Particle Size Analyzer (PSA), Symantec-HELOS-BF, Germany			
Laser I	Laser Diffraction particle size determination			
System Particle size range		0.1μm to 875 μm		
Accura	Accuracy for Dry and Liquid sample			
To find the size of p Major Applications: distribution in the si & powder material.		To find the size of particles, particle size distribution in the suspension, emulsions & powder material.		
18.	CHN/S/O Elen Elmer, USA	nental Analyzer 2400 Series II, Perkin		
Analyz	zed Elements:	Carbon, Hydrogen, Nitrogen, Sulfur and Oxygen		
Operating Mode:		CHN, CHNS and OXYGEN		
Accuracy:		0.3 % abs		
Analysis Time:		6 to 8 minutes per sample		
Major	Applications:	To analyze the concentration & percentage of C,H,N,S & O from powder samples of newly synthesized compounds, catalysts, petrochemicals, Coal & Coke, Graphite, environmental, Polymers etc.		

19.	Thermal Anal	nalysis (DSC, STA), Perkin Elmer, USA		
19.Thermal AnalyModel:Temperature Range:Heating Rate:Sensitivity:Atmosphere:Major Applications:		DSC-8000 (-35 °C to 400 °C) 0.1 to 100 °C / min 0.1m gm (0.0001mg) Nitrogen Differential scanning calorimeter measures Melting, Crystallization, Glass Transitions Temperature, Crystallinity, Specific heat, Polymorphism, Kinetic Studies, Curing Reaction. Used in characterization of polymorphism in pharmaceuticals, Characterization of pharmaceuticals formulations.		
20.	20. Thermal Analysis (STA), Perkin Elmer, USA			
Model-		STA 8000		
Specification -		Simultaneous analysis of TG with DTA mode and DSC.		
Temperature Range:		30°C to 1000°C		
Temperature Accuracy:		± 0.2 °C		
Heating Rate:		0.1 to 100 °C / min		
Atmosphere:		Nitrogen		
Major Applications:		Widely used in polymer, pharmaceuticals, cosmetics industry etc.		

21.	Thermal Anal	lysis System (TGA), Perkin Elmer, USA		
Mode		TGA-4000		
Temperature range:		Ambient to 1000 °C		
Heating Rate:		0.1 to 100 °C / min		
Atmo	sphere:	Nitrogen or Air To characterize multicomponent		
Major Applications:		materials. Widely used in polymer, pharmaceuticals, metals, metal oxides, cosmetics industry etc.	Terregravimetric Analyzer	
22.	Universal Tes	ting Machine (UTM), Shimadzu, Japan, A	AG 100 KNG	
Capacity:		100KN (10000 kgf)		
Load measuring				

Load measuring accuracy:	$\pm 0.5\%$ of indicated load	
Cross head speed range:	0.05 to 1000mm/min	
Cross head speed precision:	<u>+</u> 0.1	
Effective test width:	575nm	
Load cell of	100kN, 5kN, 1kgf	
Major Applications:	To measure Tensile strength of Fabrics,Tires,Cords,Polymers,Plastics,Rubber,Steel,Compositeetc.Compression tests,bending test,interlaminar shear strength (ILSS).	



Total Organic Carbon (TOC) Analyzer Shimadzu, Japan, TOC-VCSN/TNM-1

Measurement range of Total Carbon:	0 to 25000 mg/l	
Inorganic Carbon:	0 to 3000 mg/l;	
Total Nitrogen:	0 to 4000 mg/l	
Measurement Time:	10 minute per sample	
Major Applications:	For rapid measurement of even small quantity of organic matter in samples of wastewater, soil, sludge, sediments etc., and determination of degree of contamination.	

23.



24. Ambient Air Quality Monitoring Mobile Van, Environment SA, France

	Carbon monoxide, Total	
	hydrocarbons, Oxides of nitrogen,	
Measurement of:	Ozone, Particulate matter, Sulphur	
	dioxide and meteorological	
	parameters	
	Monitoring emissions from stationary	
	sources, Measurement of environment	
	quality in the workplace, Continuous	P and and and and and
Major Applications:	Ambient Air Quality monitoring,	
	Assessment of hazardous situation in	
	plant operations, and characterization of	
	atmospheric stability	V -
		and the second se

Water and wastewater analysis		Water and wastewater analysis
	Environmental	Solid waste and soil analysis
25.	Analysis/ Monitoring/	Stack pollution monitoring
	Auditing Facilities	Environmental Audit and Environmental Consultancy Services
		Environmental Research & Development

Contact for more information:

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