



FIST PROGRAM (LEVEL-0) PROGRESS REPORT (2022-2023)

(Participating Departments - Botany, Chemistry, Computer Science, Mathematics, Physics & Zoology)



JAMAL MOHAMED COLLEGE (Autonomous)
Tiruchirappalli - 620 020. Tamil Nadu.
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FIST PROGRAM (LEVEL-0)

PROGRESS REPORT (2022-2023)

(Participating Departments - Botany, Chemistry, Computer Science, Mathematics, Physics & Zoology)

**2022
-
2023**

PROJECT NO.SR/FST/College - 2018-315(c)
dated 22nd July 2019

Submitted to



Department of Science & Technology
Govt. of India

DEPARTMENT OF SCIENCE & TECHNOLOGY
Technology Bhawan, New Mehrauli Road,
New Delhi - 110 016.

Submitted by



JAMAL MOHAMED COLLEGE (Autonomous)
7, Race Course Road, Khaja Nagar,
Tiruchirappalli - 620 020.
Tamil Nadu.

SUMMARY OF PROGRESS REPORT SUBMITTED FOR REVIEW MEETING

DST File No: SR/FST/ College- 2018-315 (c) dated 22nd July 2019	College Name: Jamal Mohamed College (Autonomous), Tiruchirappalli, Tamil Nadu				
Total Sanctioned amount (In Lakh): Rs. 110.0 Lakhs (Rupees Hundred ten Lakhs only)	Total amount Received (In Lakh)	Total Expenditu re as on 31.3.2023 (Capital + General)	Name of the Equipments Sanctioned for		Name of the Equipment s procured as on 31.3.2023
1. Capital: Rs. 107.0 Lakhs 2. General: Rs. 3.0 Lakhs	1. Capital: Rs. 105.0 Lakhs 2. General: Rs. 75,000/-	Rs. 105.75 Lakhs	1. FT-IR spectrometer (Model ALPHA II, Bruker-Germany) 2. MULTIRAM- Bruker of FT RAMAN spectrometer model MULTIRAM	3. BINARY HPLC 4. Atomic Absorption Spectrometer Model: ICE FIOS 1	1. FT-IR spectromete r (Model ALPHA II, Bruker- Germany) 2. MULTIRA M-Bruker of FT RAMAN spectromete r model MULTIRA M 3. BINARY HPLC 4. Atomic Absorption Spectromet er Model: ICE FIOS 1
	Interest earned thereon (in Rs)				
	Rs. 2,79,528/- (Rs. 2,49,994/- + Rs. 29,534/-)				

Status of procurement of Networking (NW)/ Books(B)/ Infrastructure(IF) development, Maintenance Etc., (As per the sanctioned items)	Expenditure (lakh) NW – Rs. 7.0 Lakhs B – Rs. 1.0 Lakhs IF – Rs. 5.0 Lakhs M- Rs. 75 Thousands	Brief write up about the status of procurement NW, B, IF & Maintenance Details of NW, B, IF & M are presented in the following table				
		Category	Components Procured	No.	Amount Spent	Amount Received
		NW	Lenovo Tower Server ST50	1	Rs 7,13,683/-	Rs 7,00,000/- Excess: Rs.13,683/-
			Lenovo Desktop System	11		
			UPS –Numeric	1		
		B	Books	123	Rs 1,00,267/-	Rs 1,00,000/- Excess:Rs.267/-
		IF	Epson Laser Projector	1	Rs 4,86,050/-	Rs 5,00,000 Balance: Rs.13,950/-
			Projector Accessories	3		
			Ahuja Audio System	8		
			Lenovo Desktop System	2		
	M	Maintenance	-	Rs 75,000	Rs 75,000	
	The excess amount spent, Rs 13,683/- & Rs. 267/- for NW & B categories has been adjusted against the balance amount received Rs 13,950/- in the IF category.					
Scientific Progress based on the 1st instalment (Achievements- publications/ patents/ others etc.,)	No. of Publication with DST FIST Facilities: Patents (Number): Others, if any: No. of publications other than FIST Facilities:	Brief of on Progress A common Instrumentation centre (JAMIC) has been established with four major instruments viz., FT-IR Spectrometer, FT-RAMAN spectrometer, BINARY HPLC and Atomic Absorption Spectrometer. Jamal Mohamed College is categorized as 'Band A' in ARIIA 2021. Departments - Botany, Chemistry, Mathematics, Physics and Zoology received grant a sum of Rs.99,34,696/- under the DBT Star College Scheme. Details of various categories presented in the following table:				

		Category	Number	
		Publications		
		1. With DST FIST facilities	035	
		2. Other than DST FIST facilities	265	
		Patents	28 Filed 03 Granted	
		E-Contents developed	315	
		Projects (Faculty)	Extra mural: 02 College Sponsored: 59	
		Projects (Student)	PG (Individual): 367 UG (Group): 130	
		Training	Hands on experiments: 14 One-week certificate programme: 01	

SUMMARY OF PROGRESS REPORT SUBMITTED FOR REVIEW MEETING

Project No: SR/FST/ College-2018-315 (c) dated 22nd July 2019

Date of Sanction: 22nd July 2019

Name & Address of FIST PG College: Jamal Mohamed College, Tiruchirappalli – 620 020

State: Tamil Nadu

Total Sanction on Budget by DST: Rs. 110.0 Lakhs

College Contribution Budget Details (If it is 50-50): NA

Sr. No	Budget Approved/ Sanctioned individual Equipment Name Department wise	Actual Equipment Name Procured by the College	Make/ Model Details	Infrastructure Facility Details (Kindly Specify Each Item Individually)	Networking Details (Kindly Specify Each Item Individually)	Funds Released		Total Expenditure Based on Statement of Expenditure	
						1 st	2 nd		
1	<p>1. FTIR advanced spectrometer with Raman module – Rs.60 Lakhs</p> <p>2. Atomic Absorption Spectrometer Analytical cum semi preparative binary Gradient HPLC system – Rs. 32.0 Lakhs</p> <p>Total – Rs. 92.0 Lakhs</p>	<p>1. FT-IR spectrometer (Model ALPHA II, Bruker-Germany)</p> <p>2. MULTIRAM-FT RAMAN spectrometer model MULTIRAM (Bruker- Germany)</p> <p>3. BINARY HPLC - Breeze QS – Waters (USA)</p> <p>4. Atomic Absorption Spectrometer Model: iCE FIOS</p>				Rs. 60.0 Lakhs	Rs. 32.0 Lakhs	<p>Rs. 1,02,96,704.94/- * (*Excess Rs. 10,96,704.94/- is contributed by Management for purchase of Equipment)</p>	
2.				<p>a. E-Learning: Epson Laser Projector – 1, Projector Accessories – 3, Ahuja Audio System – 8, Lenovo Desktop System – 2,</p> <p>b. Books - 123</p>			Rs. 6.0 Lakhs		<p>Rs. 5,86,317/-* (*Balance amount Rs. 13,683/- is spent for Networking)</p>
3.					<p>Lenovo Tower Server ST50 – 1, Lenovo Desktop System – 11, UPS – Numeric - 1</p>		Rs. 7.0 Lakhs		<p>Rs. 7,13,950/-* (*Excess amount Rs. 13,683/- is adjusted from Infrastructure head and Rs. 267 is contributed by Management)</p>

DST – Fund for Improvement in S&T Infrastructure (FIST 2000)

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PART – A

Jamal Mohamed College (Autonomous) Tiruchirappalli – 620020

(Project No: SR/FST/College-2018-315 (c) dated 22nd July 2019)

Brief Outline of the College:

Jamal Mohamed College as a religious minority institution founded in 1951, with the primary objective of providing higher education to the downtrodden and socially backward section of the society. In 1972, the college was recognized by UGC New Delhi, for the purposes of Grants under section 2(F) and 12(B) of the University Grants Commission Act 1956. In 1977, on the recommendation of the University of Madras, the UGC recognized the college as one of the ten "Lead colleges" in the university area.

The college able to scale greater heights and rise to the present status with 23 UG and 21 PG courses. The college has strength of around 12000 students. There are 145 Government Aided teaching faculty and 357 staff members are working under the self-finance stream.

Teaching and Research Activities:

Teaching:

We have an effective ERP system with which we have been conducting all the regular UG and PG classes. Many faculty development programs, webinars, training programs and workshops have been organized by the departments for the benefit of the teachers and students. All our faculty members have attended faculty development programs, orientation / refresher programs, webinars and workshops for the enrichment of their knowledge and enhancement of their teaching skills. Most of the faculty members are using the ICT facilities and smart classrooms available in their departments, for effective teaching. The feedback on Teaching-Learning-Evaluation and on Campus Environment are also obtained online from all the students.

Research:

As research leads to the enrichment of the teachers' knowledge and understanding, the college management encourages the faculty members to carry out original research by providing cash incentives for the publication of research articles in the peer reviewed reputed journals approved by the UGC and for the publication of books with ISBN. A cash incentive of Rs. 1000/- is given for each publication in Web-of Science/Scopus indexed journals and Rs. 500/- for the publications in other UGC CARE List journals. An incentive of Rs. 2000/- is given for publication of a book and Rs. 10000/- for patent. Monetary incentives are also given

to the research guides for the guidance and supervision of M.Phil. and Ph.D. scholars pursuing both full-time and part-time research work.

The college publishes an Interdisciplinary referred journal entitled ‘Jamal Academic Research Journal (JARJ)’ and a Peer reviewed science journal entitled ‘Journal of Advanced Applied Scientific Research (JAASR)’ to promote research publications among the students and faculty members.

The faculty members are also encouraged to carry out socially relevant research projects, the college management provides a seed money of Rs. 10,000 to Rs.50,000 for each such project.

Faculty members are encouraged to submit research project proposals to various funding agencies such as DST, DBT, UGC, etc. and necessary infrastructure facilities are provided by the college authorities for all the sanctioned projects.

Facilities Created:

DST-FIST funded Common Instrumentation lab has been installed with the name of JAMAL INSTRUMENTATION CENTRE (JAMIC). Four major instruments, FT-IR Spectrometer, BINARY HPLC, FT RAMAN spectrometer and Atomic Absorption Spectrometer, facilities are made available for the usage to Faculty, Research Scholars and Students of Jamal Mohamed College and other neighboring institutes.

Jamal Instrumentation Centre (JAMIC)



Funding:

With a view to utilizing the DST-FIST Funds granted judiciously, a Common Instrumentation Centre was established in the campus. Networking Facilities, E-learning Class Room and equipment's like FT-IR Spectrometer, BINARY HPLC, FT RAMAN spectrometer and Atomic Absorption Spectrometer were purchased, installed and maintained in the common Instrumentation Centre. Besides, books and reference materials were also purchased under the grant received.

It is pertinent to point out that in addition to the DST-FIST fund of Rs. 1,05,75,000/, the college Management has borne an additional expenditure of Rs. 10,96,840.86 for this purchase of instrument mentioned above.

<p><i>Contact Address:</i></p> <p>Dr. R. JAHIR HUSSAIN, Head / Coordinator</p>	<p>Mobile No: +91-9443836946</p>
<p>Jamal Mohamed College (Autonomous) No.7, Race Course Road, Khaja Nagar, Tiruchirappalli – 620 020, Tamil Nadu.</p>	<p>Email ID: hssn_jhr@yahoo.com</p>

PART – B

Pro-forma for Report for utilization of FIST support

1. Name of College:

Jamal Mohamed College(Autonomous) Tiruchirappalli – 620020

2. Address for communication:

Dr. S. Ismail Mohideen, Principal

Jamal Mohamed College (Autonomous) Tiruchirappalli – 620 020 0431

Phone: 0431-2331135, 2331235 (Mobile: +91-9894113582) 0431–2331035, 2331435

Email ID: principaljmc@ymail.com Website: www.jmc.edu

3. Date and Ref. No. of DST Sanction letter:

SR/FST/College-2018-315 (c) dated 22nd July 2019

4. Details of the Grants:

Amount Sanctioned with Date: Rs.110.0 lakh (Rupees One crore and Ten lakh only) on 22nd July, 2019.

Ist Year Amount Received with Date: Rs. 60.5 lakh (Rupees Sixty Lakh and Fifty Thousand only) on 31st July,2019.

IInd Year Amount Received with Date: Rs. 45.25 lakh (Rupees Forty-Five Lakh and Twenty-Five Thousand only) on 19th July 2021 & 23rd July,2021.

Budget Heads	Amount Sanctioned (Rs in Lakhs)						Amount received (Rs in Lakhs)	
	I year	II year	III year	IV year	V year	Total	I year (Amount received on 31.07.2019)	II year (Amount Received 19.07.2021 & 23.07.2021)
a. Equipment	60 .0	32.0	-	-	-	92.0	60.0	32.0
b. Infrastructure (Books & Renovation of labs)	0.50 (B)	0.50(B) +5.0 (E learning class room)	0.50 (B)	0.75 (B)	0.75 (B)	3.0+5.0	0.50 (B)	5.50
c. Networking	-	7.0	-	-	-	7.0	-	7.0
d. Maintenance	-	0.75	0.75	0.75	0.75	3.0	-	0.75
e. Total	60.5	45.25	1.25	1.50	1.50	110.0	60.5	45.25

5. Equipment Installed:

Total cost of the Equipment is Rs. 1,02,96,704.94 (Rupees One Crore Two Lakhs and Ninety-Six Thousand Seven Hundred Four and Ninety-Four Paise only). DST has released Rs. 92 Lakhs (Rupees Ninety-Two Lakhs only) for procuring the Equipment and the excess amount of Rs. 10, 96,704.94 (Rupees Ten Lakhs Ninety-six Thousand seven hundred four and ninety-four paise only) has been contributed by the Management of Jamal Mohamed College, Tiruchirappalli.

Details of the expenditure for equipment

S. No.	Name of the Instrument	Date of Order	Date of Delivery	Date of Installation	Cost in INR
1.	MUTIRAM-Bruker of FT RAMAN spectrometer model MULTIRAM.	29/11/2019	18/02/2020	24/11/2020	70, 96,646.86
2	FT-IR Spectrometer (Model ALPHA II, Bruker-Germany)				
3	BINARY HPLC	18.12.2022	26.04.2022	11.05.2022	19,92,838.00
4	Atomic Absorption Spectrometer Model: ICE FIOS 1	18.12.2022	05.05.2022	11.05.2022	12, 07,220.08
Total					1,02,96,704.94

a. FT-IR SPECTROMETER ENTIRE UNIT



b. FT-RAMAN SPECTROMETER ENTIRE UNIT



c. BINARY HPLC ENTIRE UNIT



d. ATOMIC ABSORPTION SPECTROMETER



6. Details of Infrastructure developed:

Total cost for E-learning class room and books purchased (**Annexure – I**) under the head of Infrastructure is Rs. 5,86,317 (Rupees Five Lakhs eighty-six thousand three hundred and seventeen only). The balance amount of Rs. 13,683 (Rupees Thirteen Thousand six hundred and Eighty-Three only) is adjusted with Networking.

a) E - Learning class room

S. No	Computer Accessories	Number of Items	Amount (In Rs.)
01	Epson EB-148FI Laser Ultra Short Throw	1	4,86,050
02	Accessories for Projector	3	
03	Ahuja Audio System	8	
04	Lenovo AIO Desktop System A-340-241WL FOE800SSIN	2	

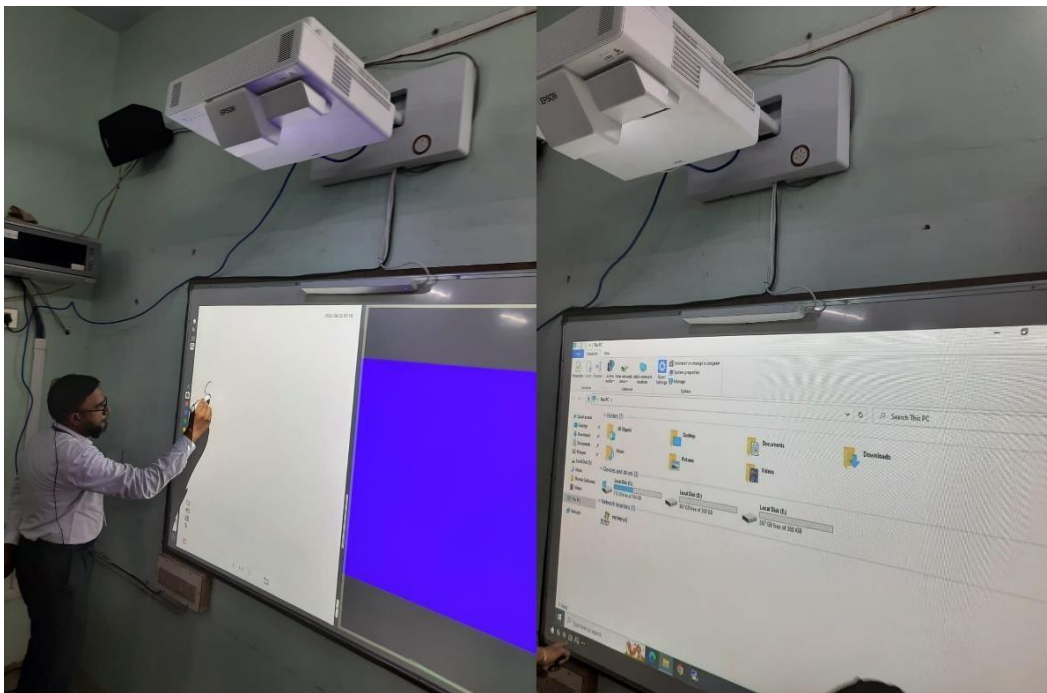
b) Books purchased

S. No	Academic Year	Department(s)	Books	Title	Amount (In Rs.)	Grand total (In Rs.)
1	2019 - 2020	Chemistry	6	4	17,793	17,793
1	2020 – 2021	Chemistry	2	2	18,079	32,401
2		Physics	10	8	14,322	
1	2021 - 2022	Botany	52	48	25,067	50,073
2		Zoology	53	49	25,006	
Total			123	111	1,00,267	1,00,267

c. Total expenditure for E-Learning class room and books

S. No.	Purchased E-Learning Class Room and Books	Grand Total (In Rs.)
1	E - Learning Class Room	4,86,050
2	Books Purchased	1,00,267
Total	486050 + 100267	5,86,317

a. E-Learning class room



b. Books purchased



7. Details of Networking:

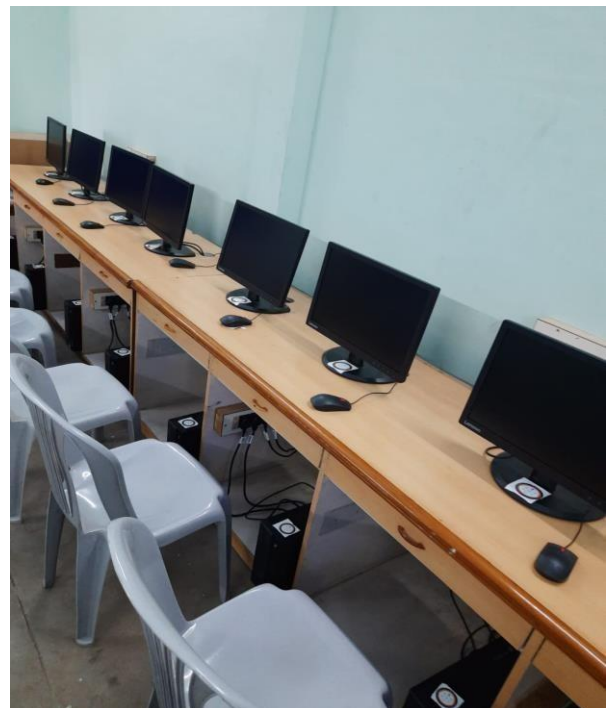
The amount sanctioned by DST for creating Networking facility in the campus is Rs. 7 lakhs (Rupees Seven Lakhs only). The total expenditure incurred for creating Networking facility is Rs. 7,13,950 (Rupees Seven Lakhs thirteen thousand and nine hundred fifty only). The excess amount Rs. 13,950 (Rupees Thirteen Thousand nine hundred and fifty only) is adjusted from the balance amount sanctioned for infrastructure facility (refer para 2 in point number 5)

Campus is Wi-Fi enabled with 300 MBps broad band for the access by students and research scholars.

1. Total expenditure for Networking

S. No.	Purchased Networking	Numbers	Grand Total (in Rs.)
01	Lenovo Tower Server ST50	01	7,13,950
02	Lenovo Desktop System – V50t 11HD0022IH	11	
03	Numeric ORFINITI5.0 Kva – 192DC	1	
Total			7,13,950

a. Networking facility



8. Utilization of the facilities created under FIST support:

- a. **For teaching:** *(List the Classroom use of equipment and new experiments introduced, if any).*

Though theoretical courses in spectroscopy are prescribed in the UG and PG Programmes, due to the sophisticated nature and high cost of the FTIR, FT-Raman spectrometer, Binary HPLC and Atomic Absorption Spectrometer bought under DST-FIST support, no class room usage is included. However, the final year students of PG programme, M. Phil. and Ph.D., Scholars are provided access to these instruments under the care and supervision of their guides. Research scholars of the respective departments are trained for individual sample preparation, instrument operation and interpretation of results.

- b. **For research:** *(Identify the research programs, including names of groups or individual faculty members, who are using the major equipment (> 5 lakhs) acquired with the FIST support)*

Research in Molecular Spectroscopy is undertaken by Dr. R. Raj Muhamed and his research scholar Capt. F. S. Muzammil of Physics department. They make use of the facilities created under DST-FIST support to carry out their research activities. In Chemistry Department, the FTIR Alpha II instrument is more supportive for the research scholars of M.Phil., and Ph.D., programmes. Dr. F. M. Mashood Ahamed and Dr. Syed Ali Padusha of Chemistry Department are working on these instruments and published research papers in the reputed journals. Dr. M. Seeni Mubarak, Dr. A. Jafar Ahamed and Dr. Syed Ali Padusha, Associate Professors of Chemistry are working on Structural determination of Organic molecules, nanomaterials and Inorganic materials respectively. For Botany department the installation of Binary HPLC instrument is more supportive for the research scholars of M.Phil., and Ph.D programmes. Dr. A. Shajahan and Dr. N. Ahamed Sherif of Botany Department are also pursuing research by the equipments mentioned above. In Zoology department, Atomic Absorption Spectrometer (AAS) instrument is used extensively by the research scholars of M.Phil., and Ph.D. programmes. Dr. A.Sadiq Bukhari, Dr. H.E.Syed Mohamed, Dr. M.Meeramaideen and Dr. R. Krishnamoorthy and other faculty members of the science departments are also actively participating in the research activities using the facilities purchased under DST-FIST support. Apart from the publications, five of chemistry faculties Dr. A. Jafar Ahamed, Associate Prof. of Chemistry Dr. N. Mujafarkani, Dr. F.M. Mashood Ahamed, Dr. B. Arifa Farzana and Dr. A. Mushira Banu, Assistant Professors of Chemistry have been granted two Indian patents and one international patents (**Annexure – III**). 16 patents have been filed using the

facilities procured under DST-FIST support.

9. Details of full length research publications (in peer-reviewed journals) during the period under report (Annexure – II)

10. Sponsored research projects in operation during the period under report (please provide name/s of PI/Co-PIs, title of the project, funding agency and total quantum of external support)

The Department of Biotechnology (DBT) has selected five science departments viz., Botany, Chemistry, Mathematics, Physics and Zoology under Star College Scheme - 2020 and sanctioned a grant of Rs.104 lakhs for the period of three years.

Documentation of Traditional Knowledge and grassroots innovations from foot Hills of Pachaimalai and Kolli Hills of Eastern Ghats of Tamil Nadu funded by National Innovation Foundation – DST, Government of India. Principal Investigator: Dr. A. Shajahan, Co-Principal Investigator: Dr. B. Balaguru, Grant: Rs. 4,73,400 (2020- 2021). Soybean crop improvement against drought by using endophytes – DST – SERB Government of India. Principal Investigator: Dr. R. Radhakrishnan Grant: Rs. 8,64,087 (2021- 2024)

11. Utilization of Equipment from outside the College

It has been decided by our college authorities to open up the facilities set up under DST-FIST support to be utilized by researchers from other institutions by paying a nominal fee. PG Students and Research scholars of nearby institutions are working on different research area viz., Environment, material science, phytochemistry, polymers, food and nutraceuticals, and synthetic field permitted to use extensively these instruments.

S.No.	Name of the Institution	Name of The Researcher	No. of Samples Analysed
1.	J.J College of Arts & Science College, Pudukkottai	Dr. Muthukumar	InraRedSpectroscopy-12
2.	Srimad Andavan Arts & Science College, Trichy	Dr. A. Anandan	InraRedSpectroscopy-5
3.	Kanchi Mamunivar Govt Institute For Post Graduate Studies & Research, Pondicherry.	P. Mahalakshmi	Atomic Absorption Spectroscopy- 6
4.	Kanchi Mamunivar Govt Institute For Post Graduate Studies & Research, Pondicherry.	A. Femina	InraRedSpectroscopy-15
5.	Srimad Andavan Arts & Science College., T.V Koil, Trichy	S. Pasupathi	InraRed Spectroscopy -8
6.	J.J College of Arts & Science College, Pudukkottai	K. Rajeswari	InraRed Spectroscopy -5
7.	Srivastham Natural Extracts, Industry	V. Prasanna	HPLC- 6
8.	Holy Cross College	Swathi Kumar	HPLC-1

9.	A.V.V.M Sri Pushpam College, Poondi	N. Syed Nafeez	Atomic Absorption Spectroscopy- 7
10.	A.V.V.M Sri Pushpam College, Poondi	R. Selvamani	FT-Raman-4
11.	A.V.V.M Sri Pushpam College, Poondi	M. Karthick	InraRedSpectroscopy-10
12.	Bishop Heber College, Tiruchirappalli	I.Bentsy Elizabeth	InraRed Spectroscopy-5
13.	Arignar Anna Govt. Arts College, Musiri	M. Thirughana Sambantham	FT-Raman -3
14.	Arignar Anna Govt. Arts College, Musiri	M. Pramalatha	FT-Raman -16 SAMPLE
15.	St. Mary's College, Thoothukudi	G. Mary Stephy	FT-Raman -3
16.	Arignar Anna Govt. Arts College, Musiri	R. Sudhakaran	FT-Raman -4

12. Self-Assessment of the impact of FIST support

(Please specify if any of the following activity emerged/ improved as a consequence of the FIST support:)

a. New class-room experiments at B.Sc./ M.Sc. or other levels

As the FTIR, FT-Raman spectrometer, Binary HPLC and Atomic Absorption Spectrometer instruments are costly, no experiments involving general usage of UG / PG students are introduced. However, the final year PG students can avail these facilities for their project work and M. Phil and Ph.D. scholars for the research studies.

b. Success of students at national level tests (various PG/Ph.D. entrance tests and tests for JRF etc.)

S.No	Name	Type of Test	Register No	Year	University	Subject
01.	Habib Rahman	Ph.D. Entrance Test	2010061002	October - 2020	Bharathidasan University	Botany
02.	Isa bin fakirullalmaz	Ph.D. Entrance Test	2108061007	August - 2021	Bharathidasan University	Botany
03.	Mohamed Yasar	Ph.D. Entrance Test	210206100	Feb. 2021	Bharathidasan University	botany
04.	Perumal	Ph.D. Entrance Test	1902061007	Feb. 2019	Bharathidasan University	Botany
05.	Perumal	CSIR-NET	TN14000903	Feb. 2022	UGC-CSIR	Botany
06.	T. Srinivasan	CSIR-NET	TN11600997	June - 2020	UGC-CSIR	Chemistry
07.	Ashlin raj	Ph.D. Entrance Test	2203461039	Mar. 2022	Bharathidasan University	Zoology
08.	Muhamed Munawwar	Ph.D. Entrance Test	2203461006	Mar. 2022	Bharathidasan University	Zoology
09.	Mohammed Shahan	Ph.D. Entrance Test	2203461055	Mar. 2022	Bharathidasan University	Zoology
10.	Muhamed Ramshad	Ph.D. Entrance Test	2203461047	Mar. 2022	Bharathidasan University	Zoology
11.	Thivakar	Ph.D. Entrance Test	2302461036	Feb. 2023	Bharathidasan University	Zoology
12.	Umar Sherif	Ph.D. Entrance Test	2302461063	Feb. 2023	Bharathidasan University	Zoology
13.	Mohamed Kalith Oli	Ph.D. Entrance Test	2302461028	Feb. 2023	Bharathidasan University	Zoology
14.	Monish	Ph.D. Entrance Test	2302461042	Feb. 2023	Bharathidasan University	Zoology
15.	Irfanul Haque	CSIR-NET	KL1203430035	June 2022	UGC-CSIR	Zoology
16.	Manikandan	CSIR-NET	TN1001330051	June 2022	87 th Rank	Zoology
17.	Mohamed Salim	SET	51350045	Jan. 2022	KL-SET	Zoology
18.	M. Adam Kani	Ph.D. Entrance Test	2308071155	Aug. 2022	Bharathidasan University	Chemistry
19.	S. Jayavidya	Ph.D. Entrance Test	2308071080	Aug. 2022	Bharathidasan University	Chemistry
20.	M. Shifana	Ph.D. Entrance Test	2208071030	Aug. 2022	Bharathidasan University	Chemistry
21.	N. Subash	Ph.D. Entrance Test	2208071025	Aug. 2022	Bharathidasan University	Chemistry
22.	Nizar Ahamed	Ph.D. Entrance Test	2302061001	Feb. 2023	Bharathidasan University	Botany
23.	M. Jayakumar	Ph.D. Entrance Test	2302071065	Feb. 2023	Bharathidasan University	Chemistry

c. Any new research project that emerged on the basis of the FIST support

The faculty members of the participating departments (Physics, Chemistry, Botany and Zoology) who are working on Molecular spectroscopy and Structural determination of new molecular entities are expected to submit the research proposals in this academic year to DST and DBT as major research projects by making use of these facilities.

d. Did the newly created facility lead to betterment of quality of research publications -

Yes. Newly created facility accelerated and improved the research quality of publications many six of our faculties have got published high impact factor papers. Apart from the publications, five of chemistry faculties Dr. A. Jafar Ahamed, Associate Prof. of Chemistry Dr. N. Mujafarkani, Dr. F.M. Mashood Ahamed, Dr. B. Arifa Farzana and Dr. A. Mushira Banu, Assistant Professors of Chemistry have granted two Indian patents and one international patents (Annexure – III). 16 patents have filed using the facilities procured under DST-FIST support. (Annexure – II)

e. Any training program/ workshop organized by the department during the period of report, especially those involving the newly created facility)

e (i). Demonstration on working of Binary HPLC

A lecture cum hands on training on HPLC was organized for the faculty members, research scholars and II M.Sc., students of P.G and Research Department of Botany in coordination with the Jamal Mohamed College Instrumentation Center “JAMIC” on 13.05.2022 (13th Friday 2022). The programme began with prayer Quirath rendered by Mr. S. Maheen Abubacker II M.Sc Botany who recited a few verses from the Holy Quran. The workshop was handled by Mr. R. Namashivayam, Waters Technical Engineer, Chennai, Tamil Nadu who explained the working principle of Waters Breeze QS HPLC system, Empower™ QS software and binary pump with PDA detector. Dr. N. Ahamed Sherif, Assistant Professor of Botany, Jamal Mohamed College elaborated on the practical aspects of HPLC such as solvent system, column types, sample quality and preparation methods, purging of column and observation of results for scientific interpretation for the research scholars and PG students.



Breeze QS HPLC system with Photodiode Array Detector

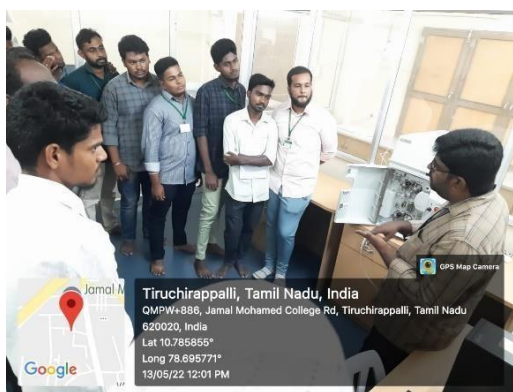
Make : Waters pacific Pte. Ltd
 Model No 1525
 Detector : Photodiode Array Detector (PDA; 2998)



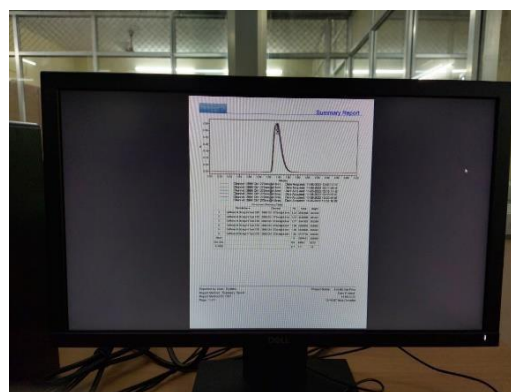
Mr. R. Namashivayam, Waters Technical Engineer installed HPLC system



Technical Engineer explained about the working principle of HPLC system to scholars



Dr. N. Ahamed Sherif, Assistant Professor of Botany explained the uses and importance of HPLC to M.Sc., students



Chromatogram of Caffeic Acid

A lecture cum hands on training on HPLC:

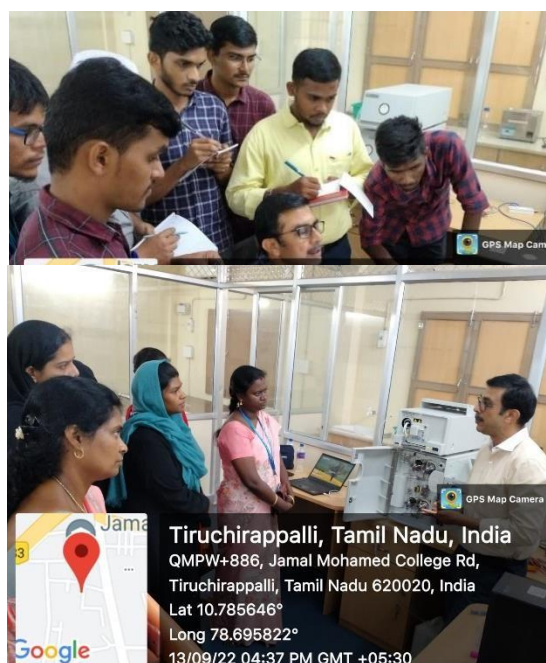
A lecture cum hands on training on HPLC was organized for III B.Sc., students of P.G and Research Department of Botany in association with Jamal Instrumentation Centre “JAMIC” on 09.01.2023 at 9.30 am to 12.30 pm. Dr. N. Ahamed Sherif, Assistant Professor of Botany, Jamal Mohamed College elaborated to students with the practical aspects of HPLC such as solvent system, column types, sample



quality and preparation methods, purging of column and observation of results for scientific interpretation. Through this programme 28 students were benefited. At the end of the programme students acquired knowledge regarding sample preparation, selection of solvent system and elution of sample with reference to retention time.

Two days Hands on Training Programme on “High Performance Liquid Chromatography”

Two days Hands on Training Programme on “High Performance Liquid Chromatography” on 13th & 14th September 2022. The chief guest Dr. Guru Basavaraj elaborated step by step the theoretical and practical aspects of High Performance Liquid Chromatography (HPLC) such as solvent system, column types, sample quality and preparation methods, troubleshooting aspects, purging of column and observation of results for scientific interpretation to students, research scholars and interested faculties of our college. Through this programme, totally 20 (M.Sc., students – 11; Research scholars – 6; Teaching faculty – 3) participants were benefited.



e (ii). Workshop on FT-IR Spectrometer

The PG & Research Department of Chemistry, Jamal Mohamed College in coordination with the Jamal Instrumentation Center “JAMIC” was organized a One-Day workshop on Fourier Transform Infra-Red Spectrometer (FT-IR spectrometer) on Monday, June 13th 2022. The workshop was inaugurated by Dr. A. Jafar Ahamed, Associate Professor of Chemistry, Jamal Mohamed College. He emphasized on the Principles of Fourier Transform Infra-Red Spectrometer to the students. FT-IR spectrometer is used primarily to detect the functional groups present in the samples through the application of Infra-Red radiation results vibrational motion. The absorption of IR radiation causes excitation of molecules from lower to higher vibrational levels, which is expressed in terms of wavelength or wave number and is plotted against percentage of transmittance. FT-IR takes advantage of identifying different types of bonds present in the molecule with respect to nature of elements and vibrations. Depending upon the modes of vibration and its intensity, specific functional group can be detected using OPUS software. It enables powerful data acquisition, manipulation and interpretation. Dr. M. Purushothaman, Assistant Professor of Chemistry, Jamal Mohamed College provided a step by step proper handling procedure and operation of the software with regards to obtaining the results as well as the appropriate way of managing the instrument. Bruker Alpha II FT-IR instrument presents an opportunity to prepare real-time samples with Diamond ATR and the interpretation of the subsequent data of the sample solutions were analyzed by the software. Furthermore, doubts and queries of the students were addressed by Dr. M. Syed Ali Padusha, Associate professor of Chemistry, Jamal Mohamed College. Totally 55 participants including research scholars benefitted out of this workshop.



e (iii). Demonstration on working of MULTI RAMBRUKER FT-RAMAN Spectrometer

A Seminar on Raman Effect and Its Impact was conducted by the PG & Research Department of Physics, Jamal Mohamed College on 03-03-2022 at Physics Seminar Hall. Dr. M. Jamal Mohamed Jaffar, Associate Professor & Head, Department of Physics, Jamal Mohamed College (Autonomous), Tiruchirappalli welcomed the gathering and introduced the Resource Persons. The seminar was inaugurated by Dr. Gunasekaran. S. TANSA Awardee, Dean, Associate Professor and Head, Department of Physics, St.Peter's University. Dr. M. Selvapandiyan, Associate Professor and Head i/c, Department of Physics, Periyar University PG Extension Centre, Dharmapuri, acted as the resource person and explained the Principles of FT-Raman Spectrometer to the students.

Their operating principle is similar to that of FTIR spectrometer and is based on an interferometer. As the Raman-scattered light enters the instrument, the interferometer selectively modulates the individual spectral components by systematically changing an optical path length difference. The resulting beam of light is recorded by a point detector. FT-Raman is superior to a dispersive instrument in the near-IR region beyond 1000 nm. Commonly, the 1064 nm laser excitation along with germanium or indium gallium arsenide (InGaAs) detector is used. They also offer excellent wavelength accuracy and can potentially combine IR absorption and Raman measurement capacity in single instrument. However, FT-Raman frequently needs to use high laser intensities due to the reduced Raman scattering efficiency at longer wavelengths, which may damage the sample.

A hands on training program on Multi Ram Bruker FT-Raman Spectrometer was conducted by the PG & Research Department of Physics, Jamal Mohamed College in coordination with the Jamal Mohamed College Instrumentation Center "JAMIC" on Tuesday, June 16th 2022. The workshop was inaugurated by Dr. M. Jamal Mohamed Jaffar, Associate Professor and Head, Department of Physics, Jamal Mohamed College. Dr. A. Ishaq Ahamed, Associate Professor, Department of Physics, Jamal Mohamed College, who explained the Principles of FT-Raman Spectrometer to the students. Dr. A. Abbas Manthiri, Assistant Professor, Department of Physics, Jamal Mohamed College, provided with a step by step guide of proper handling and operation of the software with regard to obtaining the results as well as the appropriate way of managing the instrument. CCl₄ presents an opportunity to prepare real-time solution samples and the interpretation of the subsequent data of the sample solutions were analyzed with the help of the software.



Dr. Gunasekaran, Dean & Head, Department of Physics, St. Peter's University addresses at the inauguration



Dr. M. Selvapandiyan, Head i/c, Department of Physics, Periyar University PG Extension Centre, Dharmapuri speaks on principles of FT Raman spectroscopy

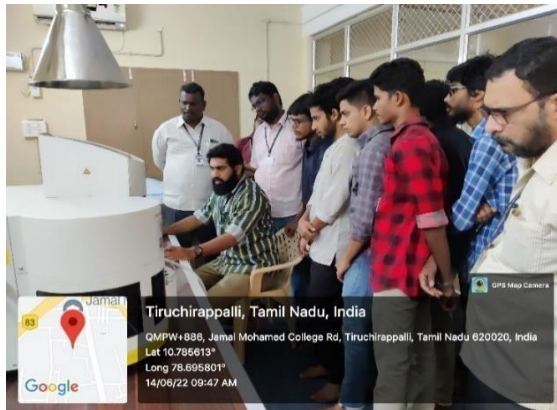
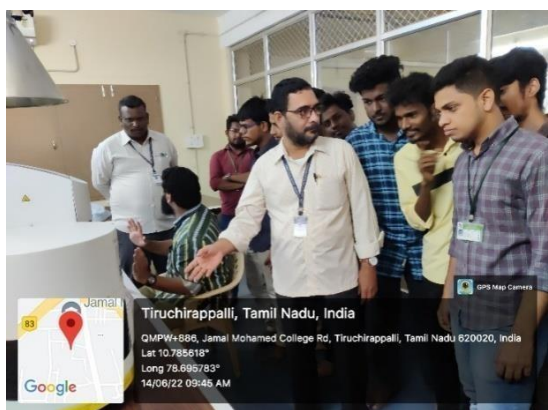


Participants keenly watching the demonstration of working of FT Raman

e (iv) Demonstration on working of Atomic Absorption Spectrometer (AAS)

One-Day workshop on Atomic Absorption Spectrometer (AAS) was conducted by the PG & Research Department Zoology, Jamal Mohamed College in coordination with the Jamal Mohamed College Instrumentation Center "JAMIC" on Tuesday, June 14th 2022. The workshop was inaugurated by Mr. Sheik Umar Sahith, Associate Professor of Zoology, Jamal Mohamed College. He acted as the resource person and introduced the Principles of Atomic Absorption Spectrometry to the students. Atomic Absorption Spectrometry (AAS) is used primarily to detect elements in solution samples through the application of characteristic wavelengths of electromagnetic radiation from a light source. Individual elements will absorb wavelengths differently, and this absorbance are measured against standards. In effect, AAS takes advantage of the different radiation wavelengths that are absorbed by different atoms. Depending upon the light wavelength and its intensity, specific elements can be detected and their concentrations can be measured using the Atomic Absorption Spectrometry software. It enables powerful data

acquisition, manipulation and interpretation. Mr. P A Ashique, Assistant Professor, Department of Zoology, Jamal Mohamed College provided with a step by step guide of proper handling and operation of the software with regards to obtaining the results as well as the appropriate way of managing the instrument. Participants had an opportunity to prepare real-time solution samples and the interpretation of the subsequent data of the sample solutions were analyzed with the help of the software. Further doubts and queries of the students were addressed by Dr. P Rajasekar Assistant Professor, Department of Zoology, Jamal Mohamed College. Mr. Sheik Umar Sahith, Associate Professor of Zoology, explains the working Principles.



One-day workshop on Heavy metal analysis by Atomic Absorption Spectroscopy (AAS)

One-day workshop on Heavy metal analysis by Atomic Absorption Spectroscopy (AAS) was conducted on 03.11.2022 in the PG & Research of Zoology, Jamal Mohamed College (Autonomous), Tiruchirappalli. The session was handled by Mr. C.V.Sudharsan, Lead Customer care Engineer, Thermo Fischer Scientific Company, Chennai. The resource person interacted and clarified all the queries of the students. 4 Staff Members and 15 Selected students were participated and benefited out of the programme.



Workshop on “Analysis of metals using Atomic absorption spectroscopy” was conducted by PG & Research of Zoology, Jamal Mohamed College (Autonomous), Tiruchirappalli in association with JAMIC on 21.02.2023. The session was handled by Dr.R.Rajaram, Associate professor, Department of Marine Science, Bharathidasan university, Tiruchirappalli. 43 students including graduates and post graduates were got benefited out of the programme.

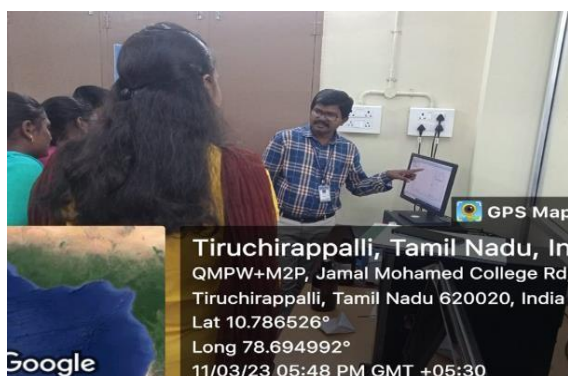


A one-week Certificate Programme on Spectroscopic and Chromatographic Techniques

Jamal Instrumentation Centre (JAMIC) is funded by the Department of Science and Technology, Government of India, under the Scheme - Fund for Improvement of Science and Technology Infrastructure in Higher Education Institutions (DST-FIST) in 2019. A sum of Rupees 110



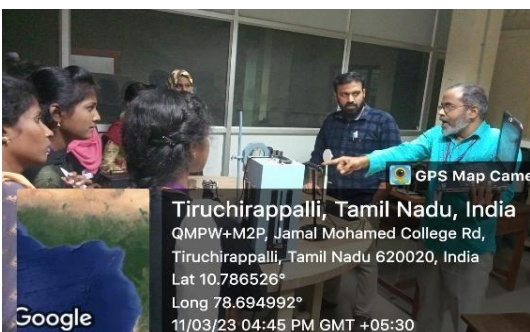
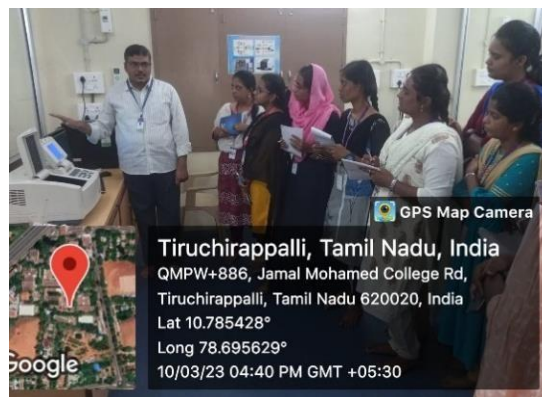
Lakhs was sanctioned under the above scheme. Through the Scheme, the Centre JAMIC was established and equipped with UV-Visible spectrophotometer, Infrared Spectrometer, Raman Spectrometer, Atomic Absorption Spectrophotometer and High Performance Liquid Chromatography instrument. In addition to that, the College Management has extended generosity towards the complete development of the center.



A one-week certificate Programme on Spectroscopic and Chromatographic Techniques (a hands-on training) was organized by the Jamal Instrumentation Centre (JAMIC) from 09th March 2023 to 13th March 2023. Dr. R. Jahir Hussain, Coordinator, JAMIC welcomed the gathering. The programme was inaugurated

by Dr. M. Ghouse Basha, Dean, Faculty of Science, Jamal Mohamed College. The theme of the hands-on training was highlighted by Dr. M. Purushothaman, Organizing Secretary of the certificate programme, meanwhile Dr. A. Sadiq Bukhari, Assistant Professor of Zoology introduced the resource person Dr. D. Saravanan, Coordinator, National Central Instrumentation Facility, National College, Trichy-1 to the august gathering. Dr. D. Saravanan emphasized the role of Analytical Techniques; his talk was informative mainly on instrumentation. Finally, Dr. P. Rajasekar, Deputy Coordinator, JAMIC proposed a vote of thanks.

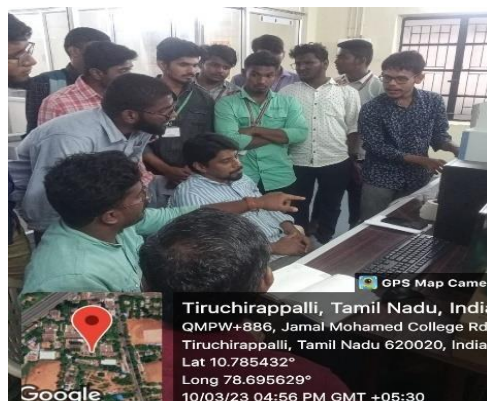
The Research scholars and students in total 48 participants from Holy Cross College, Bishop Heber College, AVVM Sri Pushpam College and our college (JMC) as well were actively participated. The total participants were divided into four different groups and four parallel Sessions conducted through clustering system with ten sessions. Each day, participants

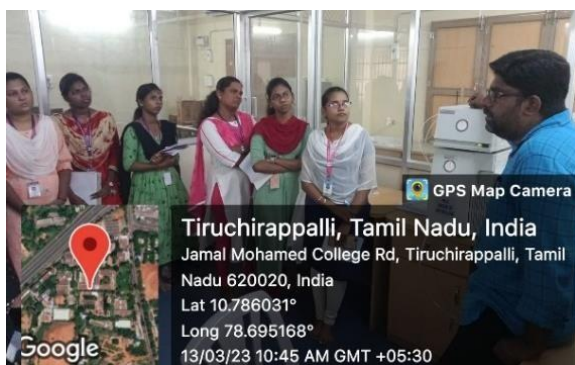


were able to know a new learning through sample preparation, instrument operation and

interpretation. The hands-on training on UV-Visible spectrophotometer was handled by Dr. M. Anwar Sathiq and Dr. N. Mujafar Kani Assistant Professors of Chemistry. Principle, sample preparation and interpretation of IR was handled by Dr. K. Loganathan and Dr. M. Purushothaman,

Assistant Professors of Chemistry. FT-Raman Spectrometer, hands-on training was given by Mr. J. Umar Malik and Dr. A. Abbas Manthiri, Assistant Professors of Physics, Atomic Absorption Spectrophotometer was handled by Dr. A. Sadiq Bukhari and Dr. S. Mohamed Hussain, Assistant Professors of Zoology and High Performance Liquid Chromatography was handled by Dr. N. Ahamed Sherif, Assistant Professor of Botany. All the participants appreciated for the strenuous efforts of the professors for meticulous planning and arrangement of the programme. Another





remarkable thing mentioned here is the enthusiasm and interest of faculty members showed a manner of clear presentation of technical experience in this event was a lively one. All the participants together with the faculty members have succeeded in their attempts to complete the training here, which

helped to motivate young minds and to create a scientific temper among the student community.

Dr. A. Abbas Manthiri, Assistant Professor of Physics welcomed the gathering in the valedictory function on 13th March 2023. The report of the hands-on training was narrated by Dr. M. Purushothaman, Organizing Secretary of the certificate programme and few of the participants gave feedback that the programme was much beneficial and they were able to understand the working principle, sample preparation separation / spectrum recording along with interpretation of results. Dr. D. I. George Amalarethnam, Bursar and Director of MCA delivered the Valedictory Address. Our College Treasurer Hajee M. J. Jamal Mohamed sahib graced the occasion and distributed the certificates to the participants. Finally, Dr. N. Ahamed Sherif, Assistant Professor of Botany proposed a vote of thanks.



A section of Participants in the inauguration and Valediction programme



13. Is any problem faced in utilization of the grant/facilities?

We tried to procure the instruments HPLC and AAS through GeM portal. Being the government aided college we were not able to register in GeM portal as buyer. Regarding this communication has been sent to DST on 01. 12. 2021, 08. 12. 2021 and 03. 02. 2022. We have not received any reply from DST till the end of the financial year. Hence we place order through open tender by constituting a purchase committee comprising of experts from Bharathidasan University with which the college is affiliated.

A report highlighting the research activities of the College during the period under review may also be provided.

a. Atal Ranking of Institutions on Innovation Achievement (ARIIA) – 2021

Jamal Mohamed College is categorized as 'Band A' institution (Performer) in the category of 'Institutes & Colleges (Govt. and Govt. aided)' in Atal Ranking of Institutions on Innovation Achievement (ARIIA) 2021 announced on 29th December 2021.

b. The institution provides seed money for research and the following faculty members from DST FIST participating departments were selected for the seed money scheme.

S. No	Name of the teacher getting seed money	The amount of seed money (in Rs.)	Year of receiving grant
1	Dr. N. Ahamed Sherif Assistant Professor, Department of Botany	10,000	2020 - 2021
2	V.C. Archana Assistant Professor, Department of Fashion Technology & Costume Designing	10,000	2020 - 2021
3	Dr. R. Radhakrishnan Assistant Professor, Department of Botany	10,000	2020 - 2021
4	Dr. N. Mujafarkani Assistant Professor, Department of Chemistry	10,000	2020 - 2021
5	Dr. M. Angel Assistant Professor, Department of Nutrition & Dietetics	10,000	2020 - 2021
6	Dr. N. Asiffa Jabeen Assistant Professor, Department of Nutrition & Dietetics	10,000	2020 - 2021
7	Dr. M. Meeramaideen Assistant Professor, Department of Zoology	10,000	2021 - 2022
8	Dr. B. Arifa Farzana Assistant Professor, Department of Chemistry	10,000	2021 - 2022
9	Dr. A. Mushira Banu Assistant Professor, Department of Chemistry	10,000	2021 - 2022
10	Dr. S. S. Syed Abuthahir Assistant Professor, Department of Chemistry	10,000	2021 - 2022
11	Ms. B. Rajalakshmi Assistant Professor, Department of Nutrition & Dietetics	10,000	2021 - 2022
12	Dr. F. M. Mashood Assistant Professor, Department of Chemistry	10,000	2021 - 2022

13	Dr. A. Asrar Ahamed Assistant Professor, Department of Chemistry	10,000	2021 - 2022
14	Dr. B. Balguru Assistant Professor, Department of Botany	10,000	2021 - 2022
15	Dr. K. Sheik Fareeth, Assistant Professor, Department of Social Work	7,500	2021 - 2022
16	Dr. S. Rajeswari Assistant Professor, Department of Social Work	7,500	2021 - 2022
17	Dr. A. Prasanna Assistant Professor, Department of Mathematics	6,000	2021 - 2022
18	Dr. S. Mohamed Rabeek Assistant Professor, Department of Chemistry	7,500	2021 - 2022
19	Dr. H. Mohamed Kasim Shiet Assistant Professor, Department of Chemistry	7,500	2021 - 2022
20	Dr. M. Sirajudeen Assistant Professor, Department of Commerce	6,000	2021 - 2022
21	Dr. P. A. Ashique Assistant Professor, Department of Zoology	7,500	2021 - 2022
22	Dr. R. Abdul Vahith Assistant Professor, Department of Chemistry	7,500	2021 - 2022
23	Dr. S. Shek Dhavud Assistant Professor, Department of Physics	20,000	2021 - 2022
24	Dr. J. Sebastin Raj, Asst. Prof. of Biotechnology	25,000	2022 - 2023
25	Dr. N. Reehana, Asst. Prof. of Microbiology	15,000	2022 - 2023
26	Dr. K. Gobalan, Asst. Prof. of Biotechnology	17,000	2022 - 2023
27	Dr. K. Mohamed Rafi, Asst. Prof. of Botany	15,000	2022 - 2023
28	Dr. P. Rajasekar, Asst. Prof. of Zoology	20,000	2022 - 2023
29	A. Swedha, Asst. Prof. of Microbiology	15,000	2022 - 2023
30	Mr. A. Abdul Wahid, Asst. Prof. of Arabic	25,000	2022 - 2023
31	Dr. A. Samsathbegum, Asst. Prof. of Chemistry	18,000	2022 - 2023
32	Dr. R. Arulnagai, Asst. Prof. of Chemistry	15,000	2022 - 2023
33	A.R. Nilofar Sulthana Asst. Prof. of Fashion Technology and Costume Designing	15,000	2022 - 2023
34	Dr. M. Habeebur Rahman, Asst. Prof. of Commerce	10,000	2022 - 2023

c. No of ongoing research projects per teacher funded by government and non-government agencies during the period.

Documentation of Traditional Knowledge and grassroots innovations from foot Hills of Pachaimalai and Kolli hills of Eastern Ghats of Tamil Nadu funded by National Innovation Foundation – DST, Government of India. Principal Investigator: Dr. A. Shajahan, Co-Principal Investigator: Dr. B. Balaguru, Grant: Rs. 4,73,400 (2020- 2021). Soybean crop improvement against drought by using endophytes – DST – SERB Government of India. Principal Investigator: Dr. R. Radhakrishnan Grant: Rs. 8,64,087 (2021- 2024)

S. No	Name of the Investigator	Amount sanctioned (in INR)	Funding Agency	Duration of the year
1	Dr. A. Shajahan Assistant Professor, Department of Botany	4,73,400	NIF-DST	2020 - 2022
2	Dr. R. Radhakrishnan Assistant Professor, Department of Botany	8,64,087	DST-SERB	2021 - 2024

d. Hands on experiments being conducted and invited lectures

- Analytical Separation Techniques** on 28-05-2020, Conducted by Dr. V. M. Biju, Associate Professor, Department of Chemistry, National Institute of Technology, Tiruchirappalli.
- A Virtual internship programme on Principle and Instrumentation of IR spectroscopy** on 24-06-2020 to 26-06-2020(Three Days), Conducted by Dr. P. Kalimuthu, Assistant Professor, Department of Chemistry, Gandhigram Rural Institute- Deemed to be University, Dindigul.
- A Virtual internship programme on the applications of Avagadro software** conducted by Dr. M. Arunachalam, Assistant Professor, Department of Chemistry, Gandhigram Rural Institute- Deemed to be University, Dindigul.
- A Virtual internship programme on the applications of Chemdraw software** conducted by Dr. M. Seenivasa Perumal, Assistant Professor, Department of Chemistry, Gandhigram Rural Institute- Deemed to be University, Dindigul.
- A Virtual internship programme on Principle and Instrumentation of UV Visible spectroscopy** conducted by Dr. P. Kalimuthu, Assistant Professor, Department of Chemistry, Gandhigram Rural Institute- Deemed to be University, Dindigul.
- SPSS**, conducted by Dr. M. Balasubramanian, Assistant Professor of Statistics, Periyar E.V.R College, Tiruchirappalli, on 17-02-2021 & 18-02-2021(Two Days).

7. **Hands on Training Programme on Maple Software** conducted by Mr. Mohamed Aslam Ameer Hamja, Data Science Enthusiast, Mindcube, Bangalore & Dr. S. Mohamed Yusuff Ansari, Assistant Professor of Mathematics, Jamal Mohamed College, Tiruchirappalli, on 11-01-2021.
8. **Herbal Product Preparation** - Dr. M. Arumugam, Head, Dept. of Botany, JJ College of Arts and Science, Pudukkottai on 20-11-2021.
9. **An overview of UV-Visible Spectroscopy: Applications in Day to Day Life**- Dr. D. Suresh, Assistant Professor, School of Chemical and Biotechnology, SASTRA Deemed University, Thanjavur on 04-12-2021.
10. **Instrumentation of UV-Visible & IR Spectroscopy** - Dr. A. Kosiha & Dr. M. Devenderan, Asst. Professor of Chemistry & Scientific Officer, VELS Institute of Science and Technology, Chennai.
11. **Phytochemistry and its application** - Dr. N. Palaniyappan, Material Chemistry, RMIT University, Melbourne, Australia, delivered a lecture on 08.07.2020.
12. **Analytical separation techniques** - Dr. V. M. Biju, Associate Professor of Chemistry, National institute of technology, Tiruchirappalli, delivered a lecture on 28.05.2020.
13. **Strategies to identify medicinally potent compounds from plants** - Dr. V. S. Pragadheesh, Scientist, CSIR-CIMAP, Bangalore, delivered a lecture on 17.06.2020.
14. **Applications of sagemath software** - Dr. P. S. Srinivasan, Associate Professor of Mathematics, Bharathidasan University, Trichy delivered a lecture on 22. 09. 2020 and 23. 09. 2020.
15. **A lecture cum hands on training on HPLC** was organized P.G and Research Department of Botany in association with Jamal Instrumentation Centre on 09.01.2023.
16. Two days Hands on Training Programme on “**High Performance Liquid Chromatography**” on 13th & 14th September 2022. The chief guest Dr. Guru Basavaraj.
17. A One-Day workshop on **Fourier Transform Infra-Red Spectroscopy** was organized by PG & Research Department of Chemistry, Jamal Mohamed College in coordination with the Jamal Instrumentation Center “JAMIC” on 13th June 2022.
18. **Demonstration on working of MULTIRAM BRUKER FT-RAMAN Spectrometer** was conducted by the PG & Research Department of Physics, Jamal Mohamed College on 03-03-2022.
19. **One-Day workshop on Atomic Absorption Spectrometer (AAS)** was conducted by the PG & Research Department Zoology, Jamal Mohamed College in coordination with the Jamal Mohamed College Instrumentation Center “JAMIC” on Tuesday, June 14th 2022.

20. **One-day workshop on Heavy metal analysis by Atomic Absorption Spectroscopy (AAS)** was conducted on 03.11.2022 in the PG & Research of Zoology, Jamal Mohamed College (Autonomous), Tiruchirappalli.
21. **Workshop on “Analysis of metals using Atomic absorption spectroscopy”** was conducted by PG & Research of Zoology, Jamal Mohamed College (Autonomous), Tiruchirappalli in association with JAMIC on 21.02.2023.
22. **A one-week certificate Programme on Spectroscopic and Chromatographic Techniques (a hands-on training)** was organized by the Jamal Instrumentation Centre (JAMIC) from 09th March 2023 to 13th March 2023.

Annexure – I

Details of Books purchased

I.(i). Details of Books purchased during in the financial year 2019-2020

S.NO	Access No.	Title	Author	Price (In Rs.)
01	52000699	Physical Methods in Inorganic Chemistry	Drago, RussellS	236.00
02	52000700	Physical Methods in Inorganic Chemistry	Drago, RussellS	236.00
03	52000701	Spectrometric Identification of Organic compounds	Silverstein, RobertM	624.00
04	52000702	Infrared and Raman Spectra of Inorganic and Coordin	Naamoto, Kazuo	7648.50
05	52000703	Infrared and Raman Spectra of Inorganic and Coordin	Naamoto, Kazuo	7648.50
06	52000704	Instrumental Methods of Chemical Analysis	Chatwal, Gurdeep R	1400.00
Total amount for financial year 2019-2020				17,793.00

I.(ii). Details of Books purchased during in the financial year 2020-2021

S.NO	Access No.	Title	Author	Price (In Rs.)
01	52000705	Practical raman Spectroscopy	Browley,H.J	7321.28
02	52000706	Surface Infrared and Raman Spectroscopy: Methods	Suetaka,W	10757.72
03	52000707	IR and Raman Spectroscopy: Principles and Spectral I	Larkin,Peter j	7987.20
04	52000708	Molecular Structure and symmetry	Veera Reddy,K	799.20
05	52000709	Molecular Symmetry and Spectroscopy	Bunker,PhilipR	1080.00

06	52000710	Molecular Symmetry and Spectroscopy	Bunker, Philip R	1080.00
07	52000711	Biomolecules	Devasena, T	176.00
08	52000712	Biomolecules	Devasena, T	176.00
09	52000713	Introduction to Magnetic Resonance Spectroscopy ES	Sathyanarayana, D N	796.00
10	52000714	Molecular and Atomic Spectroscopy	Wilfred Sugumar, R	476.00
11	52000715	Molecular Modeling and Drug Design	Anand Solomon, K	1276.00
12	52000716	Theoretical Spectroscopy	Mohan, S	476.00
Total amount for financial year 2020-2021				32,401.00

I.(iii). Details of Books purchased during in the financial year 2021-2022

S.NO	Access No.	Title	Author	Price (In Rs.)
01	52000742	Biophysics: Principles and Techniques	Subramanian, M A	340.00
02	52000743	Horticulture	Sheela, V.L	280.00
03	52000744	Pharmacognosy	Roseline, A	760.00
04	52000745	Research Methods: Tips and Techniques	Vijayalakshmi, G	200.00
05	52000746	Scientific Thesis Writing and Paper Presentation	Gurumani, N	600.00
06	52000747	Vermitechnology	Mary Violet Christy, A	316.00
07	52000748	Essence of Horticulture	Patil, M.S	476.00
08	52000775	Textbook of Botany Angiosperms	Pandey, B.P	520.00
09	52000776	College Botany	Pandey, B P	399.20
10	52000777	Botany for Degree Students	Pandey, B P	440.00
11	52000778	Botany for Degree Students Fungi	Vashishta, B R	440.00
12	52000779	Botany for Degree Students	Pandey, B P	420.00
13	52000780	Embryology of Anigiosperms	Bhojwani, S S	360.00

14	52000781	Principles of Environmental Science: Inquiry and Applications	Cunningham, William P	1596.00
15	52000782	Plant Virology	Hull, Roger	3199.60
16	52000783	Plant Biotechnology	Hussain, Anwar	1196.00
17	52000784	Devlins Exercises in Plant Physiology	Devlin, Robert M	396.00
18	52000785	Pest Control in Gardenng Plants	Aggarwal, B.S	316.00
19	52000786	Botany for Degree Students	Pandey, B.P	316.00
20	52000787	Botany for Degree Students Plant Ecology and Taxonomy	Pandey, B.P	260.00
21	52000788	Botany for Degree Students Plant Anatomy and Embryology	Pandey, B P	260.00
22	52000789	Botany for Degree Students Plant Physiology and Metabolism	Pandey, B P	212.00
23	52000790	Botany for Degree Students Gymnosperms	Vasishta, P C	399.20
24	52000791	Plant Anatomy	Pandey, B P	300.00
25	52000792	Fundamentals of Plant Physiology	Jain, V.K	420.00
26	52000793	Textbook of Botany	Pandey, S.N	460.00
27	52000794	Plant Physiology	Pandey, S.N	440.00
28	52000795	Botany for Degree Students Algae	Vashishta, B R	440.00
29	52000796	Botany for Degree Students PTeridophyta	Vashishta, P C	460.00
30	52000797	Taxonomy of Angiosperms	Pandey, B P	300.00
31	52000798	Soil Microbiology	Rao, Subba	476.00
32	52000799	Mineral Nutrition of Plants	Sood, B.S	476.00
33	52000800	Modern Practical Botany	Pandey, B.P	300.00
34	52000801	Botany for Degree Students	Pandey, B.P	428.00
35	52000802	Fundamentals of Plant Physiology	Jain, V.K	420.00
36	52000803	Genetics	Stansfield, William D	320.00
37	52000804	Textbook of Plant Ecology	Shukla, R.S	340.00

38	52000805	Textbook of Botany Angiosperms	Pandey, B.P	520.00
39	52000806	Objective Horticulture	singh, Neeraj Pratap	360.00
40	52000807	Biodiversity	William, M.N	580.00
41	52000808	Molecular Biology	Rastogi, S C	316.00
42	52000809	Bioinorganic Chemistry	Hussain Reddy, K	319.00
43	52000810	Principles and Procedures of Plant Protection	Chattopadhyay, S B	460.00
44	52000811	Wings of Fire: An Autobiography	Abdul Kalam, A P J	360.00
45	52000812	Wings of Fire: An Autobiography	Abdul Kalam, A P J	360.00
46	52000813	Wings of Fire: An Autobiography	Abdul Kalam, A P J	360.00
47	52000814	Wings of Fire: An Autobiography	Abdul Kalam, A P J	360.00
48	52000815	Wings of Fire: An Autobiography	Abdul Kalam, A P J	360.00
49	52000816	Fundamentals of Plant Physiology	Jain, V.K	420.00
50	52000817	Textbook of Plant Ecology	Shukla, R.S	340.00
51	52000818	Textbook of Botany Angiosperms	Pandey, B.P	520.00
52	52000819	Practical Botany	Bendre, Ashok M	150.00
53	52000717	Animal Biotechnology	Gupta, P K	540.00
54	52000718	Animal Behaviour	Mathur, Reena	540.00
55	52000719	Arthropoda	Kotpal, R L	144.00
56	52000720	Biotechnology and Genomics	Gupta, P K	452.00
57	52000721	Coelenterata	Kotpal, R L	108.00
58	52000722	Coelenterata	Kotpal, R L	108.00
59	52000723	Life science	Pushkar, Kumar	544.00
60	52000724	Life science	Pushkar, Kumar	544.00
61	52000725	Solved Papers Life Sciences	Editorial Board Pratiyogita Darpan	176.00
62	52000726	Developmental Biology	Sastry, K V	300.00

63	52000727	Developmental Biology	Sastry, K V	300.00
64	52000728	Echinodermata	Kotpal, R.L	108.00
65	52000729	Echinodermata	Kotpal, R L	108.00
66	52000730	Helminthes	Kotpal, R L	108.00
67	52000731	Helminthes	Kotpal, R L	108.00
68	52000732	Immunology	Lal, S S	500.00
69	52000733	Invertebrates Zoology	Kumar, Rajesh	476.00
70	52000734	Invertebrates Zoology	Kumar, Rajesh	476.00
71	52000735	Minor Phyla	Kotpal, R L	108.00
72	52000736	Invertebrates	Kotpal, R L	612.00
73	52000737	Invertebrates	Kotpal, R L	612.00
74	52000738	Porifera	Kotpal, R L	72.00
75	52000739	Porifera	Kotpal, R L	72.00
76	52000740	Practical Zoology (Invetebrate)	Kotpal, R L	364.00
77	52000741	Protozoa	Kotpal, R L	156.00
78	52000749	Bioinstrumentation	Veerakumari, L	336.00
79	52000750	Open Secret for the cracking the Civil services Examination	Kumar, Ashok	200.00
80	52000751	GATE 2022 Life Sciences Solved Papers 2000-2021	Kumar, Prabhanshu	476.00
81	52000752	Handbook of Economic Zoology	Ahsan, Dr. Jawaid	140.00
82	52000753	Biostatistics	Rastogi Veer Bala	476.00
83	52000754	Zoology	Miller, Stephen A	1596.00
84	52000755	Animal Feeding and Nutrition	robbins, T	956.00
85	52000756	Parker and Haswell Textbook of Zoology Invertabrates	Rastogi, Veer Bala	796.00
86	52000757	Parker and Haswell Textbook of Zoology Invertabrates	Rastogi, Veer Bala	796.00
87	52000758	Biology of Chordates	Pandey, B N	796.00
88	52000759	Biology of non-Chordates	Mandal, Fatik Baran	520.00
89	52000760	Foundations of Embryology	Carlson, Bruce M	876.00
90	52000761	Research Methodology: Concepts and Cases	Chawla, Deepak	520.00

91	52000762	Dairy Cattle Feeding and Management	etgen, William M	636.00
92	52000763	Bioinformatics	Hodgman, Charlie	420.00
93	52000764	Excellent communicative English	Khera, Vijay Laxmi	440.00
94	52000765	Zoology for Degree Students	Agarwal, V.K	348.00
95	52000766	Zoology for Degree Students	Agarwal, V K	399.00
96	52000767	Zoology for Degree Students	Agarwal, V.K	420.00
97	52000768	Zoology for Degree Students	Agarwal, V K	399.00
98	52000769	Zoology for Degree Students	Agarwal, V K	680.00
99	52000770	Cell Biology	Verma, P S	600.00
100	52000771	Invertebrate Zoology	Jordan, E L	680.00
101	52000772	Chordate Zoology	Jordan, E L	520.00
102	52000773	Modern Zoology	Balwan, Dr. Wahied KHawar Balwan	1916.00
103	52000774	Primer of Biostatistics	Glantz, Stanton A	956.00
104	52000820	Textbook of Zoology	Ghose, K.C	280.00
105	52000821	Solved Papers Life Sciences	Editorial Board Pratiyogita Darpan	192.00
Total amount for financial year 2021-2022				50,073.00

Annexure - II

Publications (Scopus indexed)/Patents, if any

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1. M. Ghouse Basha, 2021, Biocidal chitosan-magnesium oxide nanoparticles via a green precipitation process, Journal of Hazardous Materials. Volume 411, 5 June 2021, 124884, <https://doi.org/10.1016/j.jhazmat.2020.124884>.
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10. Radhakrishnan R., Influence of Endophytic Bacterium, *Cellulosimicrobium* sp. FRR2 on Plant Growth of *Amaranthus campestris* L. and Bacterial Survival at Adverse Environmental Conditions. J Pure Appl Microbiol. 2021;15(4):2288-2294. doi: [10.22207/JPAM.15.4.51](https://doi.org/10.22207/JPAM.15.4.51)
11. Vidya N, Saravanan K, Halka J, Kowsalya K, Preetha J.S.Y, Gurusaravanan P, Radhakrishnan R, Nanthini U.A.R and M. Arun. 2021. An insight into *in vitro* strategies for bioproduction of isoflavones. Plant Biotechnology Reports 15, 717-740 DOI: [10.1007/s11816-021-00711-3](https://doi.org/10.1007/s11816-021-00711-3)
12. Ramalingam Radhakrishnan, , 2021. An endophyte *Paenibacillus dendritiformis* strain APL3 promotes *Amaranthus polygonoides* L. sprout growth and their extract inhibits, food-borne pathogens. Plant science today 8(1):941-947. doi.org/10.14719/pst.2021.8.4.1259
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I. Publications

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37. Dr. M. Syed Ali Padusha.2022. Molecular structure determination, spectroscopic, quantum computational studies and molecular docking of 4-(E)-[2-(benzylamino) phenylimino)methyl-2]ethoxy phenol. *Journal of Bimolecular Structure and Dynamics.* <https://www.tandfonline.com/doi/abs/10.1080/07391102.2022.2052354?journalCode=tbsd20>
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 25. M. Salahudeen. 2022. Annotations and suggestions on Elephant Proof Trenches to reduce Human Elephant Conflicts in Coimbatore Forest Division South India, Journal of Advanced Applied Scientific research. <http://www.joaasr.com/index.php/joaasr/article/view/268>

Annexure - III

Patents granted and filed

Name of the Professor	Title of the Patent	Date
Granted		
Dr. A. Shajahan, Associate Prof. of Botany.	An Efficient Regeneration System Via Direct Somatic Embryogenesis In Turmeric(<i>Curcuma longa L.</i>) using leaf sheath Explants.	02-05-2020
Dr. A. Jafar Ahamed, Associate Prof. of Chemistry.	Facile synthesis of NiSe:zn nanoparticles by method variation and their morphological studi	30-05-2021
Dr. F.M. Mashood Ahamed, Assistant Prof. of Chemistry. Dr. N. Mujafarkani, Assistant Prof. of Chemistry	System for performing molecular modeling studies and density function theory calculations of new α -aminophosphonates with amlodipine as a potential inhibitor of the SARS-CoV-2 main protease	25-08-2022
Dr. B. Arifa Farjana, Assistant Prof. of Chemistry	A System for synthesis and Biological activity of sulfonamide analogues	21-11-2022
Patents filed		
S.N. Sheik Umar Sahith, Associate Prof. of Zoology	Functional modification in pallet jewels of mechanical watch escapement work.	22-06-2020
S.N. Sheik Umar Sahith, Associate Prof. of Zoology	Functional modification of gear teeth for better work	24-06-2020
S.N. Sheik Umar Sahith, Associate Prof. of Zoology	Gear driven double balance wheel system an alternative to the hairspring based technology in watches.	27-06-2020
S.N. Sheik Umar Sahith, Associate Prof. of Zoology	Functional modification of gear teeth for high performance.	09-07-2020
S.N. Sheik Umar Sahith, Associate Prof. of Zoology	Circle escapement Mechanism a replacement for Swiss lever escapement in mechanical watches.	27-07-2020
S.N. Sheik Umar Sahith, Associate Prof. of Zoology	Adapter screw driver	28-07-2020
S.N. Sheik Umar Sahith, Associate Prof. of Zoology	Optimization of swiss escapement mechanism in watches by the modification of club teeth escape wheel, pallet jewels, and swiss lever.	02-08-2020
S.N. Sheik Umar Sahith, Associate Prof. of Zoology	Making bilateral symmetry with multiple pallet stones in swiss lever of mechanical watches.	25-08-2020
S.N. Sheik Umar Sahith, Associate Prof. of Zoology	Modification of pallet stones of mechanical watches by graham's escapement method.	01-09-2020
S.N. Sheik Umar Sahith, Associate Prof. of Zoology	Modified swiss lever escapement mechanism for better displacement of pallet lever in mechanical watches.	25-12-2020
S.N. Sheik Umar Sahith, Associate Prof. of Zoology	Square scale rectangle scale and straight rulers.	10-01-2022
Dr. S. Mohamed Rabeek, Asst. Prof. of Chemistry Dr. A. Samsath Begum, Asst. Prof. of Chemistry.	Design and Biological study on new Anti-inflammatory hybrid derivatives.	06-02-2022
Dr. S. Farook Basha, Asst. Prof. of Chemistry Dr. R. Arulnangai, Asst. Prof. of Chemistry.	Nanomaterial Based Thermal Indicator	01-03-2021

Dr. P. Revathi, Asst. Prof. of Chemistry	Apparatus For Crystal Growth In Vacuum And A Method Thereof	10-12-2021
Dr. A. Mohamed Saleem, Asst. Prof. of Physics	An efficient method for synthesis of Nanospheric ZnGa ₂ O ₄ crystallites and developing its assembled three-dimensional structure.	03-09-2020
Dr. M. Meeramaideen, Asst. Prof. of Zoology	Production of Bio-compound from Fowl egg shell	04-04-2022
Dr. F.M. Mashood Ahamed, Asst. Prof. of Chemistry	Novel methyl α -D-Rhamnopyranoside analogues against Anthrax: Molecular dynamics dimulations, molecular docking, density functional theory, and admet studies.	06-05-2022
Dr. A. Mushira Banu, Asst. Prof. of Chemistry	Novel carbon dots derived beta vulgaris as potential anti-cancer and antioxidant agents.	03-06-2022
Dr. B. Arifa Farzana, Asst. Prof. of Chemistry	Novel herbal tea blend as immune booster and its antioxidant activity.	29-07-2022
Dr. J. Sebastin Raj, Asst. Prof. of Biotechnology	Deep learning based approach to study the characteristics of various microplastic degrading enzymes that are released from microorganisms.	22-07-2022
Dr. N. Mujafarkani, Asst. Prof. of Chemistry Dr. F.M. Mashood Ahamed, Asst. Prof. of Chemistry	Nano material composites for electrochemical detection of phenol.	05-08-2022
Dr. R. Arulnagai, Asst. Prof. of Chemistry	Novel nano formulations for water purification technology.	16-09-2022
Dr. S. Mohamed Rabeek, Asst. Prof. of Chemistry	Chemical composition and biological activity of Vanilla palmarum and Lippia alba.	14-10-2022
S.N. Sheik Umar Sahith, Associate Prof. of Zoology	A wrench for adjusting suspension spring of vehicles.	06-12-2022
Dr. N. Mujafarkani, Asst. Prof. of Chemistry	Method for manufacturing biodegradable polymeric nanoparticle drug.	03-08-2022
Dr. S. Mohamed Rabeek & Dr. A. Samsath Begum	Design and Biological study on new Anti-inflammatory hybrid derivatives	
Dr. B. Arifa Farzana, Asst. Prof. of Chemistry Dr. A. Mushira Banu, Asst. Prof. of Chemistry	Synthesis of super hydrophobic silica nanoparticles and method for preparing non-stick paint using same.	22-08-2022
Dr. M. Sirajudeen, Asst. Prof. of Commerce	Foot Wear	01-01-2023
Dr. R. Inbaraj, Asst. Prof. of Computer Application	Wireless optical pen mouse user input device	03-02-2023
Dr. A. Asrar Ahamed, Asst. Prof. of Chemistry	Identification of anticancer potential compound from polyherbal formulation and their molecular docking analysis	10-02-2022
Dr. G. Hema Sindhuja, Asst. Prof. of Chemistry	A Process for recovery of Sulphate and Caustic from Electrostatic Precipitator Ash	24-02-2023
Dr. R. Nijanthan, Asst. Prof. of Commerce	Impact of insurance company's contribution towards the growth of sme's	17-03-2023
Dr. E. Mubarak Ali, Associate Prof. of Commerce	Impact of 'make in india' international marketing campaign towards indian economy	24-03-2023
Dr. G. Hema Sindhuja, Asst. Professors of Chemistry	Microwave assisted one pot method for synthesizing Fluorescent Carbon dots from Chayote seeds	24-03-2023

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No.SR/FST/College-2018-315(C)
GOVERNMENT OF INDIA
MINISTRY OF SCIENCE & TECHNOLOGY
DEPARTMENT OF SCIENCE & TECHNOLOGY
R & D (Infrastructure) DIVISION

Technology Bhawan,
New Mehrauli Road,
New Delhi -110016.

22nd July, 2019

Manager
Copy to :
Principal File Section
Manager (SF) All Depts.

- 1) Director (CSF)
- 2) Dr. Razaq
- 3) Dr. Shajahan, Bot

[Signature]
9/8/19
ORDER

FIST

Subject: Financial assistance (1st installment) to the Jamal Mohamed College, Tiruchirppalli-620020, Tamil Nadu under FIST Program.

Sanction of the President is hereby accorded to the approval of the aforesaid project at a total cost of Rs.1,10,00,000/- (Rupees One crore and ten lakh only) for 5 years. The detailed breakup of the grant for General as well as Capital Components are given below:

To strengthen teaching and research facilities in the College.

Capital Assets:Rs.107.0 L

E-Rs. 92.0 L [These are : 02 items (Atomic Absorption Spectrophotometer, Analytical cum Semi preparative Binary Gradient HPLC system)- Rs32.0L and Research Facilities: 01 items (FTIR advanced Spectrometer with raman module)- 60.0L]

NW-Rs. 7.0 L [for setting up computer lab]

IF-Rs. 8.0 L [for making e-learning room- Rs 5.0L and Books- Rs 3.0L]

General Components: Rs. 3.0 L

M- Rs. 3.0 L

Total : Rs. 110.0 Lakh

2. The total budget recommended for 5 years has been phased as below: (Rs. In lakh)

Budget Heads	1 st year	2 nd year	3 rd year	4 th year	5 th year	Total
Equipment	60.0	32.0	-	-	-	92.0
Networking	-	7.0	-	-	-	7.0
IF(Books & renovation of labs)	0.50 (B)	0.50 (B)+ 5.0 (E-Learning class room)	0.50 (B)	0.75 (B)	0.75 (B)	3.0+5.0
Maintenance	-	0.75	0.75	0.75	0.75	3.0
Total	60.5	45.25	1.25	1.50	1.50	110.0

3. The sanction of the President is also accorded to the release of Rs.60,50,000/- (Rupees Sixty lakh and fifty thousand only) to the Principal, Jamal Mohamed College, Tiruchirppalli-620020, Tamil Nadu under FIST Program as a 1st installment of the grant in 2019-2020 under 'creation of capital assets' head for the maximum cost of the aforesaid Equipment including (9.4%) Custom Duty & other duties under the 'Equipment'. The break-up of the 1st installment grant released now would be 'Equipment': Rs. 60.5 lakh for procurement of the equipments mentioned above [Equipments of Foreign Origin to be acquired on FE Terms only and should not include charges for any comprehensive Maintenance and training personnel from the vendors during procurement process] and for IF- Rs 0.50 (for Books).

4. The Department/Institute will appropriately limit the expenditure within the sanctioned amount in case of any expected excess expenditure. The Department is requested to utilize the released funds in first one year from the date of sanction order.

5. This sanction is subject to the condition that the grantee organisation will furnish to the Department of Science & Technology, financial year wise Utilization Certificate (UC) in the proforma prescribed as per GFR 2017 and audited statement of expenditure (SE) along with up to date progress report at the end of each financial year duly reflecting the interest earned / accrued on the grants received under the project. This is also subject to the condition of submission of the final statement of expenditure, utilization certificate and project completion report within one year from the scheduled date of completion of the project.

6. The grantee organisation will have to enter & upload the Utilization Certificate in the PFMS portal besides sending it in physical form to this Division with UC id generated in PFMS Portal. The subsequent/final instalment will be released only after confirmation of the acceptance of the UC by the Division and entry of previous Utilization Certificate in the PFMS.

Contd./2/..

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No.SR/FST/College-2018/315 (G)
GOVERNMENT OF INDIA
MINISTRY OF SCIENCE & TECHNOLOGY
DEPARTMENT OF SCIENCE & TECHNOLOGY
R & D (Infrastructure) DIVISION

Technology Bhawan,
New Mehrauli Road,
New Delhi -110016.

Manager
Copy to :
Principal File Section
Manager (SF) All Depts.
ORDER *DoE - Stajahan*

28th June, 2021

Subject: Financial assistance (1st installment) to the Jamal Mohamed College, Tiruchirppalli-620020, Tamil Nadu under FIST Program for Grants-in-aid General.

In continuation of this Department's sanction order of even number dated 22.07.2019 sanction of the President is hereby accorded to the payment of Rs. 75,000/- (Rupees Seventy five thousand only) to the Principal, Jamal Mohamed College, Tiruchirppalli-620020, Tamil Nadu. Under FIST Program as 1st release of the grant for Grants-in-aid General in 2021-2022 for maintenance of equipments

2. The Department/Institute will appropriately limit the expenditure within the sanctioned amount in case of any expected excess expenditure. The Department is requested to utilize the released funds in first one year from the date of sanction order.
3. This sanction is subject to the condition that the grantee organisation will furnish to the Department of Science & Technology, financial year wise Utilization Certificate (UC) in the proforma prescribed as per GFR 2017 and audited statement of expenditure (SE) along with up to date progress report at the end of each financial year duly reflecting the interest earned / accrued on the grants received under the project. This is also subject to the condition of submission of the final statement of expenditure, utilization certificate and project completion report within one year from the scheduled date of completion of the project.
4. The grantee organisation will have to enter & upload the Utilization Certificate in the PFMS portal besides sending it in physical form to this Division with UC id generated in PFMS Portal. The subsequent/final instalment will be released only after confirmation of the acceptance of the UC by the Division and entry of previous Utilization Certificate in the PFMS.
5. If the grant has been released under Capital head/General through separate sanction order(s) under the same project for purchase of equipment, separate SE/UC has to be furnished for the released Capital head/General grant.
6. The aforesaid concurrence is subject to the stipulation that continuation beyond 31.03.2021 will be subject to appraisal and approval of the continuation of the Schemes(FIST) under which this project is funded, as approved by DoE's vide their Order No.42(02)/PF-III/2014, dated 06.08.2020.
7. The grant-in-aid being released is subject to the condition that:
 - (a) a transparent procurement procedure in line with the provisions of General Financial Rules 2017 will be followed by the University/Institute under the appropriate rules of the grantee organisation while procuring capital assets sanctioned for the above mentioned project and a certificate to this effect will be submitted by the University/Institute immediately on receipt of the grant, and
 - (b) while submitting Utilization Certificate/Statement of Expenditure, the University/Institute has to ensure submission of supporting documentary evidences with regard to the purchase of equipment/capital assets as per the provisions of GFR 2017. Subsequent release of grants under the project shall be considered only on receipt of the said documents.
 - (c) Grantee Institute may furnish copy of invoice in respect of equipments worth Rs. 5.0 L and above along with customs clearance certification (in case of imported equipments) after procurement of the equipments.
 - (d) As per rule 149 of GFR 2017, the goods (consumables/equipment/Networking items) available in GeM portal are to be procured mandatorily online through GeM-(Government-E-Market) platform only and the University/ Institute will also follow DOE's DoE's guidelines for incurring expenditure under the different sub-head.
 - e) The Grantee Institution is advised to start using EAT module and next release will be made only after mapping and following EAT modules by the grantee institutions.

Abhishankar

Contd. 2/

PART – C
Audited Documents and Receipts
Enclosure 1

FIST PROGRAM
STATEMENT OF EXPENDITURE
(For the period from 01st April 2022 to 31st March 2023)

1. Sanction Order No. & Date : SR/FST/College-2018-315(C), Dt.22 July 2019 & 28 June 2021
 2. Total Sanctioned Project Cost (in Rs) : 1,10,00,000/-
 3. Date of Commencement of the Project : 31-07-2019
 4. Grant Received in each year (in Rs) :

Head	1 st Year (31 st July 2019 to 31 st March 2020)	2 nd Year (01 st April 2020 to 31 st March 2021)	3 rd Year (01 st April 2021 to 31 st March 2022)	4 th Year (01 st April 2022 to 31 st March 2023)	5 th Year	Interest, If any		Total
						2019-20 to 2021-22	2022-23	
Sanctioned	60,50,000.00	--	45,25,000.00	--		249994.00	* 29534.00	1,08,54,528.00
Total	60,50,000.00	--	45,25,000.00	--		279528.00		1,08,54,528.00

5. Statement of Expenditure

Sanctioned Budget Heads	Allocation of Funds (in Rs)	Total Grant Received	Expenditure					Total	Balance as on March 2023 (in Rs)	Remark if any
			1 st Year (31 st July 2019 to 31 st March 2020)	2 nd Year (01 st April 2020 to 31 st March 2021)	3 rd Year (01 st April 2021 to 31 st March 2022)	4 th Year (01 st April 2022 to 31 st March 2023)	5 th Year			
Equipment (E)	92,00,000.00	Fin Year 2019-20 60,00,000.00	46,099.60	70,50,547.26	--	--	70,96,646.86	--	Rs.10,96,646.86 contributed by the management for purchase of Equipment	
		Fin Year 2021-22 32,00,000.00	--	--	12,07,220.08	19,92,838.00	32,00,058.08	--	Rs.58.08 Contributed by the Management for purchase of Equipment	
Net Working & Computational Facilities (NW)	7,00,000.00	Fin Year 2021-22 7,00,000.00	--	--	7,13,950.00	--	7,13,950.00	Excess spent 13,950.00	Adjusted with Books & E-Learning room	
Books 3L + E learning Class Room 5L= 8L	8,00,000.00	Fin Year 2019-20 50,000.00	17,793.00	32,401.00	--	--	50,194	--	Rs.194.00 Contributed by the Management for purchase of Books	
		Fin Year 2021-22 5,50,000.00	--	--	5,36,123.00	--	5,36,123.00	13,877	Adjusted with Networking	
Maintenance (M)	3,00,000.00	Fin Year 2021-22 75,000.00	--	--	74,500.00	--	74,500.00	500.00		
Total	1,10,00,000.00	1,05,75,000.00	63,892.60	70,82,948.26	25,31,793.08	19,92,838.00	1,16,71,471.94	** 427.00		

* Interest Amount of Rs.29,534.00 deposited back to the Government through Bhartkosh on 08-05-2023.
 ** Total Grant Rs.1,05,75,000.00 (+) Management Contribution Rs.10,96,898.94 (-) Total Exp. Rs.1,16,71,471.94 = Rs.427.00

R. J.
 (Dr. R. Jahir Hussain)
 Name & Signature
 of Project Coordinator
 Date: 8.5.2023

R. J.
 (Dr. R. Jahir Hussain)
 Name & Signature of Competent
 Financial Authority
 Date: 8.5.2023

A. A.
 (CA A. Abdul Salam)
 Name & Signature of Chartered
 Accountant
 Date

Dr. R. JAHIR HUSSAIN
 Associate Professor & Head
 Department of Mathematics
 Jamal Mohamed College
 Tiruchirappalli-620 020

BURSAR
JAMAL MOHAMED COLLEGE
 (AUTONOMOUS)
 TIRUCHIRAPPALLI-20.



- Note:
 1. Expenditure under the sanctioned Heads, at any point of time should not exceed funds allocated under that Head, without prior approval of B.S.
 2. Utilization Certificate for each financial year ending 31st March has to be enclosed along with request for carry forward permission to next year.

UDIN: 23201447BGVTAY4660

Enclosure 2

FORM GFR 12A

GENERAL FINANCIAL RULES 2017

Ministry of Finance
Department of Expenditure



GFR 12 – A

[(See Rule 238 (1)]

FORM OF UTILIZATION CERTIFICATE FOR AUTONOMOUS BODIES OF THE GRANTEE ORGANIZATION

UTILIZATION CERTIFICATE FOR THE YEAR 2022-2023 (01.04.2022 to 31.03.2023) in respect
of recurring/non-recurring
GRANTS-IN-AID/SALARIES/CREATION OF CAPITAL ASSETS

1. Name of the Scheme : DST – FIST Program
2. Whether recurring or non-recurring grants : Recurring & Non-recurring
1. Grants position at the beginning of the Financial year
 - (i) Cash in Hand/Bank : 19,93,206.92
 - (ii) Unadjusted advances : --
 - (iii) Total : 19,93,206.92
2. Details of grants received, expenditure incurred and closing balances: (Actuals)

Unspent Balances of Grants received years [figure as at Sl. No. 3 (iii)]	Interest Earned thereon	Interest deposited back to the Government	Grant received during the year			Total Available funds (1+2-3+4)	Expenditure incurred	Closing Balances (5-6)
			Sanction No. (i)	Date (ii)	Amount (ii)			
1	2	3	4			5	6	7
19,93,206.92	29,534.00	*29,534.00	--	--	--	19,93,206.92	19,92,838.00	**427.00

Component wise utilization of grants:

Grant-in-aid--General	Grant-in-aid--Salary	Grant-in-aid--creation of capital assets	Total
--	--	19,92,838.00	19,92,838.00

*Interest Amount of Rs.29,534.00 deposited back to the Government through Bhartkosh on 08-05-2023.

**Available Fund Rs.19,93,206.92 + Management Contribution Rs.58.08 (for Purchase of Equipment) – Expenditure Incurred Rs.19,92,838 = Rs.427.00

Details of grants position at the end of the year

- (i) Cash in Hand/Bank : 427.00
- (ii) Unadjusted Advances : --
- (iii) Total : 427.00



GENERAL FINANCIAL RULES 2017
Ministry of Finance
Department of Expenditure

FORM GFR 12A

Certified that I have satisfied myself that the conditions on which grants were sanctioned have been duly fulfilled/are being fulfilled and that I have exercised following checks to see that the money has been actually utilized for the purpose for which it was sanctioned:

- (i) The main accounts and other subsidiary accounts and registers (including assets registers) are maintained as prescribed in the relevant Act/Rules/Standing instructions (mention the Act/Rules) and have been duly audited by designated auditors. The figures depicted above tally with the audited figures mentioned in financial statements/accounts.
- (ii) There exist internal controls for safeguarding public funds/assets, watching outcomes and achievements of physical targets against the financial inputs, ensuring quality in asset creation etc. & the periodic evaluation of internal controls is exercised to ensure their effectiveness.
- (iii) To the best of our knowledge and belief, no transactions have been entered that are in violation of relevant Act/Rules/standing instructions and scheme guidelines.
- (iv) The responsibilities among the key functionaries for execution of the scheme have been assigned in clear terms and are not general in nature.
- (v) The benefits were extended to the intended beneficiaries and only such areas/districts were covered where the scheme was intended to operate.
- (vi) The expenditure on various components of the scheme was in the proportions authorized as per the scheme guidelines and terms and conditions of the grants-in-aid.
- (vii) It has been ensured that the physical and financial performance under..... (name of the scheme has been according to the requirements, as prescribed in the guidelines issued by Govt. of India and the performance/targets achieved statement for the year to which the utilization of the fund resulted in outcomes given at Annexure – I duly enclosed.
- (viii) The utilization of the fund resulted in outcomes given at Annexure – II duly enclosed (to be formulated by the Ministry/Department concerned as per their requirements/specifications.)
- (ix) Details of various schemes executed by the agency through grants-in-aid received from the same Ministry or from other Ministries is enclosed at Annexure –II (to be formulated by the Ministry/Department concerned as per their requirements/specifications).

Date: **B.5.2023**

Place: **TIRUCHY**

R.H

Signature
 Name :Dr. R. Jahir Hussain
 Chief Finance Officer
 (Head of the Finance)

BURSAR
JAMAL MOHAMED COLLEGE
(AUTONOMOUS)
TIRUCHIRAPPALLI-20.

S. Ismail Mohideen

Signature
 Name : Dr. S. Ismail Mohideen
 Head of the Organization

PRINCIPAL
JAMAL MOHAMED COLLEGE
(AUTONOMOUS)
V.M. TIRUCHIRAPPALLI-620 020.

V.M.

A. Abdul Salam

Signature
 Name : CA A. Abdul Salam
 Chartered Accountant



UDIN: 23201447BGVTA4660

Enclosure 3



bharatkosh.gov.in
Government of India Receipt Portal

RECEIPT

Transaction Ref.No. 0805230008182 Dated: May 8 2023 11:45AM

Received from M/S. ISMAIL MOHIDEEN S with Transaction Ref.No. 0805230008182


Dated May 8 2023 11:45AM the sum of INR 29534 (Twenty-Nine Thousand Five Hundred Thirty-Four Only) through Internet based Online payment in the account of

interest receipt on unspent balances DST, , JAMAL MOHAMED COLLEGE - REFUND OF INT. ON GRANT - 2022-2023..

Disclaimer:- This is a system generated electronic receipt, hence no physical signature is required for the purpose of authentication

Printed On: 08-05-2023 11:47:58

Courtesy :- Controller General of Accounts


PRINCIPAL
JAMAL MOHAMED COLLEGE
(AUTONOMOUS)
TIRUCHIRAPPALLI-620 020.
V.M.
NS

Enclosure 4

JAMIC



www.jmc.edu/jamic

JAMAL INSTRUMENTATION CENTRE (JAMIC)

JAMAL MOHAMED COLLEGE (AUTONOMOUS)

Accredited (3rd Cycle) with 'A' Grade by NAAC

DST- FIST Funded

(Affiliated to Bharathidasan University)

TIRUCHIRAPPALLI – 620 020



ABOUT JAMAL MOHAMED COLLEGE :

Jamal Mohamed College, was founded in 1951, an autonomous institution, affiliated to the Bharathidasan University, Tiruchirappalli. The college is administered by the Society of Jamal Mohamed College, is established in a sprawling land area of 87 acres. The college is accredited (3rd Cycle) with 'A' grade by NAAC. The college has been identified as the "College with Potential for Excellence" by the UGC.

JAMIC :

The Department of Science & Technology, Government of India has sanctioned a sum of Rs.110 lakh (Rupees One crore and Ten lakh only) to Jamal Mohamed College (Autonomous) in 2019 at Level 'O', under FIST(Fund for Improvement of Science programme).

Jamal Instrumentation Centre (JAMIC) was established under FIST programme to uplift the quality of research carried out by the students, scholars and faculty members of this college and nearby institutions in basic as well as applied field of sciences at a very affordable cost.



FT-IR Spectrometer (Model ALPHA II, Bruker Germany)



- The FTIR spectrometer ALPHA II combines outstanding quality with a small footprint and sets a benchmark in terms of user convenience. With the integrated panel PC and the touch-based operation, FTIR spectroscopy has never been easier.
- The ALPHA II features a new way to operate an FTIR spectrometer. With the integrated panel PC and the dedicated OPUS-TOUCH user interface it takes only three touches for measurement, evaluation and report generation.
- The ALPHA II represents the enhanced follow-up model of the very successful ALPHA spectrometer.
- The ALPHA II includes a durable diode laser operated with patented technology to achieve a very high wave number accuracy.
- The well-proven RockSolid™ interferometer accomplishes consistent high-quality results with outstanding stability.
- Multiple sampling accessories for transmission, attenuated total reflection (ATR), external and diffuse reflection are available to fulfill the requirements for many different analytical questions.

Bruker MultiRAM Stand Alone FT Raman Spectrometer

- Automatic Accessory Recognition (AAR) and Automatic Component Recognition (ACR)
- *Collection Optics* - High-throughput 180° collection lens standard.
- *Sources* - Primary laser excitation in the near infrared region of 1064nm with maximum power of 0.5W or 1.0W and divergence angle of 2mrad and White light source for Raman background correction.
- *Detectors*:
 - InGAs (3600 – 70 cm^{-1}) and Ge (3500 – 70 cm^{-1})
- Stokes shift down to 50 cm^{-1} and Spectral Resolution of 0.8 cm^{-1}
- Wave number Accuracy 0.1 cm^{-1} .



BINARY HPLC Model : Breeze QS - Waters(USA)



- This system adopts high pressure gradient style with dual pump. It includes two infusion pumps and UV-visible detector which are used for on-line testing. It is also used for laboratory's small scale preparation, the preparative process enlargement research and purifying the polypeptide and so on.
- It can solve semi-preparative and other small scale products purification, the loading volumes can be achieved to grams to meet with laboratory's needs and research. Flexible system configuration which is used for 10-50 mm pre packed column and axial compression column.
- This system includes two high pressure preparative pumps. It can realize the high pressure gradient operation and can also equip with one unit of preparative sampling pump to satisfy with large volume in demand. All GLP can accumulate the number of stroke of plunger piston.
- This system adopts high pressure gradient style with dual pump and can use manual programming through large screen display.
- It can also write programme through working station which can change gradient procedure at any time to achieve the ideal gradient elution effect.
- It is not only suitable for common products testing but also the liquid phase chromatography analysis.

Atomic Absorption Spectrometer Model : ICE FIOS 1



- The Thermo Scientific™ ICE FIOS AAS incorporates a unique ten lamp carousel that enables the measurement of a wide range of elements, expanding your AAS analysis.
- The flame atomizer combined with the dual beam optical system enables the analysis of elements in the concentration range of sub ppm to %.
- Easy-access ten lamp carousel with the capability to read coded lamps High light transmission for high precision and accuracy.
- Automatic fuel flow and burner position optimisation to ease method development
- Software controlled burner with horizontal, vertical and angular movement to optimise performance
- Comprehensive cookbook tool for users to help in method development
- Flexibility and reduced warm-up time for lamps increasing productivity.

Service Charge Details (Per Sample)

Analytical Equipment	Beneficiaries of host Institute	Academia	Industries
<i>FT-IR Spectrometer (Model ALPHA II, Bruker-Germany)</i>	Rs. 80/- + GST	Rs. 100/- + GST	Rs. 150/- + GST
<i>Multi RAM Bruker FT Raman Spectrometer</i>	Rs. 300/- + GST	Rs. 400/- + GST	Rs. 500/- + GST
<i>Atomic Absorption Spectrometer Model: ICE FIOS 1</i>	Rs. 100/- + GST	Rs. 200/- + GST	Rs. 200/- + GST
<i>Binary HPLC</i>	Rs. 1000/- + GST	Rs. 1500/- + GST	Rs. 2000/- + GST

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Instrument in-charges

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