



AMITY
UNIVERSITY

HANDS ON TRAINING ON **MATERIALS CHARACTERIZATIONS, LIPIDOMICS & PROTEOMICS TECHNIQUES.**

Organized by: _____

Amity University Haryana, Gurgaon

22nd - 28th August, 2022 | **REGISTER:** <https://bit.ly/3vnhWti>

(Last date for Registration: 12th August, 2022)



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DEPARTMENT OF
SCIENCE & TECHNOLOGY

Under

SYNERGISTIC TRAINING PROGRAM UTILIZING THE SCIENTIFIC AND TECHNOLOGICAL INFRASTRUCTURE (STUTI)

Registration QR | For More Information



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Leadership



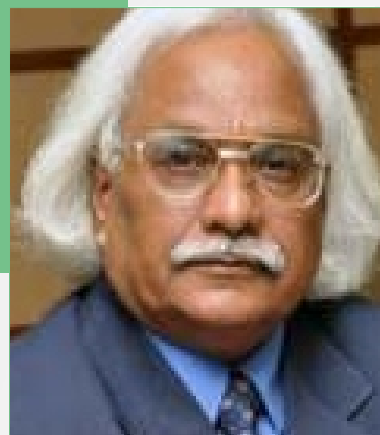
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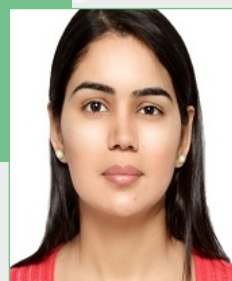
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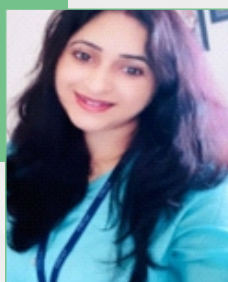


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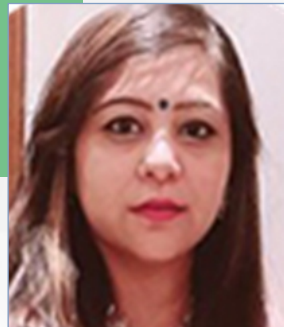
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AMITY PMU - PROJECT MANAGEMENT TEAM



Avinash Chauhan

Research Associate



Harjinder Kaur

Project Assistant



Research & Innovation Driven University

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Project Management Unit

Amity University Uttar Pradesh (AUUP) has been awarded the STUTI program as a Project Management Unit (PMU) by the Department of Science & Technology (DST) to conduct 07 days of residential hands-on training on the state-of-the-art equipment, fully sponsored by DST.

Amity Education Group is India's largest education group having 10 Indian Universities and 14 International Campuses with a strong focus on research & innovation in the diverse areas of Science & Technology. Amity University aims to become the ideal platform for scientists, researchers, and academicians to transform their ideas into success and develop their potential. Bringing together this vast community of scholars for cutting-edge research, Amity University is committed to impacting the development and global image of India in research and innovation.

Amity education group has more than 6000 strong distinguished faculty members trained in reputed National & International research Institutes. We have more than 40 brilliant Scientists from diverse places across the globe who have received various prestigious fellowships like DBT/India Alliance Wellcome Trust Early Career Fellowship, DBT Ramalingaswami Fellowship, SERB-Ramanujan Fellowship, DST-Inspire Faculty Fellowship to name a few. These highly qualified Bright Brains are mentoring more than 100 blooming brains who are pursuing their Ph.D. with prestigious fellowships.

Amity research ecosystem includes world-class research infrastructures with high computing facilities and Scanning Electron Microscope, FT-IR, High-Performance Liquid Chromatograph, Gas Chromatograph, Fermenter, etc. funded by various national and international grants. Centres of Excellence have been established in niche areas of Science & Technology. In addition, more than 12 research clusters in areas of great national and international importance are effectively functioning to act as a force multiplier in the Amity Group.

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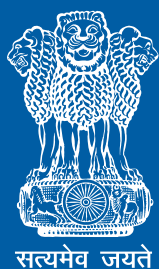
HARYANA

Amity University Haryana(AUH) has been established by Act (No.10 of 2010) of State Legislature of Haryana as a State Private University and is empowered to award degrees as specified by the UGC under section 22 of the UGC Act 1956. Amity University Haryana is a NAAC accredited (Grade-A) and NIRF ranked leading research and innovation driven university. AUH, Gurugram is built on a foundation which embodies all the qualities that have made Amity institutions world-class over the last two decades.

It has instituted global standards in education, training and research with state-of-the-art infrastructure and the latest teaching methodologies. With industry-integrated curricula, the University trains future leaders of the corporate world by blending modernity with tradition in each of its students. It is considered a pioneer in the field of innovative learning, cutting edge research and industry academia integration. It offers doctoral, postgraduate and undergraduate degrees in sectors ranging from Engineering, Applied Science, Biotechnology, Architecture, Management, Mass Communication, Law, Humanities, Psychology to unique programs in Biochemistry, Forensic Science, Environmental Science, Ocean Atmospheric Sciences and Data Science, to name a few.

Currently it is running two FIST projects under Amity School of Applied Sciences and Amity Institute of Biotechnology.





विज्ञान एवं प्रौद्योगिकी विभाग
**DEPARTMENT OF
SCIENCE & TECHNOLOGY**
SYNERGISTIC TRAINING PROGRAM UTILIZING
THE SCIENTIFIC AND TECHNOLOGICAL INFRASTRUCTURE

STUTI

The Scheme 'Synergistic Training program Utilizing the Scientific and Technological Infrastructure' (STUTI) is intended to build human resources and knowledge capacity through open access S&T Infrastructure across the country. As a complement to the various schemes of DST funding for expansion of R&D Infrastructure at academic institutions, STUTI scheme envisions a hands-on training program and sensitization of the state-of-the-art equipment as well as towards sharing, while ensuring transparent access of S&T facilities

HIGHLIGHTS OF THE PROGRAMME

The Scheme 'Synergistic Training program Utilizing the Scientific and Technological Infrastructure' (STUTI) is intended to build human resource and knowledge capacity through open access to S&T Infrastructure across the country. As a complement to the various schemes of DST funding for expansion of R&D Infrastructure at academic institutions, the STUTI scheme envisions a hands-on training program and sensitization of the state-of-the-art equipment as well as towards sharing, while ensuring transparent access to S&T facilities.

The aim of this 7-day training is to equip participants with the basic knowledge and skills required to function in material characterization. The participants will experience hands-on training on DLS, TGA-DSC, UV DRS, Modular Spectrophotometer and LCMS.

The training program includes lectures by eminent scientists who are using these advanced facilities and pursuing high end research.



OBJECTIVE OF TRAINING

To build human resource and its knowledge capacity through open access S & T Infrastructure across the country through hands-on training programs by:

- Enhancing awareness of equipments and application of state-of-the-art equipments
- Sharing while ensuring transparent access of S&T facilities funded by DST

WHO SHOULD ATTEND?

The training is organized to enhance the practical skills of Post Graduate Students, Research Scholars, Faculty Members from Universities/Colleges, Scientists Post-Doctoral Researchers and industry people Who are working in mutidisciplinary and translational research in various organizations

Eligibility:

- a. Person of Indian Origin
- b. Min. Qualification should be Post Graduation (Science) or B.Tech. (Technology)
- c. Professor /Scientist / Post-Doctoral Fellows / PhD Fellow / Industry person who are actively involved in R&D

WHY SHOULD YOU ATTEND?

Discover state of the art R&D infrastructure and facilities funded by DST and held by various R&D institutions / Universities in the country.

- Gain hands-on experience of research through latest S&T equipment and facilities.
- Design experiments by selecting appropriate/ alternate equipment for the various experiments.
- Connect with the R&D Organisations / Universities / Private Sector facilities / Start-ups/ MSMEs involved in research & development.

COST OF THE PROGRAM

This training is sponsored by DST STUTI program and registration is free.

For domestic travel of participants and faculty, the reimbursement for A/C train ticket or Deluxe Bus (only for outstation candidates/faculty) will be provided. Depending upon the availability in the Amity University, accommodation would be provided on single/double occupancy basis.

Accommodation request should be made at least 10 days before the commencement of the training program.

About FIST At Amity University, Haryana

TGA:DSC

Description:

- STA 8000 has a sensor with a pure platinum/alumina pan holder and there is a separate platform for sample and reference
- Balance design is top loading, single beam with a resolution of 0.2 μg
- Balance measurement range is up to 1500 mg and temperature range is 15°C to 1600 °C
- Temperature accuracy is from ambient to 1000°C ± 0.5 °C and 1000 °C to 1600 °C ± 1.0 °C
- Runs on an Advanced Pyris Software.



Outcome:

After successful completion of the training the trainees will be able to:

- Learn how to measure thermal stability of nanomaterials, polymers, plastics, ceramic, glass, biopolymer and their hybrids and composites.
- Identify phase transition point of the materials.
- Determine the residual water/organic solvents/fillers present in materials and to understand weight loss or degradation of materials with respect to temperature.
- Study protein unfolding and formation of their oligomeric states.

UV DRS

Description:

- Lambda 365 is a Double Beam UV/Vis spectrophotometer which has an interface of Tungsten-Halogen and Deuterium lamps
- Operating range is 190 - 1100 nm and temperature range is 15°C to 35°C
- The system delivers a variable spectral bandwidth capability from 0.5 nm to 20 nm
- It has a wide range of accessories, including multi cell changers and a solid sample accessory for transmission and reflectance



Outcome:

After successful completion of the training the trainees will be able to:

- Get a comprehensive idea about the use of UV-DRS in characterizing nanoparticles/ chromophores in suspensions/solutions and determining their concentration as well as determining the absorption properties of metallic nanoparticles (through plasmodia absorbance).
- Learn about studying the diffused reflectance and surface plasmon resonance of nanoparticles/ nanomaterials.
- Develop concepts on Pre-measurement of absorption spectrum of protein which enables exact determination of protein concentrations down to the micro molar level and also its purity (absence of undesirable protein aggregates) thus ensuring consistency in data generation in DLS measurements.

ZETA SIZER

Description:

- Zetasizer Nano ZS can measure hydrodynamic size, zeta potential and molecular weight in particle dispersions, emulsions and molecular solutions.
- Works in size range maximum (diameter) 0.3nm - 10 microns even at a minimum sample volume of 12 μ L.
- Temperature control range is 0°C - 90°C +/- 0.1°C.
- It has a Reusable Dip Cell for zeta potential measurements.



Outcome:

After successful completion of the training the trainees will be able to:

- Estimate particle size distribution of the nanoparticles (crystalline and amorphous).
- Get a comprehensive idea about how to calculate surface charge in terms of electric potential (V) of the nanoparticle system.
- Learn how to determine the nature of drug-receptor interactions.
- Understand the aggregated state of various biomolecules like protein, lipids etc.

MODULAR SPECTROMETER

Description:

- A Modular Spectrometer with 3648 pixels CCD linear array detector that has a high resolution of up to 0.03 nm (FWHM).
- System includes an incident slit, collimating mirror, dispersion element (grating), focusing optical system and a detector.
- Light is collected through the optical fiber into the spectrometer slit then the spectral information can be read out by an advanced software.



Outcome:

After successful completion of the training the trainees will be able to:

- Gain a hand full knowledge on the applications of modular spectrophotometer for various spectroscopic applications as in different modular setups, user can perform Fluorescence, Photoluminescence, Absorbance, Transmittance and Reflectance.
- Develop advanced concepts on analyzing the luminescence and other optical properties of nanoparticles .

LCMS

Description:

- Q-Trap 4500 quadrupole/linear ion trap mass spectrometer Q-Trap 4500 (SCIEX), equipped with ion sources (turbo V) Electrospray ionization (ESI), and Atmospheric pressure chemical ionization and Exion Liquid Chromatography (LC-AC) system with an autosampler and column oven.
- Special features include quantitative performance of a triple quad system and additional enhanced scan functionality of QTRAP, the integrated linear ion trap (LIT) for accurate detection, quantification, and confirmation of compounds and enhanced product ion (EPI) functionality for acquisition of a complete MS/MS spectrum to accompany MRM quantitation for every compound detected in a sample.
- Assures ultimate robustness, ruggedness, and reliability for high-throughput screening of many compounds in multiple samples
- Including Softwares like Multiquant, LipidView and Analyst (SCIEX)



Outcome:

After successful completion of the training the trainees will be able to:

- Get a comprehensive idea about applications of LC-MS/MS in Lipidomics and Proteomics which can be used in their research work and be aware of hardware details of QTRAP-4500 instrument
- Learn about method development, data acquisition and data analysis and interpretation for Targeted and Untargeted approach for lipidomics and proteomics
- Develop concept and ideas for designing own project and perform software based data analysis

REGISTRATION/APPLICATION

Participants are required to apply for the training program online at <https://aitd.amity.edu/dst-stuti> or scan the QR code provided at the end. The application deadline is August 12, 2022.

SELECTION OF THE PARTICIPANTS

The applications will be scrutinized by the STUTI training program selection committee and the decision of the committee will be final. Selected candidates will be informed through e-mail. The seats in the training program are limited.

TRAINING PROGRAM SCHEDULE

DAY (1)	
TIME	AGENDA
10:00 am-10:30 am	Introductory session
10:30 am-11:00 am	Basic presentation on QTRAP technology
11:00 am -11:15 am	Tea Break
11:15 am-1:00 pm	Practical session on Sciex QTRAP Technology – Infusion based analysis: Showcasing various scan functions
1:00 pm-2:00 pm	Lunch
2:00pm- 3:30 pm	Practical session on Flow Injection Analysis (FIA) for source optimization
3:30 pm- 3:45 pm	Tea Break
3:45 pm - 5:00 pm	Method creation for LCMS analysis, and overnight data acquisition using targeted approach

DAY (2)

TIME	AGENDA
10:00 am-10:30 am	Theoretical session covering Lipidomics analysis using QTRAP
10:30 am-11:15 am	Guest lecture on application
11:15 am -11:30 am	Tea Break
11:30 am-1:00 pm	Analysis of targeted data using Multiquant software
1:00 pm-2:00 pm	Lunch
2:00pm- 3:00 pm	Guest Lecture on application
3:00 pm- 3:45 pm	Untargeted Lipidomics analysis using Information Dependent Acquisition (IDA) method
3:45 pm- 4:00 pm	Tea Break
4:00 pm- 5:00 pm	LipidView software analysis of untargeted data

DAY (3)

TIME	AGENDA
10:00 am-10:30 am	Theoretical session – QTRAP and Proteomics
10:30 am-11:15 am	Guest Lecture on application
11:15 am -11:30 am	Tea Break
11:30 am-1:00 pm	Method creation using targeted approach and running of trypsin digested beta galactosidase standard.
1:00 pm-2:00 pm	Lunch
2:00pm- 3:00 pm	Guest Lecture on application
3:00 pm- 3:45 pm	Creation of IDA method for protein identification analysis and running of sample
3:45 pm- 4:00 pm	Tea Break
4:00 pm- 5:00 pm	Data analysis using online Mascot and ProteinPilot 5.0 software
5:00 pm- 6:00 pm	Exit Quiz and Feedback

DAY (4)

TIME	AGENDA
10:00 am-10:45 am	Lecture on thermogravimetry
10:45 am-11:00 am	Tea Break
11:00 am-01:00 pm	Lecture on Diffrential Scanning Calorimetry
1:00 pm-2:00 pm	Lunch
2:00pm- 5:00 pm	Hands on TGA-DSC

DAY (5)

TIME	AGENDA
10:00 am-10:45 am	Lecture on DLS and Zeta Sizer
10:45 am-11:00 am	Tea Break
11:00 am- 1:00 pm	Handson on DLS-Zeta Sizer
1:00 pm-2:00 pm	Lunch
2:00 pm- 3:00 pm	Lecture on UV-Vis Spectrophotometer
3:00 PM-5:00 PM	Hands on UV Vis spectrophotometer

Day 6): Field Excursion 07-08-2022

Day 7):

TIME	AGENDA
11:00-11:30 AM	Lecture on RIUS Spectrophotometer
11:30- 11:45 AM	Tea Break
11:45- 1:00 PM	Lab Visit to CIRF
1:00 -2:00 PM	Lunch
2:00-4:00 PM	Handson on RIUS Spectrophotometer
4:00-5:00 PM	Valedictory Session



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For More details about the FIST facility at Amity Gurugram

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For More
Information

