MAHARSHI DAYANAND UNIVERSITY
ROHTAK, HARYANA

AMITY UNIVERSITY

7 Days Workshop on

MATERIALS CHARACTERIZATION TECHNIQUES

Organized by:

MAHARSHI DAYANAND UNIVERSITY ROHTAK

In Association With :

AMITY UNIVERSITY (PMU)

22 – 28 Sept., 2022 | REGISTER: https://bit.ly/3vnhWti
(Last date for Registration: 12 September 2022)

SPONSORED By

सत्यमेव जयते

विज्ञान एवं प्रौद्योगिकी विभाग
DEPARTMENT OF
SCIENCE & TECHNOLOGY

Under

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

Registration QR | For More Information

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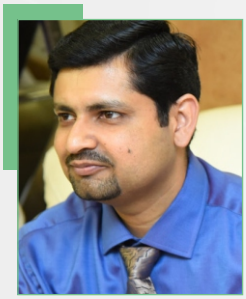

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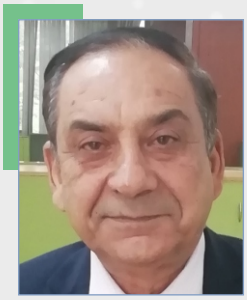

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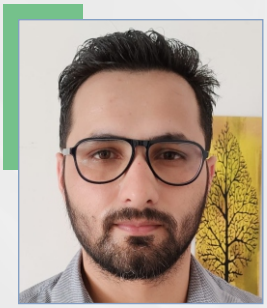
AMITY PMU PROJECT TEAM



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ORGANIZERS

MAHARISHI DAYANAND UNIVERSITY ROHTAK

Maharshi Dayanand University, Rohtak, established in 1976 as a residential University with the objective of promoting inter-disciplinary higher education and research with special emphasis on studies of environmental, ecological and life sciences, is making rapid progress to emerge as a leading educational institution of the nation. Now it is a teaching-cum-affiliating university with a formidable track record in academics, research, literacy and cultural activities, and sports. Currently, there are 38 Post-Graduate Departments and 11 Faculties in the University. Territorial jurisdiction of the University extends to 10 districts of Southern Haryana. The Directorate of Distance Education is providing quality education to the students with its traditional UG/ PG courses as well as Information Technology and Management programmes. Excellent standards of teaching and research, well-qualified faculty members, effective administrative functioning, congenial academic environment, pulsating campus life, key national and international linkages, timely holding of examinations and time-bound declaration of results, ample avenues for holistic development of personality of the students, a community-service approach, special emphasis on providing opportunities for students of rural background, girl students, and students from marginalized communities, administrative mechanism based on e-governance etc. are the salient features of this University. The overall progress made by the University in all fields resulted in the University receiving the 'A+' grade from NAAC in March 2019. University, with its large campus, provides excellent infrastructural facilities and necessary student support services, benefiting the students. Beautiful landscaping is a hallmark of the varsity. Hostel facilities for 2500 boys and equal number of girls are available on the campus. Computer and network facilities are available on the campus. The University has entered into national and international level strategic tie-ups with academic and research organizations for joint academic and research programmes. Recently, University has signed MoU with National Skill Development Corporation to facilitate skill development of University students. We are all set to emerge as a pioneer University with overall excellence and global outlook and deep commitment towards social and community causes in times to come. Welcome to this vibrant Institute of Higher Learning, and realize your academic dreams!

Research & Innovation Driven University

AMITY UNIVERSITY

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 12 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 3000 strong distinguished faculty members trained in reputed National & International research Institutes. We have more than 30 brilliant Scientists from diverse places across the globe who have received various prestigious fellowships like DBT/India Alliance Wellcome Trust Early Career Fellowship, DBT Ramalinga swami 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.

विज्ञान एवं प्रौद्योगिकी विभाग

DEPARTMENT OF SCIENCE & TECHNOLOGY

SYNERGISTIC TRAINING PROGRAM UTILIZING
THE SCIENTIFIC AND TECHNOLOGICAL INFRASTRUCTURE

DST – STUTI SCHEME

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.

HIGHLIGHTS *OF THE PROGRAMME*

This 7-day Workshop aims to equip the participants with the basic knowledge of different state-of-the-art Materials characterization techniques. The participants will experience hands-on training on x-ray diffractometer, DSC/TGA, BET surface area analyzer, Impedance analyzer, Potentiostat /galvaostat, UV-visible, Photoluminescence, and FTIR spectrometers. The training will revolve around different thermal, structural, optical and electrical characterization techniques followed by data analysis. Now a day, the world is facing energy crises; in this direction, one aspect is the generation of energy without polluting the environment and other is the storage of energy. The surface area, thermal stability, structural, optical and electrical properties of a particular material play an important role in its selection as luminescent materials for solid-state lighting applications, electrolyte/electrode materials for battery and supercapacitors applications. After going through this training program, the participating budding scientists of the future will find themselves confident in characterization and data analysis of materials for energy storage such as 2D materials, hydro-gels, metal oxides, metal sulphides, glass, glass ceramics, ferroelectric ceramics etc.

OBJECTIVE OF TRAINING

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

- Organising short term courses.
- Enhancing awareness of the use and application of state-of-the-art equipment.
- 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, and Post-Doctoral Researchers who are working in multidisciplinary/ transdisciplinary and translational research in various organizations.

Eligibility:

a. Person of Indian Origin

b. Min. Qualification should be Post Graduate (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 MDU Rohtak, 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 R&D INFRASTRUCTURE MDU ROHTAK

X-RAY DIFFRACTOMETER (PROCURED THROUGH FIST LEVEL-I GRANT, 2012-17 AT PHYSICS DEPARTMENT M.D. UNIVERSITY ROHTAK)

Make and Model: Rigaku MiniFlex 600

LEARNING OUTCOMES

- Basics of crystallography
- Differentiation between amorphous and crystalline materials
- Determination of lattice parameters, crystallite size and strain in nanomaterials

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UV-VISIBLE SPECTROSCOPY (ARYABHATA, CIL, M.D. UNIVERSITY ROHTAK)

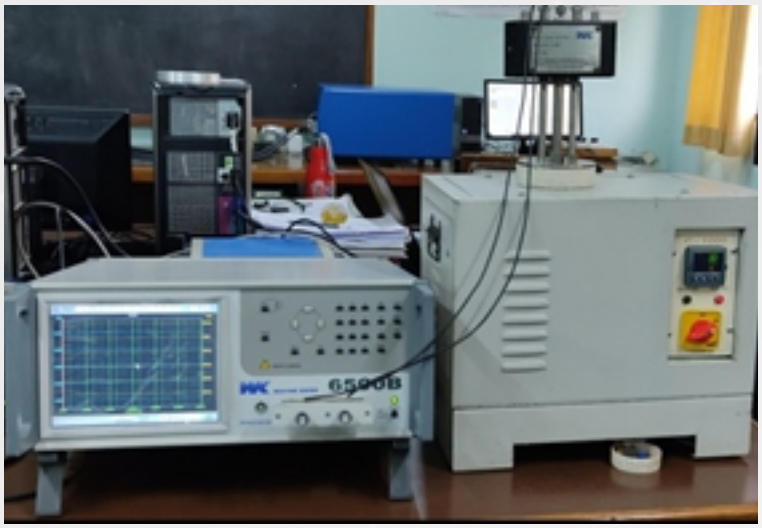
Make and Model: SHIMADZU UV 3600 plus

LEARNING OUTCOMES

- Basic principle of UV visible spectroscopy
- Knowledge to Record UV visible spectra of liquid, solid, and powder samples
- Extraction of optical parameters from obtained spectra

IMPEDANCE ANALYSER (PROCURED THROUGH FIST LEVEL-I GRANT, 2012-17 AT PHYSICS DEPARTMENT M.D. UNIVERSITY ROHTAK)

Make and Model: WAYNE KERR 6500 B)



LEARNING OUTCOMES

- Basics of Dielectric spectroscopy
- Connections between different dielectric parameters
- Knowledge to record dielectric data of a specimen
- Analysis in light of different theoretical models

FT-IR SPECTROMETER (PROCURED THROUGH UGC SAP, 2012-17 AT PHYSICS DEPARTMENT M.D. UNIVERSITY ROHTAK)

Make and Model: Thermo Scientific model no. Nicolet iS50

LEARNING OUTCOMES

- Basics of IR spectroscopy
- Knowledge to record IR spectra of typical specimen
- Deconvolution of IR data to find the exact band position and numbers of structural units

A SIMULTANEOUS DSC-TGA (PROCURED THROUGH UGC SAP, 2012-17 AT PHYSICS DEPARTMENT M.D. UNIVERSITY ROHTAK)

Make and Model: TA Instruments, model no. Q600 SDT

LEARNING OUTCOMES

- Basics of Thermogravimetry and differential scanning calorimetry
- Knowledge of thermal stability and effect of temperature scan rate
- Determine crystallinity of polymers
- Determination of different characteristics temperatures and effect of scan rate, specific heat of solids
- Basics of crystallization kinetics using DSC data

POTENTIOSTAT/GALVAOSTAT (PROCURED THROUGH 5YEAR PLAN GRANT, 2012-17, AT PHYSICS DEPARTMENT, M.D. UNIVERSITY ROHTAK)

Make and Model: VMP-300, Biologic, France

LEARNING OUTCOMES

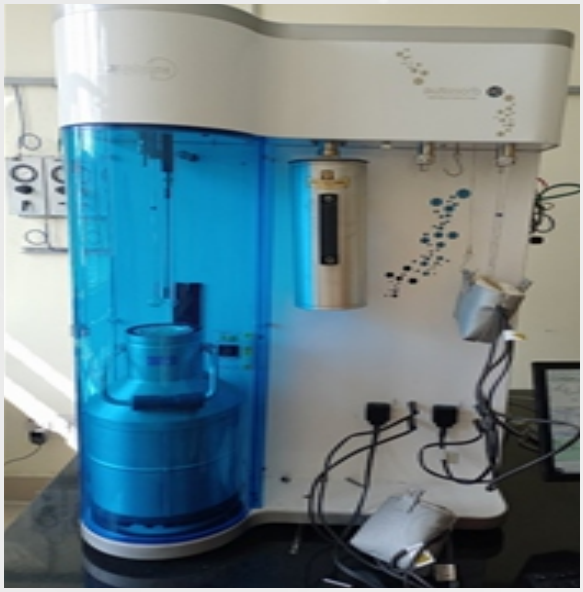
- Basics of CV measurement
- CV plots, variation of specific capacitance with scan rate
- GCD plots
- Nyquist plots and equivalent circuit modelling of materials

SOPHISTICATED FLUORESCENCE SPECTROMETER (ARYABHATA, CIL, M.D. UNIVERSITY ROHTAK)

Make and Model: HORIBA INSTRUMENT (FL3C- 21)

LEARNING OUTCOMES

- Basics of PL/Fluorescence spectrometry
- Probing the electronic structure of materials
- Band gap determination
- Impurity levels and defect detection
- Impurity levels and defect detection characterization of luminescent materials for LED applications etc.



BET SURFACE AREA ANALYSER(ARYABHATA, CIL, M.D. UNIVERSITY ROHTAK)

Make and Model: Autosorb Quantachrome

LEARNING OUTCOMES

- Basics of The Brunauer-Emmett-Teller (BET)
- Understanding of N2 adsorption isotherm measurements LN2
- Determination of specific surface area
- Determination of pore-size

REGISTRATION/ APPLICATION

Participants are required to apply for the training program online at https://bit.ly/3vnhWti or scan the QR code provided at the end. The application deadline is September, 10 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.

A TENTATIVE SCHEDULE OF WORKSHOP

DAY-1: 22-09-2022 (THURSDAY)	
9:30AM- 11:30AM	Registration and Inauguration
11:30AM- 12:00NOON	Tea Break and mentoring of participants
12: 00 NOON- 1:30PM	Technical session I: X-ray diffraction
1:30PM - 2:30PM	Lunch Break
2:30PM- 4:00PM	Hands on X-ray diffractometer
4:00PM- 4:30PM	Tea Break and mentoring of participant
4:30PM - 6:00PM	Technical session II: X-ray diffraction
DAY-2: 23-09-2022 (FRIDAY)	
10:00AM- 11:30AM	Technical session I: Impedance spectroscopy
11:30AM- 12:00NOON	Tea Break and mentoring of participants
12:00 NOON- 1:30PM	Hands on Impedance Analyser
1:30PM - 2:30PM	Lunch Break
2:30PM- 4:00PM	Technical session II: Impedance spectroscopy
4:00PM- 4:30PM	Tea Break and mentoring of participant
4:30PM- 6:00PM	Technical session III: Impedance spectroscopy
DAY-3: 24-09-2022 (SATURDAY)	
10:00AM- 11:30AM	Technical session I: Electro Chemical measurements
11:30AM- 12:00NOON	Tea Break and mentoring of participants
12:00NOON- 1:30PM	Hands on Potentiostat/galvaostat
1:30PM - 2:30PM	Lunch Break
2:30PM- 4:00PM	Technical session II: Electro Chemical measurements
4:00PM- 4:30PM	Tea Break and mentoring of participants
4:30PM- 6:00PM	Technical session III: Electro Chemical measurements
DAY-4: 25-09-2022 (SUNDAY) VISIT OF ROHTAK	

A TENTATIVE SCHEDULE OF WORKSHOP

DAY-5: 26-09-2022(MONDAY)	
10:00AM - 11:30AM	Technical session-I: FTIR spectroscopy
11:30AM-12:00NOON	Tea Break and mentoring of participants
12:00NOON - 1:30PM	Technical session-II: BET Surface Area Analysis
1:30 PM - 2:30PM	Lunch Break
2:30PM - 4:00PM	Hands on FTIR spectrometer & BET Surface Area Analyser
4:00PM - 4:30PM	Tea Break and mentoring of participant
4:30PM - 5:15PM	Technical session-III: FTIR spectroscopy
5:15PM - 6:00PM	Technical session-IV: BET Surface Area Analysis
DAY-6: 27-09-2022(TUESDAY)	
10:00AM - 11:30AM	Technical session- I: UV visible spectroscopy
11:30AM-12:00NOON	Tea Break and mentoring of participant
12:00NOON-1:30PM	Technical session-II: PL spectroscopy
1:30PM - 2:30 PM	Lunch Break
2:30PM - 4:00 PM	Hands on UV visible Spectrometer & PL Spectrometer
4:00PM - 4:30 PM	Tea Break and mentoring of participants
4:30PM - 5: 15PM	Technical session-III: UV visible spectroscopy
5:15PM - 6: 00PM	Technical session-IV: PL Spectroscopy
DAY-7: 28-09-2022(WEDNESDAY)	
10:00AM - 11:30AM	Technical session- I: Thermal Characterization of Materials
11:30AM - 12:00NOON	Tea Break and mentoring of participants
12:00NOON - 1:30PM	Hands on simultaneous DSC-TG analyser
1:30PM - 2:30PM	Lunch Break
2:30PM - 3:00PM	Technical session-II: Differential Scanning Calorimetry
3:00PM - 3:30PM	High Tea
3:30PM ONWARDS	Valedictory session

For More details and Queries about the facility

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Registration QR

For More Information