



REPORT

Synergistic Training program Utilizing the Scientific and Technological Infrastructure (STUTI)

5th JANUARY 2023 to 11th JANUARY 2023

Organized by

Departments of Physics and Chemistry Manipal Institute of Technology, Manipal, Karnataka, India

In collaboration with

Shivaji University, Kolhapur, Maharashtra

Supported by

DST, Government of India, New Delhi

JANUARY 2023

Chief Patron:

Dr. Ramdas M Pai, Chancellor, MAHE, Manipal Dr. H S Ballal, Pro Chancellor, MAHE, Manipal

Patrons:

Lt. Gen. Dr. Venkatesh, Vice Chancellor, MAHE, Manipal
Dr. P Giridhar Kini, Registrar, MAHE, Manipal
Dr. (Cdr) Anil Rana, Director, MIT, Manipal
Dr. Somashekhara Bhat, Joint Director, MIT, Manipal

STUTI Program Coordinator:

Prof. R. G. Sonkawade PMU Coordinator, STUTI Program, Shivaji University, Kolhapur, Maharashtra

Programme Committee:

Conveners:

Prof. Mohan Rao K Head, Department of Physics, MIT, Manipal

Prof. Suma A Rao Head, Department of Chemistry, MIT, Manipal

Coordinators:

Dr. Ismayil Department of Physics, MIT, Manipal

Dr. Gurumurthy S C Department of Physics, MIT, Manipal

Dr. Sudhakar Y N Department of Chemistry, MIT, Manipal









Department of Physics and Chemistry, Manipal Institute of Technology Manipal Academy of Higher Education, Manipal, Karnataka, India

Organizes

Synergistic Training program Utilizing the Scientific and Technological Infrastructure (STUTI)

5th JANUARY 2023 to 11th JANUARY 2023

In collaboration with

Shivaji University, Kolhapur, Maharashtra

Supported by

Department of Science and Technology (DST) Ministry of Science and Technology, Government of India, New Delhi

About Manipal Institute of Technology:

Manipal Academy of Higher Education (MAHE) is synonymous with excellence in Higher Education. 30,000+ students from 65+ different nations live, learn and play in the sprawling University town, nestled on a plateau in Karnataka's Udupi district. MAHE Manipal offers 28 disciplines, 12 Program levels, 350+ programs through 31 institutions / departments. MAHE also has campuses in Mangaluru, Bengaluru & Jamshedpur and off-shore campuses in Dubai (UAE) & Melaka (Malaysia). MAHE is one of the first six institutes to be awarded the Institute of Eminence (IoE) status in 2018. MAHE is also accredited by NAAC 'A++' grade with CGPA 3.65. Manipal Institute of Technology (MIT), one of the constituent institutes of MAHE, is known far and wide as an excellent technical institute in the country. It started in 1957 as a selffinanced engineering college by Dr. T. M. A. Pai. Department of Physics and Chemistry are the founder departments of the Institute. Currently, these departments have grown and developed into a centre of PG studies and research.

About STUTI:

STUTI stand for "Synergistic Training program Utilizing the Scientific and Technological Infrastructure" Program funded by the Department of Science & Technology (DST), Government of India. The Scheme is intended to build human resource and its capacity building through open access to S&T Infrastructure across the country by organizing training program on DST supported R&D equipment targeting Scientists/Professors/PhDs and PDFs actively involved in research across various institutions in the country.

About Shivaji University:

Shivaji University, Kolhapur, established on 18th November, 1962 has 276 affiliated colleges with 40 post-graduate departments. Recently, accredited with NAAC 'A++' grade with CGPA 3.52 in its forth cycle of reaccreditation 2021. Various science departments of Shivaji University are well equipped with different sophisticated instruments and laboratory infrastructures procured using funds from various funding agencies such as TEQIP I &II, DST-PURSE I & II, DST-FIST I & II, SAIF, UGC-SAP I & II, UGC DRS, MHRD RUSSA Centers for Alternative Medicine, Nanofabrics and VLSI Design, DBT-IPLS, RGSTC, Erasmus Mundus+ (EU projects), MHRD PMMNMTT Centre for Cyber Security & Data Science, DBT-BUILDER etc. STUTI project is sanctioned by DST, New Delhi to SUK worth Rs. 2.25 crore for organizing training programs on various sophisticated instruments.

Course Contents:

The main theme of this training program is to aware of the participants regarding the sophisticated instruments or characterization such as Morphological Characterization Technique (SEM and AFM), Structural Characterization Technique (XRD, FTIR, NMR and TGA) and Thin film fabrication Technique (DC & RF Sputtering, Spray Pyrolysis), Optical Characterization (UV-Vis-NIR, PL), Electrochemical work station, Impedance Analyzer, Hall Effect and Resistivity Measurements, Flash Chromatography, Profilometer etc. The training program includes theory lectures as well as Demonstration/Hands on Training on the sophisticated instruments throughout the program.

Goal of STUTI Program:

- The participants will understand and familiarize with the various sophisticated instruments supported by DST, GoI and other funding agencies.
- The participants will get skill based knowledge about the handling of various sophisticated instruments and characterization techniques.
- The interaction of participants with researchers and other participants will help them in collaborative research.

Eligibility:

- Participants should be Indian Citizen.
- Minimum qualification should be Post Graduate (Science) or B.Tech. (Technology).
- Faculty/ Scientists/ Post-Doc Fellows/ Ph.D. Fellows/ Industry persons who are actively involved in research and development (R&D).
- Not more than 3 people from one institute per training will be allowed from outside the host institute.

Registration Procedure:

- Interested candidates have to fill the online MS form (link given below) on or before 22/12/2022.
- Participants should send a brief CV (not more than 3 pages) and Recommendation/Permission letter by the Institute Head/HOD/Research Supervisor as a SINGLE pdf file (both combined) to the email IDs given below.
- Candidates will be selected according to eligibility and available seats.
- The confirmation of selection will be communicated to the selected candidates on 24/12/2022 by email.
- Registration Link:
- https://forms.office.com/r/UyHaK0k8D3

Contact : Program Coordinators

Dr. Ismayil (+91 9845497546) Dr. Gurumurthy S C (+91 9449740014)

General Information:

- Registration for the training program is **FREE**.
- Registration kit, Course material and Certificate of participation will be provided to the participants.
- Local Hospitality (accommodation & Meal) will be provided.
- The train fare (3AC or equivalent) by shortest route will be reimbursed to the selected outstation participants on submission of original tickets.
- Participants are encouraged to bring their samples if any, for hands on analysis during the program.

Chief Patron:

Dr. Ramdas M Pai, Chancellor, MAHE, Manipal

Dr. H S Ballal, Pro Chancellor, MAHE, Manipal

Patrons:

- Lt. Gen. Dr. Venkatesh, Vice Chancellor, MAHE, Manipal
- Dr. P Giridhar Kini, Registrar, MAHE, Manipal
- Dr. (Cdr) Anil Rana, Director, MIT, Manipal
- Dr. Somashekhara Bhat, Joint Director, MIT, Manipal

STUTI Program Coordinator:

Prof. R. G. Sonkawade Coordinator, SAIF, Shivaji University, Kolhapur, Maharashtra

Programme Committee:

Conveners:

Prof. Mohan Rao K Head, Department of Physics, MIT, Manipal

Prof. Suma A Rao Head, Department of Chemistry, MIT, Manipal

Coordinators:

Dr. Ismayil Department of Physics, MIT, Manipal

Dr. Gurumurthy S C Department of Physics, MIT, Manipal

Dr. Sudhakar Y N Department of Chemistry, MIT, Manipal



Special Talk Series with Hands-on Training/Demo on Sophisticated instruments.Registration Link:https://forms.office.com/r/UvHaK0k8D3Last date of Registration:22/12/2022Confirmation of Selection:24/12/2022



PROGRAM SCHEDULE

Day 1: 05-01-2023, Thursday (Venue: Sir M V Seminar Hall, AB-2, MIT, Manipal)					
8:15 - 9:15 am	Registration and Breakfast				
9:30 – 10:45 am	Inaugural Ceremony:				
	President: Cdr. (Dr.) Ani	President: Cdr. (Dr.) Anil Rana, Director, Manipal Institute of Technology, Manipal			
	Chief Guest: Dr. Vinod V Thomas, Registrar Evaluation, Manipal Academy of Higher Education, Manipal				
	Guest of Honour: Prof. R G Sonkawade, PMU Coordinator, STUTI Program, Shivaji University, Kolhapur, Maharashtra				
10:45 – 11:15 am	Tea and Photo Session				
Venue: LH 08, LG -01 Floor, AB5, MIT					
11:15 am –	Plenary Lecture 1: "X-ray diffractometry of Powder and Thin Films: Instrument				
12:45 pm	Operational Parameters" by				
	Prof. R G Sonkawade, Shivaji University, Kolhapur.				
12:45 – 2:00 pm	Lunch				
2:00 – 3:20 pm	Plenary Lecture 2: "Atomic Absorption Spectroscopy (AAS) & Inductively				
	Coupled Plasma (ICP) : Introduction, Instrumentation & Practical Aspects" by				
	Prof. K. Balakrishna, Department of Civil Engineering, MIT, Manipal.				
3:20 – 3:30 pm	Tea Break				
Lab sessions:	Lab 1: XRD	Lab 2: AAS	Lab 3: ICP		
3:30 – 4:15 pm	Group A	Group B	Group C		
4:15 – 5:00 pm	Group B	Group C	Group A		
5:00 – 5:45 pm	Group C	Group A	Group B		
7:30 – 9:00 pm		Dinner			

Day 2 : 06-01- 01 Floor, AB5, M	2023, Fri IT)	day (Venue: LH	08, LG -	Day 3 : 07-01 01 Floor, AB5, M	2023, Sa IIT)	turday (Venue	: LH 08, LG -
8:15 - 9:15 am	Breakfast		8:15 - 9:15 am	Breakfast			
9:30 - 11:00 am	Plenary Lecture 3: "X-ray Photoelectron Spectroscopy: A Surface Sensitive Technique and its operational parameters" by Dr. Maqsood Waikar, Shivaji University, Kolhapur		9:30 - 11:00 am	Plenary Lecture 5: "Transmission Electron Microscope: Instrument Operational Parameters and use of I-STEM", by Prof. R G Sonkawade, Shivaji University, Kolhapur.			
11:00 – 11:15 am	Tea Break			11:00 – 11:15 am	Tea Break		
11:15 am – 12:45 pm	Plenary Lecture 4: "Laser spectroscopic instrumentation and its applications" by Dr. Unnikrishnan V K, Department of Atomic and Molecular Physics, Manipal.		11:15 am – 12:45 pm	Plenary Lecture 6: "Principle and variants of sputtering techniques for preparation of thin films" by Dr. Dhananjaya Kekuda, Department of Physics, MIT, Manipal.			
12:45 – 2:00 pm	Lunch		12:45 – 2:00 PM	Lunch			
Lab sessions:	Lab 4: UV- Vis	Lab 5: Profilometer	Lab 6: Laser lab	Lab sessions:	Lab 7: AFM	Lab 8: Impedance Analyzer	Lab 9: DC/RF sputtering
2:00 – 3:05 pm	А	В	С	2:00 – 3:05 pm	A	В	C
3:05 – 4:10 pm	В	C	А	3:05 – 4:10 pm	В	С	А
4:10 – 4:25 pm	Tea Break		4:10 – 4:25 pm	Tea Break			
4:25 - 5:30 pm	C	A	В	4:25 – 5:30 pm	C	А	В
7:30 – 9:00 pm	Dinner			7:30 – 9:00 pm	Dinner		

1 1

Г

Day 4: 08-01-2023, Sunday (Venue: LH 08, LG -01 Floor, AB5, MIT)			
8:15 - 9:15 am	Breakfast		
9:30 - 11:00 am	Plenary Lecture 7: "Introduction, Instrumentation & Practical Aspects of Impedance Analyzer" by Dr. Ismayil, Department of Physics, MIT, Manipal.		
11:00 – 11:15 am	Tea Break		
11:15 am – 12:45 pm	Plenary Lecture 8: "Application of Atomic Force Microscopy (AFM) in Scientific Research" by Dr. Vishwanath Managuli, Department of Mechanical & Industrial Engineering, MIT, Manipal.		
12:45 pm – 2:00 pm	Lunch		
2:00 pm – 3:00 pm	Visit to Dr. TMA Pai Planetarium and MAP Museum, Manipal		
3:00 pm – 5:30 pm	Excursion to Light House, Kaup		
7:30 pm – 9:00 pm	Dinner		

Day 5: 09-01-2023, Monday (Venue: LH 08, LG -01 Floor, AB5, MIT)				
8:15 - 9:15 am	Breakfast			
9:30 - 11:00 am	Plenary Lecture 9: "NMR Spectroscopy: Principles, Instrumentation & Practical Aspects" by Dr. Sankeerth Hebbar, Principal, Kumaraswamy P U College, Subrahmanya.			
11:00 – 11:15 am	Tea Break			
11:15 am – 12:45 pm	Plenary Lecture 10: "Working principle and applications of FTIR & DSC/TGA" by Dr. Srinivasulu M, Department of Chemistry, MIT, Manipal.			
12:45 – 2:00 PM	Lunch			
Lab sessions:	Lab 10: NMR	Lab 11: FTIR	Lab 12: DSC/TGA	
2:00 – 3:05 pm	А	В	С	
3:05 – 4:10 pm	В	С	А	
4:10 – 4:25 pm	Tea Break			
4:25 – 5:30 pm	С	А	В	
7:30 – 9:00 pm	Dinner			

Day 6 : 10-01-2023, Tuesday (Venue: LH 08, LG - 01 Floor, AB5, MIT)				
8:15 - 9:15 am	Breakfast			
9:30 - 11:00 am	Plenary Lecture 11: "Scanning Electron Microscopy (SEM): An Introduction, Instrumentation & Practical Aspects", by Mr. Satya Srinivas. B, Application Specialist, Carl Zeiss India Pvt. Ltd., Bangalore.			
11:00 – 11:15 am	Tea Break			
11:15 am – 12:45 pm	Plenary Lecture 12: "Thin film fabrication using thermal evaporation, Spray Pyrolysis, Spin Coating method" by Dr. Gurumurthy S C, Department of Physics, MIT, Manipal.			
12:45 – 2:00 PM	Lunch			
Lab sessions:	Lab 13: SEM	Lab 14: PL	Lab 15: Thermal evaporation	
2:00 – 3:05 pm	А	В	С	
3:05 – 4:10 pm	В	С	А	
4:10 – 4:25 pm	Tea Break			
4:25 – 5:30 pm	С	A	В	
7:30 – 9:00 pm	Dinner			

Day 7: 11-01-2023, Wednesday (Venue: LH 08, LG -01 Floor, AB5, MIT)				
8:15 - 9:15 am	Breakfast			
9:30 - 11:00 am	Plenary Lecture 13:			
	"Applications of electrochemical workstation" by Dr. Sudhakar Y N, Department of Chemistry, MIT, Manipal			
11:00 – 11:15 am	Tea Break			
11:15 am – 12:45 pm	Plenary Lecture 14: "Applications of Hall Effect, Seebeck Effect and Resistivity measurements in Scientific Research" by Dr. Shyam Prasad K, Department of Physics, NMAM Institute of Technology, Nitte.			
12:45 – 2:00 PM	Lunch			
Lab sessions:	Lab 16: Electrochemical workstation	Lab 17: Hall Effect, Seebeck Effect	Lab 18: Resistivity measurements	
2:00 – 2:45 pm	А	В	С	
2:45 – 3:30 pm	В	С	А	
3:30 - 4:15 pm	C	А	В	
4:15 – 4:30 pm	Tea Break			
4:30 – 5:30 pm	Valedictory Program (Feedback Session, Certificate Distribution) (Venue: Sir M V Seminar Hall, AB-2, MIT, Manipal)			

INAUGURATION

Date: 5th January 2023, Thursday at 9:30 AM Venue: Sir M V Seminar Hall, AB-2, MIT, Manipal

President: Cdr. (Dr.) Anil Rana, Director, MIT, Manipal
Chief Guest: Dr. Vinod V. Thomas, Registrar Evaluation, MAHE, Manipal
Guest of Honour: Prof. R. G. Sonkawade, PMU Coordinator, STUTI Program, Shivaji University, Kolhapur, Maharashtra.



GROUP PHOTO





Day 1:05-01-2023, Thursday



Lecture 1: "X-ray diffractometry of Powder and Thin Films: Instrument Operational Parameters" by Prof. R G Sonkawade, Shivaji University, Kolhapur.



Lecture 2: "Atomic Absorption Spectroscopy (AAS) & Inductively Coupled Plasma (ICP) : Introduction, Instrumentation & Practical Aspects" by Prof. K. Balakrishna, Department of Civil Engineering, MIT, Manipal.

Hands on Training:

XRD, AAS and ICP







Day 2 : 06-01-2023, Friday



Lecture 3: "X-ray Photoelectron Spectroscopy: A Surface Sensitive Technique and its operational parameters" by Dr. Maqsood Waikar, Shivaji University, Kolhapur.



Lecture 4: "Laser spectroscopic instrumentation and its applications" by Dr. Unnikrishnan V K, Department of Atomic and Molecular Physics, MAHE, Manipal.

Hands on Training:

UV-Vis Spectrometer and Profilometer.





Day 3 : 07-01-2023, Saturday



Lecture 5: "Transmission Electron Microscope: Instrument Operational Parameters and use of I-STEM", by Prof. R G Sonkawade, Shivaji University, Kolhapur.



Lecture 6: "Principle and variants of sputtering techniques for preparation of thin films" by Dr. Dhananjaya Kekuda, Department of Physics, MIT, Manipal.

Hands on Training:

AFM, Impedance Analyzer and DC/RF sputtering



Day 4:08-01-2023, Sunday



Lecture 7: "Introduction, Instrumentation & Practical Aspects of Impedance Analyzer" by Dr. Ismayil, Department of Physics, MIT, Manipal.



Lecture 8: "Application of Atomic Force Microscopy (AFM) in Scientific Research" by Dr. Vishwanath Managuli, Department of Mechanical & Industrial Engineering, MIT, Manipal.



Visit to Dr. TMA Pai Planetarium, Manipal

Excursion to Light House, Kaup

Day 5 : 09-01-2023, Monday



Lecture 9: "NMR Spectroscopy: Principles, Instrumentation & Practical Aspects" by Dr. Sankeerth Hebbar, Principal, Kumaraswamy P U College, Subrahmanya.

Lecture 10: "Working principle and applications of FTIR & DSC/TGA" by Dr. Srinivasulu M, Department of Chemistry, MIT, Manipal.

Hands on Training:

NMR, FTIR and DSC/TGA







Day 6 : 10-01-2023, Tuesday



Lecture 11: "Scanning Electron Microscopy (SEM): An Introduction, Instrumentation & Practical Aspects", by Mr. Satya Srinivas. B, Application Specialist, Carl Zeiss India Pvt. Ltd., Bangalore.



Lecture 12: "Thin film fabrication using thermal evaporation, Spray Pyrolysis, Spin Coating method" by Dr. Gurumurthy S C, Department of Physics, MIT, Manipal.

Hands on Training:

SEM, PL, Thermal evaporation, Spray pyrolysis and Spin coating set up.



Day 7 : 11-01-2023, Wednesday



Lecture 13: "Applications of electrochemical workstation" by Dr. Sudhakar Y N, Department of Chemistry, MIT, Manipal



Lecture 14: "Applications of Hall Effect, Seebeck Effect and Resistivity measurements in Scientific Research" by Dr. Shyam Prasad K, Department of Physics, NMAM Institute of Technology, Nitte.

Hands on Training:

Electrochemical workstation, Hall Effect, Seebeck Effect and Resistivity measurements





CULTURAL PROGRAM

Date: 07-01-2023 Venue: Amphitheatre, FC2, MIT, Manipal





VALEDICTORY FUNCTION

Date: 11th January 2023, Wednesday at 4:00 PM Venue: Sir M V Seminar Hall, AB-2, MIT, Manipal

President: Dr. Somashekara Bhat, Joint Director, MIT, ManipalChief Guest: Dr. Ashok Rao, Associate Director (R & C), MIT, Manipal



MEDIA COVERAGE

UDAYAVANI January 4, 2023

ಎಂಐಟಿಯಲ್ಲಿ ಇಂದಿನಿಂದ ಸಂಶೋಧಕರಿಗೆ ತರಬೇತಿ

ಮಣಿಪಾಲ, ಜಿ. 4: ಎಂಐಟಿಯು ಮಹಾರಾಷ್ಟ್ರದ ಕೋಲ್ಹಾಪುರದ ಶಿವಾಜಿ ವಿಶ್ವವಿದ್ಯಾಲಯದ ಸಹಯೋಗದಲ್ಲಿ ಒಂದು ವಾರದ ಮೆಟರಿಯಲ್ ಕ್ಯಾರೆಕ್ಟರೈಜೇಶನ್ ಟೆಕ್ನಿಕ್ಸ್ ತರಬೇತಿಯು ಸಿನರ್ಜಿಸ್ಟಿಕ್ ತರಬೇತಿ ಕಾರ್ಯಕ್ರಮ (ಎಸ್ಟಿಯುಟಿಐ)ದಡಿಯಲ್ಲಿ ಜ. 5ರಿಂದ ಆರಂಭವಾಗಲಿದೆ.

ಈ ಕಾರ್ಯಕ್ರಮವು ಕೇಂದ್ರ ಸರಕಾರದ ವಿಜ್ಞಾನ ಮತ್ತು ತಂತ್ರಜ್ಞಾನ ಇಲಾಖೆ ಹಾಗೂ ಸಚಿವಾಲಯದ ಪ್ರಾಯೋಜಕತ್ವದಲ್ಲಿ ನಡೆಯಲಿದೆ. ದೇಶದ ವಿವಿಧ ಸಂಸ್ಥೆಗಳಲ್ಲಿ ಸಕ್ರಿಯವಾಗಿ ಸಂಶೋಧನೆಯಲ್ಲಿ ತೊಡಗಿರುವ ವಿಜ್ಞಾನಿಗಳು, ಪ್ರಾಧ್ಯಾಪಕರು, ಪಿಎಚ್.ಡಿ. ಮಾಡುತ್ತಿರುವವರು, ಪಿಡಿಎಫ್ ಸಂಶೋಧನಾರ್ಥಿಗಳಿಗೆ ವಿವಿಧ ಆಧುನಿಕ ವೈಜ್ಞಾನಿಕ ಉಪಕರಣಗಳ ಕುರಿತು ತರಬೇತಿ ನೀಡುವುದು ಇದರ ಉದ್ದೇಶವಾಗಿದೆ.

ಕಾರ್ಯಕ್ರಮದ ಉದ್ಘಾಟಿನೆಯಲ್ಲಿ ಎಂಐಟಿ ನಿರ್ದೇಶಕ ಕೆ। ಡಾ। ಅನಿಲ್ ರಾಣ ಅಧ್ಯಕ್ಷತೆ ವಹಿಸಲಿದ್ದಾರೆ. ಶಿವಾಜಿ ವಿ.ವಿ.ಯ ಪ್ರೊ। ಆರ್.ಜಿ. ಸೋಂಕವಾಡೆ, ಮಾಹೆ ವಿ.ವಿ. ಮೌಲ್ಯಮಾಪನ ಕುಲಸಚಿವ ಡಾ। ವಿನೋದ್ ಥಾಮಸ್ ಮೊದಲಾದವರು ಭಾಗವಹಿಸಲಿದ್ದಾರೆ. ಕರ್ನಾಟಕ, ಮಹಾರಾಷ್ಟ್ರ ಕೇರಳ, ತಮಿಳುನಾಡು, ಅಸ್ಸಾಂ, ಆಂಧ್ರ ಪ್ರದೇಶ ಸಹಿತ ದೇಶದ ವಿವಿಧ ಭಾಗಗಳಿಂದ ಸಂಶೋಧನಾರ್ಥಿಗಳು ಈ ತರಬೇತಿಯಲ್ಲಿ ಪಾಲ್ಗೊಳ್ಳಲಿದ್ದಾರೆ. ಪ್ರೊ! ಕೆ. ಮೋಹನ್ ರಾವ್, ಪ್ರೊ! ಸುಮಾ ಎ. ರಾವ್, ಸಂಚಾಲಕರಾಗಿ ಹಾಗೂ ಡಾ। ಇಸ್ಮಾಯಿಲ್, ಡಾ। ಗುರುಮೂರ್ತಿ ಎಸ್.ಸಿ., ಡಾ। ಸುಧಾಕರ್ ವೈ. ಎನ್. ಕಾರ್ಯಕ್ರಮ ಸಂಯೋಜಿಸಲಿದ್ದಾರೆ ಎಂದು ಪ್ರಕಟನೆ ತಿಳಿಸಿದೆ.

https://www.daijiworld.com/news/newsDisplay?newsID=1039569

