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

September 26 - October 2, 2022

Organized by: BITS-Pilani, K.K. Birla GoaCampus
Supported by: Department of Science and Technology, Ministry of Science and Technology, Government of India, New Delhi.
In collaboration with: Shivaji University, Kolhapur, Maharashtra

About BITS Pilani, Goa Campus:

Birla Institute of Technology and Science, Pilani is a private deemed to be university established under sec 3 of UGC in 1964. It has 5 campuses located in Pilani, Goa, Dubai, Hyderabad and Mumbai: It is declared an Institute of eminence by Min. of Education GOI in 2018. BITS Pilani KK Birla Goa Campus was established in 2004. It has 10 departments. The total faculty strength is 200+, and 360+ PhD students are pursuing their research. The campus has grown significantly in Sponsored research with 120+ ongoing projects. The campus has received funding from various national and international agencies from Govt and Industry.7 Departments have received FIST support from DST. The campus has also been funded under DBT BUILDER scheme, a BIRAC supported BioNEST incubator and BITS BioCyTiH Foundation (a technology innovation hub under NMICPS- DST). The Institute is committed to generating, disseminating, and preserving knowledge, and to working with others to bring this knowledge to bear on the world's great challenges. BITS is dedicated to providing its students with an education that combines rigorous academic study and the excitement of discovery with the support and intellectual stimulation of a diverse campus community.

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 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, 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 fourth 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.

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 get acquainted with the sophisticated instruments and characterization tools to design and implement appropriate strategies for research work .

Course Contents:

The main theme of this training program is to create awareness regarding the sophisticated instruments/ softwares/experimental set-ups such as PPMS, Confocal microscope, Flow cytometry, AFM, IC, BET, COMSOL multiphysics, Fluid bed technology etc. The training program includes theory lectures (2 lectures/day) as well as Demonstration/Hands on Training on the sophisticated instruments throughout the program. See the next page for details of the topics and the resource persons for the same.

Eligibility:

- Participants should be Indian Citizen.
- Assistant/Associate Professors/Professors/Scientists/Post Doc. Fellows/ Ph.D. Fellow and /or B. Tech. students who are actively involved in the field of basic or allied sciences or engineering.
- Industry professionals who are actively involved in R&D.

Registration Procedure:

- Interested candidates have to fill the online form on or before (31/08/2022).
- Candidates will be selected according to eligibility and available seats. The confirmation of selection will be communicated to the selected candidates on (08/09/2022) by email.

General Information:

- Registration Kit, Course material and Certificate of participation will be provided to the participants.
- Local Hospitality (accommodation & Meal) will be provided. The train fare (as per actuals) by shortest route will be reimbursed to the selected outstation participants. Participants are encouraged to bring their samples if any, for hands on analysis during the program.

The Focus Instruments of the Program:

- ✦Physical property measurement system (PPMS)
- ✦Confocal microscope
- ✦Atomic Force Microscope (AFM)
- ✦Ion Chromatograph (IC)
- ✦Surface area analyzer (BET)
- ✦Flow Cytometry (FACS)
- ✦Rheometer
- ✦Total Organic Carbon (TOC) analyser
- ✦UV-Spectrophotometer
- ✦FMCW Reflectometer
- ✦Differential Scanning Calorimetry (DSC) and Thermogravimetric Analysis(TGA)

A tour of the central sophisticated instrument facility (CSIF), BITS-Pilani, K K Birla Goa campus that hosts:

Field Emission Scanning Electron Microscope (FESEM), Liquid Chromatography - Mass Spectrometry (LCMS), Confocal microscope, Raman Spectrometer, X-ray Diffractometer, Nuclear Magnetic Resonance (NMR) spectrometer, Nano Particle Analyzer & Autotitrator, Sputter coater, Critical Point Drying, Ultramicrotome, Tissue processor.

Contact Us: Program Coordinator
Emergency contact: +919422442750

Schedule

Day 1 (26th September 2022, Monday)	
9:00 AM – 9:45 AM	Registration near DLT10
Lecture Sessions, Venue: DLT10	
Chairperson: Prof. R. G. Sonkawade, Shivaji University, Kolhapur	
9:45 AM-10:45 AM	Lecture 1: A Walk Through CSIF, BPGC: The Instruments, their working principles, and applications by *Dr. Raviprasad Aduri*, BITS Pilani, K K Birla Goa campus, Goa
10:45 AM-11:15 AM	Tea & Interactive session
11:15 AM - 12:15 PM	Lecture 2: Chem-Lecture -1: Fundamentals & Application of Atomic Force Microscopy by *Prof. Sunil Bhand*, BITS Pilani, K K Birla Goa campus, Goa
Inauguration at DLT9	
12:30 PM onwards	Inauguration
1:00 PM – 2:00 PM	Lunch in 'D' Mess
2:00 PM-4:30 PM	Visit to CSIF (FESEM, LCMS, Confocal Microscope, Raman Spectrometer, XRD and NMR)
4:30 PM – 5:00 PM	Tea
5:00 PM – 5:30 PM	Participants Introduction at DLT 10
Day 2 (27th September 2022, Tuesday)	
Lecture Sessions, Venue: DLT10	
Chairperson: Prof. Meenal Kowshik, Department of Biological Sciences, BITS Pilani, K K Birla Goa campus, Goa	
9:00 AM -10:15 AM	Lecture-1: X-ray Photoelectron Spectroscopy with instrumentation parameters by Prof. R. G. Sonkawade, Shivaji University, Kolhapur
10:15 AM– 11:05 AM	Bio Lecture -1: Basics of Flow Cytometry; DNA content measurements of cells by *Prof. Anasuya Ganguly*, BITS Pilani, K K Birla Goa campus, Goa.
11:05 AM-11:20 AM	Tea & Interactive session
Chairperson: Prof. Dibakar Chakrabarty, Department of Biological Sciences, BITS Pilani, K K Birla Goa campus, Goa	
11:20 AM – 12:10 PM	Bio Lecture – 2: Applications of Flow cytometry: from health to environment by *Prof. Arnab Banerjee*, BITS Pilani, K K Birla Goa campus, Goa.
12:10 PM – 01:00 PM	EEE Lecture – 1: High-speed Data Acquisition and Processing Systems for Radar Applications: FMCW Reflectometer by *Prof Amalin Prince A*, BITS Pilani, K K Birla Goa campus, Goa.

1:00 PM – 2:00 PM	Lunch
Demo/Hands-on Sessions, Venue: Room No-C112	
2:00 PM-5:30 PM	Demo/Hands-on session by Department of Biological Sciences on Data Acquisition and Analysis of biological cells in a Flow Cytometer (C112-Advanced Bio Laboratory)
4:30 PM – 5:00 PM	Tea near LT1
Day 3 (28th September 2022, Wednesday)	
Lecture Sessions, Venue: DLT10	
Chairperson: Prof. Srinivas Krishnaswamy, Department of Chemical Engineering, BITS Pilani, K K Birla Goa campus, Goa	
9:00 AM – 10:15 AM	Lecture-2: Analysis of materials using Sophisticated Instruments at SAIF facility and use of I-STEM by *Prof. R. G. Sonkawade*, Shivaji University, Kolhapur
10:15 AM– 11:05 AM	Chem-Lecture – 2: Surface Area Analysis: Fundamentals and Applications by *Dr. K. P. Jayadevan*, BITS Pilani, K K Birla Goa campus, Goa.
11:05 AM-11:20 AM	Tea & Interactive session
Chairperson: Prof. Halan Prakash, Department of Chemistry, BITS Pilani, K K Birla Goa campus, Goa	
11:20 AM – 12:10 PM	Chem-Lecture – 3: Fundamentals and Applications of Ion Chromatography by *Dr. V. Kiran*, BITS Pilani, K K Birla Goa campus, Goa.
12:10 PM – 01:00 PM	Chem-Lecture – 4: Applications of Atomic Force Microscopy by *Dr. Subhasish Roy*, BITS Pilani, K K Birla Goa Campus, Goa.
1:00 PM – 2:00 PM	Lunch
Demo/Hands-on Sessions, Venue: Room No-C207 & C114	
2:00 PM-5:30 PM	Demo/Hand-on sessions on • Atomic force microscope (C207-IMA lab) • Ion Chromatograph (C207-IMA lab) • BET surface area analyzer (C114) by Department of Chemistry
5:30 PM – 6:00 PM	Tea
Day 4 (29th September 2022, Thursday)	
Lecture Sessions, Venue: DLT10	
Chairperson: Prof. G. Karthikeyan, Department of Mechanical Engineering, BITS Pilani, K K Birla Goa campus, Goa	
9:00 AM – 10:15 AM	ChemEngg-Lecture -1: Introduction to Computational Fluid Dynamics using COMSOL multiphysics by *Dr. Amol Deshpande*, BITS Pilani, K K Birla Goa campus, Goa.

10:15 AM– 11:30 AM	ChemEngg -Lecture– 2: Modelling and Simulations for Engineers and Scientists by *Prof. Srinivas Krishnaswamy*, BITS Pilani, K K Birla Goa campus, Goa.
11:30 AM-11:45 AM	Tea & Interactive session
11:45 AM – 1:00 PM	MechEngg Lecture -1: Polymer processing and Characterization of Mechanical Properties by *Prof. Sachin D. Waigonkar*, BITS Pilani, K K Birla Goa campus, Goa.
1:00 PM – 2:00 PM	Lunch
Demo/Hands-on Sessions, Venue: Room No-A103 & A105	
2:00 PM-5:30 PM	Demo sessions on • Thermogravimetric analysis (TGA) • Total organic carbon (TOC) • UV-Vis spectrophotometer • Rheometer and COMSOL Room No.: A104 & A106
5:30 PM – 6:00 PM	Tea
Day 5 (30th September 2022, Friday)	
Lecture Sessions, Venue: DLT10	
Chairperson: Prof. Abhijit Pethe and Prof. K. R. Anupama, Department of Electrical and Electronics Engineering, BITS Pilani, K K Birla Goa campus, Goa	
9:00 AM – 10:15 AM	Phys-Lecture – 1: Measurement of magnetic and electrical properties of materials at low temperatures using Physical property measurement system or PPMS by *Prof. Ram Shanker Patel*, BITS Pilani, K K Birla Goa campus, Goa.
10:15 AM– 11:30 AM	MechEngg Lecture– 2: Fluidized Bed Technology working principle and its applicability by *Prof. Ranjit. S. Patil*, BITS Pilani, K K Birla Goa campus, Goa.
11:30 AM-11:45 AM	Tea & Interactive session
11:45 AM – 1:00 PM	EEE-Lecture – 2: Underwater Networks by *Dr. Sarang C Dhongdi*, BITS Pilani, K K Birla Goa campus, Goa.
1:00 PM – 2:00 PM	Lunch
Demo/Hands-on Sessions, Venue: Mechanical Engineering Workshop	
2:00 PM-5:30 PM	Demo/Hand-on sessions at **Workshop** by • Fluidized Bed Technology working principle and its applicability by *Prof. Ranjit. S. Patil* • Polymer processing and Characterization of Mechanical Properties by *Prof. Sachin D. Waigonkar* • Piezo based SHM and Intro to Smart Materials by *Dr. Devendra G Patil*
5:30 PM – 6:00 PM	Tea

Day 6 (1st October 2022) SATURDAY	
Lecture Sessions, Venue: DLT10	
Chairperson: Prof. Radhika Vathsan, Department of Physics, BITS Pilani, K K Birla Goa campus, Goa	
9:00 AM – 10:15 AM	Phys-Lecture-2: Imaging biomaterials using confocal microscopy and associated optics by *Dr. Indrani Chakraborty*, BITS Pilani, K K Birla Goa campus, Goa.
10:15 AM– 10:30 AM	Tea & Interaction
Demo/Hands-on Sessions, Venue: Room No- D240 & D236	
10:30 AM-2:00 PM	Demo/Hands-on sessions on • Physical Property Measurement Systems (PPMS) by *Prof. Ram Shankar Patel* • Confocal Microscope by *Dr. Indrani Chakraborty* by Department of Physics
2:00 PM – 3:00 PM	Lunch
3:00 PM onwards	**Closing Ceremony, Venue: DLT10**
Day 7 (2nd October 2022) SUNDAY	
Excursion	

Inauguration

Chief guest: Dr. Pramod Sawant, Chief Minister, Goa

Chairperson: Prof. R. G. Sonkawade, Shivaji University, Kolhapur

Program Co-ordinator: Dr. Meenal Kowshik, Professor, BITS Goa.

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, Kolhapur, Maharashtra.
Dr. PRAMOD SAWANT
Prof. SUMAN KUNDU

Lecture

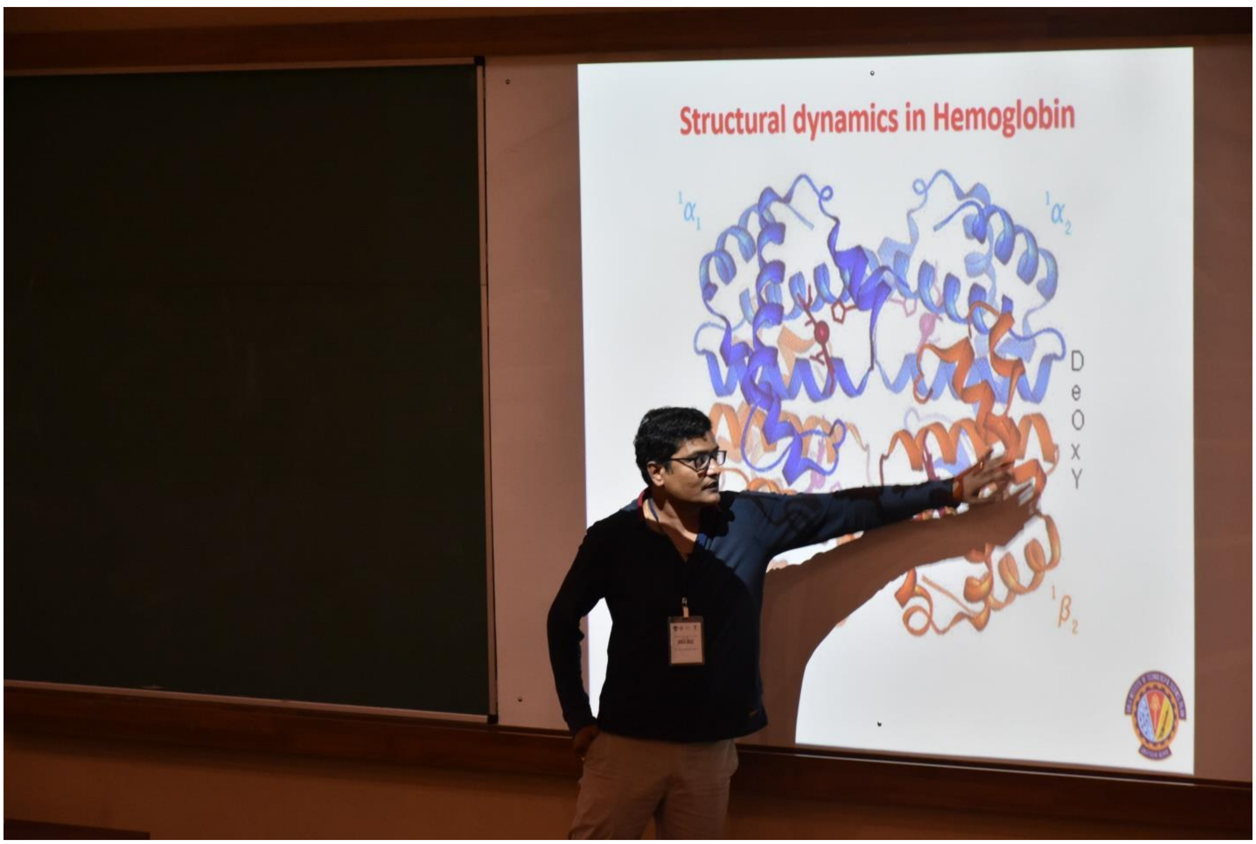
Prof. R. G. Sonkawade, Shivaji University, Kolhapur

Dr. Arnab Banerjee, BITS Pilani K. K. Birla Goa Campus

Dr. Anasuya Ganguly, BITS Pilani K. K. Birla Goa Campus

Prof. R G Sonkawade, Shivaji University Kolhapur

Dr. A. Amalin Prince, BITS Pilani K. K. Birla Goa Campus



Dr. Sunil Bhand, BITS Pilani K. K. Birla Goa Campus

Dr. Raviprasad Aduri, BITS Pilani K. K. Birla Goa Campus

Dr. Srinivs Krishnaswamy, BITS Pilani K. K. Birla Goa Campus

Dr. Kiran Venkayala, BITS Pilani K. K. Birla Goa Campus

Dr. Subhashish Roy, BITS Pilani K. K. Birla Goa Campus

Dr. Sharad Sontakke, BITS Pilani K. K. Birla Goa Campus

Dr. Jayadevan KP, BITS Pilani K. K. Birla Goa Campus

Dr.Halan Prakash, BITS Pilani K. K. Birla Goa Campus

Hands on Training


ESCO

Excursion Tour