Hands-on Training

on

High-End Scientific Equipment

7th – 13th February 2023

काशी हिन्दू विश्वविद्यालय BANARAS HINDU UNIVERSITY

Organized by:

Sophisticated Analytical and Technical Help Institute (SATHI),
Banaras Hindu University, Varanasi

Funded by:

Science & Engineering Research Board (SERB), Department of Science & Technology (DST) under the Accelerate Vigyan Scheme

Chief Patrons

Prof. Sudhir K. Jain, VC, BHU, Varanasi
Prof. Vijay K. Shukla, Rector, BHU, Varanasi

Advisory Board

Prof. Anil K. Tripathi,
Coordinator, SATHI-BHU,
Director, Institute of Science, BHU, Varanasi
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Dean, Institute of Science, BHU, Varanasi
Prof. M. S. Singh
Coordinator, CDC,
Head, Department of Chemistry,
Institute of Science, BHU, Varanasi

About the Institute

The Banaras Hindu University campus is among the world's largest residential universities with over 27000 graduate and post graduate students, over 5000 Research scholars and 2200 serving faculty members. The campus is spread over 1300 acres at Varanasi and 2700 acres in its South campus at Barkaccha, Mirzapur. It was established in the year 1916 jointly by the Maharaja of Darbhanga Rameshwar Singh, Maharaja of Banaras Prabhu Narayan Singh, Madan Mohan Malaviya, Sunder Lal and British Theosophist and Home Rule League founder Annie Besant. With over 30,000 students residing on campus, it is the largest residential university in Asia. The Banaras Hindu University is among the world's largest residential universities, comprising 6 institutes, 16 faculties, 140 departments, many centers of advanced studies, 05 interdisciplinary schools with a vast knowledgebase. The Banaras Hindu University has been given the status of Institution of Eminence (IoE) by the Ministry of Human Resource and Development, Government of India in September 2019. The Vision of University is to develops several technologies as well as technological leads and generates patents. These will require dedicated start-ups for translating them into technologies for products, processes and services and make it available for society.

Objective of the Course

- As desired by DST-SERB **KARYASHALA,** the course is intended towards **"Abhyaas"** mission.
- Innovative design for Hands-on Training on **High-End Scientific Equipment**.
- Necessity to create benchmarks that would identify High-End Scientific Equipment presence around us.
- Capacity building of Scientists, Young Faculty Members, Active Researchers and PhD. students to become an active users of **High-End Scientific Equipment** created by DST, GoI.

About the Course

This course will be conducted under Accelerate Vigyan scheme intended towards **"Abhyaas"** mission program of Science and Engineering Research Board, Department of Science and Technology, Government of India.

The workshop will include Series of Lecture on High-End Scientific Equipment such as Photoacoustic Imaging Platform, Laser Ablation (Femtosecond) Combustion Gas Chromatography - High Resolution – Isotope Ratio Mass Spectrometry (LA-CGC-HR-IRMS), High Resolution – Nuclear Magnetic Resonance (HR-NMR- 600) with Solid State facility, Solar Simulator, Fuel Cell and Electrochemical Workstation etc. followed by Hands-on training modules. Participants from academic institutions (Scientists / Young Faculty Members, Active Researchers and PhD students from universities and colleges) from all over the country are encouraged to apply.

The course shall be conducted through physical mode only.

Target Participants

Motivated Scientists / Young Faculty Members, Active Researchers and PhD students from **Tier-II & Tier-III** level institutes as defined under the Scheme 'Accelerate Vigyan' by DST-SERB.

Convener / Event Organizer

Prof. Anil K. Tripathi,
Coordinator, SATHI-BHU,
Director, Institute of Science, BHU, Varanasi
Email: sathi-bhu@bhu.ac.in

Event Co-Organizers

Mr. Saikat Sen, COO, SATHI-BHU

Dr. Pubali Adikari, PPA, SATHI-BHU

Dr. Vivek K. Pandey, PPA, SATHI-BHU

Dr. Vivek K. Maurya, SPA, SATHI-BHU

Mr. Adarsh K. Pandey, SPA, SATHI-BHU

About the Department

The Department of Science and Technology (DST) is setting up a shared, professionally managed, Science and Technology (S&T) infrastructure facility, which can be readily be accessible to academia, start-ups, manufacturing units, industries and R&D Labs. Such S&T infrastructure will be known as Sophisticated Analytical & Technical Help Institute (SATHI). These centers are equipped with major analytical instruments and advanced manufacturing facilities, which are usually not available at Institutes/Organizations. The aim is to provide professionally managed services with efficiency, accessibility and transparency of highest order under one roof to service the demands of industry, start-ups and academia. In the first phase SATHI facilities are being located at IIT-Delhi, IIT-Kharagpur and BHU-Varanasi (https://sathibhu.org/). This effort is expected to reach out much needed less endowed organizations like MSMEs, Start-ups, State Universities and Colleges fostering a strong culture of research collaboration between institutions and across disciplines to take advantage of developments, innovations and expertise in diverse areas. Largely this scheme is focusing at (a) procurement and maintenance of high-end equipment and infrastructure facility necessary for research/testing/manufacturing/fabrication. To cater service by understanding the demands of researchers, scientists, students, start-ups, manufacturing units, industries and R&D labs, (b) providing access and sharing of scientific equipment and infrastructure, (c) capacity building of operators and technicians for efficient operations and interpretations of results/outcome, (d) monitoring of usage of expensive scientific research infrastructure for maximum utilization of infrastructure management with efficient operations and to be a part of 'Atmanirbhar Bharat Abhiyan' (Self Reliant India Campaign). Inclusive purpose of SATHI is generation/creation of knowledge adopting best practices of such facility, expansion of different knowledge chain that starts from R&D to applied science then to translational research side and how to take forward to next stage to gain better societal outreach. Perceptibly, this would encourage & ensure to create a National Network of Laboratories and testing facilities, tightly linked to global standards. Hence higher efficacy through (T2C2) focused Viz: Technology, Testing, Certification & Compliance, approach through SATHI will boost-up the manufacturing clusters/industries. SATHI facilities will be used for 80% of their available time by external users i.e. outside of the host institutes and rest 20% of available time for internal users of the host institute. The usage of the facility will be guided by the basic principle of maximum and effective utilization and accessibility to all. The facilities provided by the SATHI may be utilized by any user/organization on payment of nominal charges.

Accommodation and Food

Refreshments/Lunch, Dinner, Accommodation and workshop kit will be provided to all participants and will grant TA as per SERB norms. Outstation participant will be provided third AC ticket fare reimbursement or maximum Rs 4000 round trip (by shortest route). All other expenses have to be managed by the participants.

Eligibility Criteria and Registration and Guidelines

- Candidates pursuing PhD in any discipline of Science/ Engineering/ Technology.
- Interested participants are required to register free of cost online by using the following link given below:
- https://forms.gle/rV5FSbKVsJwZXuAGA
- Shortlisted/selected candidates are required to pay registration fee of Rs **2000/- + 18 % GST** on **07-02-2023 (1st Day of Training at SATHI-BHU)** and They have to provide **NOC**, undertaking from the supervisor/ HOD of respective Department/Institution and certificate of higher degree qualification.
- **NOC format** will be shared with selected participants via email on or before 17-01-2023.
- **The participants will be limited to 25 candidates (as per SERB norms).**

Important Dates

- **Last date for Registration : 11-01-2023**
- **Last date of Notification to selected participants : 17-01-2023**

Karyashala Support Team

Mr. Shailendra Kumar, Technical Assistant, SATHI-BHU
Mr. Ashish Kumar Singh , Technical Assistant, SATHI-BHU
Mr. Ashishmani Sharma, Technical Assistant, SATHI-BHU
Mr. Shiv Prasad Patel, Technical Assistant, SATHI-BHU
Ms. Pooja Singh, Office Assistant, SATHI-BHU
Mr. Dileep Kumar, Lab Attendant, SATHI-BHU
Mr. Santosh Kumar Gupta, Lab Attendant, SATHI-BHU
Ms. Priyanka Yadav, Lab Attendant, SATHI-BHU
Mr. Virendra Kumar Maurya, Multi-Tasking Staff, SATHI-BHU
Mr. Abhishek Kumar, Multi-Tasking Staff, SATHI-BHU
Mr. Gaurav Singh, Multi-Tasking Staff, SATHI-BHU
Mr. Shree Prakash Pal, Multi-Tasking Staff, SATHI-BHU

Tentative Program Schedule

Tentative Schedule	10.30 am – 1.00 pm		1.30 pm-2.30 pm	2.30 pm – 5.30 pm	
	Tentative Topic		LUNCH	Tentative Topic	Speaker
Tentative Inaugural Session 3:30 pm to 4.30 pm (07-02-2023)					
Day -1 (07-02-2023)	Talk on Principles, Types & Applications of Photoacoustic Ultrasound Imaging Platform	Talk on Advance Applications – I of Photoacoustic Ultrasound Imaging Platform	LUNCH	Hands on Training on Photoacoustic Ultrasound Imaging Platform	Application Expert along with SATHI-BHU Team
Day -2 (08-02-2023)	Talk on Applications of Photoacoustic Ultrasound Imaging Platform	Talk on Advance Applications – II of Photoacoustic Ultrasound Imaging Platform		Hands on Training on Photoacoustic Ultrasound Imaging Platform	Application Expert along with SATHI-BHU Team
Day -3 (09-02-2023)	Talk on High Resolution – Isotope Ratio Mass Spectrometry (HR-IRMS): Principles, Types, and Applications	Nuclear Magnetic Resonance Spectroscopy (NMR) Spectroscopy: Principles, types, and applications		Hands on Training on HR-IRMS and Nuclear Magnetic Resonance Spectroscopy (HR-NMR- 600) / Photoacoustic Ultrasound Imaging Platform	Application Expert along with SATHI-BHU Team
Day -4 (10-02-2023)	Talk on High Resolution – Isotope Ratio Mass Spectrometry (HR-IRMS): Advance Applications	Nuclear Magnetic Resonance Spectroscopy (NMR) Spectroscopy: Advance Applications – I		Hands on Training on HR-IRMS and Nuclear Magnetic Resonance Spectroscopy (HR-NMR- 600) / Photoacoustic Ultrasound Imaging Platform	Application Expert along with SATHI-BHU Team
Day -5 (11-02-2023)	Nuclear Magnetic Resonance Spectroscopy (NMR) Spectroscopy: Principles, types, and applications	Nuclear Magnetic Resonance Spectroscopy (NMR) Spectroscopy: Applications – II		Hands on Training on HR-IRMS and Nuclear Magnetic Resonance Spectroscopy (HR-NMR- 600) / Photoacoustic Ultrasound Imaging Platform	Application Expert along with SATHI-BHU Team
Day -6	**12-02-2023 (Sunday) Field Visit and Sight Seen**				
Day -7 (13-07-2023)	Talk on Basics of Electrochemistry, Fuel Cell and Solar Cell and its Applications			Hands-on Training on Electrochemical Workstation, Fuel Cell and Solar Simulator	Application Expert along with SATHI-BHU Team
Tentative Valedictory Session: 3:30 pm to 4.30 pm (13-02-2023)					

High-End Scientific Equipment

Laser Ablation (Femtosecond) Combustion Gas Chromatography – High Resolution – Isotope Ratio Mass Spectrometry (LA-CGC-HR-IRMS)

Photoacoustic Imaging Platform

Solar Simulator, Fuel Cell and Electrochemical Workstation

High Resolution – Nuclear Magnetic Resonance (HR-NMR- 600) with Solid State facility