

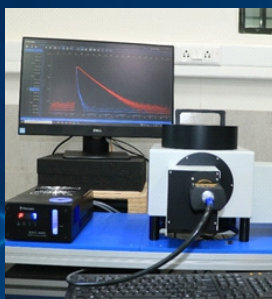
TRAINING ON

# MOLECULAR IMAGING & SPECTROSCOPY

Organized by:

INDIAN INSTITUTE OF TECHNOLOGY DELHI

11 July – 17 July 2022 | **REGISTER:** <https://bit.ly/3vnhWti>  
(Last date for Registration: : 05 July 2022)



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DEPARTMENT OF  
**SCIENCE & TECHNOLOGY**

Under

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

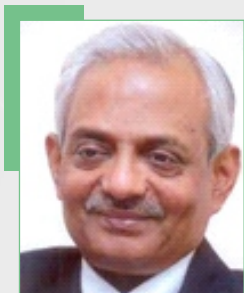
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+91 9289394650 | [dststuti@amity.edu](mailto:dststuti@amity.edu)

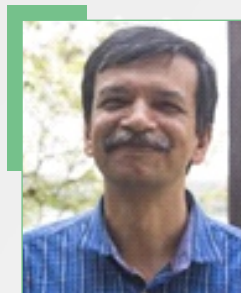
# ADVISORY TEAM

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Chancellor, Amity University Chhattisgarh,  
and Chair Professor for Life Sciences



**Prof. Rangan Bannerjee**

Director, IIT Delhi

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**Dr. V.K. Jain**

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Amity Institute of Advanced Research and  
Studies (Materials & Devices)  
Amity Institute of Renewable and  
Alternative Energy  
Amity University Noida



**Prof. Pankaj Srivastava**

SATHI Coordinator,  
Department of Physics  
IIT Delhi



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SATHI Co-Coordinator,  
Department of Chemistry  
IIT Delhi



**Dr. Kanchan Saxena**  
Dy. Director & Head  
Amity Institute of Renewable &  
Alternative Energy



**Prof. Ravikrishnan Elangovan**  
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Department of Bioengineering and  
Biotechnology  
IIT Delhi



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Faculty Coordinator,  
Department of Physics  
IIT Delhi



**Prof. Pramit K Chowdhury**  
Faculty Coordinator,  
Department of Chemistry  
IIT Delhi



**Dr. Abhishek Verma**  
Assistant Professor  
Amity University Noida



## AMITY - STUTI COORDINATORS



**Brig. R K Sharma**  
Director  
Amity Institute of Training  
& Development



**Shafali Kashyap**  
Assistant Director - Amity Foundation for  
Science Technology and Innovation Alliances  
Research Associate

## AMITY PMU - PROJECT MANAGEMENT TEAM



**Avinash Chauhan**  
Research Associate



**Harjinder Kaur**  
Project Assistant



**Digvijay Upraity**  
Project Staff





# ORGANIZERS

## INDIAN INSTITUTE OF TECHNOLOGY (IIT) DELHI

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The Indian Institute of Technology Delhi is one of the 23 IITs created to be Centres of Excellence for training, research and development in science, engineering and technology in India.

The Institute was established in the year 1961 and was later declared as an Institution of National Importance under the "Institutes of Technology (Amendment) Act, 1963" and was renamed as "Indian Institute of Technology Delhi". It was then accorded the status of a Deemed University with powers to decide its own academic policy, to conduct its own examinations, and to award its own degrees.

IIT Delhi was selected as an Institution of Eminence (IoE) by the Government of India in the year 2018. The Institute is known for its key contributions to the country's developmental challenges by virtue of having some of the best students and faculty in the country, proximity to the problems, and ability to interact with policy makers and civil society. The Institute has built a technology park on campus which will host industry labs, provide space for entrepreneur start-ups and facilitate the nurturing of innovative ideas, processes, technology, products, etc. In the QS World University Rankings for 2023, it is ranked 174 globally and number 3 in India.

# 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 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.







सत्यमेव जयते

# 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

The aim of this 7-day training is to equip participants with the basic knowledge different state-of-the-art optical microscopy and spectroscopy techniques. The participants will experience hands-on training on Confocal microscopy, Super-resolution microscopy (STED, SIM, PALM and STORM), Light sheet microscopy and Steady-state and Time resolved fluorescence. The training program, which will also be having simultaneous lecture and discussion sessions, will be carried out at the instrumentation facility of IIT Delhi (Sonipat Campus), wherein apart from the above ones, many modern equipments are also housed. The training will revolve around different kinds of imaging and spectroscopic techniques and accompanying data analyses. With increased focus on understanding cellular mechanisms, addressing different kinds of ailments and trying to combat the same through drug discovery, the techniques to be covered under this programme, starting from the basics of fluorescence and its application in varied forms of imaging, are essential to have a holistic view of modern day science and its far-reaching implications.

## OBJECTIVE OF PROGRAMME

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

- Enhancing awareness of use 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, 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 third class A/C train ticket or Deluxe Bus (only for outstation candidates/faculty) will be provided.**

Depending upon the availability in the IIT Delhi 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

## Equipment 1: STED (Stimulated Emission Depletion Microscope)

**Make and Model: Leica, Stellaris STED**

Spray pyrolysis is a process in which a thin film is deposited by spraying a solution on a heated surface, where the constituents react to form a chemical compound. It belongs to category of bottom-up approach and is very useful to deposit thin film of different physical and chemical properties over a broad area and of different thickness over a wide variety of substrates

### LEARNING OUTCOMES

A part of super-resolution microscopy, objects can be resolved down to a lateral resolution of  $\sim 50$  nm



## Equipment 2: Time Resolved Confocal Microscope

**Make and Model: Picoquant,  
MT200**

### LEARNING OUTCOMES

Understanding how to measure fluorescence of molecules at the single molecule level.

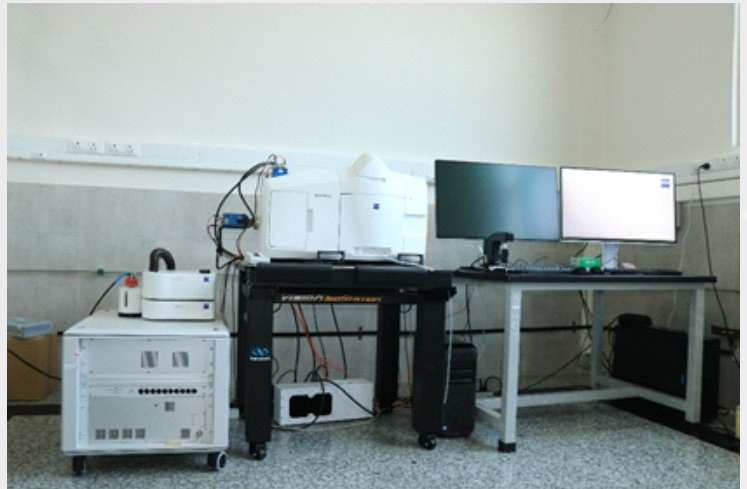


## **SPIN Equipment 3: Light Sheet Fluorescence Microscope**

**Make and Model: Zeiss, Lightsheet 7**

### **LEARNING OUTCOMES**

Understand how to image whole living model organisms, tissues and cells; this equipment is ideal for fast and gentle imaging of such specimens.



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## **Equipment 4: Automated Confocal Microscope**

**Make and Model: Zeiss, Cell Discoverer 7**

### **LEARNING OUTCOMES**

Cell Discoverer 7 calibrates itself, detects and focuses on your samples while the optics adjust themselves. With 2D or 3D cell cultures, tissue sections or small model organisms, this instrument will help you acquire better data in shorter times with this reliable automated research platform.







## **Equipment 5: Super-resolution Microscope (SIM based)**

**Make and Model: Zeiss, Elyra 7**

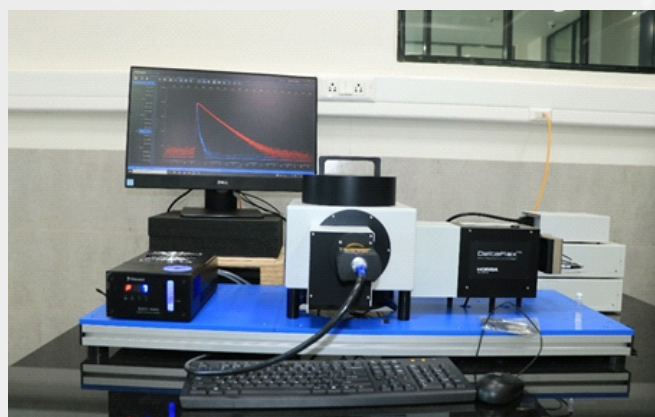


### **LEARNING OUTCOMES**

Understand how to obtain fast images at high resolution. This equipment is also capable of single molecule localisation (SMLM) based microscopy experiments.

## **Equipment 6: Time Resolved Fluorescence Setup (TCSPC system)**

**Make and Model: Horiba, Delta-Flex**



### **LEARNING OUTCOMES**

Experience the art of carrying out fluorescence lifetime measurements and many variations of the same.



## **Equipment 7: Steady-State Fluorescence setup**

**Make and Model: Horiba, PTI Quantamaster**

### **LEARNING OUTCOMES**

Will be able to learn in detail how to carry out steady-state fluorescence measurements. This instrument also has the capability of carrying out phosphorescence measurements.

## 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 July,5 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.

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**AMITY**  
UNIVERSITY

**For More details and Queries about the Programme**

**Contact Number :** +91 9289394650

**Email :** [dststuti@amity.edu](mailto:dststuti@amity.edu)

**For More details about the R&D facility at IIT Delhi**

**Dr. Abhishek Pathak**

Principal Project Scientist

**Contact Number :** +917795633835

**Email :** [pathak2909@gmail.com](mailto:pathak2909@gmail.com)

Registration  
QR



For More  
Information

