# NATIONAL INSTITUTE OF TECHNOLOGY WARANGAL

Warangal - 506 004, Telangana

**Synergistic Training Program Utilizing the Scientific and Technological Infrastructure (STUTI)**

## Call for Registration and Participation

## Training Program on R&D Equipment

**Theme:** Characterization of Materials/Compounds by using Advanced Instruments

**Program Dates:** April 11th to 17th 2023

**Venue:** Indian Institute of Technology Delhi, (Sonipat Campus)


**Register before: 31st March 2023**

**Scan to Register**

**No Registration Fee**

**Click to register:** https://forms.gle/LzQ8pc36D6Twza4p9

### Objectives of the Program:

To enable the participants to understand the principles, applications, and hands-on experience on sophisticated analytical instruments.

To gain knowledge about the in-depth analysis of the characterization techniques using high-end analytical instruments.

To interact with eminent professors/ scientists/ industrial research personnel and discuss real-time research and make collaborations.

To encourage the participants to utilize the facilities and enhance the research temper.

To create a research-friendly atmosphere by letting the creative minds of the country exchange ideas and share their knowledge among their fellow participants.

### Eligibility Criteria:

Faculty / Scientists / Post-Doc Fellows / Ph.D. Fellows / Industry Persons / M.Sc. students/ M.Tech. Students who are actively involved in research and development (R&D) in the fields of Chemical Sciences, or any relevant area.

### Important Instruction:

Fill in the prescribed bio-data form attached with this brochure and get it endorsed by the head of the institution. And keep the scanned copy ready, which needs to be uploaded during registration.

**Organized by**

**Indian Institute of Technology Delhi (Spoke)**

**NIT Warangal, Telangana (Hub)**

**Funded by**

**DST, Govt of India**

**About Indian Institute of Technology Delhi:**

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.

Established as College of Engineering in 1961, the Institute 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. The primary campus of IIT Delhi is located in Hauz Khas, South Delhi, with Sonipat and Jhajjar (land acquired only) being the two satellite campuses. Currently, IIT delhi have 16 Departments, 09 Centres, Schools and 02 Joint degree programme with a total on roll students of 12064.

**About NIT Warangal:**

National Institute of Technology Warangal, formerly known as Regional Engineering College, was established in 1959. Over the years it has developed into a premier institute of higher learning and is ranked among the top technical education institutions in India. There are 14 Departments offering eight undergraduate, 35 post-graduate programs and guiding 952 PhD scholars besides post-doctoral programs. About 6864 students across the country including international students' study on the campus. It is a fully residential campus spread across 250 acres with excellent infrastructure in the form of state-of-the-art library, seminar halls, guest houses and research laboratories.

**STUTI Team:**

**Patron,**
**Prof. Rangan Banerjee**.
*Director, Indian Institute of Technology Delhi*

**Chairman**
**Prof. N. V. Ramana Rao,**
*Director, NIT Warangal*

**Co-Chairmen**
**Prof. Naresh Bhatnagar,** *Dean (R&D), IIT Delhi*
**Prof. Somasekhar V. T.** *Dean (R&C), NIT Warangal*
**Prof. Rajender Singh**, *Associate Dean (R&D), IIT Delhi*

**Convenor**
**Sri S Goverdhan Rao,** *Registrar, NIT Warangal*
**Prof. Samir Sapra,** *Head CRF and PI, SATHI*
**Prof. Manidipa Banerjee,** *Assoc Head CRF &Co PI, SATHI*

**Principal Investigator**
**Prof. N. Narasaiah**, *Dept of MME, NITW & PI, STUTI*

**Co-Principal Investigator**
**Dr. T K Sai**, *PSO, CRIF, NITW & Co-PI, STUTI*

**Program Coordinators**
**Dr Bhupender Singh**
*Principal Technical Officer, CRF, IIT Delhi*

**Sri D Ravikumar**
*Technical Officer, CRIF, NIT Warangal*

**Note:**

The shortlisted candidates will be intimated through mail. All the selected participants have to submit the uploaded bio-data form physically for the confirmation of participation.

Non-local participants are eligible for **FREE** boarding/ lodging at **Indian Institute of Technology Delhi,(Sonipat Campus)** on double sharing basis.

For domestic travel of participants, the reimbursement for train/bus tickets is allowed as per actual up to 3AC fare (for outstation participants only).

**Contact Us:**

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CRF, IIT Delhi
bsinghiitd@admin.iitd.ac.in

## About STUTI:

The Scheme 'Synergistic Training program Utilizing the Scientific and Technological Infrastructure' (STUTI) is intended to build human resource and its knowledge capacity through open access 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, 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 of S&T facilities.

## Instruments covered for training:

- **Transmission Electron Microscope (TEM)**
- **Physical Property Measurement System (PPMS)**
- **Time of Flight Secondary Mass Spectroscopy (TOF-SIMS)**
- **Small Angle X-ray Scattering (SAXS)**
- **X-ray Photoelectron Spectroscopy (XPS)**
- **X-Ray Diffractometer (XRD)**

- **Equipment Name: Transmission Electron Microscope (TEM)**
- **Make: Jeol**
- **Model: JEM-ARM200F NEOARM**

- **Applications:**
  1. Study of crystal structure
  2. Defects study
  3. Grain boundary study
  4. Tomography
  5. Electron Energy Loss Spectroscopy



- **Equipment Name: Small Angle X-ray Scattering (SAXS)**
- **Make: Anton Paar**
- **Model: SAXS point 2.0**

- **Applications:**
  1. nanoparticle (1-100 nm) size distributions
  2. shape
  3. pore sizes
  4. particle density
  5. inter particle distance of partially ordered materials
  6. surface to volume ratio

- **EquipmentName: Physical Property Measurement System (PPMS)**
- **Make: Cryogenic Ltd. (the UK)**
- **Model: CFMS 14T**

- **Applications:**

1. Magnetic transport properties (M-T, M-H, ACS)
2. Electrical Transport Properties (Hall, MR, R-T, AC resistivity)
3. Thermal Transport properties (Seebeck Coefficient, Thermal conductivity, Heat capacity)


- **Equipment Name: X-ray Photoelectron Spectroscopy (XPS)**
  - **Make: Kratos Analytical Ltd**
  - **Model: AXIS Supra**

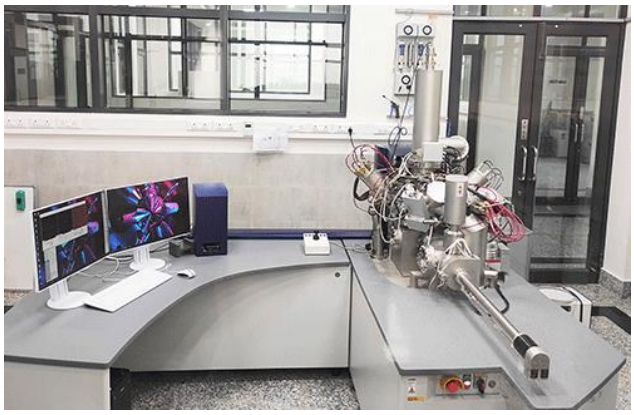
- **Applications:**

1. Insight into the chemical composition, elemental and chemical distribution of species, defect sites and functional groups
2. Surface chemistry of 2D materials and nanomaterials
3. Biomaterials
4. Catalysis
5. Thin films and multilayer films
6. Surface properties of wood, wood fibre and bio-polymer samples
7. Polymers and Battery materials

- **Equipment Name: Time of Flight Secondary Mass Spectroscopy (TOF-SIMS)**
- **Make: IONTOF GmbH Germany**
- **Model: TOF-SIMS 5**

- **Applications:**

1. Mass spectrum study of elements and organic materials
2. Mapping of elements and organic species on the surfaces
3. Composition & impurity measurements of thin films
4. Failure and root cause analysis of devices &materials
5. Dopant & impurity depth profiling.




- **Equipment Name: X-ray Diffractometer**
- **Make: Malvern PAN analytical**
- **Model: Empyrean**

- **Applications:**

1. Powder diffraction in either reflection or transmission geometries employing 0D.
2. Medium and high-resolution X-ray diffraction of Thin films including symmetrical, asymmetrical and grazing incidence diffraction, x-ray reflectivity, texture, stress, rocking curves, fast reciprocal lattice maps.
3. Medium and high-resolution X-ray diffraction studies of thin films and layered materials in the temperature range of 12 – 770 K (-261 – 500˚C).

# BIODATA FOR STUTI-21 DST TRAINING PROGRAM

| NAME Prof./Dr./Mr./Ms. | | | | | | | | | | | | | | | |
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| DATE OF ENTRY IN SERVICE | | | | | | | | | | | | | | |
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| CATEGORY (GENERAL / SC / ST / OBC) | | | | | | | | | |
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| DATE OF BIRTH | | | | | | | | | | |
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| COMPLETE ADDRESS (OFFICE) | | | | | | | | | | | | | | | |
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| COMPLETE ADDRESS (RESIDENCE) | | | | | | | | | | | | | | | |
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| CONTACT DETAILS | PHONE (O) | PHONE (R) | MOBILE No. | E-MAIL |
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CONTD. 2

| EDUCATIONAL / PROFESSIONAL QUALIFICATIONS (GRADUATION ONWARDS) | | | | | |
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| Sr. No. | EXAMINATION/ DEGREE | UNIVERSITY/ INSTITUTE | YEAR | SUBJECT | DIVISION/PERCENTAGE OF MARKS |
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| EXPERIENCE | | | | | |
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| Sr. No. | NAME OF THE ORGANISATION | DESIGNATION | FROM | TO | DUTY PERFORMED |
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| TRAINING ATTENDED | | | | |
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| Sr. No. | YEAR | NAME OF THE TRAINING PROGRAMME | NAME OF THE INSTITUTE | DURATION |
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CONTD.3

| RESEARCH EXPERIENCE | | | | |
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| Sr. No. | YEAR | TOPIC OF RESEARCH | SPONSORING AGENCY | GIST OF REASEARCH |
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| PAPER PUBLISHED / PATENT FILED/OBTAINED | | | | |
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| Sr. No. | YEAR | TOPIC OF PAPER/ BOOK | GIST OF PAPER | NAME OF JOURNAL/ MAGZINE/ PUBLISHER |
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**Briefly give details of significant contribution made by you in the field of Science & Technology during your career. (100 words)**

**Date**:
**Place**:

(Signature of the Participant)

(Head of the Institution)