



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

on the theme

# Challenges and opportunities in Water, Sanitation & Hygiene (WASH)

Organized by: Department of Bioengineering, NIT Agartala, Tripura, India.

January 23 to 29, 2023

**Register:** <https://tinyurl.com/stutiwash>

**Last Date for Registration:**  
January 10, 2023



**SPONSORED By**



विज्ञान एवं प्रौद्योगिकी विभाग  
DEPARTMENT OF  
**SCIENCE & TECHNOLOGY**



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**Course Co-Coordinator** : Dr. M. Muthusivaramapandian

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## **Challenges and opportunities in Water, Sanitation & Hygiene (WASH)**

### **ABOUT INSTITUTE**

The National Institute of Technology Agartala has been constituted by the Govt. of India in 2006 with the mission to create excellence in technical education and research in the North East States of India. The Ministry of Education has conferred the status of "*Institute of National Importance*". Institute is committed to develop highly competent young Engineers, Scientists, and Management Professionals to cater to the ever-increasing techno-managerial needs of national and international standards fulfilling professional ethics and societal commitment.

### **ABOUT DEPARTMENT**

The Department of Bioengineering at NIT Agartala has been established in 2012. The department offers undergraduate (B.Tech.) and postgraduate (M.Tech. and Ph.D.) academic programmes. The Department focuses on enhancing the effectiveness of technical education and innovation ecosystems in the field of biotechnology. The department has 8 faculty members specialized in various domains of bioengineering. The major thrust areas include microbial and enzyme technology, biochemical engineering, tissue engineering, plant biotechnology, nanobiotechnology, and computational biology.

### **ABOUT STUTI PROGRAM**

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 the 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.

### **ABOUT WATER, SANITATION AND HYGIENE (WASH)**

Recent studies state that 2.1 billion people lack access to safely managed drinking water services and 4.5 billion people lack safely managed sanitation services. India is the second-most populous country in the world, with almost 60% of the population living in urban areas, the number growing each day. This has put stress on water and sanitation services in the country. Due to limited access to functioning, safe toilets, as of 2014, 40% of the population defecated in the open, contaminating water and leading to India having the world's highest number of diarrhoea-related deaths in children under five. Two-thirds of India's 718 districts are affected by extreme water depletion, and the current lack of planning for water safety and security is a major concern. Unsafe hygiene practices are widespread, compounding the effects on people's health. Access to safe water and sanitation and sound management of freshwater ecosystems are essential to human health; environmental sustainability and economic prosperity. The WASH SDG program is developed to contribute to SDG6 and ensure access to water and sanitation for all.

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### **HIGHLIGHTS OF THE PROGRAM**

The aim of this 7-day training program is to provide the participants with the basic knowledge and skills required to function with various state-of-the-art technologies used in water treatment. The participants will acquire knowledge of cutting-edge research areas employed in environmental engineering. The scope of Design of Experiments (DoE), process modelling, process intensification, data interpretation and analysis of SEM, FTIR, XRD relevant to the theme will also be trained. The training will consist of lectures by eminent researchers followed by hands-on training.

### **WHO SHOULD ATTEND?**

The training is organized to enhance the practical skills of Undergraduate and Postgraduate 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.

### **COST OF THE PROGRAM:**

- **Registration: Free** - Sponsored by the DST STUTI program.
- **Travel:** The train fare (Sleeper class / Bus / equivalent) by shortest route will be **reimbursed** to the outstation participants on submission of original tickets..
- **Accommodation: Free** Accommodation would be provided for outstation candidates on single/double occupancy basis in the National Institute of Technology, Agartala. Accommodation requests should be made along with the registration

### **REGISTRATION PROCEDURE:**

- Interested candidates will have to fill out the online form (link given below) on or before 10/01/2023.
- The confirmation of selection will be communicated to the selected candidates by 12/01/2023 by email.
- Registration Kit, Course material and Certificate of participation will be provided to the participants.

Registration Link: <https://tinyurl.com/stutiwash>



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### Speakers



**Prof. Eric D. van Hullebusch**

Institute of Physics of the  
Globe of Paris, France



**Prof. Luigi Rizzo**

University of Salerno,  
Italy.



**Prof. Sheena Kumari**

Durban University of  
Technology, South Africa



**Prof. R. S. Singh**

Dept. of Chemical Engg  
& Tech, IIT BHU, India.



**Dr. N. Selvaraju**

Dept. of Biosciences &  
Bioengineering,  
IIT Guwahati, India



**Dr. Shivendu Ranjan**

School of Nano Science and  
Technology, IIT Kharagpur,  
India.



**Dr. Noel Jacob  
Kaleekkal**

Dept. of Chemical Engineering,  
NIT Calicut, India



**Dr. Surendran U**

Centre for Water  
Resource Management,  
Kerala, India.



**Dr. Mitali Saha**

Dept. of Chemistry,  
NIT Agartala, India.



**Dr. Soma Nag**

Dept. of Chemical Engg,  
NIT Agartala, India.



**Dr. Mrinmoy Majumder**

Dept. of Civil Engineering,  
NIT Agartala, India.



**Dr. Animesh Debnath**

Dept. of Civil Engineering,  
NIT Agartala, India.



**Dr. Tarun Kanti  
Bandyopadhyay**

Dept. of Bioengineering,  
NIT Agartala, India.



**Dr. Biswanath  
Bhunia**

Dept. of Bioengineering,  
NIT Agartala, India



**Dr. V. C. Padmanaban**

Dept. of Bioengineering,  
NIT Agartala, India



**Dr. M. Muthu  
Sivaramapandian**

Dept. of Bioengineering,  
NIT Agartala, India



**Dr. Abhijit  
Chatterjee**

Dept. of  
Bioengineering,  
NIT Agartala, India



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23.01.2023		
Registration & Inauguration 09.30 am to 11.00 am		
<b>Session 1</b> <b>11.30 am to 12.30 pm</b> <b>Prof. Eric D. van Hullebusch</b> Biogeochemistry of Engineered Ecosystems, Institute of Physics of the Globe of Paris, France.	<b>Session 2</b> <b>02.00 pm to 03.00 pm</b> <b>Dr. V. C. Padmanaban</b> Dept. of Bioengineering, NIT Agartala, Tripura, India.	<b>Lab Session 3</b> <b>03.15 pm to 05.45 pm</b> <b>Dr. V. C. Padmanaban &amp; Dr. M. Muthusivaramapandian</b> Dept. of Bioengineering, NIT Agartala, Tripura, India.
<b>Title: Biotechnologies for circular economy: selective critical elements recovery from secondary resources of water</b>	<b>Title: Process development towards the degradation of emerging contaminants through Advanced Oxidation Processes</b>	<b>Title: Training on Process modelling and operational considerations in bioreactors</b>
24.01.2023		
<b>Session 1</b> <b>10.00 am to 11.00 am</b> <b>Prof. R. S. Singh</b> Department of Chemical Engineering & Technology, IIT BHU, Varanasi, India	<b>Session 2</b> <b>11.30 am to 12.30 pm</b> <b>Dr. Biswanath Bhunia</b> Dept. of Bioengineering, NIT Agartala, Tripura, India.	<b>Lab Session 3</b> <b>02.00 pm to 04.00 pm</b> <b>Dr. Biswanath Bhunia</b> Dept. of Bioengineering, NIT Agartala, Tripura, India.
<b>Title: Microbial Fuel Cell (MFC): Waste Management along with Energy Production</b>	<b>Title: Design and operational challenges in MFC</b>	<b>Title: Training on MFC based designs</b>
25.01.2023		
<b>Session 1</b> <b>10.00 am to 11.00 am</b> <b>Dr. N. Selvaraju</b> Department of Bioscience & Bioengineering, IIT Guwahati, Assam, India	<b>Session 2</b> <b>11.30 am to 12.30 pm</b> <b>Dr. Abhijit Chatterjee</b> Dept. of Bioengineering, NIT Agartala, Tripura, India.	<b>Lab Session 3</b> <b>02.00 pm to 04.00 pm</b> <b>Dr. Abhijit Chatterjee</b> Dept. of Bioengineering, NIT Agartala, Tripura, India.
<b>Title: Advancements in the adsorption-based processes for the removal of water-based pollutants</b>	<b>Title: Adsorptive removal of heavy metals through sustainable materials</b>	<b>Title: Training on development of Adsorption Isotherms &amp; Kinetic Modelling</b>
26.01.2023		
<b>Session 1</b> <b>09.30 am to 10.30 am</b> <b>Dr. Tarun Kanti Bandyopadhyay</b> Dept of Bioengineering, NIT Agartala, Tripura, India.	<b>Lab Session 2</b> <b>10.30 am to 01.00 pm</b> <b>Dr. Mrinmoy Majumder</b> Department of Civil Engineering, NIT Agartala, Tripura, India.	<b>Session 3</b> <b>03.00 pm to 04.00 pm</b> <b>Prof. Luigi Rizzo</b> University of Salerno, Italy.
<b>Title: Challenges in monitoring the flow pattern of pollutants in water bodies.</b>	<b>Title: Water and Energy Management in India: State of art technologies &amp; approaches</b>	<b>Title: Treatment Of Aqueous Matrices By Photo Activated Homogeneous Advanced Oxidation Processes</b>

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27.01.2023		
<b>Session 1</b> <b>10.00 am to 11.00 am</b> <b>Dr. Surendran U</b> Principal Scientist & Head, Land and Water Management Research Group Centre for Water Resource Management (CWRDM), Kerala, India  <b>Title: Role of water in Carbon Sequestration in soils, Climate change and its impact in agriculture</b>	<b>Session 2</b> <b>11.30 am to 12.30 pm</b> <b>Dr. Animesh Debnath</b> Dept. of Civil Engineering, NIT Agartala, Tripura, India.  <b>Title: Role of Nanotechnology towards the removal of recalcitrant</b>	<b>Lab Session 3</b> <b>02.00 pm to 04.00 pm</b> <b>Dr. Animesh Debnath</b> Dept. of Civil Engineering, NIT Agartala, Tripura, India.  <b>Title: Training on Instrumentation in preparation of Nanomaterials</b>
28.01.2023		
<b>Session 1</b> <b>10.00 am to 11.00 am</b> <b>Dr. Shivendu Ranjan</b> Department of Nano Science and Technology, IIT Kharagpur, India.  <b>Title: Function and fate of nano-formulations in environment: Toxicity perspective</b>	<b>Session 2</b> <b>11.30 am to 12.30 pm</b> <b>Dr. Mitali Saha</b> Department of Chemistry, NIT Agartala, Tripura, India.  <b>Title: Application of Graphene-based composites towards detection and treatment of pollutants</b>	<b>Lab Session 3</b> <b>02.00 pm to 04.00 pm</b> <b>Dr. Mitali Saha</b> Department of Chemistry, NIT Agartala, Tripura, India.  <b>Title: Training on understanding the particle chemistry through instrumentation.</b>
29.01.2023		
<b>Session 1</b> <b>09.30 am to 10.30 am</b> <b>Dr. Noel Jacob Kaleekkal</b> Dept. of Chemical Engineering, NIT Calicut, Kerala, India.  <b>Title: Membrane technology towards the separation of water-based pollutants</b>	<b>Session 2</b> <b>11.00 am to 01.00 pm</b> <b>Dr Soma Nag</b> Dept. of Chemical Engineering, NIT Agartala, Tripura, India.  <b>Title: Bioremediation based approaches towards heavy metal removal</b>	<b>Session 3</b> <b>02.00 pm to 03.00 pm</b> <b>Prof. Sheena Kumari</b> Institute for Water and Wastewater Technology, Durban University of Technology, South Africa  <b>Title: Advanced water treatment towards the elimination of emerging water-based pollutants</b>
<b>Session 4: 03.00 pm to 04.00 pm</b> <b>Valedictory Session and Closure of Workshop</b>		

- Hands-on Training Sessions:**
- ☐ Demonstration of the designs of Electrochemical reactors, Packed Bed Reactors, Bioreactors, and Microbial Fuel Cells;
  - ☐ Demonstration & training on nanoparticle preparation using Sonocatalytic systems;
  - ☐ Demonstration & Hands-on training on Process Modelling;
  - ☐ Demonstration & training on Toxicological assessment of degraded metabolites;
  - ☐ Demonstration & training on FTIR, Particle Size analyzer, and Membrane-based systems;

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**ORGANIZING COMMITTEE**

**Chief Patron:**

**Prof. H. K. Sharma**

Director, NIT Agartala.

**Chairperson:**

**Prof. A. K. Das**

Dean R&C, NIT Agartala

**Co-Chairperson:**

**Dr. U. K. Bera**

PI- DST-STUTI,

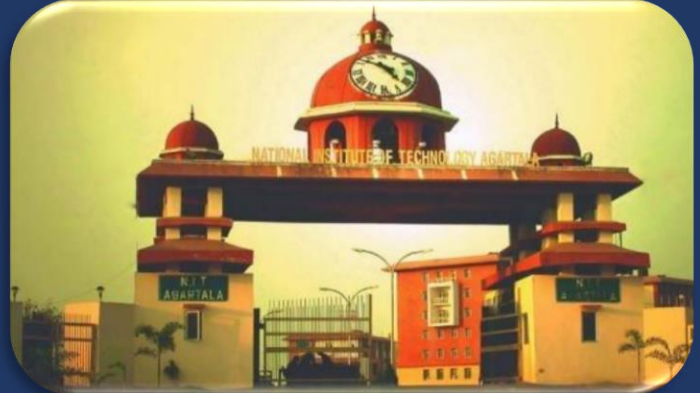
Assoc. Prof., Maths, NIT Agartala.

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**Student Co-Ordinator:**

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Post Graduate Research Scholar,

Dept of Bioengineering,

National Institute of Technology, Agartala.

**Committee Members:**

Dr Biswanath Bhunia, Dr Tridib Kumar Bhowmick, Dr Abhijit Chatterjee,

Dr Deeplina Das, Ms Hrijuta Datta

## **Challenges and opportunities in Water, Sanitation & Hygiene (WASH)**

### **How to Reach NIT Agartala**

**Reaching by Air:** Agartala is connected very well by means of air. Regular flights are available from Delhi, Mumbai, Chennai, Bangalore, Kolkata etc. After reaching the airport one can book car/auto services (Distance: 30km).

**Reaching by Train:** The nearest station to NIT Agartala is Jirania which is just 3km away. However most of the trains stoppages are at Agartala station situated at Badharghat (Distance: 21km). After reaching the station one can book car/auto services.

**Reaching By Bus:** Buses are available daily from Guwahati to Agartala. One must get down at Ranir Bazar. From Ranir Bazar, regular auto services are available to NIT Agartala.

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**Weather:** Agartala experiences its pleasant weather in the month of January – Winter Season. The temperature at night will be 10-12°C.

**Places to visit:** Tripura is a state with a collection of hills and places of worship including its characteristic jungles.

