

**Golden Jubilee Year of NEHU**



**Hands on Training Program on  
ADVANCED BIOCHEMICAL TECHNIQUES AND  
APPLICATIONS**

To see and learn what is not possible with naked eye  
**(SKILLED INDIA PROGRESSIVE INDIA)**

Under the aegis of

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



**Organized by**  
**DEPARTMENT OF BIOCHEMISTRY**  
NORTH-EASTERN HILL UNIVERSITY  
SHILLONG, MEGHALAYA, INDIA

**IN ASSOCIATION WITH**  
**SOPHISTICATED ANALYTICAL INSTRUMENTATION FACILITY (SAIF)**  
PANJAB UNIVERSITY, CHANDIGARH

**Dates: September 1 – 8, 2022**

*The last date of Registration is 12<sup>th</sup> August, 2022*

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# Organisers



**PROF. PRABHA SHANKAR SHUKLA**  
Vice-Chancellor, NEHU, Shillong  
**CHIEF PATRON**



**DR. PRATISHTHA PANDEY**  
Scientist F & HEAD  
(R & D Infrastructure Division)  
DST, GOI



**PROF. G. R. CHAUDHARY**  
Director SAIF/CIL,  
PU, Chandigarh



**PROF. L. KMA**  
(Convener)  
Department of Biochemistry,  
NEHU, Shillong  
Mobile No.: 9612908202



**DR. S. Bhan**  
(Organizing Secretary)  
Department of Biochemistry,  
NEHU, Shillong  
Mobile No.: 9436349351



**DR. A. BHATTACHARYYA**  
Scientist 'E', DST, GOI



**DR. P. K. AMBASHT**  
(Organizing Secretary)  
Department of Biochemistry,  
NEHU, Shillong  
Mobile No.: 9436302859



**PROF. M. B. SYIEM**  
(Head)  
Department of Biochemistry,  
NEHU, Shillong



**PROF. D. SYIEM**  
(Member)  
Department of Biochemistry,  
NEHU, Shillong



**PROF. A. K. SINGH**  
(Member)  
Department of Biochemistry,  
NEHU, Shillong

Queries regarding the training program  
may be sent at  
[biochemstuti2022@gmail.com](mailto:biochemstuti2022@gmail.com)

## **“Synergistic Training program Utilizing the Scientific and Technological Infrastructure (STUTI) Program – 2021”**

STUTI Program of the Department of Science & Technology (DST), Government of India, is intended to build human resource and its knowledge through open access to S & T Infrastructure across the country.

This will be achieved by organizing short term courses/workshops on the awareness, use and application of various instruments and analytical techniques. The Scheme will provide grants for organizing different training programs.

### **ABOUT**

#### **North Eastern Hill University, Shillong**

NEHU was established on 26<sup>th</sup> May, 1973. The primary objectives of NEHU are to disseminate and advance knowledge by providing instructional and research facilities in diverse branches of Learning. The university is spread over 1225 acre of Land with a beautiful Lake close to the administrative building and the entire campus boasts of Large number of pine trees among many others. There are 8 schools in NEHU that caters to 48 vibrant departments. The central NEHU Library has an impressive collection of books, journals & periodicals. NEHU has been granted ‘A’ grade by NAAC in their consecutive assessments.

#### **Department of Biochemistry, NEHU, Shillong**

The department was established in 1980 and it has been a core department for education, training and valuable research with applied potential in the field of Biochemistry. The department is internationally and nationally recognized for its contributions in specialized areas of biochemical research with its alumni spread all over the globe. It has sanctioned faculty strength of 13 and an intake capacity of 26 in M.Sc. The Ph.D intake is variable. Presently 42 students are pursuing doctoral degree in the department.

### **TRAINING HIGHLIGHTS**

- To understand the principles and applications of high-end scientific instruments for investigation of biological samples and for researchers to get the feel of these instruments during the ‘hands on training’ hours.
- Important characterization techniques such as Circular Dichroism Spectroscopy, Single-

crystal X-ray diffraction, Disease marker analysis, X-ray irradiation system, IR Spectroscopy, HPLC, Electron Microscopy, Flow Cytometry, Confocal laser microscopy, GC, Gc-MS, Sequence analysis and data sciences will be addressed during the program highlighting both instruments and direction taken by research in the Biological Sciences in recent times.

- The workshop aims to bring together academia, researchers and industrial professionals with common interest.

### **PROGRAMME OUTCOME**

- Hands on experience on some of the latest high-end instrumentation available to biological research in present times.
- Talks aimed at elaborating the latest sophisticated instruments will generate understanding of the possibilities available to scientific community in carrying out future research.
- Understanding of presently available instruments would fuel innovative ideas to bring diverse scientific fields together for highly-directed and result-oriented research in future.

### **PROGRAM COST**

- This hands-on training is funded by DST STUTI program and registration is free of cost.
- Reimbursement for train fare to the participating candidates from outstations will be provided as per their entitlement.
- Adjustment for the accommodation of the candidates will be made by university depending on the availability.
- Participating candidates should make request for the accommodation during registration process.

### **REGISTRATION**

Participants are required to apply for the training program by sending an email to [biochemstuti2022@gmail.com](mailto:biochemstuti2022@gmail.com) along with their Biodata in the format given at the end of the brochure. The application deadline is 12<sup>th</sup> August, 2022.

## SELECTION OF CANDIDATES

The applications received shall be scrutinized as per eligibility of participants by the STUTI training program selection committee and decision of the committee will be final. Selected candidates will be notified through E- mail. The number of seats in the training program are limited.

## TIME SCHEDULE

<b>Day 1 (Thursday)</b>		<b>1<sup>st</sup> September, 2022</b>
09:30 – 10:15 AM	Welcome and Inauguration	
10:15 – 10:30 AM	Address by the Chief Guest <b>Dr. Pratishta Pandey</b> <i>Scientist F &amp; HEAD, R &amp; D Infrastructure Division, DST, GOI</i>	
10:30 – 11:00 AM	<i>Tea Break</i>	
11:00 – 12:00 PM	About the STUTI Program <b>Prof. G. R. Chaudhary</b>	
12:00 – 01:00 PM	<b>LECTURE</b> Insights into sequence analysis and datascience <b>Dr. Atanu Bhattacharjee</b> <i>Department of Biotechnology &amp; Bioinformatics, NEHU, Shillong</i>	
01:00 – 02:00 PM	<i>Lunch</i>	
02:00 – 05:00 PM	Hands on Training Sequence analysis <b>Dr. Atanu Bhattacharjee</b> <i>Tea Break (03:15 – 03.30 PM)</i>	
<b>Day 2 (Friday)</b>		<b>2<sup>nd</sup> September, 2022</b>
10:00 – 11:00 AM	<b>LECTURE 1</b> Circular Dichroism Spectroscopy to Study Protein Structure, Folding, Interaction, and Dynamics <b>Dr. T. Tripathi</b> <i>Department of Biochemistry, NEHU, Shillong</i> <i>(presently Regional Director IGNOU, Kohima)</i>	
11:00 – 11:15 AM	Interactive session	
11:15 – 11:30 AM	<i>Tea Break</i>	
11:30 – 12:30 PM	<b>LECTURE 2</b> Single-crystal x-ray diffraction: A tool for solid-state structure analysis <b>Dr. S. Khatua</b> <i>Department of Chemistry, NEHU, Shillong</i>	
12:30 – 12:45 AM	Interactive session	
01:00 – 02:00 PM	<i>Lunch</i>	
02:00 – 05:00 PM	Hands on Training Using Circular Dichroism Spectroscopy Data to Study Proteins	

	<b>Dr. T. Tripathi</b> Single crystal selection, mounting and diffraction techniques <b>Dr. S. Khatua</b> <i>Tea Break (03:15 – 03.30 PM)</i>
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<b>Day 3 (Saturday)</b>	<b>3<sup>rd</sup> September, 2022</b>
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10:00 – 11:00 AM	<b>LECTURE 1</b> Identification of diabetic biomarker by gelelectrophoresis <b>Dr. Surya Bhan</b> <i>Department of Biochemistry, NEHU, Shillong</i>
11:00 – 11:15 AM	Interactive session
11:15 – 11:30 AM	Tea Break
11:30 – 12:30 PM	<b>LECTURE 2</b> Use of X-Ray Irradiation System in Biological Research <b>Prof. L. Kma</b> <i>Department of Biochemistry, NEHU, Shillong</i>
12:30 – 12:45 AM	Interactive session
01.00 – 02:00 PM	Lunch
02:00 – 05:00 PM	Hands on Training Gel electrophoresis <b>Dr. Surya Bhan</b> Demonstration of X-Ray Irradiation System and Application <b>Prof. L. Kma</b> <i>Tea Break (03:15 – 03.30 PM)</i>

<b>Day 4 (Monday)</b>	<b>5<sup>th</sup> September, 2022</b>
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10:00 – 11:00 AM	<b>LECTURE 1</b> Analysis of IR spectra to identify functional groups in an unknown compound <b>Prof. G. Bez</b> <i>Department of Chemistry, NEHU, Shillong</i>
11:00 – 11:15 AM	Interactive session
11:15 – 11:30 AM	Tea Break
11:30 – 12:30 PM	<b>LECTURE 2</b> Principle and applications of HPLC <b>Prof. D. Syiem</b> <i>Department of Biochemistry, NEHU, Shillong</i>
12:30 – 12:45 AM	Interactive session
01.00 – 02:00 PM	Lunch
02:00 – 05:00 PM	Operational aspects of IR spectroscopy and hands on analysis of IR spectra <b>Prof. G Bez</b> Hands on training on HPLC <b>Prof. D. Syiem &amp; Dr. N. Pauzakhup</b> <i>Tea Break (03:15 – 03.30 PM)</i>

<b>Day 5 (Tuesday)</b>	<b>6<sup>th</sup> September, 2022</b>
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10:00 – 11:00 AM	<b>LECTURE 1</b> Principles of Transmission Electron Microscopy and Biological Sample Preparation
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	<b>Mr. J. P. Nongkynrih</b> <i>Senior Technical Assistant SAIF, NEHU, Shillong</i>
11:00 – 11:15 AM	Interactive session
11:15 – 11:30 AM	Tea Break
11:30 – 12:30 PM	<b>LECTURE 2</b> Infinite Potential applications of Transmission Electron Microscopy in Biological Sciences <b>Prof. M. B Syiem</b> <i>Department of Biochemistry, NEHU, Shillong</i>
12:30 – 12:45 AM	Interactive session
01:00 – 02:00 PM	Lunch
02:00 – 05:00 PM	Hands on Training <b>Mr. J.P. Nongkynrih Prof. M. B Syiem</b> <i>Tea Break (03:15 – 03.30 PM)</i>

<b>Day 6 (Wednesday)</b>	<b>7<sup>th</sup> September, 2022</b>
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10:00 – 11:00 AM	<b>LECTURE 1</b> Basics of Flow cytometry and its application <b>Dr. Sukti Majaw</b> <i>Department of Biotechnology &amp; Bioinformatics, NEHU, Shillong</i>
11:00 – 11:15 AM	Interactive session
11:15 – 11:30 AM	Tea Break
11:30 – 12:30 PM	<b>LECTURE 2</b> Insights into sequence analysis and data science <b>Dr. Rintu Kutum</b> <i>Department of Computer Science, Data Scientist, Ashoka University North Delhi, Delhi, India</i>
12:30 – 12:45 AM	Interactive session
01:00 – 02:00 PM	Lunch
02:00 – 05:00 PM	Hands on Training Flow cytometry: Protocol, Setup and Analysis <b>Dr. Sukti Majaw</b> Sequence analysis <b>Dr. Rintu Kutum</b> <i>Tea Break (03:15 – 03.30 PM)</i>

<b>Day 7 (Thursday)</b>	<b>8<sup>th</sup> September, 2022</b>
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10:00 – 11:00 AM	<b>LECTURE 1</b> Principle and application of Confocal laser microscopy in biological sciences <b>Prof. N. Saha</b> <i>Department of Zoology, NEHU, Shillong</i>
11:00 – 11:15 AM	Interactive session
11:15 – 11:30 AM	<i>Tea Break</i>
11:30 – 12:30 PM	<b>LECTURE 2</b> Application of GC for analysis of hydrocarbons <b>Prof. A. K. Singh</b> <i>Department of Biochemistry, NEHU,</i>

	<i>Shillong</i>
12:30 – 12:45 AM	Interactive session
01.00 – 02:00 PM	<i>Lunch</i>
02.00 – 03.30 PM	Hands on Training Confocal laser microscopy <b>Prof. N. Saha</b> Hands on Training GC, GC-MS <b>Prof. A. K. Singh</b>
03.30 – 04.30 PM	Valedictory Functions

## Inauguration of DST STUTI Training Program at the Department of Biochemistry, NEHU, Shillong

### PROCEEDINGS ON THE FIRST DAY

The 7 days hands-on-Training Program on “Advanced Biochemical Techniques and Applications” is commenced from 1<sup>st</sup> -8<sup>th</sup> September 2022 at the Department of Biochemistry, North-Eastern Hill University, Shillong, Meghalaya, under the Synergistic Training program



Utilizing the Scientific and Technological Infrastructure’ (STUTI) program in association with Sophisticated Analytical Instrumentation Laboratory (SAIF), Panjab University, Chandigarh. The Scheme STUTI, supported by the Department of Science and Technology,



Government of India, is intended to build human resources and knowledge capacity through open access to S&T Infrastructure. It envisions hands-on training and sensitization of the state-of-art instruments in various institutes/departments having availed projects under

FIST/PURSE/CURIE/SAIF/ SATHI schemes.

The training program was commenced and inaugurated by Chief Patron **Prof. Henry Lamin**, acting-Vice Chancellor, NEHU, Shillong, and **Prof. Nirmalendu Saha**, Dean-Sciences, Guest of Honor, NEHU-Shillong and Guest of Honour **Prof. Ganga Ram**



**Chaudhary** Director SAIF, Coordinator STUTI-PMU Panjab University, Chandigarh joined online. **Prof. M. B. Syiem**, Head of the Department of Biochemistry, gave cordial welcome to the Chief Guest, Guest of Honour, and all the participants of the program. **Dr. Surya Bhan** and **Dr. Pravin. K. Ambasht**,



organizing secretary of the STUTI training program, highlighted the key points of the STUTI training program and its schedule and emphasized the importance of the training program. He mentioned that a total of **30** participants from different institutes/universities have participated in this training program representing various States/UTs. **Prof. Ganga Ram Chaudhary**, Coordinator of the STUTI Program-PMU & Director, SAIF, PU, Chandigarh, emphasized the goals and visions of the STUTI scheme to the participants. He addressed the participants and highlighted the importance of Hands-on-training in enhancing technical skills. The participants from various institutes were also given the opportunity to introduced themselves.

**Prof. Henry Lamin** welcomed the participants and highly appreciated the efforts of the organizing committee members of the training program for the commencement of such a wonderful event. **Prof. Lakhon Kma** presented the vote of thanks to the dignitaries and wished good luck to all the participants in the training program.



The event was also graced by the presence of **Mr. Bunty Sharma**, Project Associate in the DST STUTI project, and **Dr. Moondeep Chauhan** from SAIF, Panjab University,

Chandigarh. Many eminent resource persons are invited to deliver lectures during the 7 days training program to impart to participants with basic knowledge and skills of the various techniques. Participants will be imparted hands-on training on several



instruments such as HPLC, HPTLC, Single crystal XRD, Electron microscopy, circular dichroism, UV-visible, IR Spectroscopy, Confocal Laser Microscopy, GC, GCMS, and Flow cytometry, among others. The inaugural session was followed by the technical session, where **Prof. G. R. Chaudhary and Prof.**

**Donkumar Syiem** delivered lectures.

After the morning session the teachers, delegates and participants then gathered for lunch. After lunch the afternoon practical demonstration session of HPLC was conducted under the guidance of Prof. Donkumar. Syiem who enlighten the participants about HPLC,



and also shows hand-on demonstration of the instrument and the participants were also shown how to perform the technique. In addition Prof. D. Syiem also show the participants about HPTLC instrument and explaining about its uses, importance and also how to operate it.

### **PROCEEDING ON THE SECOND DAY**

On the second day of the program i.e., on the 02. September 2022 started with a lecture given by **Dr. Timir Tripathi, Assistant Professor of the Biochemistry Department, NEHU**, who delivered a lecture on circular dichroism (CD) spectroscopy and

its application in studying protein structures such as the various secondary structure of an unknown protein sample, protein folding and misfolding, protein kinetics, and the many applications and studies that can be done using CD Spectroscopy technique.

After a short tea break, the second lecture in the morning session was given by

**Prof. Khatua, a Professor in the Department of Chemistry** who share and delivered a lecture on Single X-ray Crystallography. Prof. Khatua thoroughly explained the principle and



concept in relation to this technique and its components. And also an important application of X-ray crystallography in understanding and determining the structure of any unknown sample precisely and also how to interpret the result.



In the afternoon session, the participants were given a tour of the lab of Dr. Timir Tripathi Lab. The participants got to know some of the instruments and facilities available in his lab, such as nanodrop, FPLC, CO<sub>2</sub> Incubator, etc. A demonstrative and interactive session on the Cd Spectroscopy instrument and how to operate it to analyze samples was shown by the research scholar from Dr. Tripathi's Lab.

Next, the participants were guided to go toward Prof. Khatua Lab, in the Chemistry Department, whereby the participants got to observe on sight the X-ray crystallography machine and also a demonstration about how to observe the crystal and analyze its structure through an X-ray crystallography machine was thoroughly explained by Prof. Khatua and also how to interpret the result.

### **PROCEEDING ON THE THIRD DAY**

On the Third Day, the morning session was proceeded by a lecture given by **Prof. Bez, who is a senior professor in the Department of Chemistry, NEHU**. Prof. Bez delivered a talk on Infrared Spectroscopy (IR), a technique that helps in the analysis of the functional group of a compound. He explains the principle and how to interpret and analyze the infrared spectrum so as to identify the functional group. So, the participants were



introduced into Infrared spectroscopy and its application and also how to analyze the spectrum obtained after analysis to get information.

In the second lecture of the morning session, the next lecture was given by **Prof. Lakhon Kma, a Professor in the Department of**

**Biochemistry**. Dr. L. Kma delivered a lecture on radiation and its various applications in

cancer and radiation research. He also introduces the participants to the various aspects of cancer research and the various technique by which radiation can be induced in experimental design, such as Gamma chamber and X-ray irradiation chamber. So overall it was a good interactive lecture whereby the



participants get to know about the harmful effect of radiation and what it can cause if exploited and no preventive measure is taken. Also, the various application of such instruments to study on radiation research and cancer biology was also discussed in this session.



The participants then were gathered for lunch. In the afternoon practical session, the participants were gathered in the Department of Chemistry in Prof. Bez lab where his scholar explained and demonstrate to the participants on how to prepare the sample either solid or liquid, before proceeding for analysis in the IR spectroscopy instrument. The scholars also explained to the participants how to interpret the results about gathering the information. The participants were then given a small graph so that they could try to interpret the result by themselves.

Next, the participants were then gathered in Biochemistry Department, in Prof. L. Kma lab where him and his scholar demonstrate to the whole participants about the X-ray irradiation chamber, and how to operate the instrument s as to induce radiation in mice for research purpose. Then, the



participants were guided to observe the Gamma chamber and Prof Kma showed the participants the component of the instrument and also explains the principles in how the machine work.

The next day i.e on a Sunday, the participants, volunteers led by Dr. Surya Bhan went for a field trip to Cherrapunjee where they were able to visit various tourist spots such as the Nohkalikai falls, Arwah cave, Seven sister fall, etc.

#### **PROCEEDING ON THE FOURTH DAY**

On the fourth day of the workshop the participants were introduced into data analysis in a lecture delivered by Dr. Rintu Kutum on the topic “Insights into sequence analysis and data science”. In this lecture Dr. Rintu, explain to the participants the importance of data science in research work and also give a hands-on training



demonstration on some of the data analysis software such as R-programming. The afternoon session was also continued by Dr. Rintu who taught the participants some basic steps of how to perform R-programming with the participants performing it on their under hid supervision.

#### **PROCEEDING ON THE FIFTH DAY**

The lecture was delivered by **Mr. Joston Nongkynrih, a Senior Technical Assistant of SAIF, NEHU**, who has almost 20 years of experience in working with electron microcopy most importantly the Transmission electron microscopy. In the lecture Mr. Nongkynrih



delivered a lecture on the basic components of electron microscope, comparison between light and electron microscope, principle of the working of electron microscopy. Mr. Nongkynrih also discusses about how to prepare the samples for TEM analysis, and what are the steps that is needed to be followed for

preparation of sample, and also how to visualize the image. The various and wide applications of TEM technique and how to take advantage of its application was also discussed in the session.

The second lecture of the session was delivered by **Prof. Mayashree Syiem, Professor and Head of the Department of Biochemistry, NEHU, Shillong.** Her topic for discussion of the day was on transmission electron microscopy and its infinite potential in Biological Sciences. In the lecture she discussed



about the history of electron microscopy, and also what kind of information one can get from electron hitting the sample. In the lecture also she discusses about the differences between the various types of microscopes and what determine their resolution. She also discusses about The various applications of TEM such as to gather information on crystalline structures, ultrastructure's, fractures, contaminations, in biological sciences for example to explore



molecular structure, mechanism of disease, etc., and more such as in technology to identify fractures, flaws and damages to micro-sized technologies.

After lunch, in the afternoon session, the participants were able to visit Sophisticate Analytical Instrument facility (SAIF), NEHU, whereby Mr. Joston Nongkynrih, discusses in detail about the preparation of sample for TEM analysis. After, a

detailed interactive session the participants were then guided to the lab whereby they are shown on sight how to prepare sample from different sources for TEM analysis and what precautions and requirement are required during sample preparation. Then, the participants were showed how to cut ultra-thin sections of the tissue. After this, the participants were then guided to the TEM instrumentation room whereby the participants get to see the machine. During this time, Mr. Joston Nongkynrih showed the various parts and compartment of the machine and also how he operates and analyze the sample.

### PROCEEDING ON THE SIXTH DAY

In the first lecture of the morning session the lecture was given by Dr. Sukti Majaw, Assistant Professor in the Department of Biotechnology, who delivered a lecture on **“Introduction to Flow cytometry and its application in research”**. Dr S. Majaw talk about the basic component that make up a flow



cytometer which is basically the fluidic system (where sample is introduced), optical system



(whereby how the laser interacts with the sample), and the detection system (for detection of the signal). She also talks about how to interpret the results from signal obtained from the flow cytometry so as to obtained precise information about the sample mixture.

In the second lecture of the morning session was given by Dr. Surya Bhan, Assistant Professor in the Department of Biochemistry, who delivered a lecture on the topic entitled **“Biomarkers of Diabetes and Electrophoresis”**. Dr. S Bhan talks about how biomarkers are an important tool in diagnosis of disease and how their importance. Firstly, Dr Bhan give a brief introduction into

In the second lecture of the





the topic of diabetes and how diabetes is caused, types and what are the major adverse effects it has on the body if exposed to longer duration of uncontrolled high sugar level in the body causing various complications. After a brief introduction on diabetes, and the various biomarker of diabetes, Dr.

Surya Bhan then introduced the class to the topic of electrophoresis, the types of electrophoresis and the principle involved in electrophoresis. He explained to the class about how the procedure of electrophoresis and what are the requirements, and also the wide applications of electrophoresis in proteomics and genomics study.

After the class the participants all dispersed for lunch. In the afternoon session, it was taken by Dr. Sukti. Majaw, who explained about how to know the company, know about anti-body and also the fluorophore attached to the antibody so that we can select which kind of laser to use, etc. Dr. S. Majaw also



showed the participants how to operate the machine in a power point presentation.

In the next practical session the participants were then gathered at the Biochemistry M.Sc cluster room,, where Dr. S. Bhan along with the assistance from Dr. L. Hynniewta a technical staff in The Department of Biochemistry demonstrate to the participants bout SDS-PAGE, and also the participants were asked to prepare the gel so as to make them familiar with the technique.

### **PROCEEDING ON THE SEVENTH DAY**

The first lecture of the morning session was delivered by Prof. Nirmalendra Saha, Dean of the School of life science and also a senior Professor in the Department of Zoology. Prof. N. Saha delivered a lecture on the technique “**Confocal laser scanning microscopy and its application**”. In his lecture, Prof. Saha explained the principle of working of





Confocal microscopy and also the components that makes up the machine. Most importantly, Prof Saha talks about how the very useful and wide application of the technique in biological research, as with help of such technique important studies like localization of proteins, expression of proteins in various treatment

and control can be done and also observe in real-time which is really a good technique in the sense that it can help the researcher to monitor their experimental changes in the cells via the use of lasers as a source of energy and fluorescence and antibody for specific binding to cell for detection. Prof. Saha concluded the lecture by advising the participants to plan their research in such a way that they could incorporate this technique in their research.



After the first lecture, the participants were gathered for a short tea break. The second lecture of the morning session was delivered by Prof. Arvind K. Singh, a senior faculty of the Department of Biochemistry. Prof. A. K. Singh delivered a lecture on **“Gas Chromatography and its application”**. In this lecture, Prof. Singh gives detailed insight and explanation of the various components that make GC equipment. He also thoroughly explained the various mobile and stationary phases that could be used in the GLC technique depending on the type of molecules or compounds the researcher is working on and what



kind of detectors can be used to detect the compounds depending on the requirements, such that correct interpretation of data in the form of peaks can be done.

After the second lecture, the participants were then gathered for lunch.

In the second half session, the participants then went to the central facility of life sciences, whereby Prof. N. Saha showed the

participants the **confocal microscope physically** and also shows the participants the various components that he had explained during his lecture. Prof. Saha and his scholar then showed the participant how to operate and handle the instrument and also how to capture the image for results, which was really a good learning experience for all.

Then, the participants were gathered in the department of Biochemistry, where Prof. A.K. Singh and his scholar demonstrate the participant about the **Gas Chromatography (GC) and the Gas Chromatography-Mass Spectroscopy (GCMS) instrument**. Prof. Singh showed the participants how to handle and operate the instrument, how to set the instrument before operating it, and also how to load the sample and interpret the result. It was a great experience as the participant got to understand how one can utilize this instrument for analytical research.



### **VALEDICTORY SESSION**

After the practical session, the participant was then gathered in the science cluster



seminar hall, where the valedictory session was conducted with Prof. N. Saha, Dean of School of Life Science, as the Chief Guest, along with Prof. Mayashree B. Syiem, Head Biochemistry Department, Prof. Lakhon Kma, Convenor of the program, Dr. P. K. Ambasht and Dr. S. Bhan, Organizing

Secretary in the Diocese.

Also, there were in attendance a number of faculties from various Department of Life Sciences. Dr S. Bhan then give a remark on the workshop, after which a note from Prof. Saha and Prof. M. B, Syiem was then given. The participants were then called on the stage to share their experiences on the





concluding remark on the workshop and also the vote of thanks. So, overall the workshop was conducted in a very professional and elegant manner, and all the resource person have really inspired the participant through their lectures and also provide the participant with a lasting information on how to utilize the various instrument in their research.

workshop, in which they have implied that they have really enjoyed the workshop and that they have take a lot of knowledge and information from this program. The participants were then handed their certificate of participation.

Then Dr. P. Ambasht give the



### **FUTURE PLAN**

We are motivated to carry out more training sessions of this nature in the near future with improvements thanks to the response and input we have got from the participants. We will take similar action in the future as a result of their comments.

### **ACKNOWLEDGEMENTS**



The Department of Science and Technology (DST) New Delhi has sanctioned a project under Synergistic Training Program Utilizing the Scientific & Technological Infrastructure (STUTI) program to North Eastern Hill University in collaboration with SAIF, Panjab University Chandigarh. We would also like to thank DST for liberal funding. Support from departmental Ph.D. students is highly appreciated. We would like to thank the University for supporting the Department to conduct this programme. We would like to thank all the speaker and

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experts who have spared their time to enlighten the students on various topic that have really help enrich their knowledge. Without the assistance of the student volunteers, no academic event can be planned in the department. We appreciate your participation in every facet of the event and your enthusiasm, dear pupils. Last but not least, I want to express my gratitude to the whole administrative team, the support team, and everyone else who helped make this training programme a huge success.

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