

# 77TH TRAINING PROGRAMME OF NITUB



## TRAINING PROGRAMME ON THE USE, MAINTENANCE AND TROUBLE-SHOOTING OF NUCLEAR MAGNETIC RESONANCE (NMR) SPECTROSCOPY

**19–23 December 2021**

### *Organized by*

Network of Instrument Technical personnel and User scientists of Bangladesh (NITUB).

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Bangladesh Council of Scientific and Industrial Research (BCSIR).

### *Venue*

Institute of National Analytical Research and Service (INARS),  
BCSIR.

Dr. Qudrat-E-Khuda Road, Dhanmondi, Dhaka-1205.

### *Programme Committee*

Professor Nilufar Nahar Former Chairperson Department of Chemistry, DU and Treasurer, NITUB	Convener
Shamim Ahmed Director (in-charge) INARS, BCSIR, Dhaka	Member
Muhammad Abdullah Al-Mansur PSO INARS, BCSIR, Dhaka	Member
Md. Tanvir Uddin Instrument Engineer, NITUB	Member Secretary

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## Background

Network of Instrument Technical personnel and User scientists of Bangladesh (NITUB) is a voluntary, non-profitable, non-political learned society dedicated to scientific education and research. NITUB is functioning since 1994 with the aim to improve the capability of scientists and technical personnel of Bangladesh to use, maintain and trouble-shoot scientific equipment.

NITUB regularly conducts training programmes on the use, maintenance and trouble-shooting of specific groups of instruments such as AAS, GC, HPLC, UV-VIS&IR, X-ray, NMR etc. NITUB also conducts training programmes on Common Laboratory Equipment and Common Medical Instruments. So far, NITUB has conducted 76 training programmes through which more than 1000 scientists and technical personnel have been trained. NITUB conducts a very important programme, Instrument Repair Programme, throughout the year since 1996 through which more than 1800 non-functioning scientific instruments of different public and private organizations of Bangladesh have already been repaired.

NITUB has been conducting its activities hands-on so that scientists and technical personnel get direct exposure to instrumentation which help them to use their instruments more effectively. However, due to COVID-19 pandemic NITUB had to arrange its activities virtually for almost last two years. Since the COVID -19 situation has been improved significantly and all education and research organizations in Bangladesh have started functioning off-line, the EC of NITUB decided to start NITUB programmes again in person. The 77<sup>th</sup> training programme of NITUB would be on the use, maintenance and trouble-shooting of Nuclear Magnetic Resonance (NMR) Spectroscopy.

## Training Programme

The 77<sup>th</sup> training programme of NITUB will consist of theoretical lectures and practical sessions on operation, analytical applications, maintenance and trouble-shooting of NMR Spectroscopy. A draft schedule of the training programme is given in this brochure; however, the final programme will be

sent later to all selected participants. The training programme will be conducted by university professors, senior scientists and technical experts.

## Participants

A maximum of 15 (Fifteen) participants will be selected from among the applications of young faculty members, graduate students, scientists and technical personnel of public and private educational institutes, pharmaceuticals and research organizations. Interested regional and international applicants are welcome to attend the training programme. Applicant having NMR Spectroscopy at his/her working place will get preference to participate in the training.

## Registration

Applications to participate in the 77<sup>th</sup> training programme on NMR Spectroscopy should reach the General Secretary of NITUB on or **before 12 December 2021** in the prescribed form given in the circular. Application must be sent through proper channel **along with a training fee of Tk. 10,000/- (taka ten thousand) in the form of a bank draft or pay order in the name of “NITUB” (Sonali Bank Limited, Dhaka University Branch, Account No. 4405734255099)**. Training fee will include registration, teaching materials, lunch and tea.

Selected participants will get soft copies of acceptance letters on or before **15 December 2021** and the training fee of the applicants who could not be accommodated will be refunded within a week.

## **Tentative Programme**

### **19-12-2021 (Sunday)**

0900-1000 - Registration

1000-1100 - Inauguration

1100-1130 - Tea

1130-1300 - **Lecture 1:**

Basics of NMR spectroscopy

1300-1400 – Lunch Break

1400-1630 - **Laboratory session -1**

Demonstration of 400 MHz NMR

1630-1730 - Tea & Discussion

### **20-12-2021 (Monday)**

0930-1100 - **Lecture 2:**

NMR Spectroscopy: what structural information we can get from the  $^1\text{H}$  NMR spectrum and how to interpret the  $^1\text{H}$  NMR spectra of simple organic compounds.

1100-1130 - Tea

1130-1300 – **Laboratory Session -2**

Group A:  $^1\text{H}$  &  $^{13}\text{C}$  NMR analysis of Natural Product compound

Group B: Data Interpretation of NMR Spectra

1300-1400 – Lunch Break

1400-1630 - **Laboratory session -2(continuation)**

Group B:  $^1\text{H}$  &  $^{13}\text{C}$  NMR analysis of Natural Product compound

Group A: Data Interpretation of NMR Spectra

1630-1700 - Tea & Discussion

### **21-12-2021 (Tuesday)**

0930-1100 - **Lecture 3:** Structure Elucidation by NMR Spectroscopy

1100-1130 - Tea

1130-1300 – **Laboratory Session -3**

Group A: Distortion less Enhancement of Polarization Transfer (DEPT)  $135^\circ$ ,  $90^\circ$  and  $45^\circ$  NMR analysis of Natural Product compounds

Group B: Structure Elucidation of Natural Product compounds using 1D Spectrum

1300-1400 – Lunch Break

1400-1630 - **Laboratory session -3(continuation)**

Group B: Distortion less Enhancement of Polarization Transfer (DEPT)  $135^\circ$ ,  $90^\circ$  and  $45^\circ$  NMR analysis of Natural Product compounds

Group A: Structure Elucidation of Natural Product compounds using 1D Spectrum

1630-1700 - Tea & Discussion

### **22-12-2021 (Wednesday)**

0930-1100 – **Lecture 4:** Trouble Shooting and Maintenance of NMR

1100-1130 - Tea

1130-1300 - **Laboratory session -4**

Group A:  $^1\text{H}$ - $^1\text{H}$  Correlation (Cosy), Heteronuclear Multiple Bond Correlation (HMBC) and Heteronuclear Single Quantum Correlation (HSQC) NMR analysis of Natural Product compounds

Group B: Structure Elucidation of Natural Product compounds using 2D Spectrum

1230-1400 – Lunch Break

1400-1630 - **Laboratory session -4(continuation)**

Group B:  $^1\text{H}$ - $^1\text{H}$  Correlation (Cosy), Heteronuclear Multiple Bond Correlation (HMBC) and Heteronuclear Single Quantum Correlation (HSQC) NMR analysis of Natural Product compounds

Group A: Structure Elucidation of Natural Product  
compounds using 2D Spectrum



## 77<sup>th</sup> Training Programme of NITUB

On the use, maintenance and trouble-shooting of NMR  
Spectroscopy  
19-23 December 2021

### APPLICATION FORM

<b>Name of the applicant</b> (Block Letter)	
<b>Date of birth</b>	
<b>Academic qualification</b>	
<b>Designation</b>	
<b>Institute/Organization with address</b>	
<b>Phone / cell phone number</b>	
<b>E-mail Address</b>	
<b>Any previous training If yes, please specify</b>	
<b>Date:</b>	<b>Signature of the applicant</b>

Recommendation from the Head of Institution / Organization

Date:

Signature

Name &  
Seal

1630-1700 - Tea & Discussion

### 23-12-2021 (Thursday)

1000-1100 - **Laboratory session -5**

Refilling of Liquid N<sub>2</sub> in NMR

1100-1130 - Tea

1130-1200 - **Laboratory session -6**

Group A: Interpretation of NMR spectra of inorganic compound

Group B: Interpretation of NMR spectra of organometallic  
compound

1200-1230 - **Laboratory session -6(continuation)**

Group B: Interpretation of NMR spectra of inorganic compound

Group A: Interpretation of NMR spectra of organometallic  
compound

1230-1400 – Lunch Break

1400-1530 – Open Discussion, Evaluation & Feedback

1530- - Closing and certificate awarding ceremony

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