



## One Week Training Program

On

Advanced Instrumental Techniques in Chemistry and Material Sciences (AITCM'S 22)

Under

Synergistic Training program Utilizing the Scientific & Technological Infrastructure

An initiative of Department of Science & Technology (DST), Govt. Of India

Organized by

Department of Chemistry, BIT Mesra, Ranchi-835215



### One Week Training Program on "Advanced Instrumental Techniques in Chemistry and Material Sciences (AITCM'S 22)" (09<sup>th</sup> May – 15<sup>th</sup> May, 2022)

The Department of Science and Technology, Government of India, has given the responsibility to IIT (ISM) Dhanbad to build human resources and its knowledge capacity using open access science and technology infrastructure through the scheme "*Synergistic Training Program Utilizing the Scientific and Technological Infrastructure (STUTI)*". Thus, under DST-STUTI programme of IIT (ISM) Dhanbad, a one-week training program on "*Advanced Instrumental Techniques in Chemistry and Material Sciences (AITCM's 22)*" is organized from 09<sup>th</sup> May to 15<sup>th</sup> May, 2022 at BIT Mesra, Ranchi.

This training program was coordinated by Dr. Sumit Mishra, Associate Professor, Department of Chemistry, BIT Mesra, Ranchi and Dr. Parthasarathi Das, Associate Professor, Department of Chemistry and Chemical Biology, IIT (ISM) Dhanbad. This program includes thirty participants (Faculty/Research Scholar) from various universities/colleges in Jharkhand, Odhisa, Kolkata, Uttar pradesh and Bihar, with no more than three from the same university/college.

#### Highlights of the Day-1 (Dated: 09<sup>th</sup> May, 2022)

The first day of the training program began with a brief introduction to the program's purpose and significance. The introduction energized the participants' interest in science and engineering. The participants were then given a welcome kit that included a bag, a note pad, a power kit (pen, pencil, eraser, sharpener), and a program pamphlet.

Following that, two consecutive lectures were scheduled, with a relatively short tea break in between. The introduction and application of the NMR spectroscopy were the focus of these lectures. The first lecture (from 10:00 AM to 11:15 AM) was delivered by Prof. Ashoke Sharon, Department of Chemistry, BIT Mesra and the second lecture (from 11:30 AM to 12:45 PM) was delivered by Prof. Anirban Pradhan, Department of Chemistry, BIT Mesra.

Next, after the lunch break, a practical demonstration (from 2:00 PM to 5:00 PM) of the NMR spectroscopy was provided by Prof. Ashoke Sharon and Prof. Anirban Pradhan, Department of Chemistry, BIT Mesra.





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### Highlights of the Day-2 (Dated: 10<sup>th</sup> May, 2022)

On the second day, two lectures were given on FTIR and Computational Chemistry lab. The first lecture (from 10:00 AM to 11:15 AM) was delivered by Prof. Barnali Dasgupta Ghosh, Department of Chemistry, BIT Mesra and the second lecture (from 11:30 AM to 12:45 PM) was delivered by Prof. Debdutta Chakraborty, Department of Chemistry, BIT Mesra.

Next, after the lunch break, a practical demonstration (from 2:00 PM to 5:00 PM) on FTIR was provided by Prof. Barnali Dasgupta Ghosh and Prof. Debdutta Chakraborty, Department of Chemistry, BIT Mesra.

### Highlights of the Day-3 (Dated: 11<sup>th</sup> May, 2022)

On the second day, two lectures were given on HPLC and Flash Chromatography. The first lecture (from 10:00 AM to 11:15 AM) was delivered by Prof. Ashoke Sharon, Department of Chemistry, BIT Mesra and the second lecture (from 11:30 AM to 12:45 PM) was delivered by Prof. K. K. Pradhan, Department of Chemistry, BIT Mesra.

Next, after the lunch break, a practical demonstration (from 2:00 PM to 5:00 PM) on HPLC and Flash Chromatography was provided by Prof. Ashoke Sharon and Prof. K. K. Pradhan, Department of Chemistry, BIT Mesra.

### Highlights of the Day-4 (Dated: 12<sup>th</sup> May, 2022)

Similarly, two lectures were given on Flame Photometer AAS and ICP-OES. The first lecture (from 10:00 AM to 11:15 AM) was delivered by Prof. Sumit Mishra, Department of Chemistry, BIT Mesra and the second lecture (from 11:30 AM to 12:45 PM) was delivered by Prof. A. K. Mishra, Department of Chemistry, KIIT Bhubaneswar.

Next, after the lunch break, a practical demonstration (from 2:00 PM to 5:00 PM) on the Flame Photometer AAS and ICP-OES was provided by Prof. Sumit Mishra and Prof. A. K. Mishra.

### Highlights of the Day-5 (Dated: 13<sup>th</sup> May, 2022)

Similarly, on the fifth day, two lectures were conducted based on the FESEM and XRD. The first lecture (from 10:00 AM to 11:15 AM) was delivered by Prof. Dilip Singh, Department of Physics, BIT mesra and the second lecture (from 11:30 AM to 12:45 PM) was delivered by Prof. S. K. Rout,





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Department of Physics, BIT Mesra.

Next, after the lunch break, a practical demonstration (from 2:00 PM to 5:00 PM) on FESEM and XRD was provided by Prof. Dilip Singh and Prof. S. K. Rout, Department of Physics, BIT Mesra.

Highlights of the Day-6 (Dated: 14<sup>th</sup> May, 2022)

Similarly, on the sixth day, two lectures based on UV-Visible and Spectrophotometer were given. The first lecture (from 10:00 AM to 11:15 AM) was delivered by Prof. Subhendu Naskar, Department of Chemistry, BIT Mesra and the second lecture (from 11:30 AM to 12:45 PM) was delivered by Prof. Joydeep Dhar, Department of Chemistry, BIT Mesra.

Next, after the lunch break, a practical demonstration (from 2:00 PM to 5:00 PM) on the UV-Visible and Spectrophotometer was provided by Prof. Subhendu Naskar and Prof. Joydeep Dhar, Department of Chemistry, BIT Mesra.

Highlights of the Day-7 (Dated: 15<sup>th</sup> May, 2022)

Similarly, two lectures based on the Electrochemical Analyzer and Mass Spectrometry were given on the seventh day (the last day of the training program). The first lecture (from 10:00 AM to 11:15 AM) was delivered by Prof. S. S. Mahapatra, Department of Chemistry, BIT Mesra and the second lecture (from 11:30 AM to 12:45 PM) was delivered by Prof. Atul Kumar, Department of Chemistry, BIT Mesra.

Next, after the lunch break, a practical demonstration (from 2:00 PM to 5:00 PM) on the Electrochemical Analyzer and Mass Spectrometry was provided by Prof. S. S. Mahapatra and Prof. Atul Kumar, Department of Chemistry, BIT Mesra.

Following that, the certificate distribution took place, followed by a closing speech. Throughout the training programme, a formal discussion environment was established for the exchange of scientific and technological knowledge.

**Prof. Sumit Mishra**  
Program Coordinator

**Prof. Sagar Pal**  
PI (DST-STUTI)

**Prof. R. K. Gangwar**  
Co-PI (DST-STUTI)

**Prof. Parthasarathi Das**  
Program Coordinator