BIT MESRA

DEPARTMENT OF
SCIENCE & TECHNOLOGY

IIT(ISM) DHANBAD

आज़ादी का अमृत महोत्सव

One-week Hands-on Training Workshop on
"Preparation and Characterization of Oral Solid Dosage Form"

आज़ादी का अमृत महोत्सव

10th-16th June 2022

Conducted by

DEPARTMENT OF PHARMACEUTICAL SCIENCES AND TECHNOLOGY
BIRLA INSTITUTE OF TECHNOLOGY MESRA (BIT MESRA) RANCHI-835215

Under

DST-STUTI PROGRAMME OF INDIAN INSTITUTE OF TECHNOLOGY (ISM) DHANBAD-826004

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The one-week training program on **"Preparation and characterization of oral solid dosage form"** will be organized by the Department of Pharmaceutical Sciences and Technology, Birla Institute of Technology Mesra (BIT Mesra), Ranchi under the banner of 'Synergistic Training program Utilizing the Scientific & Technological Infrastructure (STUTI)' project of Department of Science and Technology (DST), Government of India. The training content is considered to impart knowledge on the development of formulation and some advanced instrumental techniques used for the characterization of pharmaceutical formulations. This module will be beneficial for the researchers actively engaged in research or consultancy work. Participants will have to go through the classroom teaching which will be followed by the laboratory demonstration of each instrument. So, the practical operation procedures, and interpretation of analysis results of each instrumental technique will be discussed in detail. The theory session will be followed by a hands-on laboratory demonstration for a better understanding of the principle and operation of the instruments and the use/ interpretation of the data. Tentative schedules and topics to be covered within this module are as follows:

ACTIVITY	DELIVERABLES
Tablet manufacturing and in-process quality control study	Equipment like rapid mixture granulator, blender, fluidized bed processor, tablet compression machine, fluidized coater, etc. are used for tablet manufacturing purposes. Disintegration apparatus, hardness tester, friability apparatus, dissolution apparatus, etc. are used for the in-process quality control study. Overall, exposure to tablet manufacturing and in-process quality control study will be given.
Differential scanning calorimetry (DSC) and thermogravimetric analysis (TGA) (FIST Supported)	DSC is used to understand the behavior of the material as a function of temperature. Thus, DSC is widely used to perform the compatibility study of pharmaceuticals and excipients. It is also used to understand the different forms of multi-component or single component solids. We will learn the principle of the instrument and learn the analysis of the thermogram. TGA is also very useful in understanding the thermal degradation kinetics of pharmaceutical excipients. We will learn the principle of the instrument and learn the analysis of TGA data.
High-performance liquid chromatography (HPLC) (FIST Supported)	HPLC is one of the prominent separation techniques. It is widely used in the analysis of pharmaceuticals in dissolution samples, assay samples, etc. Here, we will learn the concepts, operations, and working of HPLC.
Powder X-ray diffraction (PXRD)	PXRD is a technique for the determination of crystal structure of pharmaceuticals. It is also used in compatibility studies and in characterizing the different forms of multi-component or single component solids. Here, we will learn the concepts, operation, and working of PXRD.
Field emission scanning electron microscope (FESEM) (FIST supported)	FESEM is used to determine the morphology of samples. We will learn principles, operation, sample preparation, and various case studies of analyzed samples.
Fourier transform infrared (FTIR) (DST FIST Supported) & Particle size analyzer	FTIR is one of the first hands instruments used for the characterization of samples, and to know about the functional groups present in it. We will learn the analysis, operation, and interpretation of spectra using FTIR. Particle size analyzer is used to understand the effect of particle size on various properties of nanoformulations. We will learn the principle of the instrument, working, and data analysis.
Single crystal X-ray Diffraction (SCXRD)	SCXRD provides comprehensive data on molecular structure and arrangement in three dimensional (3-D) space. We will learn basic principles, operation and applications of this system.

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