

It is our great pleasure to announce the Self Sponsored Online Short-Term Course (STTP) on “Advanced Methods of Material Characterization and Surface Analysis” (AMCSA 2021) by Central Research Facility, Maulana Azad National Institute of Technology, Bhopal, during Feb. 27-03 March, 2021.

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Note: All email correspondence must be addressed with the subject “AMCSA2021”

About the institute

Maulana Azad National Institute of Technology (M.A.N.I.T), Bhopal is one of the pioneering engineering institutes of the country which has contributed many outstanding engineers. It is named after the great scholar, educationist and the first education minister of Government of India, Maulana Abul Kalam Azad. It was established in the year 1960. Currently, the institute is conducting 09 UG, 30 PG programs and Ph.D. programmes in all the disciplines of engineering and applied sciences and also conducting M.B.A programme with the help of about 200 competent faculty members. Special attention is given to interdisciplinary application-oriented research with an aim of bridging the gap between academicians and industry professionals.

SELF SPONSORED ONLINE SHORT TERM TRAINING PROGRAM

ON

ADVANCED METHODS OF MATERIAL CHARACTERIZATION AND SURFACE ANALYSIS

(Feb. 27-03 March, 2021)

Patron

Prof. N.S. Raghuwanshi

Director, MANIT Bhopal

Advisors

Prof. M.M. Malik

Prof. Rajnish Kurchania

Prof. N. P. Partidar

Dr. Fozia Z Haque

Program Coordinators

Dr. S. Suresh

Dr. D.K.Sharma

Dr. Piyush K. Patel



Organized by

Department of Physics

Maulana Azad National Institute of Technology

Bhopal – 462 003

Website: www.manit.ac.in

About the Department:

Physics Department of MANIT Bhopal is one of the founding Department of the Institute since 1960 when the institute was Maulana Azad College of Technology (MACT). The department runs an M.Tech. course in Nanotechnology since 2006 with an intake of 18 students. A center of Nanoscience and Engineering is formed within the Department in 2014. The Department and the centre is engaged in research leading to Ph.D. and teaching in the frontier areas of experimental sciences. It is well established laboratories at UG, PG and research level. Department has sophisticated instruments like AFM, BET, UV-visible, PL-Spectrophotometer and nanofiber synthesis unit. It strengthens the research-relevant infrastructure of basic science and technology.

About the One Week STTP

The identification and analysis of materials span almost all the areas of science and engineering. The methods and equipment's suitability for their intended use in research should be demonstrated to validate their applications. This short-term training program designed to provide a demonstration on the modern trends in qualitative and quantitative investigation of substances while reviewing the most recent advances in instrument design and operational methodology. In order to better understand the research processes for different materials our experts will discuss theory, operation and applications of various equipment's such as Electron microscope, XRD, HPLC TG/DTA-DSC, BET, GCMS, AFM, Photovoltaics and modern optical spectroscopy methods for materials and surface analysis. A FESEM/TEM is a microscope technique that works with electrons used to understand electronic properties and atomic/molecular topographic details of substance. Several case studies involving the application of AFM methods for materials structural and topographic analysis will be discussed that allows touching the material at the nanoscale level and perform force spectroscopy. The basic principle, sample preparation and applications with suitable examples to understand the complexity of

Physisorption and Chemisorption will be presented using Brunauer-Emmett-Teller (BET) surface area analysis. Practical concepts of HPLC highlighting the development of a normal phase and reverse phase chromatographic separation to monitor kinetics will be conferred. Separate sessions devoted to GC-MS and thermal analysis to identify the compound category, retention time, boiling points, and Phase Diagrams along with general applications of DSC and TGA, DTA respectively. XRD analysis for phase identification, quantitative mixtures analysis, rocking curve, etc. will be demonstrated. Further, optoelectronic and semiconductor properties of the materials will be illustrated using photovoltaic methods (EIS, solar stimulator etc.) and UV-VIS-IR spectroscopy including single-particle imaging and spectroscopy methods.

The focus of “AMCSA” isto understand the working and operations of the above-mentioned instrumentsto avoid the artifacts, mistakes and misconceptions in materials research. One can join our experts in live and interactive webinar discussions for

- Understanding operations, testing and calibration of research instruments for materials science/engineering.
- Identification of scientific tools and advanced instrumentation for obtaining the best quality analytical results in materials research.
- Strategic optimization of analytical workflow for improved results and reproducibility.

CONTENTS

The major areas of the STTP are:

- Electron Microscope: FESEM/ TEM
- AFM & Force Spectroscopy
- XRD: Powder/mixtures/Thin film
- Thermal Analysis: TGA/DSC/DTA
- Chromatography, HPLC
- GCMS, BET
- UV-Visible & FTIR
- Single Molecule Imaging & Spectroscopy
- EIS & Solar stimulator

REGISTRATION

Participants	Amount
Diploma/UG/PG/PhD Students	Rs. 500/-
Faculty of Academic InstitutesandR&D organization	Rs. 500/-
From Industry	Rs. 500/-

Registration forms are available on Institute websitewww.manit.ac.in.

The completed registration form may be sent along with Demand Draft payable in favor of “Director, MANIT Bhopal”, payable at S.B.I, MANIT Bhopal Branch. The last date for application is 24 Feb.-2021.

Details of Money-Transfer by net-banking: Account Name: Director MANIT Bhopal
 Bank Name: State Bank of India
 Bank Address: MANIT (MACT) Bhopal
 Account No. 10020150107
 IFSC Code: SBIN0001608

In net banking money transfer please clearly mention narration in remark column as “Registration fee for AMCSA 2021” otherwise it will be difficult to trace the money transfer and receipt may not be issued.

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ADVANCED METHODS OF MATERIAL CHARECTERIZATION AND SURFACE ANALYSIS (Feb. 27-03 March, 2021)

Registration Form (online/offline/spot)

Name of the Candidate (Capital letters):

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Address:

.....

Fax:

Phone: (R)..... (O)
(with STD code)

E-mail:

Qualification:

Present Position:

Relevant Experience:

PAYMENT DETAILS:

Bank Name:
 Amount: DD no:
 Date:

Date: Signatureof Applicant