



**AICTE Training and Learning (ATAL)
Academy sponsored
One Week Online Faculty Development Program
(FDP)**

On

***“Novel Materials: Advances and
Applications”***

24th– 28th September 2021

Organized by

AICTE Training and Learning (ATAL) Academy



and

**Department of Chemical Engineering
Jointly with
Metallurgical and Materials Engineering
National Institute of Technology
Raipur-492 010 (Chhattisgarh)**



Chief Patron

Dr. A. M. Rawani, Director, NIT Raipur

Patron

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Chairperson

Dr. A K Poonia, HoD

Department of Chemical Engineering
and

Dr. M K Manoj, HoD

Department of Metallurgical and Materials
Engineering

Course Coordinators

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Resource Persons

- Prof. Neelam Srivastava, Professor of Physics, IIT BHU
- Prof. Dr Narendra K. Bodhey, Professor and Head, Department of Radiodiagnosis, AIIMS Raipur
- Dr. Gaurav Kumar Gupta, Principal Scientist, CSIR AMPRI Bhopal
- Dr. Shilpee Jain, Entrepreneur-in-Residence, Society for Innovation and Development, IISc Bangalore
- Prof. Vimal Katiyar, Chemical Engg., Dean (R&D) IIT Guwahati
- Prof. Anil Verma, Chemical Engg., Assoc. Head, CEP/QIP/TEQIP, IIT Delhi
- Prof. Rajesh Khanna, Chemical Engg., IIT Delhi
- Prof. VC Srivastava, HoD Chemical Engg., IIT Roorkee
- Prof. Sishir Sinha, Chemical Engg., IIT Roorkee
- Shailesh Kumar, Global Product Manager, TE Connectivity
- Dr. Muralidhar, JMP Academic Ambassador, JMP Statistical Discovery.

About the Institute NIT Raipur is situated in the capital of Chhattisgarh, has proven to be "avant-grade" in the field of science and technology over past few decades in this region. With sweet memory of foundation ceremony by President Hon'ble Dr. Rajendra Prasad on 14th September 1956, the institute started with two departments namely Metallurgical and Mining Engineering. From 1st December 2005, the institute has become the National Institute of Technology. It is well connected with Mumbai, Delhi and all metro cities by regular flights and is on the main Howrah-Mumbai railway route. The institute is 5 km from the Raipur railways station and 18 km from airport on NH-6, the Great Eastern Road.

Objectives and Scope

Materials Science and Engineering is the interdisciplinary field connecting chemistry, physics, chemical, metallurgy, electrical, mechanical, architecture etc. which concentrates on the properties of a material and their microstructure which may be tailored for desired application. The advancement in Materials Science has led to the designing and development of novel materials for engineering applications required for the industrial and socio-economic development. Recent progress in theoretical and experimental approaches, as well as novel technological applications, have advanced the frontier of this field, but also brought challenging new problems into focus, to which this workshop is dedicated. As novel materials will play a key role in science and technology in the 21st century, still there is a big gap between the manufacturing side, material testing and characterization of Novel Materials. This workshop will identify the current frontier of understanding and speculate on what type of new ideas or tools might be needed to push further cutting-edge research in the field.

The objectives of this workshop will be providing an interdisciplinary forum for PG students, researchers, faculty/teachers and industry persons, engaged in the full spectrum of research, development, application, and to discuss the current state of the art and recent developments of advanced materials with a focus on real life applications.

Themes

The short-term training program aims to include the following topics:

- Novel Materials and Applications
- Futuristic Novel Materials
- Processing of Novel Materials
- Characterization and Testing Methods of Novel Materials
- Data Analysis and Interpretation Using Software Tools
- Structural Characterization and Image Analysis
- Emerging Novel Materials for Energy Storage and Conversion
- Hybrid Materials
- Novel Eco-Friendly Materials
- Responsive and Functional Materials
- Smart and Active Polymeric Composite
- Nano Materials and Nanotechnology
- Novel Electronic Materials, Design and Recent Developments
- Novel Architectures

Experts/Resource Persons

Resource Persons for FDP are from IITs, NITs, National Research Labs, Industries and other reputed organizations.

Target Participants

Faculty members of the AICTE approved institutions, Research scholars, PG Scholars, participants from Government, Industry (Bureaucrats/Technicians/Participants from Industry etc.), Staff of NIT Raipur

Registration Fee

There is no registration fee for participants.

Online registration

Signup and register using this link
<https://www.aicte-india.org/atal>

Selection

The seats are limited to 200 candidates. The preference will be on first-come basis. The intimation regarding selection will be sent to the candidates by email as per the schedule.

Note

A test will be conducted by coordinators at the end of the program. The certificate shall be issued to those participants who have attended the program with 80% attendance and scored minimum 60% marks in the test.

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Tentative Schedule

Date	9:30 AM to 9:45 AM	10:00 AM to 11:30 AM	12.00 PM to 1.30 PM	2:30 PM to 4.00 PM
24.09.2021	Inauguration	Session 1 Fundamentals of Materials (Prof. Rajesh Khanna)	Session 2 Futuristic Novel Materials (Futuristic Electrolyte for flexible devices - Prof. Neelam Srivastava)	Session 3 Success without Stress (Art of Living, Bangalore - Dr Namita Kumari)
25.09.2021		Session 4 Characterization and Testing of Novel Materials for Organic Solar Cells (Prof. Vimal katiyar)	Session 5 Synthesis & Characterisation of bio-membrane in fuel cell application (Prof. Sishir Sinha)	Session 6 Lab 1: Synthesis of Novel Materials (Prof. V C Srivastava & Dr. Dharm Pal)
26.09.2021		Session 7 (Industry)Unfolding possibilities in materials & processings in medical devices (Shailesh kumar)	Session 8 Emerging Novel Materials for Energy Storage and Conversion Devices (Prof. Anil Verma)	Session 9 Lab 2: Characterization and Testing of Novel Materials (Prof. Anil Verma & Dr. Neha Gupta)
27.09.2021		Session 10 Nano Materials and Nanotechnology (Nanomaterials: Design and Medical Applications - Dr. Shilpee Jain)	Session 11 Metallic foams for biomaterial application- (Dr. Gaurav Kumar Gupta)	Session 12 Design and Recent Developments (Armemantarium of an Interventional Radiologist - Present Scenario and expectations from a Biomaterial Scientist - Dr Narendra K. Bodhey)
28.09.2021		Session 13 Nanomaterials synthesis through novel routes (Prof. V C Srivastava)	Session 14 Smarter Experimentation and Statistical Discovery for Novel materials using JMP (Dr.Muralidhar Anandamurthy)	Exam and Valedictory Function

Course Coordinators: Dr. Dharm Pal and Dr. Neha Gupta