The Indian Institute of Metals Short Professional Educational Courses(Online) on

"Carbon Nanomaterials: Potential and Product Applications"

(Course Number IIM-25-109)

Online Mode 19th, 20th & 21st August 2025, 09:30 – 13:30 each day

Background: Development of nanomaterials in last four decades have led to myriad of application-oriented research, indicating possible potential of nanomaterials in offering exciting properties. Carbon nanomaterials, specifically carbon nanotubes, the one-dimensional variant and graphene, the two-dimensional variant have triggered even more hope for future products with new functionalities. One study published in 2012 has claimed publication of 52,224 papers and 5,746 patents on carbon nanotube related topics during the period 2000-2010. Another report published in September 2024 has mentioned publication of over 370,000 research papers and filing of 150,000 patents worldwide, only on graphene related matters, during the period 2004-2024. These numbers clearly tell us the promise of these wonder materials and the commercial race among different industrial houses over these two materials.

As far as the commercialization of carbon nanotubes and graphene and their products are concerned, India is still to go a long way to catch up with the front runners in this field. Next 5-10 years should see a huge jump in commercialization of new products and processes related to carbon nanomaterials. This short course focusses on the potentials and existing applications of these carbon nanomaterials, specifically highlighting the areas in which India has already shown promise. This short course is aimed to deliver information and food-for-thought for scientists, researchers and industries to develop commercial carbon nanomaterials related products in the coming decade.

Speakers Profile: The Faculties of this course is drawn from various eminent institutes across India.

1. Dr. Vikas Kumar, Ex-Director, Defense Metallurgical Research Laboratory, Hyderabad, India and visiting faculty to multiple IITs
2. Dr. Kinshuk Dasgupta, Head, Carbon Materials Division, Bhaba Atomic Research Centre, Mumbai, India
3. Dr. Kaushik Chatterjee, Professor, Indian Institute of Science, Bengaluru, India
4. Dr. Anup Kumar Keshri, Associate Professor, Indian Institute of Technology Patna, India
5. Dr. Indranil Lahiri, Professor, Indian Institute of Technology Roorkee, India
6. Dr. Kaushik Pal, Professor, Indian Institute of Technology Roorkee, India
7. Dr. Tapas Laha, Professor, Indian Institute of Technology Kharagpur, India
8. Dr. Viswanath Balakrishnan, Professor, Indian Institute of Technology Mandi, India
9. Dr. Debrupa Lahiri, Professor, Indian Institute of Technology Roorkee, India

The Course Content would be covered in Classroom Lectures accessible through Virtual on-line route from 19th to 21st August 2025.

Who should attend: This course will be immensely useful for practicing professionals working in industries, especially those focusing on new and advanced materials, researchers, academicians in various colleges and universities, students, materials scientists in R&D laboratories and government institutions etc.

Course Content:

Day-1	Day-2
Inaugural Session	**Lecture 5:** Graphene – the 2-D material: Potential, products and market by Dr. Indranil Lahiri
Lecture 1: Carbon Nanomaterials in Defense Applications by Dr. Vikas Kumar	**Lecture 6:** Advanced carbon based materials for sensor and biomedical applications by Dr. Kaushik Pal
Lecture 2: Direct exfoliation of graphite to graphene by age-old technique by Dr. Anup Kumar Keshri	**Lecture 7:** Graphene foam – scalable process and potential by Dr. Indranil Lahiri
Lecture 3: Potential of carbon nanomaterials in structural composites by Dr. Debrupa Lahiri	**Lecture 8:** Carbon nanomaterials for tissue regeneration by Dr. Kaushik Chatterjee
Lecture 4: Nanomanufacturing of carbon nanotubes: From nucleation to large-scale applications by Dr. Viswanath Balakrishnan	

Day-3		
Lecture 9: Continuous synthesis of carbon nanotube fibers and sheets: From laboratory to industry by Dr. Kinshuk Dasgupta		**Lecture 11:** Carbon based materials for energy generation and storage applications by Dr. Kaushik Pal
Lecture 10: Aluminium-graphene nano-platelet composites by Dr. Tapas Laha		**Valedictory Session**

Registration Fees and Payment Methods

Participant type	Only Theory Course
IIM Members	5000 + 900* = 5900
IIM Non Member	7500 + 1350* = 8850
Student Member	800 + 144* = 944
Student Non-member	1200 + 216* = 1416
* (18% GST)	

- Participants may join for the 3 days course module which shall be conducted virtually.
- Advance payment of Registration fees is mandatory.
- Participation fee is non-refundable; however, change in nomination is possible.
- Students may furnish suitable proof of they being students while filling in the online form.
- 10% discount shall be offered if more than 5 participants are nominated by any Organisation.

Participants are requested to register via

https://shorturl.at/0BZsN [For Individuals],
https://shorturl.at/DEAwb [For Organizations]

and pay online as per the details given below.

The online transaction receipt, mentioning the course number IIM-25-109 may be uploaded by using the link provided in google form. Alternately, a demand draft in favour of "The Indian Institute of Metals" payable at Salt Lake, Kolkata can be sent to The Indian Institute of Metals, Metal House, Plot 13/4, Block AQ, Salt Lake, Sec V, Kolkata : 700 091.

Contact Person :

Ms Nabatara Mitra
The Indian Institute of Metals
Plot 13/4, Block AQ,
Salt Lake, Sec V,
Kolkata: 700 091

readingroom@iim-india.net /
iimshortonlinecourses@gmail.com

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