

## QIP SHORT TERM COURSE

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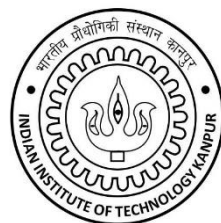
### *Nanoscopy and Nanoanalysis of Materials* (*Nanoscopy – 2018*)



**10 – 14 September, 2018**

Venue:

PBCEC, Visitors Hostel (VH)  
Indian Institute of Technology Kanpur



Department of Materials Science & Engineering  
Indian Institute of Technology Kanpur  
Kanpur, 208 016

## ABOUT THE COURSE

Imaging at atomic resolution and elemental analysis at nanoscale has become essential characterization in advanced materials processing/development/design. The range of experimental techniques available have been increasing and the researchers need to develop a high degree of expertise, both in the conduct of the analysis using these tools and interpretation of the acquired data/results. The lack of exposure and expertise in these techniques is becoming more and more a limitation in carrying out the high quality of research using these advanced research tools/techniques. This course aims to address this shortcoming.

## SCOPE AND OBJECTIVE OF THE COURSE

The course will start with introduction to various techniques and related fundamentals. It will also provide case studies of most challenging and precise analyses using these equipment. Both the theoretical aspects and practical applications will be discussed. The course is designed to cater both the aspiring students and advanced researchers looking for an insight into the atomic/nano-/micro-scale details of materials. The objectives of the course are:

- To give the basic understanding and an overview of advances in a range of techniques for nanostructures and nanoscale composition analysis.
- With practical and demonstrations, provide firsthand feel for designing and carrying out experiments/ analysis on using these tools and techniques.
- Data analysis and interpretation with a range of selected case studies.

## NANO-CHARACTERISATION TOOLS/TECHNIQUE

The course will cover nano-characterization tools and Techniques viz. TEM, STEM/HAADF, HRTEM, SPM, and nano-analysis with EDS, EELS and APT. Major topics to be covered are:

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|---|---|
| ○ Nanoscopy and nano-analysis                         | ○ 3D Nanoscale and Atomic scale imaging analysis  |
| ○ Nanostructure analysis by CTEM                      | ○ Nanoscale/atomic element analysis using STEM/HAADF/EDS/EELS and atom probe tomography (APT) |
| ○ TEM Electron Diffraction and diffraction techniques | ○ Specimen preparation for TEM and APT  |
| ○ Atomic resolution using HRTEM                       |   |
| ○ Scanning probe nanoscopy techniques                 |   |
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\* Practical/demos with IITK experimental facilities at MSE/ACMS/AIC

### **APPLICATION/REGISTRATION PROCEDURE**

1. Fill in google form and obtain approval to participate.  
(<https://docs.google.com/forms/d/e/1FAIpQLSfORjZS-Whe95mOszi9-eme1f3jjYUJV0eRnN3aiv76e5uGOA/viewform>)
2. After approval fill in registration form and get signatures.
3. Send completed form along with the registration fee.

**Last date submission of registration Fee & form: 31/08/2018.**

### **REGISTRATION FEES**

A maximum of 30 QIP participants and 10 senior Ph. D students will be selected and the participants need to send a letter from their Head of the Institute/Department, in support of their application. Ph.D Students should route their application through supervisor/HOD.

1. Faculty from AICTE Institutes coming under QIP program  
(refundable only on participation): Rs. 1000/-
2. Faculty from private/autonomous Institutions: Rs. 10,000/-
3. Ph.D Students of IITK Rs. 3,000/-
4. Ph.D Students from Educational Institutions: Rs. 6,000/-
5. Participant from Industry and R&D labs: Rs. 15,000/-

For students and non-QIP, last date for withdrawal: 05/09/18  
(With a deduction of Rs. 200/- for postage and handling)

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*Payment only by demand draft  
in favour of*

***Coordinator, CEP, IIT Kanpur***

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### **ARRANGEMENT FOR FOOD**

Food is being arranged in VH dining hall for all the registered participants. Breakfast, lunch, dinner will be provided. Tea/coffee and snacks will be provided at the venue during breaks. VH is located 1 km from VH extension. Venue for lecture session is located within VH premises.

### **ABOUT ACCOMMODATION**

Accommodation in Visitors Hostel (VH) will be arranged only for participant from outside Kanpur city on advance request at the time of application itself. All participants have to pay the accommodation charges by themselves. The guest room occupants should agree to abide by the existing rules and regulations of VH, IITK.

### **Rental Details:**

#### **Visitors hostel (AC room): For all QIP participants and others**

Single occupancy: Rs. 700/-  
\*Double occupancy Rs. 1100/-

#### **Visitors Hostel Extension (Non-AC): For all student participants only**

Single occupancy: Rs. 200/-  
\*Double occupancy: Rs. 300/-

\* Participants will be placed in shared accommodation in case single occupancy is unavailable.

### **For further information and queries contact:**

<i>Coordinator:</i>	<i>Co-coordinator:</i>
Dr. Gouthama	Dr. J. Bhagyaraj
Professor, MSE Department, IIT Kanpur	REO, MSE Department IIT Kanpur
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Phone No. 0512-3337450	Phone No. 0512-3336763

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### **Address for mailing Registration Form and Fee:**

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Department of Materials Science & Engineering  
Indian Institute of Technology Kanpur  
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Uttar Pradesh

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