REGISTRATION FORM

Short Term QIP Course on
TEM and HRTEM in Materials Characterisation
(TEM/HRTEM-2017)
September 18th – 22nd , 2017

Name: _____

Title/Position: _____

Organization:_____

_____

Mailing Address: _____

_____

_____

Email: _____

Phone(s): _____

Research interests: _____

_____

Accommodation Required: Yes / No

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***Important*: Payment to be sent only after obtaining participation approval through mail**

***Details of enclosed Demand Draft*:**

DD No._____ Dated: _____

Amount (Rs): _____Issuing Bank: _____

Date

Signature of Applicant

About Accommodation:

Accommodation in IITK guest house will be arranged only for participant from outside Kanpur city on request at the time of application itself. QIP candidates will be provided free shared accommodation for the course period. Other participants may have to pay the accommodation charges by themselves. The guest room occupants should agree to abide by the existing rules and regulations of guest house.

Payment only by demand draft in favour of "Coordinator, CEP, IIT Kanpur"

For further information and participation approval, contact:

Coordinator:
Dr. Gouthama
Professor, MSE Department,
IIT-Kanpur
E-mail: gouthama@iitk.ac.in
Phone No. 0512-2597450

Co-coordinator:
Dr. J. Bhagyaraj,
Research Establishment Officer,
MSE Department, IIT-Kanpur
E-mail: bhagya@iitk.ac.in
Phone No. 0512-2596680

SHORT TERM QIP COURSE

ON

TEM and HRTEM in Materials Characterisation

(TEM/HRTEM-2017)

September 18th -22nd, 2017

Venue:

PBCEC, Visitors Hostel
Indian Institute of Technology Kanpur

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

ABOUT THE COURSE

TEM/HRTEM has become the most essential characterization tool in advanced materials processing/development/design. The range of experimental techniques available requires varying degree of expertise, both in the conduct of the analysis on the microscope and interpretation of the acquired data/results. Some of the techniques are highly demanding and sophisticated enough to make their usage impossible without rigorous training and experience. The lack of exposure and expertise in these techniques is becoming more and more a limitation in carrying out the highest possible quality of research using these advanced research tools. This course aims to address this shortcoming.

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CHARACTERISATION TOOLS/TECHNIQUE

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

Transmission Electron Microscopy (TEM)

- Instrument and its attachment
- Physical basis for Electron microscopy
- Contrast mechanism/Interpretations
- Imaging modes: BF, DF and WB-DF
- Defect analysis in TEM
- Electron diffraction: SAED, CBED, etc.
- Fine structure in SADP and interpretations
- Specimen preparation for TEM

Scanning Transmission Electron Microscopy

- Physics behind STEM/HAADF
- Z-contrast imaging
- Atomic scale imaging by STEM
- Nano-Chemical analysis: EDS and EELS
- 3D Tomography of materials

High Resolution Transmission Electron Microscopy

- Basis of Phase contrast imaging
- In-situ studies in TEM/HRTEM
- Image processing and simulations
- Comparison with other Atomic scale imaging AFM/STM/APT etc.

The course will cover the fundamentals as well as applications of complete range of techniques.

SCOPE AND OBJECTIVE OF THE COURSE

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

- Provide fundamentals of electron nanoscopy
- Provide practical training for proper conduct of data acquisition, analysis and interpretation
- To give exposure to range of applications of TEM/STEM/HRTEM
- To provide training for preparing and handling sample for each of these techniques

APPLICATION PROCEDURE

Write and obtain approval to participate before registration. The registration form should be sent to the coordinator along with the registration fee. Participants other than QIP are required to pay for accommodation charges upon their arrival. The last date for receiving the application is ***August 20, 2017.***

REGISTRATION FEES

A maximum of 40 participants will be selected (first-come-first serve basis) 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 on participation): Rs.1000/
2. Faculty from private and autonomous educational 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 Organizations : Rs. 15,000/-

Cancellation charges for all : Rs. 1000/-

(Registration fee covers course materials/kit, tea/breakfast/lunch/dinner for the course period)

To : Prof. Gouthama
Dept. Materials Science & Engineering
Indian Institute of Technology Kanpur
Kanpur 208 016, UP