Hands on Training on
"Electron Microscopy-Why, How and What"

June 15 – July 15, 2017

Organized by:
Sophisticated Analytical Equipments Division
CSIR- National Physical Laboratory New Delhi -110012

Aim and Scope of the Training program:

The ñ**Electron Microscopy: Why, how and what**ò training is organized to provide graduate and postgraduate-level students and researchers in Physics, Chemistry, Materials Science and allied fields with basic knowledge of the capabilities and limitations of Electron Microscopes: Scanning electron microscope (SEM) and Transmission electron microscope (TEM). It includes lectures on theoretical aspects of Electron Microscopy followed by hands-on training sessions. The format and content of the training is tailored to suit the needs of practical microscopist routinely dealing with challenges of instrumental procedures, specimen preparation, data collection and quantification. This will provide a deeper understanding of the Physics underlying the electron microscopy, imaging and analysis.

This one-month training would focus on understanding the basics of SEM and TEM. The emphasis would be on operation of SEM, TEM, Diffraction imaging, and sample preparation techniques for SEM and TEM.Electron Microscopy group houses Zeiss EVO-MA10SEM alongwith two HRTEM: JEM 2100F (JEOL) and Tecnai G2 F30 STWIN (FEI). The aforesaid HRTEMs are equipped with SAED, EDS, dark filed, bright filed and STEM facilities.

Practical session includes sample preparation, working on SEM and TEM, image analysis and alignment procedures. This will help young researches to make best use of electron microscopy. The participant will be competent in operating electron microscopes.

Objectives: **Training on Electron microscope**

Course contents

Provide an understandingof SEM and TEM theory and principles. This includes:
1. Electron-optics of SEMand TEM (lenses, lens aberrations)
2. Image formation and imaging modes in SEM and TEM
3. Diffraction theory and diffraction patterns
4. Image interpretation
5. High resolution microscopy and lattice imaging
6. SEM and TEM sample preparation

Provide "hands-on" training on operation of SEM and TEM. This includes:
1. Construction of SEMs and TEMs
2. Basic SEM and TEM alignment& troubleshooting
3. SEM and TEM imaging
4. High resolution and lattice image microscopy
5. Energy dispersive spectroscopy (EDS)
6. Interpretation of data

Course Coordinators:
Dr. V.N. Singh
Dr. A.K. Srivastava

Team members:
Mr. K.N. Sood
Mr. Dinesh Singh
Mr. Praveen Tanwar
Mr. J.S. Tawale

Application Form for One-Month training on
"Electron Microscopy: Why, How & What"
CSIR- National Physical Laboratory, NPL Delhi-110012

Kindly mail the completed forms to: Head, HRD Dr. K.S. Krishnan Marg, New Delhi -110012 Email:hrd@nplindia.org, singhvn@nplindia.org, Phone: 01145609361	Affix passport size photograph

1. Name of applicant (in block letters): Dr./Ms. /Mr.:

2. Educational qualification:

3. Age (years) and Sex:

4. Address for correspondence:

5. Sponsored or Individual:
If sponsored then by whom

Tel:

Mobile:

Email:

Signatureof Applicant

Fee Structure

- Educational and R&D Institutions: Rs. 18,000/- + 15% Service Tax
- Participants from Industries: Rs. 30,000/- + 15% Service Tax
- The fee in the form of a DD drawn in the name of Director, NPL Delhi payable at Delhi should be sent along with the application form.Online transfer is also acceptable through Syndicate Bank Account No. 91002010030018, NPL, PUSA, NPL Campus IFSC Code SYNB0009100. Kindly confirm the NEFT transfer details through e-mail.

Notes:

- Application should reach Office, HRD,National Physical Laboratory by 5thJune, 2017. Scanned copy may be sent by e-mail to singhvn@nplindia.org and hrd@nplindia.org
- Kindly come to Delhi to attend the training program, only if you have received intimation.
- Maximum number of participants will be limited to 20.
- Participants have to arrange their own boarding and lodging.
- Training material will be given in CD/DVD.
- Training certificates will be provided.