

# Programme

## Monday 12 October

- 8.30 - 9.00 Participants registration  
9.00 - 9.15 Welcome and introduction  
9.15-10.00 Principles of electrons-matter interactions  
(*Roberto Balboni, CNR-IMM Bologna*)  
10.00 - 10.45 Basic and operation of a Scanning Electron Microscope (SEM) (*Andrea Tombesi, CNR-NANO-S3, Modena*)  
10.45 - 11.00 Coffee Break  
11:00-11:45 Signals and detectors in the SEM  
(*Paolo Mengucci, University of Ancona*)  
11:45-12.30 Energy Dispersive Spectroscopy (EDS) Microanalysis (*Amelia Montone, ENEA-Casaccia*)  
12.30:14:00 Lunch break  
14:00-14:45 STEM: image formation and detectors  
(*Vittorio Morandi, CNR-IMM Bologna*)  
14:45-15:30 Optimization of SEM performances  
(*Marco Vittori Antisari, ENEA-Casaccia*)  
15:30-16:15 Sample preparation for SEM analysis  
(*Daniele Mirabile Gattia, ENEA-Casaccia*)  
16:15-16:30 Coffee break  
16:30-17.15 Basic principles of Scanning Helium Ion Microscope (*Marco Vittori Antisari, ENEA-Casaccia*)  
17:15-18.00 Characterization and Microscopies by Synchrotron Radiation Light (*Luca Gregoratti, Elettra Sincrotrone Trieste*)  
*Informative session on recent advances in instruments and techniques*  
18.00 - 18.30 Companies presentation

## Tuesday 13 October

- 9:00-9:45 Introduction to Focused Ion Beam (FIB)  
(*Gian Carlo Gazzadi, CNR-NANO-S3, Modena*)  
9:45-10:30 EBIC - Principles and applications to device diagnostics (*Massimo Vanzi, University of Cagliari*)  
10:30-10:45 Coffee break  
10:45-11:30 In-situ electrical and mechanical probing in the FIB (*Gian Carlo Gazzadi CNR-NANO-S3, Modena*)  
11:30-12:15 3D Photometric Stereo at the SEM.  
Application to microelectronics (*Giovanna Mura, University of Cagliari*)

- Informative session on recent advances in instruments and techniques*  
12.15-13.15 Companies presentation  
13.15-15.00 Lunch break  
15.00 -18.00 Practical sessions

## Wednesday 14 October

- 9.00-12.00 Practical sessions  
12:00-13:00 Lunch break  
13:00-16:00 Practical sessions

### Director

Regina Ciancio (CNR-IOM, Trieste)

### Local Organizing Committee

Stefano Bigaran, Simone Dal Zilio, Silvio Greco, Alessia Matruglio, Luca Piantanida

### Local Technical Support

Matteo Brutti, Vanja Cvelbar

### Supported by:



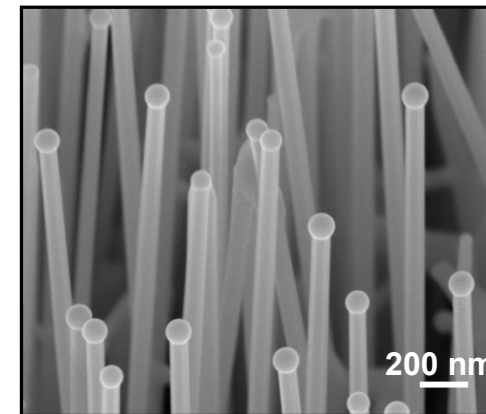
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Istituto Officina dei Materiali



## School of Scanning Electron Microscopy on nanostructured materials and innovative applications

Trieste, 12-14 Ottobre 2015

CNR-IOM - Istituto Officina dei Materiali  
c/o Area Science Park - Basovizza  
Strada Statale 14 km 163,5 - 34149 Trieste

## General Information

The school, jointly organized by SISM and CNR-IOM, aims to provide the concepts and basic physical principles of scanning electron microscopy and microanalysis with a special focus on nanostructured materials and technological applications. The school is addressed to researchers, technicians and students both from academia and industry who wish to acquire the skills necessary for the proper use of scanning electron microscopy and related analytical techniques.

The school includes both lectures and demonstrations at the CNR-IOM facilities. The basic physical principles and the various analytical techniques available in a modern scanning electron microscope will be presented to participants in the form of lectures; practical sessions will be conducted both on a Field Emission Gun (FEG) Scanning Electron Microscope (SEM) and on a Focused Ion Beam/Dual Beam system to investigate different types of nanostructured materials and to highlight performances, differences and fields of applications.

Emphasis will be also paid on current trends and technologies for industrial applications from device nanofabrication by electron beam lithography and Focused Ion beam technology to characterization and failure analysis as well as in-situ electrical and mechanical probing.

Participants, during practical sessions, will have the opportunity to observe their own samples properly prepared in advance.

To this end, participants are kindly invited to send their samples along with a detailed description of the related scientific case to the organizers of the school, not later than **31/07/2015**.

Samples received after that date will not be taken into consideration.

At the end of the school, participants will receive a certificate of attendance

## Registration

The registration form should be sent by e-mail before 13/09/2015 (semschool2015@iom.cnr.it) together with copy of the payment of the registration fee, or by filling out the form on the SISM website, [www.sism.it](http://www.sism.it).

### Registration fees

**Full:** € 350 + VAT

**Reduced<sup>1</sup>:** € 250 + VAT

<sup>1</sup> SISM members at 30/05/2015

An additional 20% discount (VAT excluded) on the fees is foreseen for students and not permanent staff

After payment, regular invoice will be issued. Please note that for employees of public bodies the fee is exempt from VAT (art. 10 DPR 633/72).

Fees include registration at the school, teaching materials, coffee breaks and lunches.

Registration fees can be paid in the following ways:

1) credit card (on [www.sism.it](http://www.sism.it))

2) bank transfer

IBAN: IT 43 Q 02008 02455 000103039142

BIC/SWIFT: UNCRITM1PM5

Account holder: S.I.S.M.

Account address: Unicredit - Ag. Dante, Bologna

Payment reference: Participant Surname + TSSEM2015

Participants making membership request to SISM will be exempted from payment of membership fees for the year 2016

The school will be open to a maximum of **30 participants**.

A minimum number of **10 attendees** is required to activate the courses

For further information: <http://semschool.iom.cnr.it/>

Contact: Dr. Regina Ciancio : [ciancio@iom.cnr.it](mailto:ciancio@iom.cnr.it)

## Registration form

School Trieste 2015

Family name:.....

Firstname:.....

Role:.....

Address:.....

.....

Phone:..... Fax:.....

E-mail:.....

SISM member  No SISM member

Student  Not permanent staff

DATA FOR INVOICING (required)

For private individual invoices, residence and personal tax identification number must be provided.

For employees of public bodies, in order to benefit from the VAT exemption, data of University and/or affiliation Department must be provided.

HEADER: (Institution, University, Department or individual)

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ADDRESS:

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VAT number:

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Personal tax number :

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