



Venture Center
 100, NCL Innovation Park
 Dr. Homi Bhabha Road, Pune –411008
 Email: lab@venturecenter.co.in
 Phone: +91-20-6401-1027

Technical Workshops Series – 2012/01

3 Day Intensive Workshop on Microscopy for Life Sciences

- Organized by Venture Center -

Learn	Principles of Microscopy; Types of microscopes; Different contrasting techniques like Bright field, Dark field, Phase contrast, Interference contrast, Polarization and fluorescence contrast; Electron Microcopy; Scanning Probe Microscopy; Applications of Microscopy; Live demonstration of experiments on latest instruments; Best practices in Microscopy; Troubleshooting and maintenance of microscopes. Quick update on latest techniques/developments; Workshop is intended to be basic.
Organized by	Venture Center – a Technology Business Incubator
For whom	<ul style="list-style-type: none"> • Industry professionals wishing to expand their skill sets • Students of various disciplines of life sciences Maximum 30 seats; First-come-first-serve.
When	9 th – 11 th January 2012
Where	Training Room and Lab Block, Venture Center, 100 NCL Innovation Park, Dr. Homi Bhabha Road, Pune-411008
Contact	Ms. Lipika Biswas Phone: 020-64011026 Email: eventsdesk@venturecenter.co.in
Cost	<ul style="list-style-type: none"> • NCL Staff/Students, Other students with valid ID card: Rs 1500 • NCL TEC Members : Rs 900 • Micro and small enterprises/ individuals: Rs 4000 • Medium and large companies/ others: Rs 6000



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Introduction

This workshop is intended to be basic and is meant for graduate and post-graduate students of different disciplines of life sciences as well as medicine. The main objective of this workshop is to make students aware of theory behind different types of microscopy and contrasting techniques, their applications, followed by quick update on latest techniques/developments.

The workshop will include theory sessions on Principles of Microscopy; Types of microscopes; Different contrasting techniques like Bright field, Dark field, Phase contrast, Interference contrast, Polarization and fluorescence contrast; Electron Microscopy; Scanning Probe Microscopy; Applications of Microscopy; Live demonstration of experiments on latest instruments. Participants will also learn best practices in Microscopy; Troubleshooting and maintenance of microscopes.

Course Outline

The workshop will include theory as well as practical sessions. Workshop format will include:

- Talks
- Hands on experience of handling light, inverted and fluorescence microscope
- Demonstration cum tour of Confocal and electron microscopy (TEM and SEM) facility at NCL
- Interactive session
- Films and video presentations
- Networking lunches
- Online compilation of content with archival value

Course includes

- Course notes (hard copy) including slides, case studies, application notes
- Access to restricted website with online compilation of resources for microscopic techniques
- Certificate of Participation issued by Venture Center
- Course includes tea and lunch at Venture Center cafeteria



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Schedule		
9-Jan-12		
Time	Session title	Lead
9:00 to 9:30	Registration	
9:30 to 10:00	Introduction to the course and faculty	Dr. Manisha Premnath
	Theory session – Light Microscopy	
10:00 to 11:15	Light Microscopy – Resolution and Contrast - Primer1	Dr. B. B. Nath
11:15 to 11:30	Tea break	
	Theory Session – Light Microscopy	
11:30 to 12:30	Light Microscopy – Resolution and Contrast - Primer2	Dr. B. B. Nath
12:30 to 13:00	Handling, Adjustment and Trouble shooting skills in Light Microscopy	Dr. B. B. Nath
13:00 to 14:00	Lunch break	
	Practical session	
14:00 to 15:00	Demonstration: Handling, Adjustment and Trouble shooting skills in Light Microscopy	Dr. B. B. Nath
15:00 to 15:30	Tea break	
	Theory session – Electron Microscopy - TEM	
15:30 to 17:00	Electron Microscopy: An overview	Dr. Atanu Basu
10-Jan-12		
Time	Session title	Lead
	Theory session – Electron Microscopy - SEM	
9:00 to 10:30	Instrumentation & Sample preparation	Mr. Rajdeep Dongre
	Use of SEM to understand cell-cell interactions during normal and abnormal pattern formation	Dr. Surendra Ghaskadbi
10:30 to 11:00	Tea break	
	Theory session - Fluorescence & Confocal Microscopy	
11:00 to 13:00	Rendezvous with vibrant 3D world of cells	Dr. Nishigandha Naik
13:00 to 14:00	Lunch break	



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10-Jan-12		
Time	Session title	Lead
	Practical session	
14:00 to 15:00	Demonstration: Fluorescence Microscopy	Dr. Nishigandha Naik
	Theory session - Image Analysis	
15:00 to 15:45	Microscopy goes Virtual	Dr. Aparna Joshi
15:45 to 16:15	Tea break	
	Theory session – Electron Microscopy - SPM	
16:15 to 17:45	Scanning Probe Microscopy: fundamentals to applications	Dr. C. V. Dharmadhikari
11-Jan-12		
Time	Session title	Lead
	Practical session	
9:00 to 13:00	Demonstration: Confocal Microscopy, Electron Microscopy – SEM & TEM	Dr. Suresh Bhat, Mrs. Anuya Nisal
13:00 to 14:00	Lunch break	
14:00 to 14:30	Concluding session – Feedback, Certificate distribution	Dr. V. Premnath



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Course Director	
	<p>Dr. B. B. Nath Associate Professor, Dept of Zoology, University of Pune. Dr. Nath has more than 25 years of research experience in the areas of cell biology and cytogenetics involving different microscopic techniques.</p>
Other Faculty	
	<p>Dr. Nishigandha Naik Head of Imaging – Translational Research Department, Piramal Life Sciences Limited. Dr. Naik's fields of interest are Cytoskeletal proteins – actin and tubulin, formyl peptide receptors, antisense therapy, cellular, zebrafish and small animal imaging, chronic myeloid leukemia, breast cancer, glioblastoma. Her current responsibilities involve establishment of 'in vitro' and 'in vivo' imaging facilities for the PLSL and drug discovery in oncology.</p>
	<p>Dr. Aparna Joshi Consultant Histopathologist, KEM Hospital, Pune Dr. Joshi has over 15 years of experience in Histopathology and various subspecialties of pathology in many hospitals and institutes in India and abroad. She is also involved in development of Digital Pathology Imaging and Telepathology solutions while acting as consultant with various software and instrumentation companies in India, US and Europe.</p>
	<p>Dr. Atanu Basu Deputy Director and Group Leader of the Electron Microscopy and Pathology Group at the National Institute of Virology, Pune Dr Basu's research interests are in the area of understanding pathogenesis of viral hemorrhagic fevers and virus ultrastructure. He heads the electron microscopy group at NIV that also plays a crucial role in interfacing experimental nanodevices with biological systems with an emphasis on targeted drug delivery.</p>



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	<p>Mr. Rajdeep Dongre Officer D, SEM Facility, Agharkar Research Institute, Pune. Mr. Rajdeep Dongre is working in the field of Electron Microscopy for more than 22 years. He has vast experience in handling samples in the field right from material, biological, medical, to pharmaceuticals sciences applying various preparation methodologies specific to the specimen related to their field.</p>
	<p>Dr. Surendra Ghaskadbi Head, Animal Sciences Group, Agharkar Research Institute, Pune. Dr. Ghaskadabi has more than 30 yrs of experience as developmental biologist. His current research interest is in studying cell - cell interaction during development and pattern formation in animals. He has used fluorescence and SEM techniques extensively for these studies.</p>
	<p>Dr. C. V. Dharmadhikari Visiting Faculty, IISER, Pune, Former Professor and Head of Physics and Instrumentation Science, University of Pune. Dr. Dhramadhikari is well known for his pioneering work in the development of a whole range of Scanning Probe Microscopes and their application to the investigation of a host of problems at the frontiers of surface science, thin films and nanoscience.</p>
	<p>Dr. Suresh Bhat Scientist E1, Polymer Science and Engineering department at National Chemical Laboratory, Pune. Dr. Bhat has extensive expertise in the field of Light scattering from complex fluids, Protein-Polysaccharide interactions, Aggregation, Gelation and phase separation in soft materials. His areas of interest are Investigation of Structure, Dynamics & Rheology of Soft Materials using Scattering Techniques, Structure Property Relationships, Application of Nanoscience concepts to food technology, Developments of novel scattering tools for soft matter research.</p>
	<p>Mrs. Anuya Nisal Scientist, Polymer Science and Engineering department at National Chemical Laboratory, Pune. Ms. Nisal has over six years of experience in handling and characterizing polymeric systems using both transmission Electron Microscopy and Scanning Electron microscopy. These skills have been leveraged to solve a variety of scientifically relevant problems.</p>



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About the organizers

Entrepreneurship Development Center (Venture Center) – a CSIR initiative – is a Section 25 company hosted by the National Chemical Laboratory, Pune. Venture Center strives to nucleate and nurture technology and knowledge-based enterprises by leveraging the scientific and engineering competencies of the institutions in the Pune region in India. The Venture Center is a technology business incubator supported by the Department of Science & Technology's National Science & Technology Entrepreneurship Development Board (DST-NSTEDB). Venture Center's focuses on technology enterprises offering products and services exploiting scientific expertise in the areas of materials, chemicals and biological sciences & engineering. For more information, visit <http://www.venturecenter.co.in>