

Technical Workshops Series - 2014

**One-Day Mini Workshop on  
Mass Spectrometry for Chemists**

- Bioincubator, CAMS & Venture Center -

Learn	Concepts of Mass Spectrometry; MS calibration and optimization; Ion production, fragmentation and detection; Operation in MS, MS-MS, and MS-MS-MS modes Structure determination by product ion analysis. Live demonstration of experiments; Hands on session; Mini-workshop on data interpretation with real data; Quick update on latest techniques/developments; Workshop is intended to be basic.
Organized by	
Supported by	
Anchor Faculty	<ul style="list-style-type: none"> <li>• <b>Ajeet Singh, Center For Applications of Mass Spectrometry (CAMS), Venture Center</b></li> </ul>
VC Organization team	<ul style="list-style-type: none"> <li>• Ajeet Singh, Sujaya Ingale, Edna Joseph, Pratima Jagtap</li> </ul>
For whom	<ul style="list-style-type: none"> <li>• Industry professionals wishing to expand their skill sets (Industries – Pharma; Environmental; Forensic ; Food, Petrochemicals etc)</li> <li>• Students and staff of polymer/ materials sciences/ engineering/ analytical/physical chemistry wishing to equip themselves for industry jobs</li> <li>• Maximum 15 seats; First-come-first-serve.</li> </ul>
When	<b>Saturday, 27<sup>th</sup> September 2014 , 9:00 am – 5:45 pm</b>
Where	Training Room, Venture Center, 100 NCL Innovation Park, Dr. Homi Bhabha (Pashan) Road, Pune-411008
Contact	Ms. Lipika Biswas Venture Center, 100, NCL Innovation Park, Dr. Homi Bhabha Road, Pune – 411008; Phone: +91-20-25865877 Email: <a href="mailto:eventsdesk@venturecenter.co.in">eventsdesk@venturecenter.co.in</a>
Cost	<ul style="list-style-type: none"> <li>• Students with valid ID card: Rs. 900/-</li> <li>• Micro and small enterprises/ individuals: Rs. 2,000/-</li> <li>• Medium and large companies/ others: Rs. 4,000/-</li> </ul>



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## Introduction

Mass spectrometry is a powerful analytical technique used to quantify known materials, to identify unknown compounds within a sample, and to elucidate the structure and chemical properties of different molecules. The complete process involves the conversion of the sample into gaseous ions, with or without fragmentation, which are then characterized by their mass to charge ratios ( $m/z$ ) and relative abundances. This technique basically studies the effect of ionizing energy on molecules. It depends upon chemical reactions in the gas phase in which sample molecules are consumed during the formation of ionic and neutral species.

Mass spectrometry is fast becoming an indispensable tool in the fields of Environmental analysis, Forensic analysis, Clinical research, Proteomics. It is also been widely used for Pharmaceutical, Food and Safety applications. Oligonucleotides, carbohydrates, drug discovery, combinatorial chemistry, pharmacokinetics, drug metabolism, bioequivalence, target identification, haemoglobin analysis, drug testing, metabolomics studies can also be carried out using Mass Spectrometry. Mass Spectrometry can also be employed to analyse Adulterants, Pesticides, Antibiotics, Plant Growth Regulators (PGR), Veterinary Steroids, Vitamins, Dyes and colorants etc. in various matrices.

This workshop aims to give an introduction to the principles and practices of Mass Spectrometry for students and industry professionals. The workshop includes lab demonstrations and data interpretation exercises. The workshop shall also discuss some recent trends and new developments in research and industry relating to **Mass Spectrometry**.

## Course Outline

- **Understanding the Mass Spectrometry**
  - Principle and application of mass spectrometry
  - Instrumentation (various ion source, analyzers, hyphenation with LC/GC)
  - Data interpretation & Identification and confirmation of molecules
  - Reporting data in scientific publications
- **Hands on sessions at CAMS**
  - Targeted analysis, Characterization of small molecules



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Time	Session title	Lead	Venue
08:30– 09:00	Registration		Foyer, Learning Center, VC
09:00 – 09:15	Introduction to course and Faculty	V Premnath	Training room, VC
09:15 – 10:30	Understanding the Mass spectrometry: <b>Principle of Mass Spectrometry</b>	Ajeet Singh	Training room, VC
10:30–11:00	<b>Tea &amp; Group Photograph</b>		Foyer, Learning Center, VC
11:00–11:45	Understanding the Mass spectrometry: <b>Instrumentation</b>	Ajeet Singh	Training room, VC
11:45–13:00	Understanding the Mass spectrometry: <b>Data interpretation &amp; reporting</b>	Ajeet Singh	Training room, VC
13:00–14:00	Lunch		Cafeteria, VC
14:00 -17:30	<b>Hands – on session at CAMS</b>	Ajeet Singh Avinash Ghanate	CAMS, VC
17:30–18:00	Closure; Feedback & Certificate distribution	V Premnath	Training room, VC

Anchor Faculty	
	<p><b>Ajeet Singh</b>  <b>Scientific Consultant at Center for Applications of Mass Spectrometry (CAMS), Venture Center</b></p> <p>Ajeet completed his Masters in Analytical Chemistry from the Indian Institute of Technology (IIT), Roorkee, and is a PhD (Chemistry) candidate at the National Chemical Laboratory (NCL), Pune. He specializes in Mass Spectrometry and Mass Analysis. His expertise lies in method development for proteomics, qualitative as well as quantitative analysis of small molecules, pharmaceuticals drugs, pesticides, food contaminants and metabolites. He has the credit of setting up CAMS and managing related operations.</p>
<p>Other Faculty</p>	<p>Dr V. Premnath is Scientist, Complex Fluids and Polymer Engineering Group at NCL, Pune, Head, NCL Innovations and Director, Venture Center. He specializes in Polymer Science and Engineering.</p> <p>Avinash Ghanate is a Senior Research Fellow (SRF) and PhD candidate at the National Chemical Laboratory (NCL), Pune. His interests lie in software development and bioinformatics involving mathematical &amp; statistical modeling. Avinash has also worked on developing bioinformatics solutions during his project internship at the National Center for Cell Sciences (NCCS), Pune. He is the brains behind MS based Quantitation at Barefeet and developing IT based technical solutions for Mass Analysis.</p>



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### Course includes

- Course notes (hard copy) including slides, case studies, application notes
- Lab demo
- Access to restricted website with online compilation of resources for Mass Spectrometry
- One-on-one feedback on data interpretation exercise
- Certificate of Participation issued by Venture Center
- Course includes tea and lunch at Venture Center cafeteria

### About the organizers

#### About Venture Center

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/>

#### About BioIncubator

The BioIncubator at Venture Center aims to nucleate and nurture technology and knowledge-based enterprises leveraging knowledge in the areas of biotechnology (biopharma, agrobiotech, industrial biotech, clean technology), biomedical engineering/ devices/ diagnostics, biomass value addition/ renewable fuels/chemicals/materials, bioinformatics, bio/medical services and related disciplines. For more information visit: <http://www.bioincubator.venturecenter.co.in/>