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Technical Workshops Series

One-Day Intensive Workshop on

Gas Chromatography

Wave 2

- Organized by SPIRIT, NCL and Venture Center -

Learn	Gas Chromatography (GC): Fundamental Principles. Sample Introduction Techniques. Basic maintenance of GC. Column selection and instrument parameters. GC detectors. Qualitative & Quantitative Analysis using GC. Basic maintenance of GC. Troubleshooting process for problems like contamination, ghost peaks, baseline drift, peak tailing, reduced peak size, carrier gas leakage, and retention time shift. Practical applications of GC in the Industry. GC Method Development Strategies. Best practices in GC. Live demonstration of experiments; Mini-workshop on data interpretation with real data; Quick update on latest techniques/developments; Workshop is intended to be basic.
Organized by	<ul style="list-style-type: none">• SPIRIT: Sustainable Polymer Industry through Research, Innovation and Training - A Centre of Excellence in Polymers at National Chemical Laboratory, Pune sponsored by the Department of Chemicals and Petrochemicals• Venture Center – a Technology Business Incubator
For whom	<ul style="list-style-type: none">• Industry professionals wishing to expand their skill sets (Industries – Pharma; Environmental; Forensic ; Food, Petrochemicals etc)• Students and staff of polymer/ materials sciences/ engineering/ analytical/physical chemistry wishing to equip themselves for industry jobs• Maximum 20 seats; First-come-first-serve.
When	Friday, 20th February, 9 am – 5:45 pm
Where	Training Room & Lab block, 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: +91-20-2586-5877; Email: eventsdesk@venturecenter.co.in
Cost	<ul style="list-style-type: none">• Micro and small enterprises/ individuals: Rs. 2000• Medium and large companies/ others: Rs. 4000• Students with valid ID card: Rs. 900



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Introduction

Gas chromatography enables reliable, high-precision trace analysis with high repeatability. Gas chromatography is one of the most widely used techniques for analyzing hydrocarbon mixtures. Some of the advantages of chromatography are the range of measurements and the detection of a wide range of components. Typical applications of GC include pesticide residue analysis, detection of drugs of abuse in urine, blood, tablets, determination of fatty acid contents in edible oils, fats. GC is widely used in the **Food, Agriculture, Environmental, Forensic, Biotech, Fragrance, & Chemical** Industries.

This workshop aims to give an introduction to the Fundamentals of Gas Chromatography for industry professionals and students. The workshop will be conducted by an expert having vast experience working on high end chromatography techniques. The workshop includes lab sessions and data interpretation exercises. The workshop shall also discuss some recent trends and new developments in research and industry relating to **chromatography techniques**.

Course Outline

- Gas Chromatography (GC): Fundamental principles.
- Sample Introduction techniques.
- Column selection and instrument parameters.
- GC detectors.
- Qualitative & Quantitative Analysis using GC
- Basic maintenance of GC.
- Troubleshooting process for problems like contamination, ghost peaks, baseline drift, peak tailing, reduced peak size, carrier gas leakage, and retention time shift.
- Practical applications of GC in the Industry.
- GC method development strategies.
- Best practices in GC.
- Lab session and lab tour.
- Mini-workshop on data interpretation with real data.
- Quick update on latest techniques/developments.

Course includes

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



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Time	Session title	Lead
9:00 to 9:30	Registration	
9:30 to 9:45	Introduction to the course and faculty	VP /AL
9:45 to 10:30	Introduction and fundamental principles of GC; General terms and essential concepts; Sample Introduction techniques; Quick overview of GC; Typical data recorded	BN
10:30 to 11:00	Tea	
11:00 to 11:30	Instrumentation; Instrument parameters, Types of columns and column selection; Types of detectors	BN
11:30 to 12:15	Basic Maintenance of GC; Trouble shooting processes, Qualitative & Quantitative Analysis in GC	BN
12:15 to 13:00	Practical applications of GC; Method development strategies. Interactive session – Real case studies and application notes.	BN
13:00 to 14:00	Lunch	
14:00 to 14:30	Best practices in GC.	BN & EJ
14:30 to 16:30	Practical Session <ul style="list-style-type: none">• Instrumentation• Sample Injection• Standard samples analysis• Data interpretation exercise• Calculations	BN & EJ
16:30 to 17:00	Tea	
17:00 to 17:45	Closure – Feedback, Certificate distribution	VP /AL



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Anchor Faculty	
	<p>Dr. Bharathi Nuthakki has more than 10 years of research experience in analytical chemistry. She has Developed analytical methods for separation and quantification of reaction products by GC-FID, GC/MS and Chiral GC-MS. She worked as Researcher in Battelle India, Pune where she executed client-based projects involving key expertise is in chemical/biosensing, analytical chemistry, green chemistry and application driven research. She was Visiting faculty at IISER where she taught chemical separations with emphasis on column chromatography, GC, HPLC, GC-MS, HPLC –MS, Mass spectroscopy She is recipient of Pfizer Green chemistry fellowship and the ‘International Forum on Applied Electrochemistry Scholarship’</p>
Other Faculty	<p>Dr AK Lele is Scientist, Complex Fluids and Polymer Engineering Group at NCL, Pune. He is also the Head of SPIRIT. Dr AK Lele is an accomplished Chemical Engineer with a strong research program in Polymeric Materials.</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>Ms. Edna Joseph is Asst. Lab Manager at Venture Center and manages the scientific facilities including the analytical facilities at Venture Center.</p>

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 SPIRIT at National Chemical Laboratory, Pune

SPIRIT stands for Sustainable Polymer Industry through Research, Innovation and Training. SPIRIT is a Centre of Excellence in Polymers sponsored by the Department of Chemicals and Petrochemicals, Government of India, at the CSIR-National Chemical Laboratory, Pune. More information: <http://www.pamlab.org/spirit/>