

# Gas chromatography: method development; instrument operation, maintenance, and troubleshooting

Supporting almost every industry in South Africa from petroleum to what is on your plate.

Gas chromatography (GC) was first used in 1952 and is now one of the most widely used techniques in analytical chemistry. The use of relatively standardised approaches of separation, which involves optimising only temperature and gas, makes the technique user friendly. The only attribute a molecule requires is that it can be volatilised and enter the gas phase.

Therefore, GC is currently used in almost every conceivable industry, from production to food safety. As this analysis is used in such a broad scope of applications, continuous performance monitoring is one of the most important aspects of GC analysis.

The aim of this workshop is to provide analyst with tools to improve the separation, identification, and quantification of compounds of interest. While taking a critical look at instrumental quality control criteria.

**Limited space available,  
maximum of twenty  
participants - register now!**

**JOIN OUR GAS  
CHROMATOGRAPHY  
JOURNEY**

**How to ensure the quality of  
your analysis.**

**24 July - 4 August 2023  
29 January - 2 February 2024**

**An informative workshop  
aimed at GC analysts from  
beginners to advanced users -  
we will have something for you.**



The AFRIMETS initiative is supported by

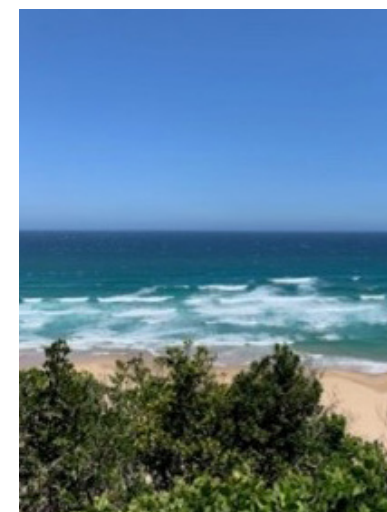


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**Excellence through measurement  
Opening the doors to Africa and beyond**

# WEEK 1 - INTRODUCTION TO GAS CHROMATOGRAPHY - HOW TO MASTER SEPARATION

DAY 1:	DAY 2:	DAY 3:	DAY 4:	DAY 5:
<ul style="list-style-type: none"> <li>• Registration and coffee</li> <li>• Welcome and logistics.</li> <li>• Successful GC analysis – the measurement procedure</li> <li>• Coffee</li> <li>• Introduction to instrumental analysis</li> <li>• Lunch</li> <li>• The GC instrument</li> <li>• Questions and discussion</li> </ul>	<ul style="list-style-type: none"> <li>• Morning coffee</li> <li>• Sample introduction</li> <li>• Coffee</li> <li>• Sample introduction continued</li> <li>• Lunch</li> <li>• Chromatographic separation</li> <li>• Questions and discussion</li> </ul>	<ul style="list-style-type: none"> <li>• Morning coffee</li> <li>• Chromatographic separation continued</li> <li>• The right detector for the job</li> <li>• Coffee</li> <li>• Flame ionization detector (FID)</li> <li>• Lunch</li> <li>• Electron capture detector (ECD)</li> <li>• Questions and discussion</li> </ul>	<ul style="list-style-type: none"> <li>• Morning coffee</li> <li>• Principles of mass spectrometry</li> <li>• Coffee</li> <li>• Various mass detectors</li> <li>• Lunch</li> <li>• Understanding MS data and MS/MS experiments continued</li> <li>• Questions and discussion</li> </ul>	<ul style="list-style-type: none"> <li>• Morning coffee</li> <li>• Planning an experiment – what should we use?</li> <li>• Practical method development</li> <li>• Coffee</li> <li>• Lab tours</li> <li>• Lunch</li> <li>• Theoretical close out and discussion</li> <li>• Logistics for week 2</li> </ul>



## Finding a course that is right for you

The NMISA Training Centre is committed to building measurement capacity in Africa. The centre has a number of courses that may meet your training needs, from personnel at the beginning of their careers to those wanting to develop advanced skills. Please visit our website [www.nmisa.org](http://www.nmisa.org) for more information or contact us at [training@nmisa.org](mailto:training@nmisa.org) or call +27 12 947 2461.

## We are with you every step of the way

- The NMISA provides an extensive suit of products and services to meet your laboratories needs. This includes but is not limited to consultation services that spans the entire lifetime of your laboratory from design to implementation.
- Training in method development; validation and uncertainty.
- Providing calibration, proficiency testing and reference materials to assist your laboratory in meeting quality control and assurance objectives.



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## WEEK 2 - LIQUID CHROMATOGRAPHY IN PRACTICE

DAY 1: Getting things ready	DAY 2: What will we see?	DAY 3: Where did my peak go?	DAY 4: How to do that?	DAY 5: Can we improve?
<ul style="list-style-type: none"> <li>• Setting up the inlet</li> <li>• Column set-up and column care consideration</li> <li>• Column conditioning; flushing and storage</li> </ul>	<ul style="list-style-type: none"> <li>• Setting up the detector</li> <li>• Inlet and detector quality control and how to interpret the data</li> </ul>	<ul style="list-style-type: none"> <li>• Troubleshooting               <ul style="list-style-type: none"> <li>○ Problems with baseline</li> <li>○ Problems with peak shape</li> <li>○ Problems with the inlet</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Checking your inlet</li> <li>• Changing your column</li> <li>• Routine maintenance</li> </ul>	<ul style="list-style-type: none"> <li>• Changing the method - where to start</li> <li>• Is this the right column?</li> <li>• Can I go any lower?</li> </ul>

### Finding Proficiency Tests that suit your needs

The NMISA is an ISO/IEC 17043 accredited proficiency testing service provider with accreditation in the following fields: Food Testing (chemical additives, residues, and nutritional content); Water Testing (Chemical contaminants and residues) and Forensic Testing (forensic level alcohol, forensic preservatives and breath alcohol).

### We are with you every step of the way

To support your measurement quality control and quality assurance objectives, the NMISA has released several reference materials and certified reference materials. These materials where possible originate from within the African Continent, to ensure compatibility with the samples routinely measured in your laboratory. Reference materials currently available include mycotoxins (analytical standards as well as naturally incurred materials such as maize flour and peanut slurry), forensic blood alcohol analysis analytical standards, matrix materials for nutritional content, nutritional and toxic elements as well as pesticides.

Please visit our on-line store for available products and pricing [www.store.nmisa.org](http://www.store.nmisa.org)



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