

# Gas Chromatography

Method development, instrument operation, maintenance, troubleshooting and quantification



**nmisa**  
training centre

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 analysts 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 ten  
participants - register now!

## JOIN OUR GAS CHROMATOGRAPHY JOURNEY

How to ensure the quality of your  
analysis

**24 June – 05 July 2024**

An informative workshop  
aimed at GC analysts from  
beginner to advanced users – we  
will have something for you



**AFRIMETS**  
Intra-Africa Metrology System  
Système Intra-Africain de Métrologie



The AFRIMETS initiative supported by

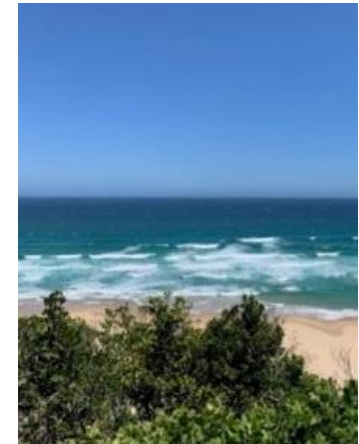


Visit [www.nmisa.org](http://www.nmisa.org) or contact us  
on +27 12 947 2780 for more information.

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# WEEK 1

DAY 1	DAY 2	DAY 3	DAY 4	DAY 5
<ul style="list-style-type: none"><li>• Welcome and logistics</li><li>• Successful GC analysis – the measurement procedure</li><li>• Good weighing practice</li><li>• Care and effective use of pipettes</li><li>• General calculations for the preparation of calibration solutions</li></ul>	<ul style="list-style-type: none"><li>• General quantification calculations</li><li>• Introduction to performing these calculations in Excel</li><li>• Introduction to instrumental analysis</li><li>• The GC instrument</li></ul>	<ul style="list-style-type: none"><li>• Sample introduction</li><li>• Setting up the inlet</li><li>• Chromatographic separation</li><li>• Column set-up and column care considerations</li><li>• Cutting and seating of the column</li><li>• Column conditioning: flushing and storage</li></ul>	<ul style="list-style-type: none"><li>• Chromatographic separation continued</li><li>• The right detector for the job</li><li>• Flame ionisation detector (FID)</li><li>• Electron capture detector (ECD)</li><li>• Questions and discussion</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>



## 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 laboratory's 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



## DAY 1

- Principles of mass spectrometry
- Various mass detectors
- Understanding MS data and MS/MS experiments
- Questions and discussion

## DAY 2

- Method development from sample mass to analysis
- How to amend a method

## DAY 3

- Troubleshooting problems with baseline
- Troubleshooting problems with peak shape
- Troubleshooting problems with inlet

## DAY 4

- Checking your inlet
- Changing your column
- Routine maintenance
- Changing the method – where to start
- Is it the right column?
- Can I go any lower?

## DAY 5

- Planning an experiment – what should we use
- Practical method development
- Lab tours
- Practical method development and calculations
- Questions and discussion



### 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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