

1st Summer School for the Analysis of Toxic and Nutritional elements in Food

Supporting sustainable agricultural practices, ecosystem health and exports through accurate measurement.

The agricultural sector is a major contributor to the gross domestic product (GDP), as well as total employment of many African Countries. To place exports in context, the value of edible fruits and nuts from Africa to the European Union represent a € 4.3 billion market.

The nutritional value of agricultural and food products is, in part, determined by the mineral content of the food. Conversely, the presence of toxic elements adversely affects health, thus necessitating local and international legislation in this regard. This makes accurate quantification of elemental content not only crucial in safeguarding human and animal health, but also in securing exports.

Outside agriculture, many African countries have mineral-based economies, which in recent times includes recycling of electronic goods. Historic mining activities as well as the methods used, can lead to soils and water enriched with elements normally found at only trace levels.

The aim of this workshop will introduce new technologies and approaches in elemental analysis. The workshop will be to empower attendees with a broad background in elemental analysis, including hands-on experience in sample preparation and analysis by plasma spectrometry (ICP). Aspects such as method selection, experimental design, method validation and quality control will also be addressed.

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

JOIN OUR ELEMENTAL
ANALYSIS JOURNEY

From the farm to market
– how to ensure analysis
supports industry.

4 - 15 September 2023

An informative workshop
aimed at anyone interested
in the analysis of toxic and
nutritious elements in food
matrices.



The AFRIMETS initiative is supported by



Visit www.nmisa.org or contact us on +27 12 947 2780 for more information.

Excellence through measurement
Opening the doors to Africa and beyond

Friendly, Knowledgeable Facilitators

- The course will be presented by facilitators that strongly encourage interactive training, with a willingness to share.
- The first day of the course will be combined with a virtual workshop to encourage the sharing of information from suppliers to users throughout the continent.
- Facilitators will include:
 - Maré Linsky (NMISA)
 - Dr Angelique Botha (NMISA)
- Presentations by academic specialists

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 for more information or contact us at training@nmisa.org or call +27 12 947 2461.



WEEK 1 - THEORETICAL CONSIDERATIONS OF ELEMENTAL ANALYSIS

DAY 1: Recent developments in the analysis of Elements in Food workshop	DAY 2: Regulations and introduction into Elemental analysis	DAY 3: Analytical approaches and techniques	DAY 4: Ensuring valid results	DAY 5: Quality Control and Reporting
<ul style="list-style-type: none"> • Welcome • Importance of elemental speciation in Food • Recent developments in Food CRMs • Impact of industrial activities on the environment and food • Elements in food by ICP-OES and ICPMS • Ion Chromatography in the analysis of food • Developments in sample preparation: Microwave Digestion 	<ul style="list-style-type: none"> • Morning coffee • Regulatory landscape • Accreditation • Coffee break • Important laboratory requirements • Lunch • Method selection • Coffee break • Sample preparation approaches and considerations 	<ul style="list-style-type: none"> • Morning coffee • Instrumental techniques: AAS, ICP-OES • Coffee break • Instrumental techniques: ICPMS • Lunch • Experimental design • Coffee break • Preparing experimental designs for selected food categories 	<ul style="list-style-type: none"> • Morning coffee • Metrological Traceability • Coffee break • Method Validation • Lunch • Instrument calibration approaches • Coffee break • Preparing method validation plans 	<ul style="list-style-type: none"> • Morning coffee • Quality control approaches • Coffee break • Uncertainty of measurement approaches • Lunch • Reporting requirements • Evaluation of selected case studies

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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Measurement and calibration expertise

The NMISA offers calibration and measurements in a wide field of scientific disciplines including, but not limited to:

- Acoustics, Ultrasound and Vibration
- DC Low Frequency and Radio Frequency
- Fibre Optics
- Gas Analysis
- Mass Calibration Services
- Temperature and Humidity Calibration Services
- Photometry and Radiometry
- Essential oils
- Environmental contaminants
- Toxic and nutritional content
- Food contaminants and nutritional content

WEEK 2 - LET'S GET PRACTICAL SAMPLING TO REPORTING

DAY 1: Experimental design and sample preparation	DAY 2: Sample digestion and standard preparation	DAY 3: Sample preparation and instrument set-up	DAY 4: ICP-OES and ICPMS analyses	DAY 5: Data processing and reporting
<ul style="list-style-type: none">• Laboratory safety• A tour of the NMISA facilities• Coffee break• Experimental design• Weighing samples• Lunch• Digestion reagents• Coffee break• Laboratory preparations	<ul style="list-style-type: none">• Morning coffee• Microwave digestion• Coffee break• Microwave digestion (continued)• Lunch• Preparing analytical standards• Coffee break• Introduction to ICP-OES, ICP-SFMS and ICP-QQQ instruments	<ul style="list-style-type: none">• Morning coffee• Sample transfer• Coffee break• Sample dilutions• Lunch• Sample dilutions (continued)• Coffee break• Setting up ICP sequences	<ul style="list-style-type: none">• Morning coffee• ICP start up, optimisation• Coffee break• ICP sample analyses• Lunch• Evaluation of instrument calibration• Coffee break• Microwave cleaning procedures and acid distillation	<ul style="list-style-type: none">• Morning coffee• Data analysis• Coffee break• Data analysis (continued)• Lunch• Prepare result report• Evaluation of method validation data and quality control measures• Estimation uncertainty of measurement• Q&A session

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

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