



Bringing Scientific and Technical Resources to the African Continents (NITA/TRN/875)

HANDS ON PRACTICAL TRAINING ICP- OES/MS 13th – 17th November 2023

Course Overview

A comprehensive 5 days' course designed to increase expertise and optimize results for all users of ICP-MS. Understanding sample introduction and optimization of instrument performance are important subject areas within this 5 days' course. Interactive Training sessions and tutorial exercises are used to reinforce key learning points.

Who is this course for?

The training program is valuable for those who have an interest to make their career in industries which are related to metals, trace metals analysis, motor oil, mineral processing, food products and several others.

Previous knowledge

Background knowledge of ICP-OES or Mass Spectrometry may be useful but not necessary, as all the essentials are covered in the course. Previous experience using ICP-MS equipment can be beneficial.

What you will learn

1. How the ICP source fragments in a different way to other MS techniques, offering a complementary view of the chemicals being analyzed
2. Why ICP-MS is particularly suitable for isotope ratio studies
3. How ICP-MS can be used for the analysis of ultra-trace metal elements (0.0005-100ppb)
4. Application of ICP-MS to non-metallic elements (e.g. S, P)

Please Note:

- The certificate will be provided only after clearing a test
- We also conduct customized training programs on request.

<ul style="list-style-type: none"> • Registration and Climate setting 	DAY 1 (09.00-10.00)
Tea Break	10.00-10.30
<ul style="list-style-type: none"> • Introduction to fundamentals and applications of ICP-OES/MS, software familiarization and description of instrument 	11.00-12.30
Lunch Break	12.30-14.00
<ul style="list-style-type: none"> • Laboratory session: Learning components of ICP, i.e. torch, detector, cones, spray chamber, nebulizer, tubing. 	14.00 -16.30
<ul style="list-style-type: none"> • Assembling the sample introduction system • ICP gas requirements 	DAY 2 (9.00-10.30)
Tea Break	10.30-11.00
<p>Introduction:</p> <ul style="list-style-type: none"> • Principles of spectroscopy • Principles & operation of ICP-MS • Components of sample introduction, sample handling, preparation, measurement system hardware overview 	11.00-12.30
Lunch Break	12.30-14.00
<p>Sample preparation techniques</p> <ul style="list-style-type: none"> • Wet digestion • Dry ashing • Fusion 	14.00 - 16.30
<p>Laboratory session</p> <ul style="list-style-type: none"> • Preparation of organic sample • Preparation of inorganic samples • Preparation of difficult samples 	DAY 3 (9.00-10.30)
Tea Break	10.30-11.00
<ul style="list-style-type: none"> • Microwave assisted digestion • Software basic and instrument set-up 	11.00-12.30
Lunch Break	12.30-14.00
<p>Calibration methods</p> <ul style="list-style-type: none"> • Internal standard • Standard addition • Calibration curve <p>Laboratory session</p>	14.00-15.30

<ul style="list-style-type: none"> • Preparation of standards • Preparation of QCs • Method development 	
Use of quality controls <ul style="list-style-type: none"> • Internal QCs – spiking, HRM, replicate testing • External QCs – CRM, PTs, ILC 	DAY 4 (9.00-10.30)
Tea Break	10.30-11.00
<ul style="list-style-type: none"> • Overview of System hardware, system setup and operation, detection limit determination, system optimization and background correction 	11.00-12.30
Lunch Break	12.30-14.00
ICP interferences <ul style="list-style-type: none"> • Matrix interferences • Spectral interferences • Internal Standards, analysis protocols and consideration, sample analysis using methods of standard additions. 	14.00-15.30
<ul style="list-style-type: none"> • Calculation and reporting data, conclusion and generating discussion 	DAY 5 (9.00-10.30)
Tea Break	10.30-11.00
<ul style="list-style-type: none"> • Uncertainty measurements calculations • Trouble shooting and maintenance Instrument tuning • Discussion of the results 	11.00-12.30
Lunch Break	12.30-14.00
Directors speech and issue of certificates	14.00 – 15.00
Dates: 13th – 17th November 2023 Deadline 1st November 2023	Cost Kes. 81,200.00 or USD 812.00
	Nairobi

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