



# AL123: Inductively Coupled Plasma (ICP) Practices, Techniques & Applications

## Training Description:

Since the scientist have needed to know the identity and quantity of the materials with which they are working. Consequently, the development of chemical and physical analysis parallels the development of chemistry and physics.

This course discusses one of most important methods of instrumental spectroscopy analysis which call Inductively Coupled Plasma, the common analytical tool for the determination of elemental analytes in solution. It is based upon the emission light from elemental species aspirated into high temperature argon plasma, which used for excitation of contained elements.

## Training Objectives:

**By the end of the training, participants will be able to:**

- ✓ Understand the meaning of spectroscopy, and to be able to make elemental analysis with high sensitivity by spectroscopy

## Training Designed for:

This course is intended for anyone whose working in any analytical laboratory. Laboratory staff, Chemists, Supervisors and Technicians.

## Training Program:

### FIVE DAYS:

- ❖ PRE-TEST
- ❖ Introduction
- ❖ Analytical Chemistry and Chemical Analysis
  - Classical Methods
  - Instrumental Methods
- ❖ Spectroscopic Methods of Analysis
  - Historical and review
  - Basic Principals
  - Electromagnetic Spectrum
  - Theory of Spectroscopy
    - Absorption
    - Emission
    - Fluorescence
    - Phosphorescence
- ❖ Type of Spectroscopy Analysis
  - Molecular Spectroscopy analysis
  - Atomic Spectroscopy analysis
    - Atomic Fluorescence Spectrometry (AFS)
    - Atomic Absorption Spectrometry (AAS)
    - Atomic Emission Spectrometry (AES)
      - Flame Photometry



- Inductively Coupled Plasma (ICP)
- ❖ Inductively Coupled Plasma (ICP)
  - Introduction
  - Theory
  - Instrumentation
    - Sample introduction system (Nebulizer)
    - Peristaltic pump
    - ICP torch
    - High frequency generator
    - Load Coils
    - Transfer optics and spectrometer
    - Detector
    - Computer interface
  - Routine Maintenance and troubleshoot
  - Optimizing and Verifying Performance
  - Comparing ICP with Other Atomic Spectroscopic Techniques
  - ICP Advantages and Disadvantages
  - Sensitivity
  - Detection limit
  - Interference
  - Safety requirement for running ICP
  - Sampling, Preparation and Treatment
  - Data Analysis
  - Laboratory Report
  - Quality Control and Quality Assurance
  - Application
- ❖ Course Conclusion
- ❖ POST-TEST and EVALUATION

### Training Requirements:

“Hands-on practical sessions, equipment and software will be applied during the course if required and as per the client’s request.”

Please note that the above topics can be amended as per client’s learning needs and objectives. Further, it should be forwarded to us a month prior to the course dates.

### Training Methodology:

This interactive training course includes the following training methodologies as a percentage of the total tuition hours:

- 30% Lectures, Concepts, Role Play
- 70% Workshops & Work Presentations, Techniques, Based on Case Studies & Practical Exercises, Software & General Discussions
- Pre and Post Test



### Training Certificate(s):

Internationally recognized certificate(s) will be issued to each participant who completed the course.

### Training Fees:

**As per the course location** - This rate includes participant's manual, hand-outs, buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

Note: The 5% VAT (Value Added Tax), will be effective starting 01st of January 2018 as per the new regulation from the UAE Government. The VAT applies for all quotation both for local and abroad.

### Training Timings:

#### Daily Timings:

07:45 - 08:00	Morning Coffee / Tea
08:00 - 10:00	First Session
10:00 - 10:20	Recess (Coffee/Tea/Snacks)
10:20 - 12:20	Second Session
12:20 - 13:30	Recess (Prayer Break & Lunch)
13:30 - 15:00	Last Session

**For training registrations or in-house enquiries, please contact:**

**Aisha Relativo:** [aisha@cmc-me.com](mailto:aisha@cmc-me.com)

Tel.: +971 2 665 3945 or +971 2 643 6653 | Mob.: +971 52 2954615

Training & Career Development Department

