



TRAINING PROGRAM



Inductively Coupled Plasma

Introduction:

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 discuss 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.

Who Should Attend?

The course is of interest for any person working in any analytical laboratory. Laboratory staff, Chemists, supervisors and technicians.

Methodology:

This interactive Training will be highly interactive, with opportunities to advance your opinions and ideas and will include;

- Lectures
- Workshop & Work Presentation
- Case Studies and Practical Exercise
- Videos and General Discussions

Certificate:

BTS attendance certificate will be issued to all attendees completing minimum of 80% of the total course duration

Course Objectives:

The quality of analysis depend more on the quality of the operator than that of the instrument, so this course will help laboratory staff to understand meaning of spectroscopy, and to be able to make elemental analysis with high sensitivity by spectroscopy

Course Outline:

- Introduction
- Analytical Chemistry and Chemical Analysis
 - ❖ Classical Methods
 - ❖ Instrumental Methods
- Spectroscopic Methods of Analysis
 - ❖ Historical and review
 - ❖ Basic Principles
 - ❖ 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