TRAINING PROGRAM

Spectroscopy Analysis

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 analysis which call Spectroscopy Analysis, 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 is 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 apple 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 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)

- **Method of Analysis**
- **Sampling , Preparation and Treatment**
- **Interference**
- **Problem and troubleshot**
- **Routine Maintenance**
- **Data analysis**
- **Comparing Spectroscopic Techniques**
- **Spectroscopic Advantages and Disadvantages**
- **Safety requirement**
- **Practical Application**
  - ❖ Petroleum Analysis
  - ❖ Water Analysis
  - ❖ Solid Waste Analysis
  - ❖ Environmental Analysis