

Yarmouk University

**Faculty of
Science**

Chemistry Department Research Labs and Devices

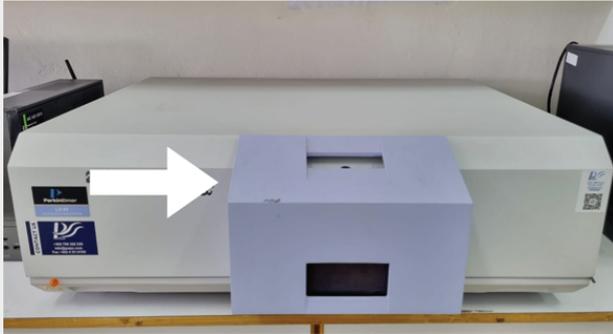
The Department of Chemistry at the Faculty of Science contains several research labs and devices.

Central Lab (1)

Lab technician: Noura Mhaidat

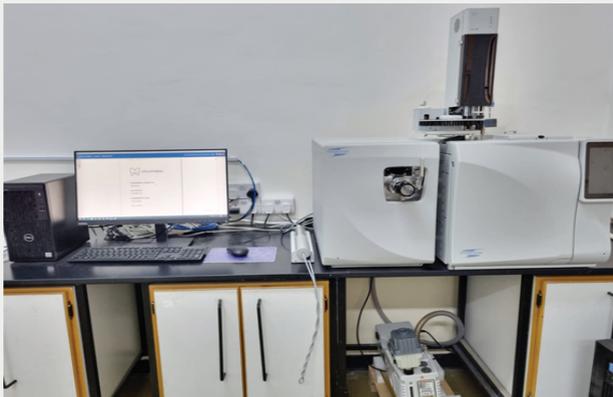
Devices Available in the Lab

1) Fluorometer



It is a molecular emission spectroscopy that analyzes fluorescence from a molecule based on its fluorescent properties (limited to fluorescent molecules). It is used in biochemical, medical, and chemical research fields.

2) Gas Chromatography Mass Spectrometry (GC-MS)



It is an analytical separation technique applicable to gas, liquid, and solid samples (components that are vaporized by heat). Combines two analytical tools to identify compounds and measure the concentration of chemicals found in food, oils, pharmaceuticals, the environment and more.

3) UV/VIS spectrophotometer



It is an analytical technique that measures the amount of light that is absorbed by the solution in a cuvette placed in the spectrophotometer. It is a widely used technique in many areas of science:

- 1) Chemical research.
- 2) Drug identification and nucleic acid purity checks and quantitation.
- 3) Quality control in the beverage industry and food industries.
- 4) Bacterial culturing and protein content in biological samples.

Central Lab (2)

Lab technician: Thana'a Al-Smadi

Devices Available in the Lab

Flame Atomic Absorption Spectrometer (FAAS)



FAAS is used in measuring the concentrations of different metals in the samples (especially toxic heavy metals like Pb, Cd, As, Cu, Ni ...etc.) by measuring their absorbances at selected wavelengths in the visible and ultraviolet range from the EM Spectrum. The theory of flame atomic absorption spectrometry depends upon the Beer's law ($A = -\log T = abc$) and the concentration calculations are usually done according to the linear standard calibration method. It's used in chemical, biochemical, pharmacological, medical, geological and toxicity research fields.

Central Lab (3)

Lab technician: Thana'a Al-Smadi

Devices Available in the Lab

Fourier-transform infrared spectrometer (FT-IR)



FT-IR is used to obtain the IR spectra of different organic and inorganic chemical compounds. The theory depends on the vibrational modes of chemical bonds in different chemical compounds. The resulted IR spectrum covers the range of 400cm^{-1} - 4000cm^{-1} . It reveals the types of chemical bonds present in the chemical compounds and hence reveals the functional groups suspected to be presented in the sample.

FT-IR together with other spectroscopic methods like UV-VIS, GC-MS, NMR...etc. can be used to figure out the total shapes of the chemical compounds in the samples which in many times can be totally unknown.

Moreover, FT-IR is very useful to be used in detection of different changes that occur in the chemical bonds in samples during different chemical reactions (in-situ measurements).

NMR Lab

Lab technician: Ayat Foudeh

Devices Available in the Lab

NMR stands for "Nuclear Magnetic Resonance."



NMR Spectroscopy is a technique used to determine the chemical molecular structure of organic compounds.

The experiments conducted by the NMR unit:

- 1) ^1H -NMR
- 2) ^{13}C -NMR
- 3) Dept-NMR
- 4) 2D-NMR
- 5) Hetero Atoms NMR