

Introduction to Analytical Methods

SAIKRISHNA UGGU

Lecturer in Chemistry

P. R. Govt. College (A)

KAKINADA

Contents...

- Analytical chemistry definition
- Chemical analysis definition
- Classification of Chemical analysis
- Classical methods of analysis
- Instrumental methods of analysis

What is Analytical Chemistry ?



Analytical Chemistry....

Analytical Chemistry is a branch of Chemistry which deals with the **Chemical Analysis** of various compounds by using different Analytical Methods.

What is Chemical analysis ?



Chemical analysis....

Chemical analysis is a method of Separation, Identification and Quantification of different components present in the given sample by using different analytical techniques.

Chemical analysis...

Chemical analysis is mainly of two types.

1. Qualitative chemical analysis
2. Quantitative chemical analysis

Chemical Analysis

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graph TD; A[Chemical Analysis] --> B[Qualitative Analysis]; A --> C[Quantitative Analysis];
```

Qualitative Analysis

Quantitative Analysis

Qualitative Analysis...

Qualitative analysis, in which the identification of analytes is being carried out by using different analytical methods.

Qualitative Analysis...

- Inorganic Simple salt analysis and Mixture analysis for identification of different anions and cations present in the given unknown sample.
- Organic Compound analysis for identification of different functional groups present in the given unknown compound

Quantitative Analysis...

Quantitative analysis, in which the quantification of analytes is being carried out by using different analytical techniques.

Quantitative Analysis...

- Gravimetric analysis,
- Titrimetric analysis,
- Volumetric analysis,
- Spectrophotometric analysis, etc.,.

Quantitative Analysis...

Quantitative analysis, is further classified into two types,

1. Classical methods of analysis
2. Instrumental methods of analysis

Quantitative Analysis



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graph TD; A[Quantitative Analysis] --> B[Classical Methods]; A --> C[Instrumental Methods]
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Classical Methods

Instrumental Methods

Classical methods...

These are conventional type of methods for quantitative determination of analytes.

Ex: Gravimetric methods, Titrimetric methods, etc.,.

Classical methods...

Classical methods of analysis is also termed as wet chemical analysis, consists of those analytical techniques that use no mechanical or electronic instruments other than a balance.

Classical methods...

The classical methods of analysis is usually relies on chemical reactions between the material being analyzed (the analyte) and a reagent that is added to the analyte.

Instrumental Methods...

In contrast to Classical methods, Instrumental methods of analysis typically depends on the measurement of a physical property of the particular analyte by using an instrument.

Instrumental Methods...

It involves the use of an instrument, other than a balance, to perform the analysis. In some cases, the instrument is used to characterize a chemical reaction between the analyte and an added reagent; in others, it is used to measure a property of the analyte.

Instrumental Methods...

Instrumental analysis is subdivided into different categories on the basis of the type of instrumentation employed.

Instrumental Methods...

- Conductometric titrations,
- pH metric titrations,
- Potentiometric titrations,
- Spectroscopic methods,
- **Thermal Methods,**
- Electro analytical methods, etc.,.

Thank You.....

