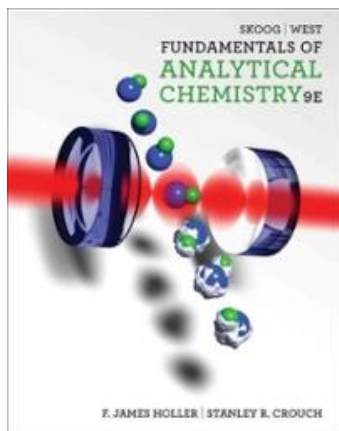


STATISTICS IN CHEMISTRY

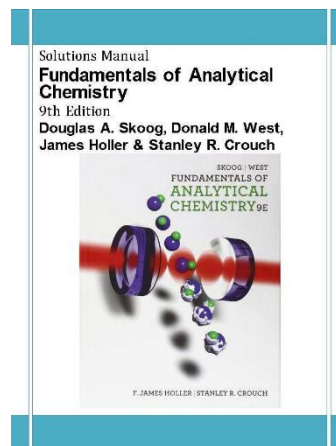


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1. Skoog DA, West DM, Holler FJ, Crouch SR. Fundamentals of Analytical Chemistry. Nelson Education; 2013.
2. Skoog DA, West DM, Holler FJ, Crouch SR. Solutions Manual of Fundamentals of Analytical Chemistry. Nelson Education; 2013.

Errors in Chemical Analysis

Introduction to Analytical Chemistry, Basic Concepts, Tools of Analytical Chemistry

Analytical chemistry is used in many fields and consists of many methods of measurement science. It is mainly examined under two headings. The area in which the determination of the elements and compounds in the sample takes place is called **qualitative analysis**. The area in which the amount of components in a sample is determined is called **quantitative analysis**. Each component in the sample is called an **analyte**.

Analytical chemistry is a science that has relations with many branches of science such as physics, biology, medicine, materials, agriculture, environment and geology, especially chemistry. The main reason for this is the need for various measures in every science at the decision-making stage.

Since analytical chemistry is a science that involves a large number of measurement methods, the following steps are generally used in an analytical method:

- Method selection
- Sampling
- Preparation of the sample for analysis
- Solubilization of the sample by a suitable method
- Eliminating any interfering effects
- Determination if there is a feature that can be measured, otherwise converting it to a structure with a feature that can be measured and measuring this property
- Calculation of results
- Determination of the reliability of the results

Each step during this process is important for an accurate and reliable analysis. Specifically, the sampling and preparation of the sample for analysis will make sense when the sample fully represents the batch we want to know about, otherwise the analysis with a non-representative sample, no matter how expensive and precise methods are used, is not accurate about the batch. It is necessary to know that it will have no meaning because it will not provide information.

Error Concepts

There are two important concepts in the evaluation of the analysis results; **accuracy** and **precision**.

Accuracy is a measure of the proximity of the results to the actual value. The result obtained; the closer to the right value is more accurate, the more distant to the right value is inaccurate.

Precision is a measure of the closeness of the results obtained by the same method.

Therefore, according to the data obtained from the analysis results, can be high accuracy and low precision or low accuracy high precision. However, the task of an analyst is to obtain the results of the analysis with high accuracy and precision.