

## Method, Advantages and Disadvantages of Gravimetric analysis – A Brief Introduction

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### Perspective

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Gravimetric analysis, a way of quantitative subjective investigation amid which the constituent looked for is changed over into a substance (of known composition) which is able to be isolated from the test and weighed. The steps commonly taken after in gravimetric examination are Planning of an answer containing a known weight of the test, Partition of the specified constituent, Weighing the isolated constituent, and Computation of the sum of the real constituent interior the sample from the observed weight of the disconnected substance.

Of the various methods which will be used for isolating the specified constituent from a solution of a sample, the foremost common is precipitation—that is, transformation into a substance not soluble within the solution. A reagent is added that forms an insoluble compound with the specified constituent but won't precipitate other constituents of the sample. The precipitate obtained is separated by filtration, washed freed from soluble impurities, dried or ignited to remove water, and weighed. Certain substances are often separated by virtue

of their easy convertibility into gaseous compounds, as within the determination of carbonate during a mineral analysis. The sample is treated with an acid, and  $\text{CO}_2$  is evolved as a gas. The gas is absorbed on a weighed quantity of a solid alkaline reagent, and therefore the amount of  $\text{CO}_2$  is decided from the gain in weight of the absorbent. Electrodeposition is utilized so as to isolate certain metals which can be plated out by passing an electrical current through an answer of their salts. Copper in alloys could also be determined by this method as long because the sample is free from other metals that plate out under equivalent conditions. Errors made in gravimetric analyses usually relate to the purity of the isolated constituent. For the most part, the compounds that are precipitated are exceptionally insoluble, and insignificant error results from the inadequacy of precipitation. Obtaining a precipitate that's 100 percent pure and is exactly of the composition represented by a chemical formula is, however, considerably harder. All gravimetric methods are subject to some degree of error due to this difficulty.

#### Advantages

Gravimetric analysis, in the event that strategies are taken after carefully, gives for exceedingly exact analysis. In fact, gravimetric analysis was wont to determine the atomic masses of the numerous components inside the table to accuracy. Gravimetry provides little or no room for instrumental error and doesn't require a series of standards for calculation of an unknown. Also, methods often don't require expensive equipment. Gravimetric analysis, thanks to its high degree of accuracy, when performed correctly, also can be wont to calibrate other instruments in lieu of reference standards. Gravimetric analysis is currently wont to allow undergraduate chemistry/Biochemistry students to experience a grad level laboratory and it's a highly effective teaching tool to those that want to attend school of medicine or any research graduate school.

#### Disadvantages

Gravimetric analysis usually only provides for the analysis of one element, or a limited group of elements, at a time. Comparing advanced dynamic flash combustion including gas chromatography with conventional combustion analysis will appear that the past is both quicker and permits for simultaneous determination of multiple components whereas conventional determination permitted just for the determination of carbon and hydrogen. Methods are often convoluted and a small mis-step during a procedure can often mean disaster for the analysis (colloid formation in precipitation gravimetry, for example). Compare this with hardy methods like spectrophotometry and one will find that analysis by these methods is far more efficient.