

### §1.1.3 The basic analytical process

Analysis is a complex process. It is a process that from unknown and disorder to confirmation and known order. The analytical process is not unalterable because of the complexity of sample. The basic analytical process is the common parts of all kinds of analytical processes.

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#### I Sampling Selecting representative sample

Sampling is the first step of the whole process. The sample to be measured must be truly representative. For example, the composition of a piece of iron ore is not even, and the quantity of the piece of the iron ore does not represent the whole diggings.

#### II. pretreatment of sample Dissolving and eliminating the interference.

Most samples can't be used to determine directly. e.g. the determination of the amount of the additive in the food and the determination of the amount of the heavy metal in the cosmetics. The key procedure for some sample is dissolving. The usual methods for pretreatment of sample are extracting, dissolving by acid or fusing by alkali.

The pretreatment of sample should avoid introducing interference, the elimination of the coexisting interference include masking, separation by chromatography and so on.

#### Measurement——Selecting a suitable analytical method.

The suitable analytical method should be selected before measurement. For the selecting analytical method, the following factors should be considered, the property of the test sample, the quantity range and the error. For example, the chemical methods are usually used for major amount of sample, while the determination for minor amount of sample is completed by instrument.

#### III. Calculation and evaluation of the results——the reliability of the results