



Mineral Measurements Instruments:

Measurement of minerals is commonly performed by several techniques:

يتم إجراء قياس المعادن بشكل شائع من خلال العديد من التقنيات:

1. Flame photometer or (Atomic absorption spectroscopy AAS):

A device used in chemical analysis to determine the concentration of mineral ions, such as (Ca, K and Na, Mn, Fe, Co, etc.).

2. Auto analyzer (biochemistry analyzer):

An instrument with ion selective electrodes, which measured electrolyte most often are sodium and potassium, chloride and bicarbonate and others.

3. X-ray diffraction (XRD):

X-ray is one of the most powerful tools for mineral determination and identification, structural and chemical and size determination.

تعتبر الأشعة السينية واحدة من أقوى الأدوات لتقدير وتشخيص المعادن وتحديد البنية التركيبية والكيميائية وتحديد الحجم

4-Spectroscopy: التحليل الطيفي

This spectroscopy involves UV-visible and infrared spectroscopy and X-Ray fluorescence to analysis of the spectral properties and elemental

compositions of the minerals.

5- Mass Spectrometry:

Mass Spectrometry can also be used to study of the minerals.

Principles of X-Ray Fluorescence:

The analysis of major and trace elements in the minerals by X-ray fluorescence, when the atoms interact with the high energy incident X-radiation, the materials are excited and ionized because the energy of radiation is sufficient to dislodge a tightly-held inner electron, the atom becomes unstable and an outer electron replaces the missing inner electron.

يتم تحليل العناصر الرئيسية والنادرة في المعادن بواسطة فلورة الأشعة السينية، فعندما تتفاعل الذرات مع الأشعة السينية الساقطة ذات الطاقة العالية، يتم إثارة المواد وتأينها لأن طاقة الإشعاع كافية لإزاحة الإلكترون الداخلي المرتبط بقوة وتصبح الذرة غير مستقرة ويحل الإلكترون الخارجي محل الإلكترون الداخلي المفقود

When this happens, energy is released due to the decreased binding energy of the inner electron orbital compared with an outer one. The emitted radiation is of lower energy than the primary incident X-rays and is termed fluorescent radiation. Because the energy of the

emitted photon is characteristic of a transition between specific electron orbitals in a particular element, the resulting fluorescent X-rays can be used to detect the abundances of elements that are present in the sample.

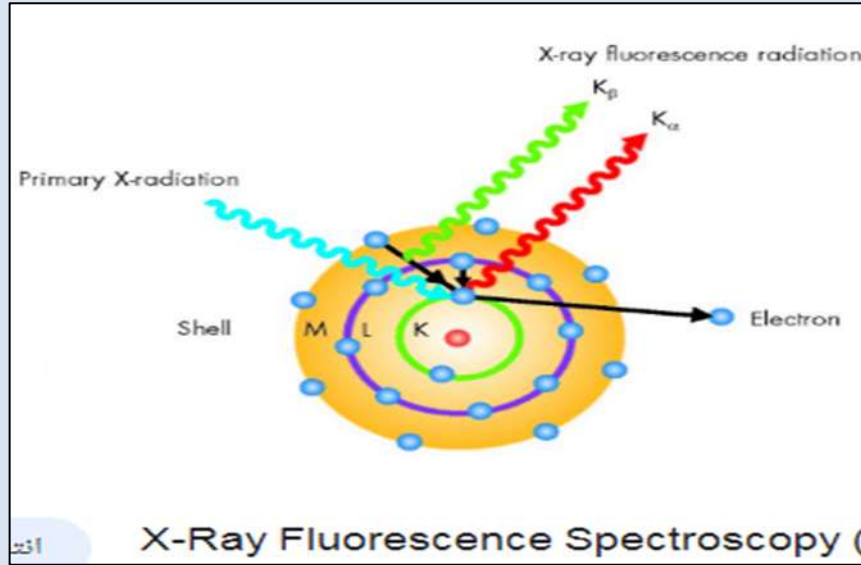
عندما يحدث هذا، يتم فقدان طاقة بسبب انخفاض طاقة الارتباط لمدار الإلكترون الداخلي مقارنة بالمدار الخارجي. الإشعاع المنبعث ذو طاقة أقل من الأشعة السينية الساقطة الأولية ويسمى بإشعاع التفلور. نظرًا لأن طاقة الفوتون المنبعث هي خاصية الانتقال بين مدارات إلكترون محددة في عنصر معين، فيمكن استخدام الأشعة السينية المتفلورة الناتجة للكشف عن

وفرة

العناصر

الموجودة

العينة



في

The amount of phosphate in the blood affects the level of calcium in the blood. Calcium and phosphate in the body react in opposite ways: as blood calcium levels rise, phosphate levels fall. A hormone called parathyroid hormone (PTH) regulates the levels of calcium and phosphorus in your blood. When the phosphorus level is measured, a vitamin D level, and sometimes a PTH level, is measured at the same time. Vitamin D is needed for your body to take in phosphate.

The relation between calcium and phosphate may be disrupted by some diseases or infections. For this reason, phosphate and calcium levels are usually measured at the same time.

The determination of total phosphorus (TP) in an aqueous sample is based on digestion of the sample to convert phosphorus compounds into orthophosphate, which can then be determined based on spectrophotometry

