

TXRF

 **LABNICS**
Equipment

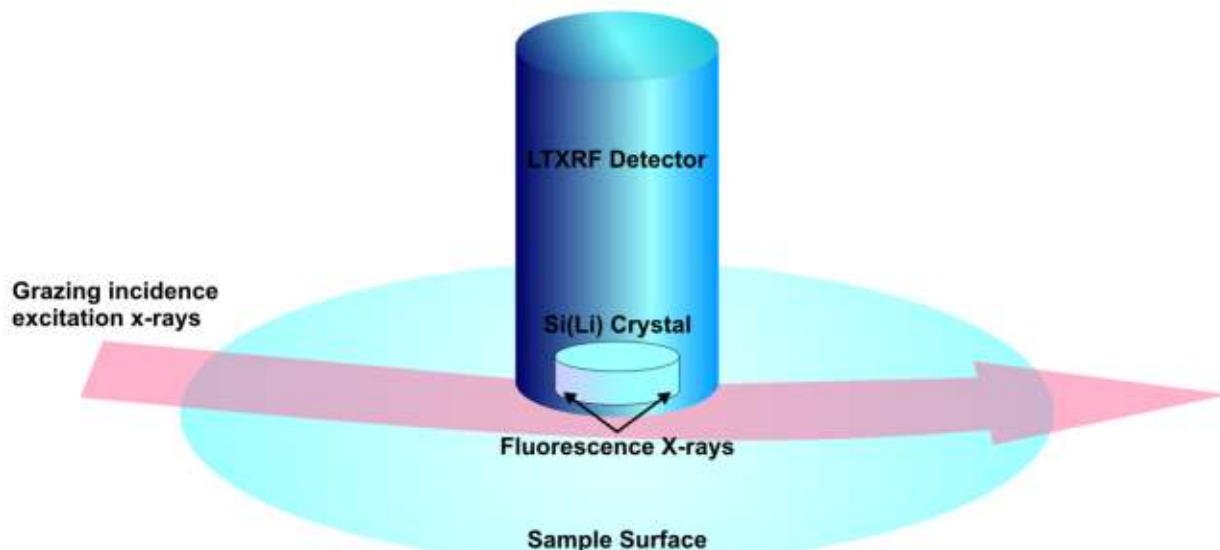


Total Reflection X-Ray Fluorescence Spectrometer

Total Reflection X-Ray Fluorescence Spectrometer (LTXRF)

Principle :

LTXRF is a variant of the Wave Dispersive X-ray Fluorescence technique. The sample is excited by X-rays which are applied at a grazing incidence angle to a highly uniform, flat surface (substrate) on which the sample is either intrinsically present (e.g. contaminant on Si wafer) or deposited. The principle is that the excitation beam is totally reflected by the substrate and only particles on the surface are excited giving rise to X-ray fluorescence emissions. In this way the background normally associated with XRF measurements is much reduced, leading to higher sensitivity and lower detection limits. Because the quantity of material giving rise to fluorescence X-rays is very small, detection efficiency must be as high as possible. The detector is usually mounted as close to the sample as possible and a large area detector Si(Li) detector is used to maximize the solid angle. It is a very sensitive analysis technique for looking at low level concentrations of atomic elements. The technique is sensitive to very dilute quantities of material, but it does require very flat samples.





LTXRF

Features :

- » It is a non destructive tool, does not require standards.
- » It can simultaneously analyze elements ranging from ^{11}Na to ^{92}U .
- » It is a very rapid method with determination time from 10 seconds to 1000 seconds.
- » The lowest absolute detection limit is pg level; the lowest relative detection limit is ng/ml.
- » Consumption of samples is very low - μL or ng level.
- » Excitation power is less than 500 W.
- » Powders, Suspending liquids, & other samples that can provide a plane could be directly determined, without pretreatment.

System Configuration :

Hardware :

- » Total reflection is of double path, bulk material is the optical glass, includes X-ray path, slit roster and sealed shell.
- » Source: High voltage power system, double X-ray tube excitation system, cooling water and controlling system.
- » Data processing system: Si (Li) detector, with carrier ,spectrograph amplifier, multi channel analyzer, high voltage detector.
- » Mechanical adjusting system: Control board, solid state relays, five step servo motors and relevant raise and fall, sets angle controlling and the raise and fall of sample carrier sets mechanical positions and sets the sensor.
- » X ray masking System - X-ray tube & the set for adjusting the X-ray tubel.
- » The adjustment of the X-Ray tube & the sample carrier is controlled.
- » The System has alarm facility with respect to voice & light.

Software :

- » Scanning spectrum software
- » Analytical software
- » Controlling motor software



(Analysis of Precious metal in mineral)

Applications :

It is used for Elemental Analysis. It could be extensively applied to macro, micro and trace analysis, in fields such as mineral, metallurgy, chemical engineering, food, biology, medicine, environmental protection, judicial analysis, archaeology, high purity material etc. It is especially useful in controlling the surface quality of silicon in the semi-conductor industry.



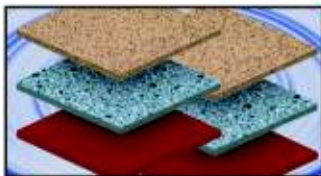
» Mineral

Gold, concentrated copper, nickel, fluorite, feldspar and antimony oxide.

Metallurgy «



Nickel electrolyte, copper anode mud, precious metal in nickel homoborneol, spectroscopically pure rhodium, gold and silver jewelry, cast iron and bearing.



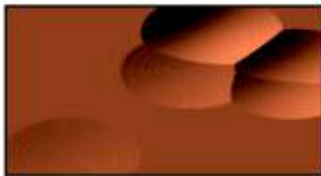
» Chemical Engineering

Sulfur content of diesel oil, kinds of catalyst, ceramics, enamel.

Material «



The content of impurity in high- purity quartz, the identification of injecting erbium into KTP crystal.



» Biology

Teeth and sap of oceanic animal

Environmental Protection «



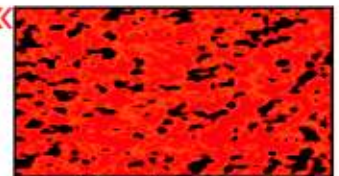
Tap water, atmospheric floating dust, polluted water and sludge.



» Food

Wholesome and deleterious elements in drink.

Medicolegal Physician «



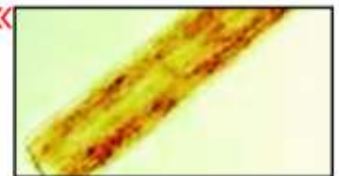
The identification of sample in the site of an accident.



» Archaeology

Bronze vessels

Medicine «



Deleterious elements in hair and nail.

» Ordering Information :

Model No.	Catalog No.
LTXRF	36740101



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