

Producing polymers

In the polymer industry, techniques such as XRF (X-ray fluorescence) and XRD (X-ray diffraction) are used in research and development, quality control, quality assurance, certification and failure analysis. Each technique provides unique information about the chemical composition and structure of the polymer.

The XRF analysis can identify and quantify the elemental composition and concentrations of inorganic additives (pigments, fillers, flame retardants, stabilizers) in the polymer. It could also be used for the RoHS/WEEE regulation determinations.

The XRD analysis is used to determine the crystalline or microcrystalline or amorphous forms. The polymorphism and relative crystallinity are often related to processing methods and XRD can provide vital information for the process and quality control labs. Low angle or small angle scattering can be used to determine the size and shapes of polymer domains within a specimen. Special XRD arrangements are used for polymer fibers and films for more advanced structural investigations.



Bench-top XRF and XRD for fast, convenient, economic analysis

Thermo Scientific™ ARL™ QUANT'X EDXRF

- Rapid elemental analysis from Fluorine to Uranium
- Sensitivity from <1 ppm up to 100%
- Measurement times 10-60 sec per element
- Sample imaging with CCD camera
- Adjustable X-ray beam size from 1 to 15 mm
- High performance silicon drift detector (SDD) for uncompromising element coverage
- Thickness and layer analysis
- UniQuant™ for quantitative analysis of “unknown samples”

Thermo Scientific™ ARL™ EQUINOX 100/1000 XRD

- Fast, real-time simultaneous XRD detection of full pattern
- Reliable and robust with no moving parts
- High flux Micro-Focus source coupled with Smart Optics or High power standard XRD tube with Monochromators
- Easy sample entry for rapid screening and QC/QA
- Various sample stages for versatility and investigative work
- Dual-Mode diffraction capability (high intensity vs high resolution) with SIAMX

Polymers analysis

XRF and XRD analysis capabilities from Thermo Fisher Scientific



Thermo Scientific Niton XL5
XRF Portable Analyzer



ARL QUANT'X
Versatile EDXRF



ARL OPTIM'X
Compact WDXRF



ARL PERFORM'X
Advanced WDXRF



ARL EQUINOX 100
Compact low power XRD



ARL EQUINOX 1000
Compact high power XRD



ARL EQUINOX 3000-5000-6000
Advanced XRD



ARL 9900 X-ray WorkStation
full XRF/XRD

Thermo Fisher offers a wide range of XRF and XRD capabilities from convenient hand-held analyzers for field applications or bench-top instruments to high end laboratory instruments for flexibility and performance depending on the analytical needs.

Find out more at thermofisher.com/xrf or thermofisher.com/xrd

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