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Accreditation & Standards

Our XPS analyses are accredited according to ISO/IEC 17025:2017.

The RMS Foundation's management system is certified to ISO 9001:2015.

In the standards ISO 10993-18 and ASTM F2847, XPS is expressly recommended for the *in-situ* determination of the surface composition of medical devices—both for organic and inorganic substances as well as for insoluble particles.

ISO 9001	Quality management systems - Requirements
ISO/IEC 17025	General requirements for the competence of testing and calibration laboratories
ISO 10993-18	Biological evaluation of medical devices - Part 18: Chemical characterization of materials
ASTM F2847	Standard Practice for Reporting and Assessment of Residues on Single Use Implants

Sample requirements

Materials

Vacuum-compatible metals (including magnetic ones) and non-metallic solids as well as powders.

Dimensions

- Maximum sample diameter: 80 mm
- Maximum sample height: 20 mm
- Larger samples can be crushed if necessary

Condition upon Delivery

- Avoid touching the samples by hand whenever possible.
- For transport, wrap them dry in conventional aluminium foil.

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Discuss your questions with us – we are happy to advise you.

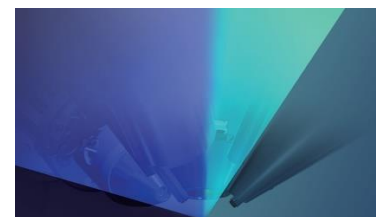
For more information, please visit www.rms-foundation.ch.

XPS Flyer_e_V9



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XPS Analysis



X-Ray Photoelectron Spectroscopy (XPS)

Chemical surface analysis for:

- Quality Control: Cleanliness
- Contaminants and residues
- Monitoring of surface modifications

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How does XPS work?

In an X-ray photoelectron spectrometer, electrons are excited by X-rays so strongly that they leave their atoms and ultimately exit the sample surface. The energy of these photoelectrons is measured and used to calculate their binding energy, enabling a qualitative and quantitative determination of the chemical composition in the top 5 to 10 nm of the surface.

With this technique, all elements except hydrogen and helium can be detected, and their binding states can be analysed. The detection limit is approximately 0.1 at%, corresponding to about 1 ng/cm² on the sample surface.

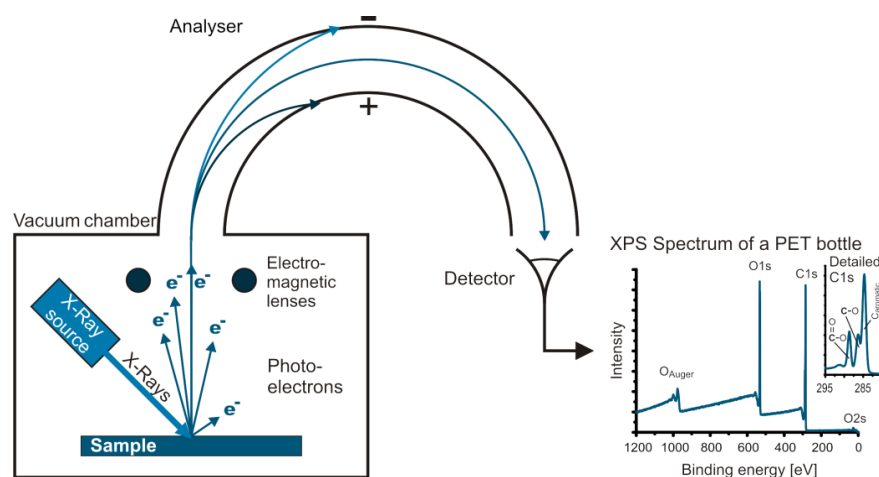


Figure: XPS principle.

Applications

XPS is a non-destructive technique used to analyse:

- The cleanliness of surfaces for quality control
- The chemical composition of contaminants and residues
- Chemical modification after surface treatments

XPS analyses serve customers in the medical technology sector as well as in other industries such as watchmaking, coatings, electronics, and semiconductors.

Equipment

PHI Genesis by Physical Electronics / ULVAC-PHI

This spectrometer is suitable for all standard analyses and is particularly notable for its ability to investigate micrometre-sized structures from 5 µm.

Analysis Types & Costs

Depending on your needs, various types of analysis are available, all of which are accredited. In the basic package (XPS analysis incl. test certificate), high-resolution survey spectra are quantitatively evaluated. The option that includes a report allows for more detailed investigations. Special investigations such as measurements in very small areas, angle-resolved measurements, imaging XPS, or depth profiling are carried out in extended XPS analyses.

Table: XPS Analysis Types, and their Capabilities

Service	XPS-Analysis incl. Test Certificate	XPS-Analysis incl. Report	Extended XPS-Analysis
Measurement			
High-resolution survey spectra¹	yes	yes	yes
Quantification of all detected elements			
Detailed spectra¹			
Additional analysis of chemical and oxidation states	–	yes	yes
Area of analysis			
large: Ø 200 µm, scanning possible	yes	yes	yes
small: Ø 50–100 µm	–	yes	yes
very small: Ø 5–20 µm	–	–	yes
Detection limit	0.1–0.3 at%, depending on element	yes	yes
Uncertainty	15 % for main elements, up to 100 % for trace elements	yes	yes
Special analyses			
angle-dependent analysis	–	–	yes
to analyse surface depth distributions			
imaging-XPS	–	–	yes
to chemically map the surface			
depth profile using Ar-sputtering	–	–	yes
Report			
Test Certificate (German or English)	yes	–	yes
Report (German or English)	–	yes	yes

¹ In high-resolution survey spectra, the fwhm(Ag 3d_{5/2}) is 0.8 to 1.0 eV, while in detailed spectra it ranges between 0.4 and 0.5 eV, depending on the pass energy.

Table: XPS Analysis Types, and associated Costs

Total Number of Analysed Spots ²	XPS-Analysis incl. Test Certificate	Price/Spot in CHF XPS-Analysis incl. Report	Extended XPS-Analysis
1	450	600	
2	320	440	Prices on request
≥ 3	270	380	
≥ 6	240	330	
≥ 9	220	300	

² Sum of all analysed spots in an investigation (for example, 3 samples × 2 spots per sample results in a total of 6 analysed spots).