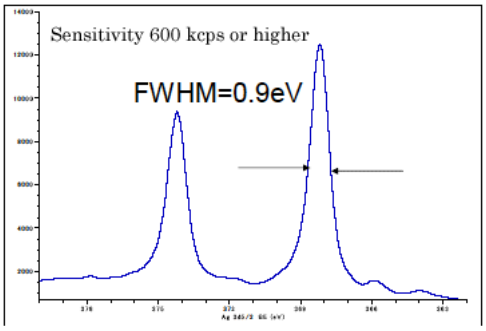
JPS-9010 Photoelectron Analyzer - A Versatile Surface Analyzer

JPS-9010 Series - Features

The JPS-9010 series offers a variety of accessories to meet a wide range of applications including high resolution measurement, angle resolved XPS analysis, and depth profiling.

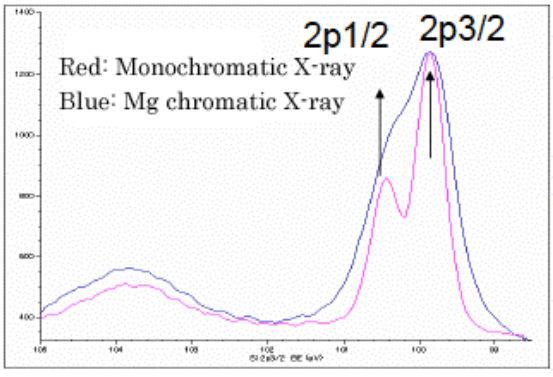
- High accuracy energy analyzer
- X-ray source to minimize damage to samples
- Compact X-ray monochromator: Neutralizing gun incorporated
- Ultra high clean vacuum system; easy baking
- Versatile auto analysis to support routine analysis
- Large stage to accommodate a 3.5” hard disk
- Easy to use software: Windows®XP compatible
- High speed peak separation software
- High speed ion gun: Rapid depth profiling at low acceleration voltage and high current

JPS-9010 base unit



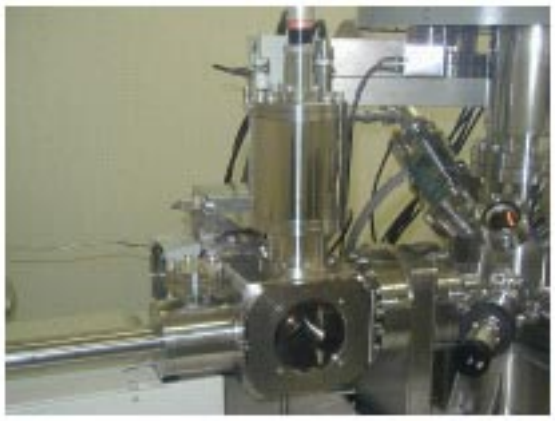
Ag3d photoelectron spectrum

Monochromatic X-rays are ideal for high resolution analysis.The figure on the left



compares the Si2P spectra acquired with monochromatic and Mg chromatic X-rays.

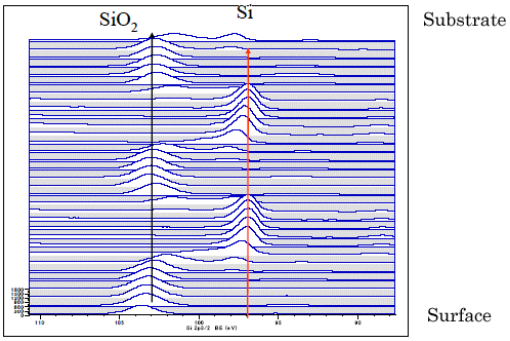
High speed ion gun for rapid depth profiling
No adjustment needed for ion gun

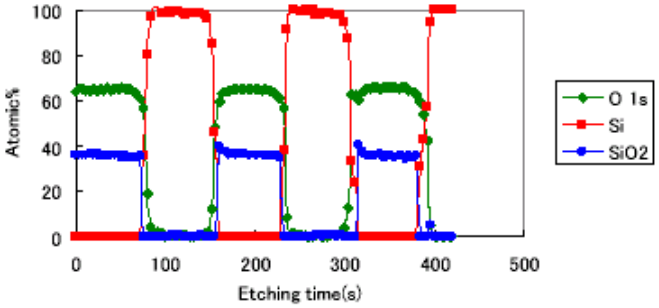


The high speed ion gun is specifically designed for XPS to etch samples at a low accelerating voltage from 150 V to 1500 V, minimizing the damage on the surface and interface. The etching rate is 3 to 120 nm/min (SiO_2 conversion).

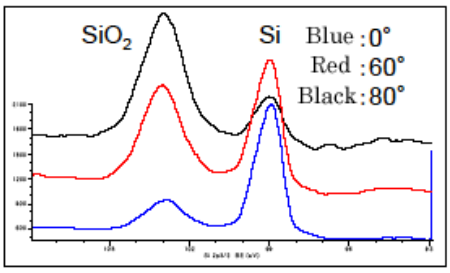
High speed ion gun for XPS mounted to top of pre-evacuation chamber

The figure on the right shows the Si2p spectrum acquired in depth profiling at 500 V of the Si substrate on which SiO_2 and Si layers alternately developed (5 layers in total). The spectrum clearly detected SiO_2 and Si.

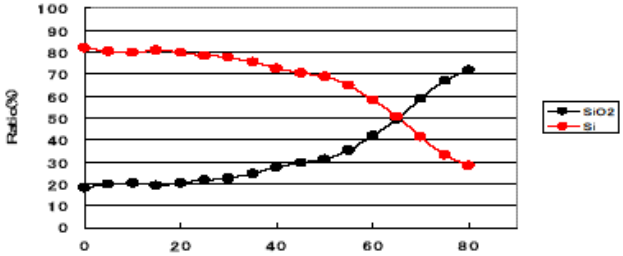




The figure below shows the depth profile of SiO_2 and Si obtained by the Depth Profile program. The data shows that each layer is 25 nm thick.



Si2p spectra from ARXPS



Stage tilt angle

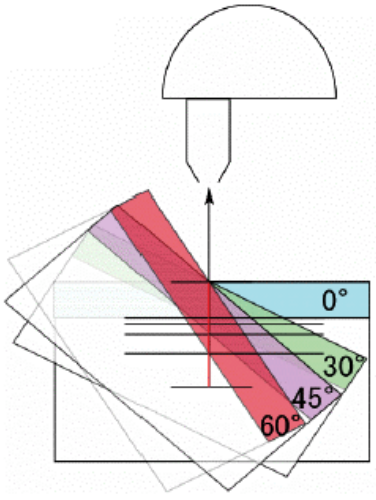
Easy angle resolved XPS (ARXPS)

Angle resolved XPS is a technique to analyze a sample while changing its tilt angle.

The detection depth of photoelectrons (d) is expressed as:d ＝～3λcosθ　(λ: mean free path; θ: sample tilt angle)

As the sample tilt angle increases, d will be shallower, enabling depth profiling on the surface.

ARXPS is a non destructive depth profiling technique.



Principle of ARXPS