

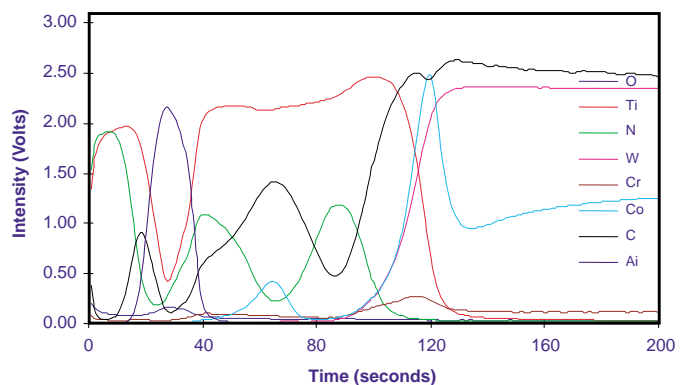
Look at the Surface and Beyond...And See a Whole New World of Information

GD-PROFILER HR™

RF Glow Discharge OES Instrument
Highest Optical Resolution for Maximum Performance

A World of Applications:

- Thin films
- PVD/CVD coatings
- Coated steels
- Oxidation/Corrosion/Passivation
- Surface treatments
- Semi-conductors
- Metal alloys
- Ceramics
- Powders
- Glasses
- Complex alloys: W, Ti, U, Pu
- Rare earth and lanthanide elements



GDS is important in the process control of specialty machining tools. This depth profile shows the various hard coatings (TiN, TiC, alumina, TiCN and TiC/Co/Cr) which have been applied to a tungsten carbide/cobalt material. The optical resolution of the GD-PROFILER HR allows the analysis of such complex, multi-layered samples.

The GD-PROFILER HR is a multi-functional instrument:

- Bulk analysis
- Depth profile analysis
- Near surface analysis

With the following benefits:

- Analysis of conductors and non-conductors
- All elements analyzed including H, O, N, C & Cl
- Full spectral coverage
- Quantitative depth profile analysis
- Sensitivity for analysis at low ppm level
- **The highest optical resolution available**

Features of interest:

- Typical sputtering rate of 3 $\mu\text{m}/\text{min}$ provides results in minutes
- Depths of over a hundred microns
- Ease of use
- Depth resolution comparable to that of more expensive surface techniques



The excellence of the GD-PROFILER
20 years of experience in Glow Discharge
The expertise of RF source technology





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RF-GD excitation source

- Class E RF generator
- 150W Max
- Optimized SINGLE source for conductors and non-conductors
- Computer control of RF parameters (Power, DC bias and RF voltages)
- Fast matching box with tunable computer control default settings
- Compliant with CE regulations

GD lamp

- 4mm anode diameter
- Optional 2mm and 7mm anodes available
- Double pumping system for optimum crater shape
- Computer control of Ar pressure inside the lamp
- Sample cooling device (optional chiller available)

Optics

- Single view optics: All optical mountings have a direct observation of the GD plasma (no fibers)
- Optics are all equipped with JY, ion etched, holographic gratings
- Optics are purged with a neutral gas for VUV determination and maximum lifetime of components

Polychromator

- Paschen-Runge Mounting
- 1.0m focal length
- 3000 grooves/mm, double order concave grating
- Spectral Range: 110nm – 520nm. This spectral range allows the analysis of gas elements (H, O, N, C & Cl) at their sensitive wavelengths in the VUV range
- Spectral Resolution: 7pm in second order
- Metallic mask with more than 230 pre-etched secondary slits
- Up to 60 optical channels
- All channels are equipped with patented HDD® detectors (dynamic range 10¹⁰)
- Patented Polyscan system allows automatic scanning around all mounted channels

Specifications subject to change without notice.

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Flat field (optional)

- Patented optical mounting installed within the frame of the primary polychromator
- 1200 grooves/mm parabolic grating
- Extends the spectral range in the IR region to 900nm for the alkali elements (Na, Li, K, F)

Monochromator (optional)

- Czerny-Turner optical mounting
- 1.0m focal length
- 3600 grooves/mm flat grating (80 x 110mm)
- Resolution: 9pm in the UV
- Direct drive scanning system, computer controlled
- The monochromator can measure **simultaneously** any "n+1" element within a depth profile analysis and any sequence of elements in a bulk program.

IMAGE: Full spectrum acquisition (optional)

- IMAGE provides a full spectrum acquisition of a sample or a thick layer in less than two minutes. Monochromator option required.
- IMAGE provides the capability to compare spectra, to identify elements, to obtain a semi-quantitative measurement of the sample composition and provides a "fingerprint" archive of a sample

Data processing

- Ultrafast acquisition system with multi-stage integration times
- Computer, monitor and printer
- Quantum™ software including IQ™, Intelligent Quantification, for quantitative depth profile analysis

Physical Data

230cm (length) x 85cm (width) x 196cm (height), 820kg (weight)
90in (length) x 34in (width) x 77in (height), 2255lbs (weight)

Options

- Chiller: closed cooling device with temperature control
- Nitrogen generator
- Argon purifier
- 2mm and 7mm anodes
- Small sample holder
- Reference books
- Remote diagnostics for on-line assistance

