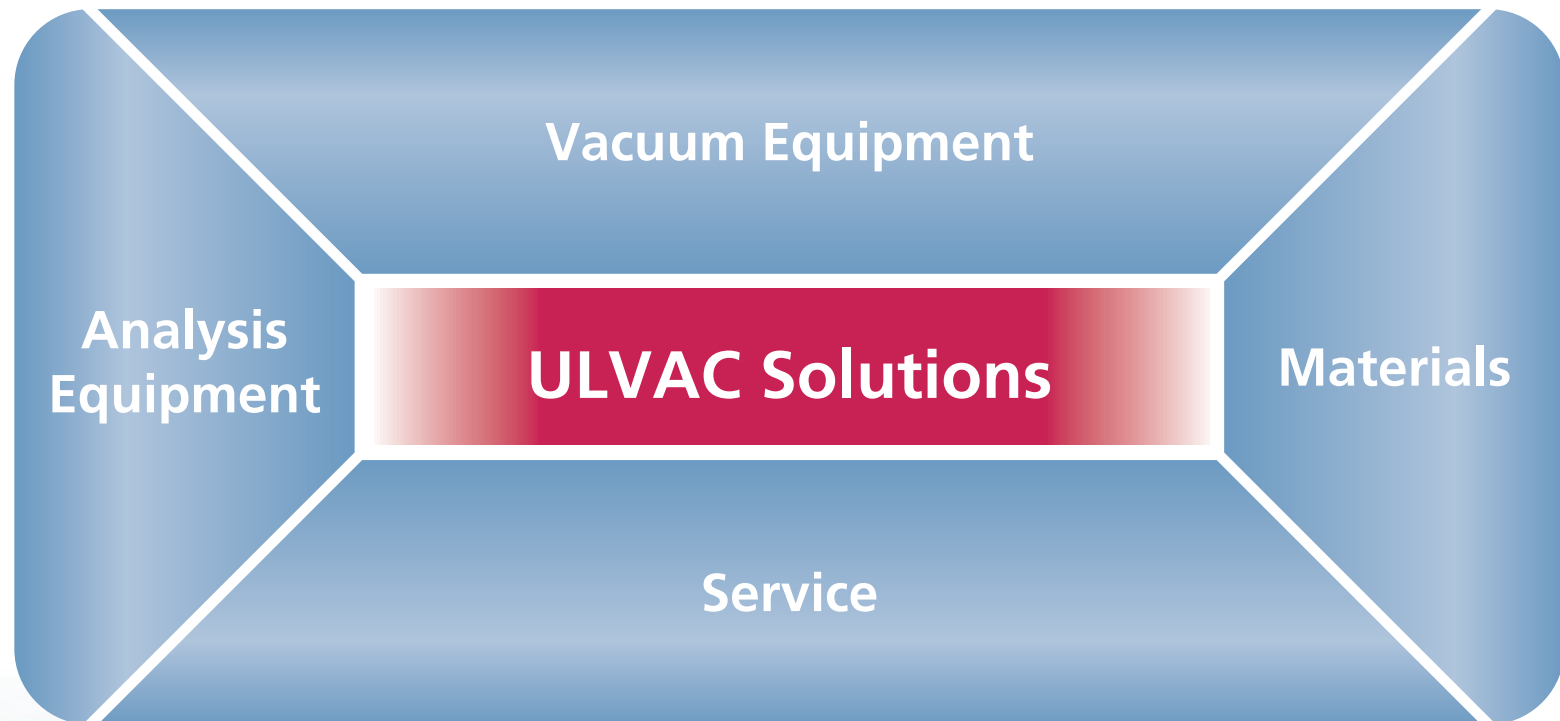


## ■ For Analysis and Measurement Equipment Applications



## Product for Solutions

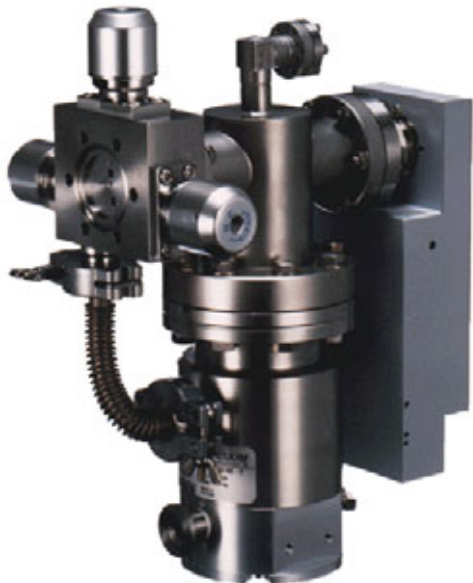
### Reactive Gas Process Monitor

## REPROS Series

REPROS is a quadrupolar mass spectrometric type process monitor for CVD and etching.

### Features

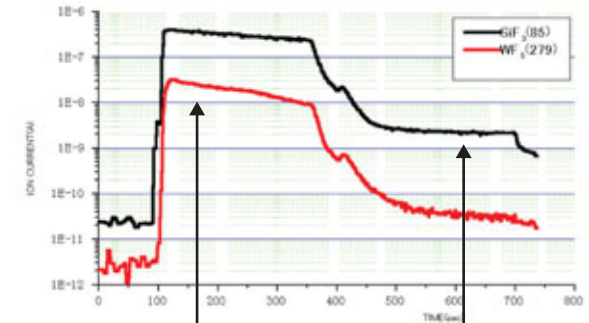
Suitable for measurement of respective gas during CVD and Etching process.



ULVAC, Inc.

### For measurement of CVD cleaning end point

- For etching and CVD process
- "Ion current vs. Time" measurement data as the result of monitoring a cleaning process using fluoride in a  $WSi_2$  CVD chamber.



Original end point    Conventional process hour

### ULVAC's Analysis and Measurement Equipment

	Vacuum Measurement			Leak Detection
	Vacuum Gauge	Vacuum Gauge Calibration Equipment	Gas Analyzer	Helium Leak Detector
ULVAC	○	○	○	○
ULVAC-RIKO				
ULVAC-PHI				
Applications	Total pressure measurement and control for various vacuum equipment	Calibration for various vacuum gauge	Partial pressure measurement for various vacuum equipment	Leak test for various vacuum equipment and products

## Stylus type Surface Profiler

### Dektak Series

Dektak Series measures surface profile on various substrate easily and precisely.

#### Features

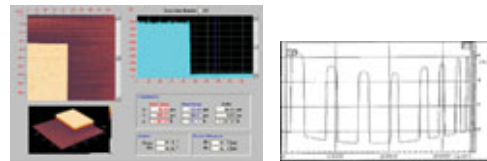
- Complete with two types of Dektak 6M with a 150mm-dia. manual stage and Dektak 8 with a 200mm-dia. motor-driven programmable stage.
- Dektak 8 permits automatic measurement of the entire surface of a 200mm-dia. substrate. It also permits 3D measurement as option.



ULVAC, Inc.

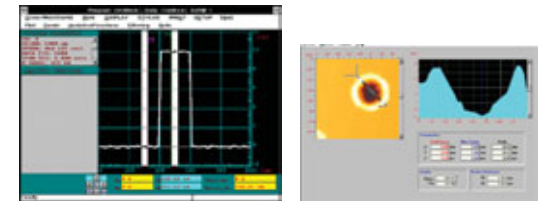
#### For wide area measurement

- For analysis of waviness and stress of substrate
- Applicable to wide area 3-D analysis



#### For film thickness measurement

- For process control of evaporation and sputtering by film thickness measuring



#### ULVAC's Analysis and Measurement Equipment

	Control of Deposition Analysis of Deposited Thin Film			
	Crystal Oscillation Deposition Controller	Ellipsometer	Stylus-type Surface Profiler	Non-contact, high speed measurement of metal film thickness
ULVAC	○	○	○	○
ULVAC-RIKO				
ULVAC-PHI				
Applications	Evaporation and sputtering Deposition Control	Refractive index and thickness measurement of oxide film, nitride film, ITO, etc.	Measurement of film thickness deposited by evaporation, sputtering etc.	Non-contact metal film measuring instrument

## Product for Solutions

### Scanning Auger Electron Spectroscopy **PHI 700**

#### Features

- Element analysis of foreign body and microanalysis
- Element analysis of cross section in a device
- Depth profiling analysis

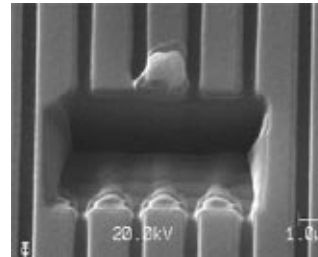


ULVAC-PHI, Inc.

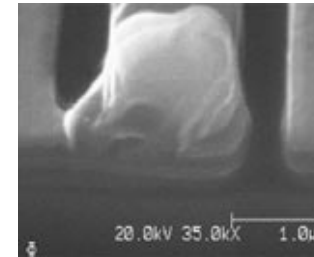
#### For analysis of cross section defects

- Available to analysis of SiO<sub>2</sub> particle defect after FIB (Focused Ion Beam) cutting

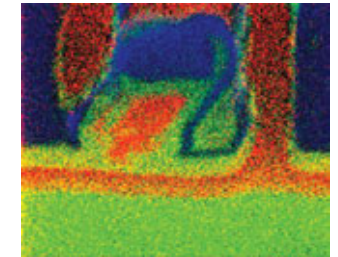
Red: silicon oxide  
Green: silicon metal  
Blue: tungsten



Secondary electron micrographs at low magnification



Secondary electron micrographs at high magnification



Color elemental map

#### ULVAC's Analysis and Measurement Equipment

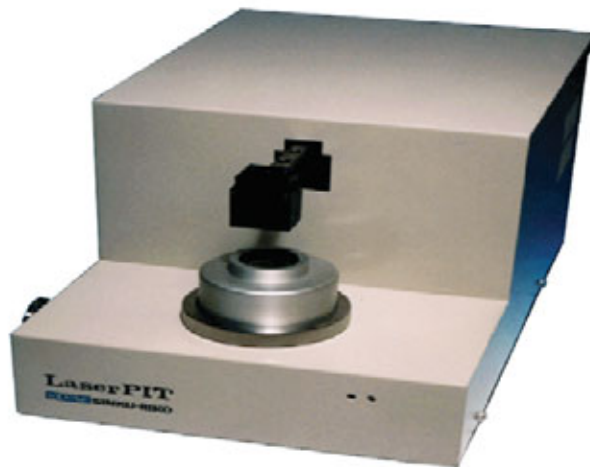
	Material Surface Detection Analysis of Deposited Thin Film				
	Scanning Auger Electron Spectroscopy	X-ray Photoelectron Spectroscopy	Secondary Ion Mass Spectrometry	Time of Flight Secondary Ion Mass Spectrometry	Surface Profiler for 200mm and 300mm Wafer
ULVAC					
ULVAC-RIKO					
ULVAC-PHI	○	○	○	○	○
Applications	Composition and depth profile analysis of minute foreign body defect	Micro and chemical analysis, depth profile and composition analysis	Depth profile analysis of small impurities	Chemical composition and species analysis, and depth profiling analysis for thin film characterization	

## Product for Solutions

### Thin Film thermal Conductivity Measurer

### Laser PIT

Laser PIT is a thermal constant measurer with light alternating current method, and can measure thermal conductivity of film of 0.1μm or less



ULVAC-RIKO, Inc.

### For thermal conductivity measurement of GMR head gap layer

- For measurement of thermal conductivity of thin film on semiconductor or GMR head.

- Example (Sputtering deposition temp.200)

Sample	Film thickness (Å)	Thermal conductivity (Wm-1K-1)
AIN	1000	4.6±0.8
AIN	2000	6.5±0.6

### ULVAC's Analysis and Measurement Equipment

	Analysis of materials Analysis of deposited thin film		
	Measurement systems for calorimetry	Thermal analyzer	Thermophysical property measurement instruments
ULVAC		○	
ULVAC-RIKO	○	○	○
ULVAC-PHI			
Applications	Measurement and analysis of corrosiveness and temperature in materials	Thermobalance and thermal desorption analysis	Thermal discharge characteristics analysis of dielectric materials