

*Trusted production with stable quality control is one of the our support.*

*Quality control division has sufficient knowledge and equipment to satisfy demands.*



## ◆ Our facilities

### Surface Observations



#### Laser Scanning Microscope

3D laser scanning microscope is capable of inspection and measurement of the sample in a non-contact. In addition to the accurate performance measurement, makes it possible to perform measurement of surface roughness in a non-contact that was difficult with the conventional roughness measuring machine.

#### Scanning Electron Microscope with EDX

Scanning Electron Microscope (SEM) detects secondary electrons to form an image for observation. Since the amount of the secondary electrons varies depending on the angle of the electron beam on the surface, minute roughness of the surface can be expressed according to the signal intensity.



#### Atomic force microscope (AFM)

AFM is a instrument that detects the deflection of the cantilever by atomic force which is acted between the probe and the sample surface (attraction-repulsion). Spot of laser beam irradiation on the cantilever tip has detected in the position detector. Slight displacement of the cantilever is detected larger by optical detection system using detection equipment.

#### Surface Roughness Tester

Surface Roughness Tester can be used to accurately measure the surface shape of the sample surface step, waviness and roughness by sweeping the sample using a diamond stylus.



#### Dynamic Ultra Micro Hardness Tester

Dynamic Ultra Micro Hardness Tester measures the indentation, not dynamic indentation depth after the test. This method permits measurement of very thin films and surface layers that are impossible to measure with conventional method. Additionally, this method supplies the data needed to calculate elastic modulus of the sample.

#### Other Hardness Tester : Rockwell, micro-vickers, Shore

### Composition Analysis



#### Inductively Coupled Plasma analyzer (ICP-AES)

ICP-AES can measure dilue concentration of metal in plating solution. Emission line spectrum of specific element is ingenerated by inductively coupled plasma. This spectrum intensity is determined by content rate of element. It is possible to perform qualitative and quantitative analyses by detecting a spectrum.

#### Capillary Electrophoresis system (CE)

CE is analysis equipment which applies the high voltage to the both ends of capillary filled with buffer solution, and separates sample compounds by electrophoresis. The mobility is determined by the difference in characteristic (electric charge, a particle size, and a form) of sample compound. It is possible to perform qualitative analysis and quantitative analysis by the detected time, the height and area of a peak, and a absorbance spectrum.



#### UV-Vis with integrating sphere

UV-Vis can measure the absorbance of not only the liquid but also the solid sample. The light of a wavelength for measurement is dispersed to monochromatic light by a diffraction grating, and it is entered to a sample. The absorbance is determined to detect the intensity of the transmitted light which passed the sample.

#### Others : Atomic Absorption Spectrometry (AAS), High performance liquid chromatography (HPLC)

Structural Analysis



**X-ray diffractometer (XRD)**

X-ray diffractometer can be analyzed substance without destructive in the atmosphere. For example, we can perform a qualitative analysis, stress measurement, and the determination of lattice constant by using this machine.



**Fourier transform infrared spectrophotometer (FT-IR)**

FT-IR is device to analyze organic compound structure. When a molecule is irradiated with infrared, infrared that corresponds to vibrational energy between the atoms which constitute the molecule is absorbed. The structure of organic compound is identified by the infrared spectrum detected.

Thickness Measurement



**Energy dispersive X-ray fluorescence measuring instrument (XRF)**

XRF is device to measurement the thin film thickness. When the sample is irradiated with X-ray, the fluorescent X-rays in accordance with the elements that make up the metal is released. The intensity has been measured separately in each energy. Since there is a correlation between the fluorescent X-ray intensity and thickness, the film thickness is obtained by the fluorescent X-ray intensity

**Others : Coulometric Thickness Gauge, Electromagnetic Thickness Gauge**

Various Tester

**Salt Spray Tester (SST), CASS Corrosion Tester, Impact Tester**

Others



**Laser diffraction Particle size Analyzer**

Laser diffraction Particle size Analyzer can be analyzed wide range of particle size in various plating solution. When the sample is irradiated with laser light, the light intensity distribution pattern of diffraction/scattering light will arise. A light intensity distribution pattern is changed depending on the size of particles. The rate of the particles of a certain size in a sample is theoretically calculated using a light intensity distribution pattern.

**Cross section polisher (CP)**

CP is machine to perform precision cross section. The Ar<sup>+</sup> ions accelerated of certain energy, which is derived ionized atom of Ar gas, are emitted by applied voltage from Ar ion gun. The position of constituent atom is shifted by a emitted Ar<sup>+</sup> ion, that penetrates into specimen and gives energy to the constituent atom, from ion gun. The phenomenon in which the constituent atom of the specimen being dislodged in this processes, is called sputtering. The specimen is milled as a result of this sputtering phenomenon.



**Others : Electrochemical Measurement Systems, CVS analysis machine, Automatic titrimetry device**

