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Scientific

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Date: 27 janvier 2011
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HORIBA Scientific

■ Former HORIBA Jobin Yvon

  ● Old French company

■ Leader Company in Spectroscopy & Analytical instrumentation

JOBIN YVON
Technology

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Raman Spectroscopy

Raman scattering provides chemical composition and molecular structure information. Such data results from vibrational interactions between molecular bonds and laser light.

Typical applications: pharmaceuticals, cosmetics, biology, polymers, semiconductors

Fluorescence

Fluorescence is a phenomenon of emission of light induced by photons. The mode of excitation is absorption of a photon, which brings the absorbing species into an electronic excited state. Then occurs an emission of photons (UV Visible, NIR) when the excited species go down to the electronic ground level.

Typical applications: Biology, chemistry, cosmetics, materials science

Inductively Coupled Plasma Spectrometry

The Inductively Coupled Plasma Atomic Emission Spectrometry (ICP-AES) determines the elements that are present and quantifies the concentration in virtually all types of samples. It results from emission of photons of ions and atoms.

Typical applications: biology, chemistry, environmental, material science, metallurgy, petrochemistry

RF Glow Discharge Emission Spectrometry

RF Glow Discharge Optical Emission Spectrometry (GD-OES) is for applications involving the surface and interface analysis of elements in materials and coatings. It is a fast, easy to use technique, applicable to conductors and non-conductors and requiring no sample preparation. It allows a quantitative depth profile of the elements, including gases, with excellent depth resolution and good sensitivity.

Typical applications: glass, metallurgy, polymers, semiconductor, photovoltaic-solar power

Carbon/Sulfur and Oxygen/Nitrogen/Hydrogen Analyzers

These analyzers determine the gases emitted during combustion of the sample by specific Non Dispersive Infra Red analyzers (NDIR) or thermal conductivity detectors (TCD). These gases are for CO, CO_2, SO_2, H_2, and N_2.

Typical applications: metallurgy (steel, pure and precious metals, alloys), cements, ceramics, catalyst, soils, waste

X-Ray Fluorescence (XGT Series)

The XGT uses energy dispersive X-ray fluorescence for the determination of all elements from sodium to uranium. It is a non-destructive method for solid, liquid, powders or aggregate samples. Microscopic spatial resolution is one of the main feature of this elemental microanalysis.

Typical applications: WEEE-RoHS-ELV regulations, geology, biology, forensics, materials, electronics, art

Ellipsometer

Raman Spectrometer

Optical Spectroscopy

Spectrofluorometer

Particle Size Distribution Analyzer

Glow Discharge Spectrometer

ICP-AES Spectrometer

Oxygen, Nitrogen and Hydrogen Analyzer

Sulfur in Hydrocarbons Analyzers

This instrument measure S in various petroleum products. The measurement of medium and high concentrations from 5 ppm to 10% is done with energy dispersive X-ray fluorescence. The measurement of very low concentrations of sulfur from 0.03 ppm to 1%, is accomplished by combustion of the sample in an 1100°C oven followed by the analysis of SO_2 by ultraviolet fluorescence (UVF).

Typical applications: S in oil, diesel, gasoline, testing ship oils.

Gratings and OEM Spectrometers

A grating scatter the light emitted by a system. That is why it is the heart of most of HORIBA Jobin Yvon instruments. Gratings and spectrometers for Original Equipment Manufacturers (OEM) are designed as well as special gratings for the scientific markets such as astronomy, the synchrotrons and the high energy lasers (Laser Megajoule).

Typical applications: Life science, biotechnology, colorimetry, environmental sciences, NIR applications, semiconductors

Optical Spectroscopy

From the simplest system to custom made configurations, HORIBA Scientific develops and manufactures optical spectroscopy solutions for research and industry. We offer a wide range of light sources, spectrometers, detectors, readout electronics and application oriented software.

Typical applications: photoluminescence, fluorescence, transmission/reflection, laser pulse characterization, microscopy, raman, cathodoluminescence, imaging, plasma monitoring, NIR spectroscopy.

Particle Size Analysis

Particle characterization analyzers are able to identify the size and morphology distributions of particles (or droplets) in powders, suspensions, as well as in emulsions.

Typical applications: Ceramics, polymers, chemicals, cosmetics, minerals, metallurgy, cement, food products, inks, environment

Optical characterization of Thin Films Spectroscopic Ellipsometry

Spectroscopic ellipsometry is an optical technique that measures the changes in the polarization state of light reflecting from a sample surface. The sensitivity and accuracy of the technique set the standards for the characterization of thin films, surface and interface with angstrom resolution.

Typical applications: display, nano and biotechnologies, optical coatings, semiconductor, optoelectronic, photovoltaic-solar power

Forensics

The instruments are dedicated to the examination, capture, enhancement and comparison of finger and palm prints to help the Police with the search for evidence. The found evidence could be fingerprints (porous and non-porous surfaces, questioned documents, biology (body fluids detection), trace evidence (hair, fibers, glass fragments), shoe prints, gun shot residues, bite marks/bruises, human bone fragments etc.

Typical applications: police forensics

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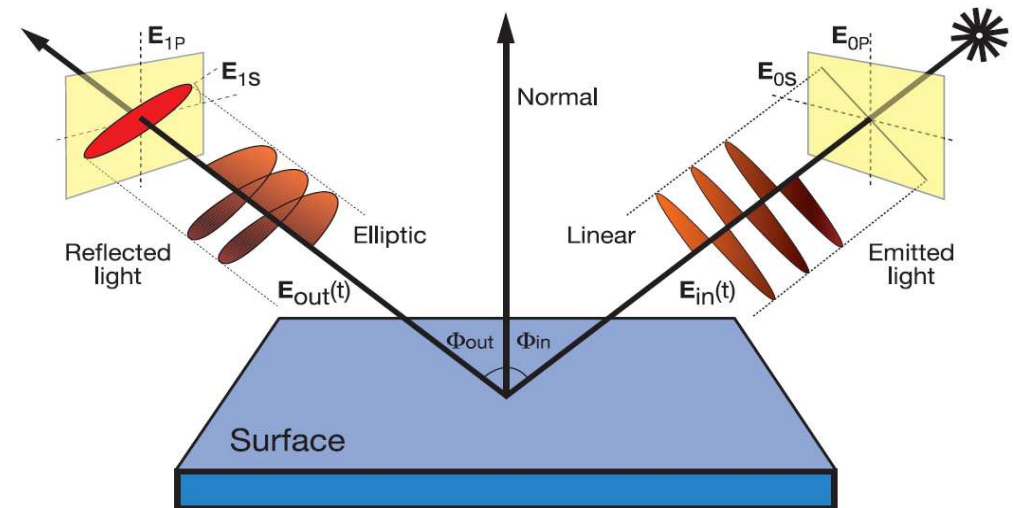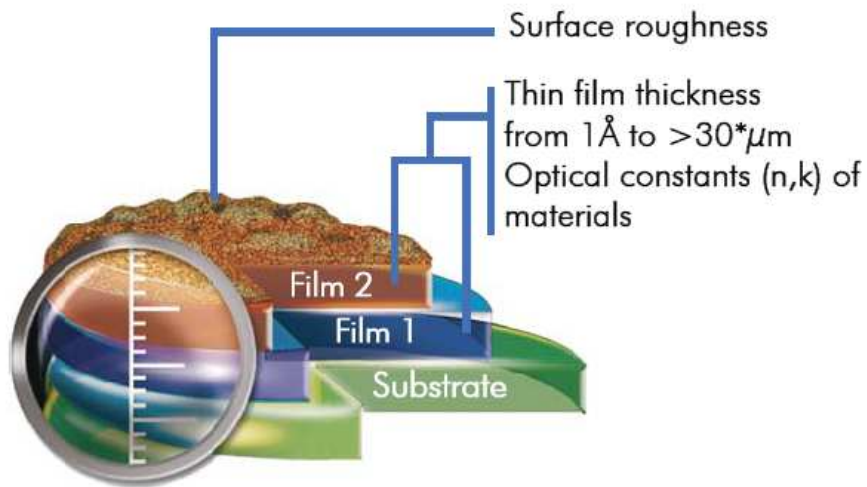
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Poster

Optical Characterisation of different types of Carbon Material using Spectroscopic Ellipsometry

■ Principle of spectroscopic ellipsometry
- Thickness & optical properties

Main properties determined by Spectroscopic Ellipsometry

Optical Characterisation of different types of Carbon Material using Spectroscopic Ellipsometry

■ Results on different types of Carbon

- Investigation of the effect of the laser fluency parameter on the thickness of DLC coatings

Comparison of Optical Constants Found for Samples 1,2,3
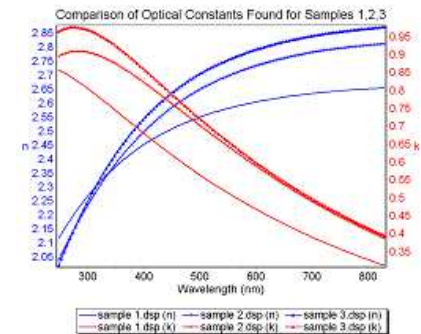
- Results on a very thin amorphous carbon film deposited on c-Si substrate

| a- C | 24 Å |
| SiO$_2$ | 25 Å |
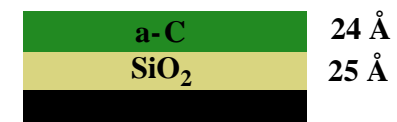
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