FIT 2024 FIT 2024

Didier Pellerin 18 juin 2024



ScienTec PRESENTATION

Company specializes in the distribution of rigorously selected scientific equipments.



I. About ScienTec













Our expertises



Equipments :

Atomic Force Microscopy, Optical Profilometry, Mechanical profilometry, Nano-Indentation, Vacuum, thin film...



Applications

Semiconductors, materials, MEMS, lenses, energy, balistic, industry, life science, polymers, vacuum, smartphone, chemical, display, ceramics, coating...

Radiometry & Colorimetry

Equipments :

Illuminancemeter, luxmeter, chromameter, photometer, videocolorimeter, radiometer, photogoniometer, spectroradiometer...



Applications

Indoor and outdoor lighting, color & luminance, automotive, avionic, museum, studios, cosmetics, display, smartphone...





Scanning probe



Atomic Force Microscopes

CSI, manufacturer specializes in the conception of Atomic Force Microscope and offers many solutions in AFM as Nano-Observer, **the best price/performance AFM** and recently **the best AFM electrical measurements package** with sMIM system combined with ResiScopeTM and HD-KFMTM modes.







Nano-Observer AFM

- Best cost effective solution
- Easy to use
- Multiple modes
- Advanced electrical modes : -HD-KFM, ResiScope, Soft ResiScope
- Environments :

-liquid, temperature, peltier, gas...

Material characterization,
 Polymer science, Semiconductor
 Soft sample, Biology



Scanning Electron Microscope

> COXEM is leading Manufacturer of Scanning Electron Microscope(SEM). SEM is the most widely used platform technology in Nano-Metrology of Nano-scale.





High resolution surface analysis

- Intuitive User Interface
- All-in-one Model of SEM-EDS
- Sample preparation system
- Scanning Electron Particle

Analyzer Automotive,
smartphone, semiconductor,
chemical, construction, energy,
metal material, bioengineering,
display, education...



Sample cleaning



Sample Preparation System

Coxem also offers MEB accessories for sample preparation such as the metallizer or the cross polisher.

PIE Scientific specializes in developing advanced plasma systems for plasma etching, cleaning, surface treatment, ion and electron beam production applications.

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Metallizer

- Easy to use
- Digital interface

Cross-Section Polisher

- Preserves structures
- Prepare several type of sample

Plasma Cleaner

- SEM / TEM sample cleaning
- Quantitative Plasma monitoring

Plasma cleaning & surface activation solutions for TEM, SEM, and FIB users

Principle of in-situ sample and chamber cleaning using downstream plasma cleaners

- Generate Air, O2+Ar or Hydrogen plasma inside plasma source
- Radical species (O, O3, OH, H) diffuse into sample chamber
- Radicals react with hydrocarbon molecules and generate high vapor pressure by-products
- By-products are then pump away by vacuum pumps





Ultra High Vacuum UHV





Prevac, one of the world's leading manufacturers of research equipment for analysis of high and ultra high vacuum applications. It specialises in delivering custom deposition and analysis





Ultra High Vacuum systems Deposition and analysis

- XPS, UPS, ARPES, FTIR, AFM, MBE, PLD, CVS, Sputter deposition, thermal evaporation
- Manipulators
- Goniometer
- Chamber
- Sample holders
- Instruments
- Accessories...



Profilometry



Mechanical and Optical profilometer

The KLA series of benchtop stylus and optical surface profilometers offer the most complete range of stylus surface measurement features to meet the surface measurement needs of the engineering and research communities.







Optical & mechanical Profilers

- -Industries & Research
- Complete range
- 2D and 3D stress measurements capability
- -PSI, VSI, ZSI
- Step Height, Roughness and Texture, Bow, Shape and Form, semiconductors, data storage, MEMS, optoelectronics



Optical profilometer

Filmetrics was founded in 1995 with the mission of making thin-film measurements simple and affordable. The Filmetrics approach, borne from the microelectronics and software revolution, results in filmthickness measurements that take less than a second.

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Surface profiler

- Roughness and topography
- sub-nanometer vertical resolution
- vertical-scanning
- interferometry (VSI)
- phase-shifting interferometry (PSI)

-Profil, topography, step height, roughness, surface condition...



Optical profilometer

Lyncée Tec is an innovative, dynamic and customer focused company based in Lausanne, Switzerland with a worldwide network of distributors. It offers matured holographic microscopes based on the revolutionary patented Digital Holographic Microscope (DHM®) technology.







Digital Holography Microscopes

- Reflection & transmission
- MEMS analyser
- Dynamical 3D Topography /
 Resonance & Electrical analysis
 TRUE Real time 3D
- -MEMS tools & reflectometer
- Tribology, microhoplate, membrane, msart polymer, electrochemistry, self assembly, living cell, mems, step heightn micro-optics, flatness,



Nano-Indentation



Nano Indenter

Nano-mechanics products are most commonly used for nanoindentation testing from a wide variety of materials that are being used in a large variety of applications. From the iNano nanoindenter to the INSEM product line, our products can interest industry as academic needs.









Nano-mechanical characterization

- Hardness
- Easticity
- Temperature
- Imaging
- Multiple environments
- Metals, ceramics, ultra thinfilm, paints, plastics, chemical, MEMs, fibrous...



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Thin film







Filmetrics was founded in 1995 with the mission of making thin-film measurements simple and affordable. The Filmetrics approach, borne from the microelectronics and software revolution, results in filmthickness measurements that take less than a second.

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FILMETRICS

Thin-film thickness & refractive index measurements

- Inline monitoring
- Single-spot measurements
- Microscopic-spot measurements
- Dielectrics, Glass & Plastic
- Thickness, Hardcoat Thickness, ITO & Other TCOs, Photoresist, Silicon Wafers & Membranes, Solar Applications, Semiconductor Teaching Labs



Conclusion

Sheet Resistance Mapping

Filmetrics R-Series resistivity mapping tools marry the sheet resistance technology developed and perfected by KLA for over 45 years with the benchtop instrument technology and user interface refined over the last 20 years by the Filmetrics team.

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FILMETRICS

Resistivity mapping tools Contact 4PP or Eddy Current

- Metal film and backside layer thickness measurements
- Substrate resistivity
- Sheet resistance / conductivity
- Thin film thickness or resistivity
- Bulk conductivity

Dielectrics, Glass & Plastic Thickness, Hardcoat Thickness, ITO & Other TCOs, Photoresist, Silicon Wafers & Membranes, Solar Applications, Semiconductor Teaching Labs





Spectroscopy IR

and

Raman





Submicron non-contact IR spectroscopy and simultaneous Raman in life sciences, polymers, contaminant ID, microplastics and more





Same time. Same spot. Same resolution.

mlRage+R, IR and Raman Microscope



Outline







Optical Photothermal IR (O-PTIR) spectroscopy

3



IR+Raman and other applications of mIRage

4







O-PTIR solves traditional IR spatial resolution limitations

Step 1. Pulsed, tunable, infrared laser source (pump) is focused through a reflective (Cassegrain) objective



Still diffraction limited 10-20 μm thus it cannot resolve the small blue inclusions vs brown Step 2. Colinearly introduce, a visible laser, typically a 532 nm green Raman excitation laser (probe) through same objective



Shorter wavelength green laser can be focused ~20X better than IR and is only focused on the blue region Step 3. Detect green reflected (or transmitted) as a function of IR laser wavelength tuning



When the wavelength matches an absorption band in the sample the IR energy is absorbed causing a photothermal response in the sample, thus changing its green reflectivity



Microscope

Simultaneous IR and Raman spectroscopy

Same spot

R+Raman • Same sub-micron resolution

- Same time
- Take full advantage of the complementarity of IR and Raman
- Confirmatory analysis IR confirms Raman results, Raman confirms IR results
- One instrument supports simultaneous sub-micron IR and Raman spectroscopy
- More thorough sample characterization
- Optional 785nm Raman/OPTIR probe laser available



Simultaneous OPTIR and Raman spectra from a film of PET collected from the same spatially resolved, submicron spot.

O-PTIR combines the benefits of IR & Raman while eliminating their limitations



O-PTIR and co-located Fluorescence Microscopy opens up new scientific possibilities

- Epi-Fluorescence used to locate specific regions of interests via molecular tagging
- O-PTIR used to analyze chemical structure of fluorescently tagged locations
- Unique combination that enables new discoveries in both single cell analysis and IR identification of small biomolecular structures
- Fluorescence option includes:
 - Fluorescence camera, Olympus
 Illuminator and Solar white light source
 - Customer selectable filter cubes
 - Selectable high magnification objectives
 - Easy to use software navigation for identifying and measuring specific molecular structures



O-PTIR combines the benefits of IR & Fluorescence while eliminating their limitations



Fluorescence and Raman

Fluorescence: <u>high specificity</u> from molecular tagging O-PTIR: Sub-micron IR spectroscopy and imaging



S&I your global resource for spectroscopy solution !





Spectroscopy & imaging GmbH

- Confocal Raman Microscopes
- Single, double and triple spectrometers
- spectrometers
- -Analyzer Automotive, smartphone, semiconductor, chemical, construction, energy, metal material, bioengineering, display,
- education...



SpectroRadiometry

and

Colorimetry



Light sources & screens

Konica Minolta contribute to the improvement of quality and precision of screens and light source essential for various industrial sectors by the supply of high precision measuring instruments





Screen and light source color analyzers

- Luxmeter
- Chromameter
- Photometer
- Videocolorimeter
- Spectroradiometer





Thank you!

Contact us

☆ www.scientec.fr

➡ info@scientec.Fr