YOUR INSTRUMENT.

YOUR SOLUTION.

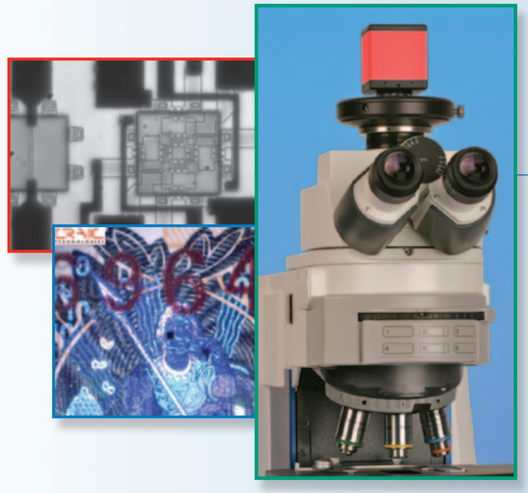
CRAIC

Your Instrument. Your Solution.

Innovation with Advanced Microanalysis Solutions.

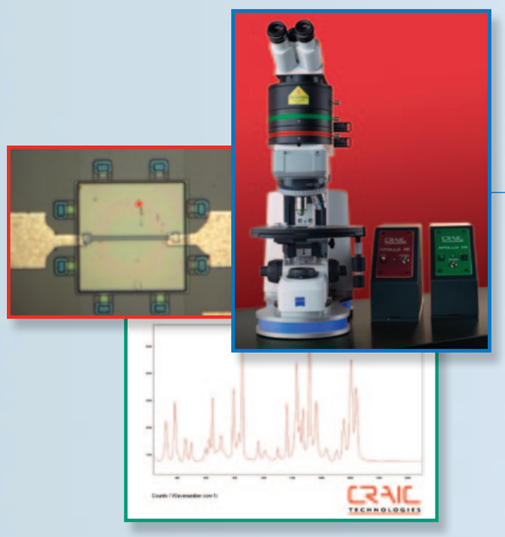
UV-visible-NIR Microspectroscopy

CRAIC Technologies is a leading supplier of microspectroscopy solutions. Our microspectrometers operate from the deep ultraviolet through the near infrared and are able to acquire absorbance, reflectance, fluorescence and polarization spectra of microscopic samples.



UV-visible-NIR Imaging

CRAIC Technologies is able to supply UV-visible-NIR microscopes both as standalone and integrated spectroscopy solutions. Featuring high resolution imaging from the deep ultraviolet to the near infrared, images may be collected by transmission, reflectance, polarization and fluorescence illumination.



Raman Microspectroscopy

CRAIC Technologies has combined its extensive experience in microspectroscopy with Raman spectroscopy to offer a highly flexible Raman microspectroscopy solution. Offered either as standalone or integrated into our microspectrometers, CRAIC Raman is a powerful solution.

Custom Solutions

CRAIC Technologies offers many specialized solutions in addition to custom engineering to meet your exact requirements. Some of these include micro spot thin film thickness measurement capabilities, three dimensional mapping of spectral features and colorimetry with micron scale resolution, microspectroscopy standards, refractive index measurement and much more.

products-at-a-glance

20/30 PV™

FLEX™

508 PV™

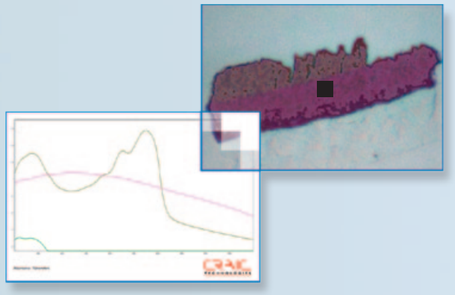
UVM-1™

ELIXIR™

APOLLO™

Forensics

Comparison and databasing of forensic evidence including fibers, dyed hairs, glass, automotive and architectural paints, soils and minerals by UV-visible-NIR absorbance, reflectance, polarization and fluorescence microspectroscopy.



Photomicrograph and absorbance micro-spectrum of an automotive paint chip.

Materials Science

Optimization and quality control of photonic bandgap crystals in the UV, visible, and NIR regions. Analysis of optical semiconductors and novel materials by transmission, reflectance and fluorescence microspectroscopy.

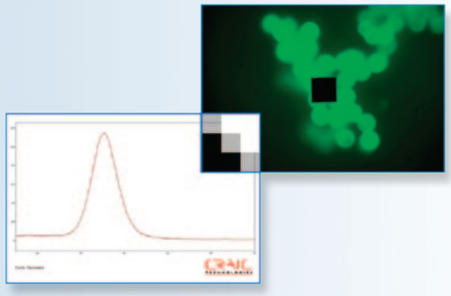


Image and emission spectrum of quantum dots.

Surface Plasmon Resonance

UV-visible-NIR microspectroscopy and microscopy for the development and analysis of next generation materials for applications such as surface plasmon resonance based biosensors.

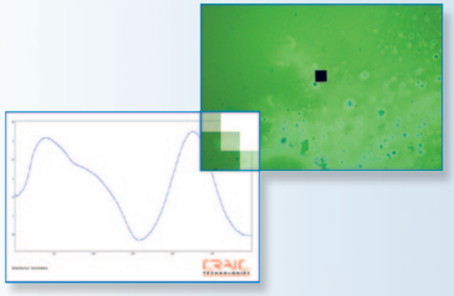


Image and UV-visible microspectrum of an SPR film used in a biosensor.

Biotechnology & Nanotechnology

Analysis and development of novel drugs and advanced products including fluorescence immunoassays, laboratories-on-a-chip devices, nanotechnology, and tissue samples.

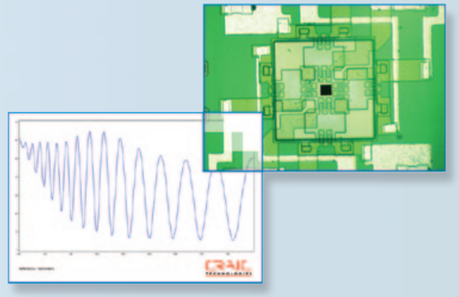


Image and microspectrum of a test point on a “lab-on-a-chip” device.

Vitrinite Coal, Coke & Kerogen

Qualification and quality control of coal, coke, source rock and kerogen by ISO and ASTM standard methodologies measuring vitrinite reflectance and microspectroscopy. Additional qualification by full-spectrum fluorescence microspectroscopy.

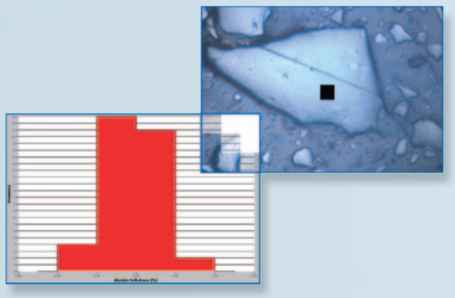
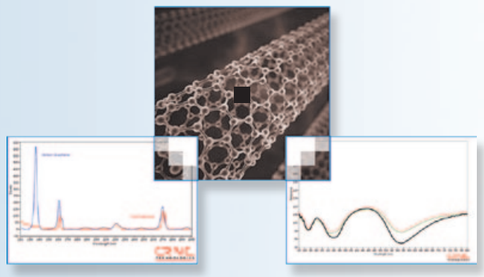


Image and reflectance histogram of vitrinite coal sample.

Graphene & Nanotubes

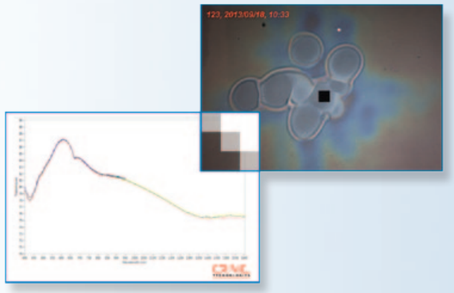
Graphene and other forms of carbon, such as carbon nanotubes, are characterized by their Raman and UV-vis-NIR Microspectroscopic optical characteristics. Analysis of these materials in different forms aids in understanding them, their development and in their usage.



Raman spectra of graphene on left. Ultraviolet image and microspectrum of nanotubes on right.

Metamaterials

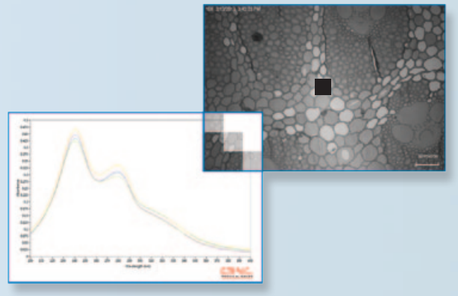
Metamaterials are engineered for specific properties and UV-visible-NIR and Raman microspectroscopy is used to study and characterize these novel complexes. Studies of everything from gold monocrystalline films to the development of next generation sensor materials is done by microspectroscopy.



Meta-material resembling “fish scale structure.”

Lignin

Lignin, an organic polyer commonly derived from wood, is an integral part of the cell walls of plants. Deep UV microscopic imaging and UV spectroscopic analysis can analyze such samples without stains to identify types of lignins and their structure.



Lignin sample mounted with oil on quartz slide.

applications

20/30 PV™

FLEX™

508 PV™

UVM-1™

ELIXIR™

APOLLO™

Semiconductors

Mircospot thin film thickness measurements and mapping of microscale integrated circuits. The same instrument can also be used for contamination analysis with Raman, UV-vis-NIR and fluorescence microspectroscopy.

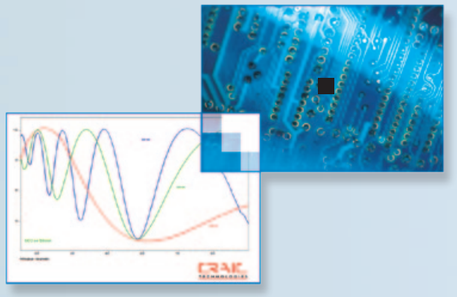


Image and interference spectrum of semiconductor device.

LED/OLED Flat Panel Displays

Quality control by absorbance or reflectance microspectroscopy. Identification of mura, in addition to monitoring chromophore concentrations across pixels. Radiometric or photometric measurements of components and assembled units.

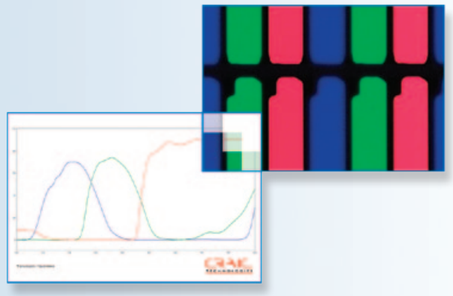
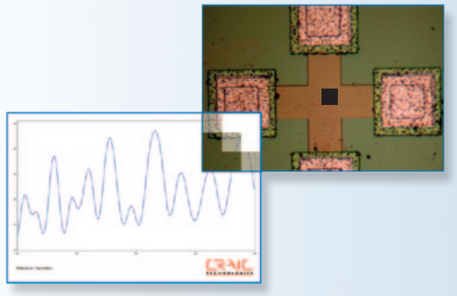


Image and transmission spectrum of LCD color mask pixels.

Photovoltaics

Development and quality control on the microscale of photovoltaic devices via transmission, reflectance and small spot film thickness measurement.



Deep UV image and spectrum of contaminants on photovoltaic device.

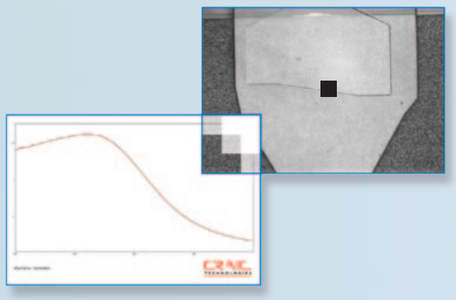
Chemistry & Pharmaceuticals

UV-visible microspectroscopy and UV micro-imaging of pharmaceutical compounds and precursors. This includes micro-chemical analysis and locating and qualifying protein, flavin and DNA microcrystals.

Ultraviolet image and microspectra™ of caffeine.

Contaminant Identification

Raman, deep UV and fluorescence microscopy and microspectroscopy to locate and identify contaminants in high purity manufacturing processes such as pharmaceuticals, MEMS, semiconductors or disk drive manufacturing.



Deep UV image and spectrum of contaminants on disk drive read head.

Microspot Film Thickness

Determination of multilayer thin-film thickness on opaque and transparent substrates by UV-visible-NIR reflectance and transmission microspectroscopy.

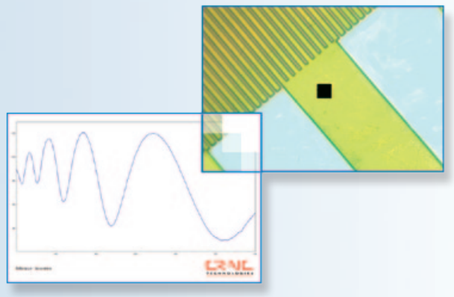
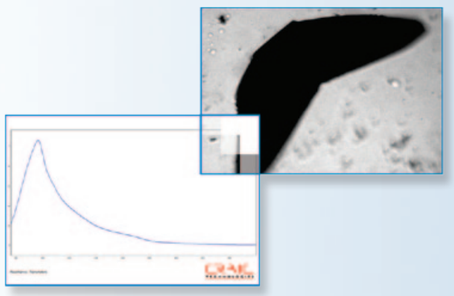


Image and spectrum of a semiconductor chip for film thickness determination.

Protein Crystals

Protein crystals are easily and quickly located, isolated and qualified by their intrinsic protein fluorescence or by their UV absorbance images and microspectra™. Raman microspectroscopy is used to study the crystalline forms for proteins and other biological materials such as DNA.



Ultraviolet image and microspectrum of protein crystals.

Biology

UV-visible-NIR absorbance and fluorescence microspectral analysis and high resolution UV microscopy of human and animal tissue, plants, plankton, and bacteria. Quantification and qualification of DNA and RNA for enhanced DNA screening.

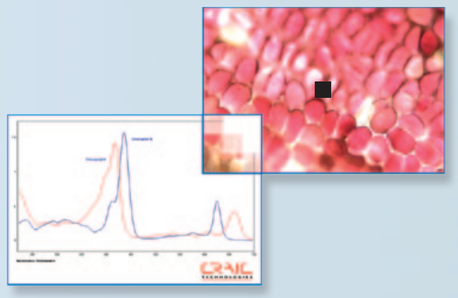


Image of a flower petal with spectrum of chlorophyll.

20/30 PV™ Microspectrophotometer

The Perfect Vision™ for cutting-edge analysis

PV™ stands for Perfect Vision™ and perfectly describes the 20/30 PV™ microspectrophotometer. As the new standard for UV-visible-NIR and Raman microspectroscopy and micro-imaging, the 20/30 PV™ is a complete, turnkey system designed for you. Built to order, this powerful instrument can be configured to acquire both spectra and images with multiple techniques. The 20/30 PV™ may be configured to measure UV-visible-NIR transmittance, absorbance, reflectance, fluorescence, emission, polarization and even Raman spectra. Of course, microscopic imaging can also be done with each method in the UV, visible and NIR regions.

CRAIC Technologies "Perfect Vision" for advanced microspectroscopy offers

- Full UV-visible-NIR microspectroscopy in absorbance, transmittance, reflectance, fluorescence and emission.
- Raman microspectroscopy with numerous laser wavelengths offered
- UV, visible and NIR imaging capabilities
- Variable sampling areas with Absolute Reproducibility

Lightblades™ Spectrophotometers

Lightblades™ spectrophotometers were specifically developed by the demands of microspectroscopy. Lightblades™ can be customized to meet your exacting requirements. Featuring the latest in detectors, cooling, optical design and electronics, Lightblades™ are featured in CRAIC Technologies' most advanced systems and can be customized to meet your critical demands giving you breakthrough results.

Spectral Range

200 nm — 2100 nm

The 20/30 PV™ microspectrophotometer integrates Lightblades™ spectrophotometers with our UV-visible-NIR range microscopes and advanced software. Lightblades™ feature highly sensitive CCD and InGaAs array detectors to cover the ultraviolet, visible and near infrared regions while yielding the best quality spectra. The microscope is designed to provide excellent image quality while imaging in the deep ultraviolet, visible and near infrared regions. It's optics are optimized for image quality and signal intensity so that the microscope provides the best optical signal to the integrated spectrophotometers.

The 20/30 PV™ is easy to use, durable and can provide cutting-edge results. It incorporates a flexible software package that allows for instrument control and automation, spectral and image analysis, as well as a host of specialized modules that add such capabilities as kinetics or microspot thin film thickness measurements.

20/30 PV™ SPECIFICATIONS

Microspectrophotometer Range	200 to 2100 nm
Imaging	Deep UV to NIR
Fluorescence Range	300 to 1000 nm
Fluorescence Excitation	254 to 546 nm
Sampling Area	Variable from 1 to 10000 microns^2
Spectral Resolution	User selectable from 1 to 15 nm
Detectors Offered	CCD and InGaAs Arrays
Detector Cooling	Thermoelectric
Scan Time (Full Range)	4 millisecond minimum
High Resolution Color Imaging	Included
UV-visible-NIR Imaging	Up to 5.0 megapixels available
Programmable Stage with Mapping	Available
Full Automation	Available
Operating System	Windows 7 Pro, Windows 8

microspectrophotometer products

FLEX™ Microscope
Spectrophotometer

FLEX™ from CRAIC Technologies is designed to measure the spectra of microscopic samples from the deep UV to the NIR easily and economically. FLEX™ is capable of transmittance, reflectance and fluorescence microspectroscopy as well as high resolution, color imaging. FLEX™ from CRAIC Technologies incorporates years of experience to produce an affordable, easy to use yet highly capable instrument perfect for the laboratory or production floor.

With a fully integrated design, FLEX™ from CRAIC Technologies features a UV-visible-NIR range micro-scope, a CCD spectrophotometer, a digital camera and advanced software.

Thermoelectric cooling of the CCD arrays is offered to further enhance instrument stability and reduce dark counts. High resolution color imaging makes FLEX™ simple to use and provides a host of image analysis capabilities. And the software also offers a range of spectral analysis capabilities for advanced data analysis.

By combining all these features, the result is FLEX™: a powerful and rugged scientific instrument built for many years of productive work.

FLEX™ SPECIFICATIONS

Transmittance Spectral Range	240 to 900 nm
Reflectance Spectral Range	400 to 900 nm
Fluorescence Spectral Range:	400 to 900 nm
Fluorescence Excitation	365 to 546 nm
Sampling Area	Variable from 1 to 10000 microns^2
Fluorescence Spectral Range	400 to 900 nm
Fluorescence Emission	254 to 546 nm
Spectral Resolution	User selectable from 1 to 15 nm
Detectors	CCD Array
Detector Cooling	Thermoelectric offered
Scan Time (Full Range)	4 millisecond minimum
Imaging	Color
Imaging Resolution	Up to 5 Megapixels
Operating System	Windows 7 Pro, Windows 8

Spectral Range

508 PV™ Microscope
Spectrophotometer

The 508 PV™ microscope spectrophotometer can easily be added to an existing microscope, probe station or even be used to upgrade an older microspectrophotometer. Depending upon the microscope configuration, you will then be able to take absorbance, transmittance, reflectance, polarization and even fluo-rescence microspectra™ of samples smaller than a micron. With CRAIC Technologies™ Universal Microscope Adapters, the 508 PV™ can be added to just about any microscope. The flexibility of these adapters allow you to easily parfocal and parcenter the 508 PV™ image with the image from your eyepieces.

The 508 PV™ microscope spectrophotometer is a rugged, precision tool featuring advanced technology and optics. The 508 PV™ is offered with Lightblades™ spectrophotometers, ther-moelectric cooling for improved spectral performance, parfocal and parcentral interface optics for your microscope, and high resolu-tion color digital imaging. All software runs under Microsoft™ Windows™ and features LambdaFire™ instrument control and spectral analysis as well as ImageUV™ imaging soft-ware. The 508 PV™ is flexible, advanced, simple to use and will give years of reliable service.

508PV™ SPECIFICATIONS

Spectrophotometer Ranges* (select one)	200 to 900 nm 350 to 1000 nm 900 to 1700 nm 900 to 2100 nm
Fluorescence Excitation	365 to 546 nm
Laser Illumination	Available
Sampling Area	Variable from 1 to 10000 microns^2
Spectral Resolution	User selectable from 1 to 15 nm
Detectors	CCD and InGaAs Arrays
Detector Cooling	Available
Scan Time (Full Range)	4 millisecond minimum
High Resolution Color Imaging	Included
Image Resolution	Up to 5 Megapixels
Programmable Stage with Mapping	Available
Operating System	Windows 7 Pro, Windows 8

Spectral Range

microspectrophotometer products

Expanding your capabilities.

With the Apollo™ MicroRaman Spectrometer Module.

Apollo™ Raman Features

- 405, 473, 488, 532, 638, 660, 785, 830nm lasers
- Multiple lasers can be combined on single instrument
- Permanently aligned for ease of use
- Single point and Raman spectral mapping
- Can be added to CRAIC microspectrometers
- Can be added to many microscopes

Apollo™ Raman spectrometers are designed for flexibility, power and functionality, featuring a modular design where each unit is optimized for a particular laser wavelength. The self-contained unit includes a laser source, the microscope interface module and a Raman spectrometer optimized for that particular laser. This modular design means that you can select several different laser wavelengths and combine them into one Raman microspectrometer. Apollo™ Raman modules also offer simultaneous imaging of both the laser spot and the sample, making these systems easy to use while being a powerful analytical tool.

The Apollo™ Raman microspectrometer is a powerful instrument designed to be fitted to CRAIC microspectrometers or used independently on many microscope models. Combined with CRAIC Technologies LambdaFire™ software, Apollo™ Raman microspectrometers can acquire single point spectra or, with an automated stage, create 3D Raman spectral maps. LambdaFire™ controls the instrument while offering many data analysis capabilities. This includes optional searchable libraries to aid in spectral identification.

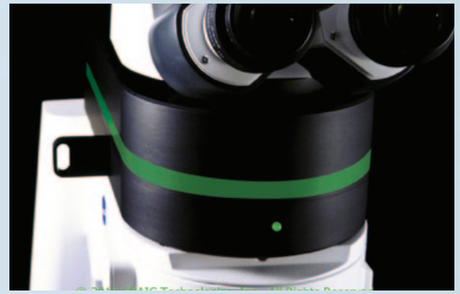
APOLLO™ RAMAN SPECIFICATIONS[1]

Excitation Source	
Wavelength (nm)	405*, 473*, 488*, 532*, 638, 660, 785, 830
Bandwidth	< 0.02 nm
Output Power	50-100 mW
Spectrometer	
Spectral Range	120 to 3000 cm^{-1}**
Spectral Resolution	6 cm^{-1}
Sampling Area (20x)	14 um
Detectors	
Type	TE cooled CCD
Integration Time	8 ms to 10 minute
A/D Resolution	16 bit
Dynamic Range	25000
Electronics	
Interface	USB 2.0
Input power	110-220 VAC

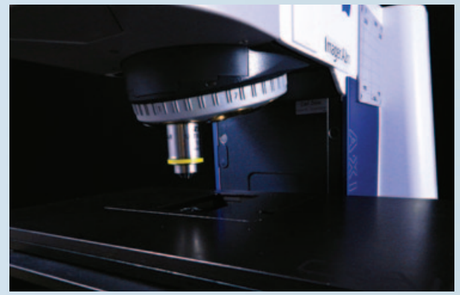
** Specified wavelengths have an Output Power of 50 mW. **Actual spectral range determined by system configuration. [1]As we are continually striving to build better instruments, the specifications are subject to change without notice.*

Raman Module Innovations

The Apollo™ Raman spectrometer modules can be combined to offer several laser wavelengths on a single instrument. Each is permanently aligned so using the system is as simple as focusing on your sample. The system can be added to any CRAIC microspectrometer for a powerful, multi-purpose analytical tool.



Microscope optical interface for Apollo™ Raman microspectrometer



Different power objectives can be used to vary the spectral sampling area.

Spectral Range [Class IIIB Laser Instrument]

microspectrophotometer products