



CRAIC

CAUTION
ULTRAVIOLET ENERGY
PROTECT EYES AND SKIN

1 TL 2 PL 3 365nm
4 420nm 5 545nm 6

CRAIC
ULTRAVIOLET

CRAIC

YOUR INSTRUMENT ♦ YOUR SOLUTION



CRAIC

**Microspectroscopy
and Imaging.**
One tool to do it all.

UV-VIS-NIR ABSORBANCE

UV-VIS-NIR REFLECTANCE

UV-VIS-NIR FLUORESCENCE

PHOTOLUMINESCENCE

MICROSPOT THIN FILM THICKNESS

UV-VIS-NIR POLARIZATION

RAMAN MICROSPECTROSCOPY

MICROSPOT COLORIMETRY

KINETIC MICROSPECTROSCOPY

5D SPECTRAL MAPPING

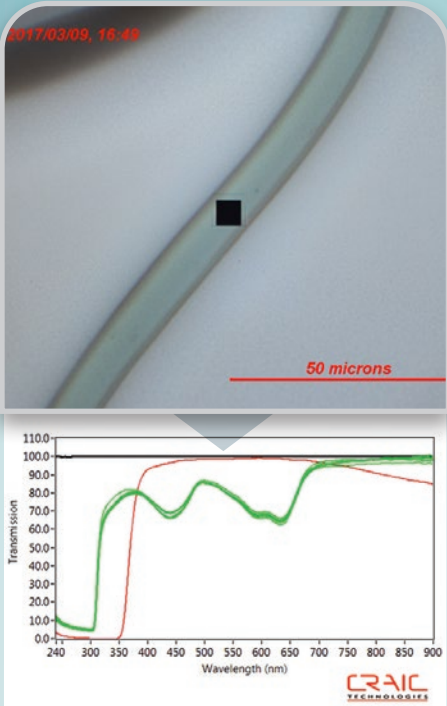
UV, COLOR & NIR MICROSCOPE IMAGING

REFRACTIVE INDEX MEASUREMENTS

CRAIC Applications

CRAIC Technologies builds tools designed to take spectra and images of microscopic samples in the ultra-violet, visible and near infrared spectrum. Designed for busy research facilities, these tools are designed for power, reliability and ease of use.

Microspectrometers are used in many fields of research due to their myriad capabilities. The ability to acquire spectra of microscopic sampling areas has found utility in everything from basic research to quality control to failure analysis.

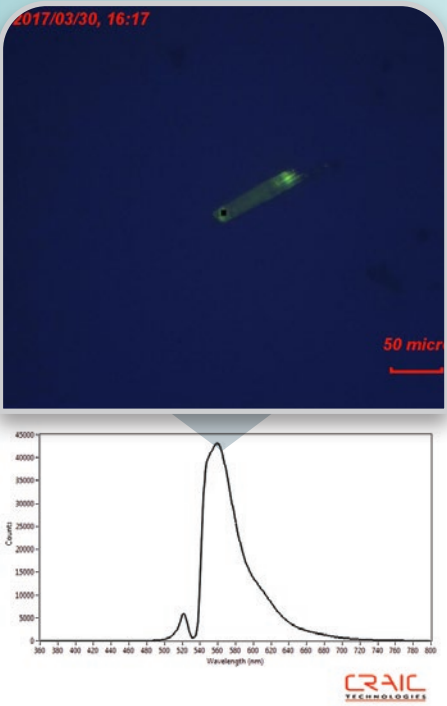


Forensic Science

CRAIC microspectrometers are used to compare known and questioned trace evidence, including textile fibers, glass fragments and paint chips, as well as questioned documents and currencies. Microspectrometers use multiple spectral techniques to analyze the evidence.

CRAIC Advantages

- World leader in the field
- Spectral range from deep UV to NIR
- Reproducible measurement areas
- NIST Traceable calibration standards
- Decades of forensic experience

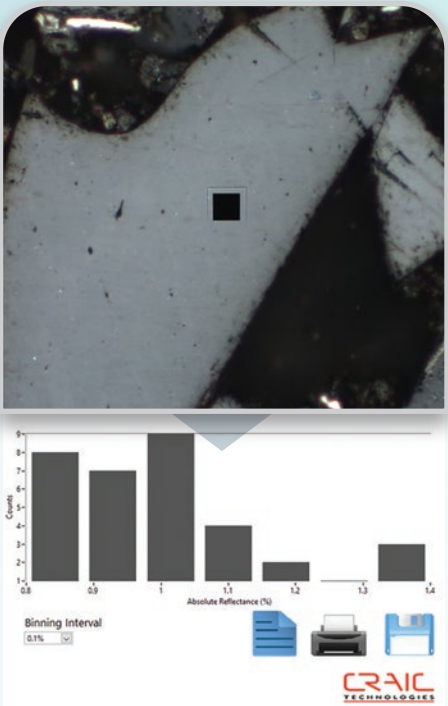


Chemistry

CRAIC microspectrometers are used in the development of new materials and the characterization of their optical properties. Spectroscopic techniques like this are useful as it requires extremely small amounts of samples that can be analyzed under controlled conditions.

CRAIC Advantages

- Multiple types of spectroscopy in one instrument
- Measure the same microscopic area with multiple methods
- Absorbance & Reflectance
- Raman and Photoluminescence

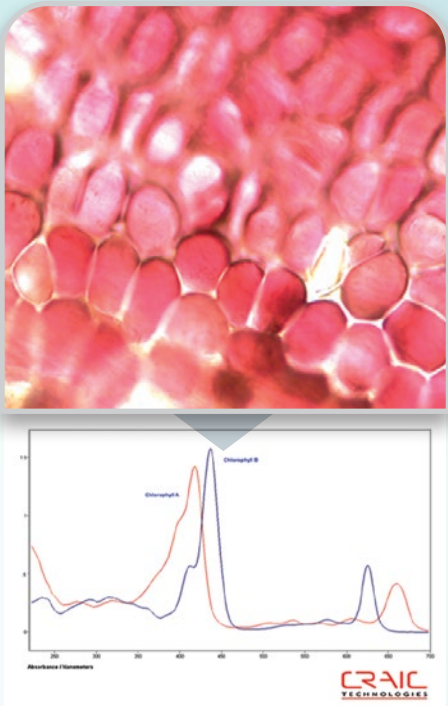


Geology

CRAIC scientific instruments are used for qualification and quality control of coal, coke and petroleum source rock by international standards such as ISO and ASTM. Analysis of geological samples is also done by Raman, UV-vis, photoluminescence and fluorescence microspectroscopy and imaging.

CRAIC Advantages

- Industry standard vitrinite reflection measurements
- Imaging and microspectroscopy
- Manual or automated operation
- Reliable & easy to use

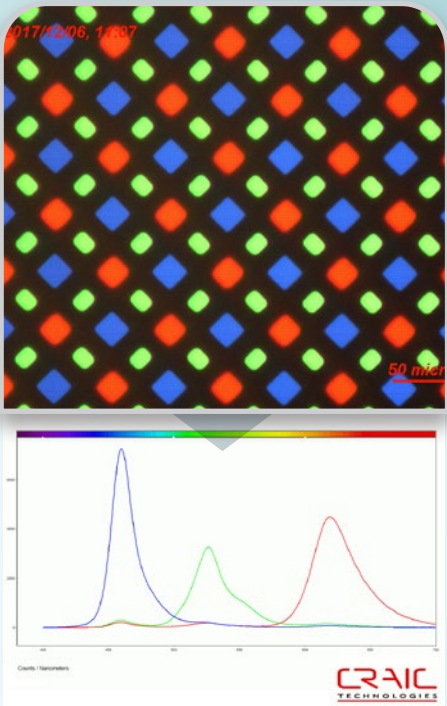


Life Sciences

CRAIC microspectrometers are used to study and characterize the optical properties of bird feathers, butterfly wings and to study color vision and how it works on the microscale. CRAIC instruments are also used in the development and quality control of pharmaceuticals.

CRAIC Advantages

- Locate/quality protein crystals easily
- Rapid development methods for pharmaceuticals
- Quality control of pharmaceuticals by Raman mapping
- Time resolved microspectroscopy

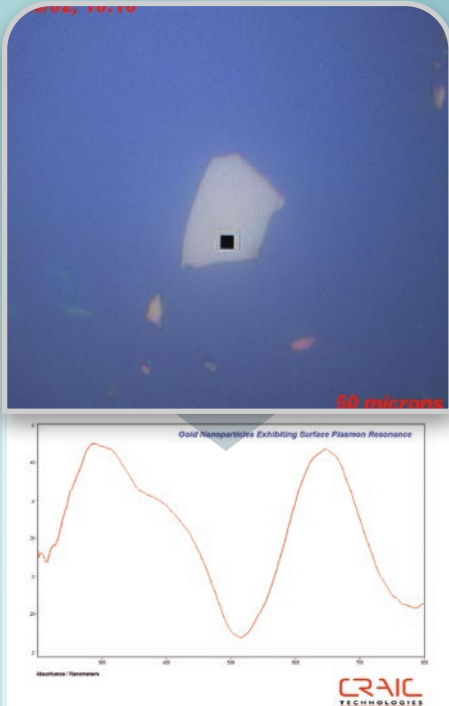


Flat Panel Displays

CRAIC instruments are used in the development and quality control testing of the latest technology displays. Able to measure the intensity and color of the smallest pixels in a display, CRAIC microspectrometers are fast and reliable both on and off the production line.

CRAIC Advantages

- Quality control of micron-scale display pixels
- High spatial resolution mapping of large displays
- Contaminant analysis by UV microscopy
- Manual and automated operation



Nanotechnology

CRAIC instruments are used to characterize the optical responses of new materials and devices. The optical properties of not only the materials themselves, but their nanoscale structures yields information about the structures and their environment. CRAIC Technologies devices are perfect for this type of micro-scale analysis.

CRAIC Advantages

- Rapid optimization of nano-structures
- Sub-micron spectral analysis
- Testing new nanotechnologies



Lightblades™ Spectrometers

Lightblades™ spectrometers are designed specifically to meet the rigorous demands of microspectroscopy. Offering a large spectral range, high sensitivity for the low light levels typical of microspectroscopy, Lightblades™ can be used to measure UV-vis-NIR absorbance, reflectance, fluorescence, photoluminescence and even Raman spectra. Incorporating a unique blade design concept for spectroscopy, Lightblades™ are customized to meet your exacting requirements. Featuring the latest technology detectors, solid state cooling, precision optical design and the latest electronics, Lightblades™ are the heart of CRAIC Technologies most advanced microanalysis systems.



Scorpil™ Advanced Illumination System

Scorpil™ is an advanced illumination system featured in the PRO model CRAIC microspectrometer systems. Named after the binary star system, Scorpil features a dual source with a high ultraviolet output in a proprietary configuration. The sources are integrated with the PRO systems to offer a larger spectral range, high stability and long lifetime light sources and features such as SampleSafe™, a technology designed to protect your samples from the effects of photobleaching. With a spectral range from 200 to 2500 nm, Scorpil™ Advanced Illumination Systems are robust, reliable and long lived.



Calibrated Variable Sampling Area

The entrance aperture of **CRAIC** microspectrometers are directly imaged with the sample. This means that you know exactly what you are measuring. No digital marking or other tricks that can lead to inaccuracies in your measurements. The microspectrometer entrance aperture is always perfectly aligned. Additionally, the aperture is always calibrated and the sizing is absolutely reproducible. This means that measurements made today can be reproduced tomorrow by locating the same sample area, measuring the same volume and with the same, reproducible conditions. Absolute Reproducibility reduces your experimental errors and improves the reliability of your results.

2030PV PRO™ UV-Visible-NIR Microspectrophotometer



Confocal spectroscopy of even sub-micron samples.

Multiple spectroscopy techniques combined in one instrument.

Multiple imaging techniques all in a single UV-vis-NIR microscope.

Permanently calibrated, absolutely reproducible measurement areas.

Microspectroscopy for the Future

The **2030PV PRO™** microspectrometer sets the standard for UV-visible-NIR and Raman microspectroscopy...all offered in a single instrument. The 2030PV PRO™ is able to measure spectra and acquire images of microscopic samples with a spectral range from the deep ultraviolet to the near infrared. Designed for cutting edge research, this instrument extends your boundaries for industrial and scientific microscale analysis in many industries.

The 2030PV PRO™ microspectrophotometer integrated the Lightblades™ spectrometers, Scorpii™ Advanced Illumination System with a custom-built UV-visible-NIR range microscope and Lambdafire™, CRAIC Technologies' sophisticated instrument control and data analysis software. The 2030PV PRO™ microspectrophotometer offers the ability to collect UV-visible-NIR transmission, reflectance, fluorescence, photoluminescence and Raman spectra of micron-scale samples. With the additional of software modules to Lambdafire™, the 2030PV PRO™ is also able to measure the thickness of thin films, map out the spectral response and film thickness of larger samples, such as flat panel displays, measure color and much more.

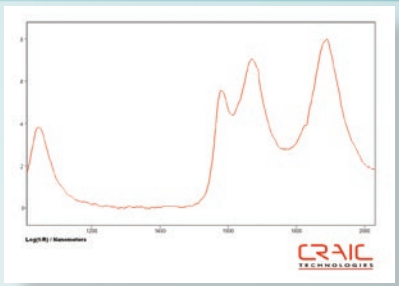
The 2030PV PRO™ is easy to use, durable and can reliably provide you with cutting edge results for many years to come.

2030PV PRO™ SPECIFICATIONS

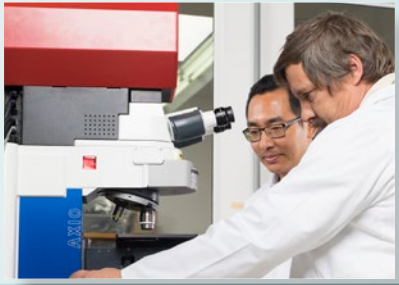
Types of Microspectroscopy	Absorbance, Reflectance, Fluorescence, Photoluminescence, Polarization, Kinetics, Raman
Microspectrometer Spectral Range	200-2500 nm
Microscope Imaging Spectral Range	220-1700 nm
High Resolution Color Imaging	Included
Fluorescence Excitation	280-546 nm
Fluorescence Emission	300-1000 nm
Lighting System	Scorpii™ with SampleSafe™ technology
Microscope Imaging Range	Deep ultraviolet, color and near infra-red
Spectrometer	Lightblades™
Sampling Area	Variable from 1 to 10,000 microns ²
Reproducible Sampling Areas	Absolute
Detector Cooling	Thermoelectric
Spectral Resolution	User selectable, 1-15 nm
Full Spectrum Scan	14 milliseconds
Thin Film Thickness	From as thin as 5 nm
Full Automation	Available
5D Spectral Mapping	Available
Operating System	Windows



Spectroscopy of samples smaller than a micron.



UV-vis-NIR spectral range with sub-micron sampling area.



Combining many types of spectroscopy and imaging in a single tool.



Easy to use and ready for years of service in your lab.

2030XL PRO™ UV-Visible-NIR Microspectrometer



Microspectroscopy for Large Samples

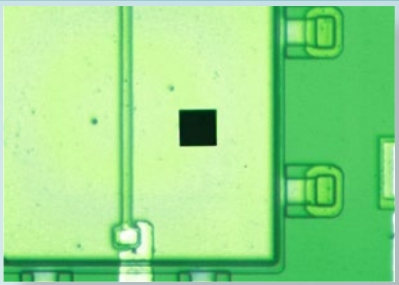
The **2030XL PRO™** microspectrophotometer is designed to measure the spectra of microscopic areas of very large samples such as individual pixels on flat panel displays or creating film thickness maps on 300 mm wafers. The 2030XL PRO™ offers a spectral range from the deep ultraviolet to the near infrared and is capable of both measuring UV-visible-NIR range spectra and images of even sub-micron sampling areas. Designed for microspot measurements on large samples, this instrument is a sophisticated multi-purpose tools for any industrial laboratory.

The 2030XL PRO™ microspectrophotometer includes Lightblades™ spectrometers, the Scorpii™ Advanced Illumination System, a purpose built UV-visible-NIR range microscope and CRAIC Technologies instrument control and data analysis software, LambdaFire™. The 2030XL PRO™ microspectrometer offers the ability to acquire transmission, reflectance, fluorescence, photoluminescence, time-resolved, polarization and Raman spectra throughout the UV, visible and NIR regions. It can measure sub-micron areas of large scale samples and can also be configured to measure thousands of sub-micron spots over large samples in order to generate spectral or film thickness maps. As such, the 2030XL PRO™ instrument is perfect for microscale resolution of industrial samples quickly and accurately.

The 2030XL PRO™ is simple to use, rugged and will provide you with cutting edge results for years to come.

2030XL PRO™ SPECIFICATIONS

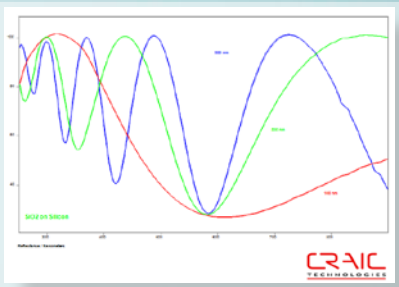
Types of Microspectroscopy	Absorbance, Reflectance, Fluorescence, Photoluminescence, Polarization, Kinetics, Raman
Microspectrometer Spectral Range	200-2500 nm
Microscope Imaging Spectral Range	220-1700 nm
High Resolution Color Imaging	Included
Fluorescence Excitation	280-546 nm
Fluorescence Emission	300-1000 nm
Lighting System	Scorpii™ with SampleSafe™ technology
Microscope Imaging Range	Deep ultraviolet, color and near infra-red
Spectrometer	Lightblades™
Sampling Area	Variable from 1 to 10,000 microns ²
Reproducible Sampling Areas	Absolute
Detector Cooling	Thermoelectric
Spectral Resolution	User selectable, 1-15 nm
Full Spectrum Scan	14 milliseconds
Thin Film Thickness	From as thin as 5 nm
Full Automation	Available
5D Spectral Mapping	Available
Operating System	Windows



Designed for industrial applications.



Microspot spectroscopy of your biggest samples.



UV-vis-NIR spectral range with sub-micron sampling area.



Combining many types of spectroscopy and imaging in a single tool.

FLEX PRO™ UV-VIS-NIR Microspectrophotometer



Confocal spectroscopy of even sub-micron samples.

Multiple spectroscopy techniques combined in one instrument.

Capable of film thickness, Raman and 5D spectral mapping.

Permanently calibrated, absolutely reproducible measurement areas.

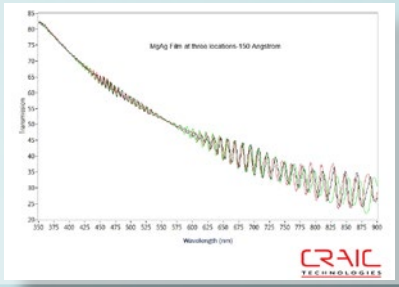
Rugged and Reliable Microspectroscopy

The **FLEX PRO™** microspectrometer is designed to measure the spectra of microscopic samples from the deep ultraviolet to the near infrared easily and economically. FLEX PRO™ is capable of transmission, reflectance, fluorescence, polarization and Raman microspectroscopy as well as high resolution, color imaging. FLEX PRO™ from CRAIC Technologies incorporates years of experience to design and build an affordable yet highly capable instrument perfect for the laboratory or the production floor.

With a modular design, FLEX PRO™ features Lightblades™ spectrometers, Scorpium™ Advanced Illumination system, a custom UV-visible-NIR range microscope and LambdaFire™, sophisticated instrument control and data analysis software. Thermoelectric cooling of the CCD detectors is offered to further enhance instrument stability and reduce dark counts. High resolution color imaging makes FLEX PRO™ simple to use and provides a host of image analysis tools in addition to spectroscopy. The spectral analysis capabilities of LambdaFire™ software are used for sophisticated data analysis. By combining all these features, the result is FLEX PRO™, a powerful and rugged instrument built for many years of productive work.



Rugged and reliable yet cost effective.



UV-vis-NIR spectroscopy combined with Raman, kinetics and more.



A powerful yet cost effective instrument designed for your toughest problems.



Cutting edge microspectroscopy in any discipline.

FLEX PRO™ SPECIFICATIONS

Types of Microspectroscopy	Absorbance, Reflectance, Fluorescence, Polarization, Kinetics, Raman
Microspectrometer Spectral Range	240-900 nm
High Resolution Color Imaging	Included
Fluorescence Excitation	365 - 546 nm
Fluorescence Emission	400 - 900 nm
Lighting System	Scorpium™ with SampleSafe™ technology
Spectrometer	Lightblades™
Sampling Area	Variable, 1 to 10,000 microns ²
Reproducible Sampling Areas	Absolute
Detector Cooling	Thermoelectric
Spectral Resolution	User selectable, 1-15 nm
Full Spectrum Scan	14 milliseconds
Thin Film Thickness	From as thin as 5 nm
Full Automation	Available
5D Spectral Mapping	Available
Operating System	Windows

508PV™ UV-Vis-NIR Microscope Spectrophotometer



- Add spectroscopy to your microscope now!
- Microspectroscopy of even micron sized samples.
- 508 PV™ spectral range from 200 to 2100 nm limited only by the microscope.
- Multiple spectroscopy techniques fitted to your microscope.

Adding Spectroscopy to Your Microscope™

The **508 PV™** microscope spectrophotometer is a rugged, precision tool designed to be added to an optical microscope. Depending upon the microscope configuration, the 508PV™ enables you to acquire absorbance, reflectance, fluorescence and even polarization spectra of sub-micron sized samples. It is offered with a spectral range from the deep UV to the near IR as it can also be used to upgrade older model micro-spectrometers with the latest technologies and software.

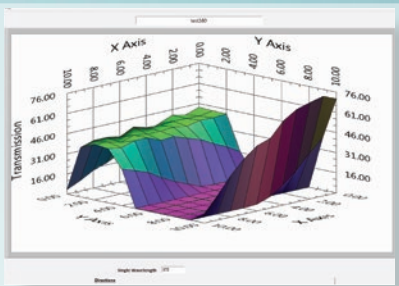
The 508PV™ features Lightblades spectrophotometers, thermoelectric cooling for improved spectral performance, parfocal and parcentral adapters for your microscope and a variable sampling size with absolute reproducibility. Powered by CRAIC Technologies advanced Lambdafire™ control and analysis software, the 508PV™ is also able to measure thin film thicknesses in addition to creating 5D spectral maps of samples. The 508PV™ is flexible, advanced, simple to use and will give years of reliable service.

508 PV™ SPECIFICATIONS

Types of Microspectroscopy	Absorbance, Reflectance, Fluorescence, Kinetics, Polarization
Spectrometer Spectral Range	200-2100 nm*
High Resolution Color Imaging	Included
Fluorescence Excitation	365-546 nm
Fluorescence Emission	400-900 nm
Spectrometer	Lightblades™
Sampling Area	Variable from 1 to 10,000 microns ²
Reproducible Sampling Areas	Absolute
Detector Cooling	Thermoelectric
Spectral Resolution	User selectable, 1-15 nm
Full Spectrum Scan	14 milliseconds
Thin Film Thickness	From as thin as 5 nm
Full Automation	Available
5D Spectral Mapping	Available
Operating System	Windows



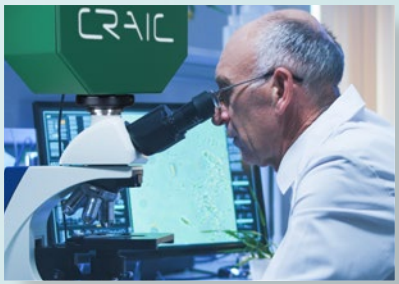
Multiple types of spectroscopy with a single instrument.



Can also be used to spectrally map samples in five dimensions.



Add spectroscopy and color imaging to your microscope easily and quickly.



The 508 PV™ can upgrade older microspectrometers of many different makes.

APOLLO M™ Confocal Raman Microspectrometer



- Easy to use confocal Raman Microspectroscopy
- Lightblades-R™ spectrometer designed for Raman microscopy
- Fast and powerful
- Designed for routine research & ease-of-use.

Raman Microspectroscopy for Your Microscope™

The **APOLLO M™** is a modular system that adds Raman spectroscopy to an optical microscope. Integrated as a single module, the Apollo M™ features a Raman grade, solid state laser, rugged optics designed for microscopy, and a Lightblades™ spectrometer optimized for Raman spectroscopy and tuned to the laser wavelength. Featuring high resolution color imaging, the laser spot is simply focused on the sample volume and the spectra is acquired. This rugged and reliable unit is ready to use and as such is perfect for daily research and analysis.

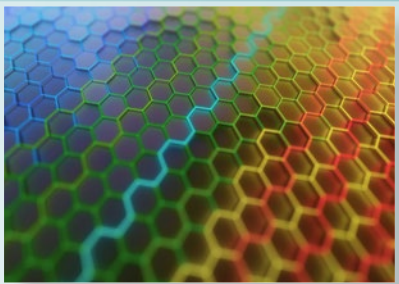
Designed to be used as either standalone units or added onto a CRAIC microspectrometer, the Apollo M™ adds Raman microspectroscopy to your arsenal of research techniques. Featuring confocal Raman microspectroscopy of micron-scale samples, the Apollo M™ is a reliable instrument that allows you to build a system that best meets your experimental requirements.

APOLLO M™ SPECIFICATIONS

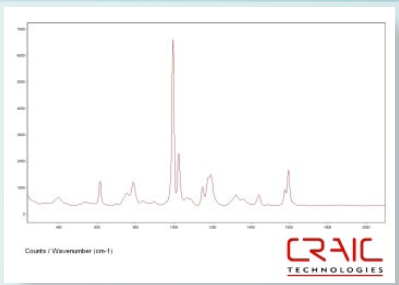
Types of Microspectroscopy	Raman				
Excitation Sources					
Excitation Wavelengths (nm)	405	532	632.8	785	830
Maximum Output Power (mW)	30	50	30	80	100
Bandwidth (nm)	<0.02 nm				
Laser Power Control	Nuetral Density Filters				
Detection Specifications					
Detector	Back thinned, cooled CCD				
Grating (lines/mm)	1800	1800	1800	1200	1200
Detection Range Start (cm ⁻¹)	300	120	100	100	100
Detection Range End (cm ⁻¹)	5,360	2,800	1,960	2,030	1,800
Spectral Resolution (cm ⁻¹) @ (1086 cm ⁻¹ calcite)	17	10	6.5	6.8	6
Peak Position Accuracy	<1 cm ⁻¹				
Peak Position Reproducibility	<0.2 cm ⁻¹				
Confocal	Yes				
Sampling Area (50x objective)	5 microns				
Full Automation	Available				
5D Spectral Mapping	Available				
Operating System	Windows				



Configure the Apollo M™ to meet your requirements



Rugged and reliable for routine research



Highest quality Raman spectroscopy



Add Raman to your microscope or microspectrometer

GEOIMAGE™ Imaging Microphotometer

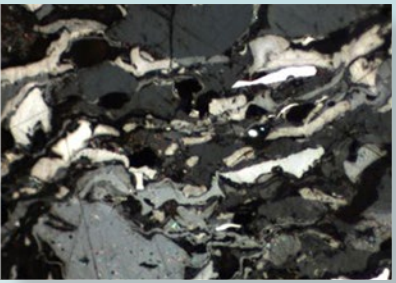
Fast and Accurate Vitrinite Reflectance

The **Geolmage™** system from CRAIC Technoliges is our fastest and most accurate system for vitrinite reflectance measurements of coal, coke and petroleum source rock. Built to comply with the major test methodologies for vitrinite reflectance, included ISO 7404-5 and ASTM D2798, the Geolmage™ can be run manually or configured for fully automated analysis. Geolmage™ can also be used for point counting thus complying with the ISO 7404-3 and ASTM D2799 test methods.

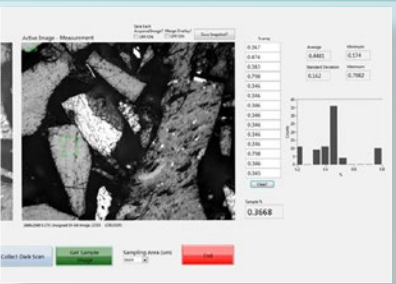
Consisting of sophisticated software and imaging technologies from CRAIC, the Geolmage™ system is designed for rapid and precise analysis of large numbers of coal samples. With a high throughput, unmatched accuracy and a rugged design, the Geolmage™ system can be automated for increased performance and reduced labor costs. The system also features other imaging modes, such as high-resolution color and fluorescence microscopy. Point counting can also be added to the unit as a useful feature. As such, the Geolmage™ is CRAIC Technologies most sophisticated solution for optical petrography.

GEOIMAGE™ SPECIFICATIONS

Method	Vitrinite reflectance per ISO 7404-5 and ASTM D2798
Method	Point counting per ISO 7404-3 and ASTM D2799
High Resolution Color Imaging	Included
High Resolution Fluorescence Imaging	Included
Fluorescence Excitation	365-546 nm
Fluorescence Emission	546 nm
Detector	Solid State
Automation	Available
Point Counting	Available
Operating System	Windows



Accurate and rapid vitrinite reflectance measurements.



Data presented in industry standard reporting formats.



Industry accepted reflectance standards for optical petrography.



User friendly in addition to setting industry standards.



- Design specifically for vitrinite reflectance measurements.
- Exceeds ISO 7404 and ASTM D2798 standard instrument requirements.
- Exceeds IS 7404-3 and D2799 standard instrument requirements
- Fast and easy to use.

UVM-1™ UV-Vis-NIR Microscopes



- Cutting edge UV, color and NIR imaging with high resolution digital cameras fitted to the UVM-1™ microscope.
- Full UV-visible-NIR spectral range for transmission, reflectance, fluorescence and polarization imaging.
- A modular design concept allowing the addition of microspectroscopy, Raman and photoluminescence and film thickness capabilities.
- Offered as manual, semi-automated and fully automated options.

Microscopy in a Whole New Light™

Ultraviolet, color and near infrared imaging are all combined in the novel **UVM-1™** UV-visible-NIR microscope. The UVM-1™ microscope is able to image in absorbance, reflectance, fluorescence, photoluminescence and even gather polarization images throughout the UV-vis-NIR spectral range. The UVM-1™ is a cutting-edge microscope incorporating CRAIC Technologies innovative optics, Scorpii™ Advanced Illumination System and the latest in cameras and imaging software. This allows you to gather many types of images all with the same microscope. Whether for higher resolution with shorter wavelength light or for spectral imaging, the UVM-1™ represents a pinnacle in true broadband microscopy.

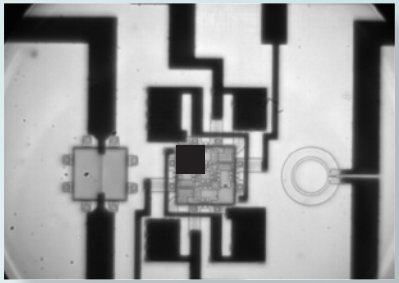
The versatility of this unique system allows users to analyze and image samples with high resolution throughout the UV, visible and near IR regions with a single microscope. UV microscopy is sensitive enough to detect trace amounts of contaminants on semiconductors yet powerful enough to resolve finer details than with a standard microscope. NIR microscopy can be used to selectively image the interior circuits of bonded silicon wafer devices non-destructively. And these are just many of the applications of the UVM-1™. The flexibility of the UVM-1™ microscope design makes this the premier UV-visible-NIR microscope.

UVM-1™ SPECIFICATIONS

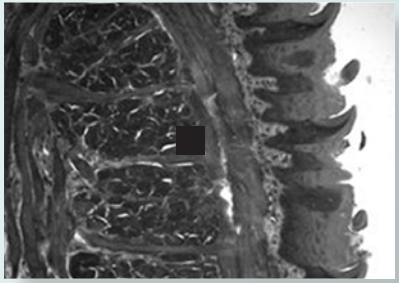
Types of Imaging	Absorbance, Reflectance, Fluorescence, Photoluminescence, Polarization
Microscope Imaging Spectral Range	220 - 1700 nm
Fluorescence Excitation	280 - 546 nm
Fluorescence Emission	300 - 1000 nm
Lighting System	Scorpii™ with SampleSafe™ technology
Full Automation	Available
Operating System	Windows



Scientific grade microscope with a UV-visible-NIR range.



UV-vis-NIR imaging in transmission, reflectance, fluorescence and more.



The UVM-1™ can also incorporate UV-vis-NIR and Raman microspectroscopy.



Featuring Scorpii™ with SampleSafe™ technology

rIQ 2.0™ Forensic Glass Analysis System



The rIQ™ system uses powerful algorithms to measure the refractive index with the highest precision.

Experiments are stored to video and can be reanalyzed without having to rerun the entire experiment!

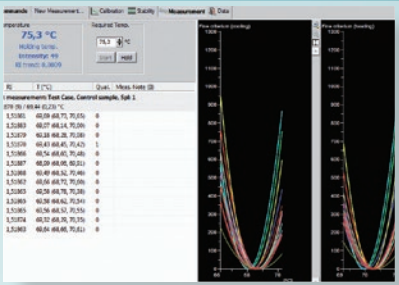
The Intelligent Way to Measure Glass Refractive Index

Worldwide, forensic labs measure the refractive index of microscopic fragments of glass recovered from crime scenes. This is done by comparing the refractive index of the recovered glass fragment at a fixed wavelength and temperature with those of known sources. The process, as defined by the test method ASTM E1967, monitors a glass fragment in a calibrated oil as the temperature is changed. The tool consists of a high-resolution digital camera, a thermal stage with controlling electronics and advanced software. The system used thermo-optical methodology for high precision measurements to accurately calculate the refractive index of microscopic glass samples. **rIQ™** implements several unique time saving features to rapidly and correctly measure the glass refractive index. Place any number of probes and this sophisticated instrument will measure multiple glass fragments simultaneously. The unique video recording features allows for easy probe placement, measurement and replacement on new edges or other glass shards.

rIQ™ is a valuable standalone tool but it can also be added to existing CRAIC Technologies microspectrometers so that it can be used in conjunction with other trace evidence tools and techniques.

rIQ™ SPECIFICATIONS

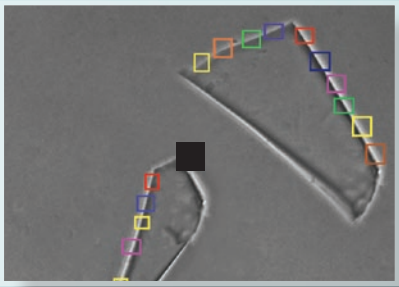
Method	ASTM E1967
Temperature Range	RT to 120 °C
Temperature Precision	0.1 °C
Oils (RI at 546 nm)	~1.51, 1.53, 1.55
Glass Standards	24 standards with RI from 1.46 to 1.54 over 20-120°C and 488-656 nm
Analysis Wavelengths (nm)	488, 589, 656
Probes	24 Probes, Resizable
Five Hour Stability	<2x10-5 RI
Five Day Stability	<3x10-5 RI
Analysis	Standard Statistical Analysis included
Operating System	Windows



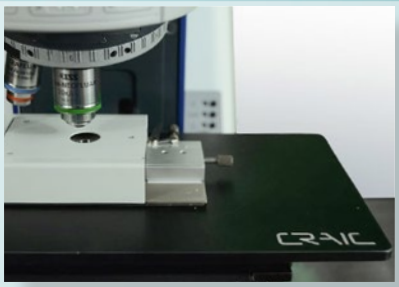
OSAC and ASTM E1967 compliant



Rugged and reliable



More than resizable 20 probes per scan



Quickly re-analyze the data without redoing experiment

CRAIC™ Innovative Analysis Software Solutions



Advanced Spectral & Image Analysis

LambdaFire™ is sophisticated software for controlling your CRAIC microspectrometer and to analyze the imaging and spectral data. Combining both imaging and spectroscopy, LambdaFire™ offers full instrument control and sophisticated image and spectral analysis. Plug-in modules add further functionality to this software including automation, spectral mapping, film thickness measurements and so much more.

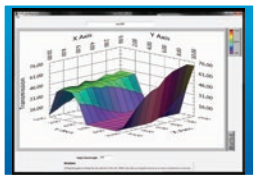
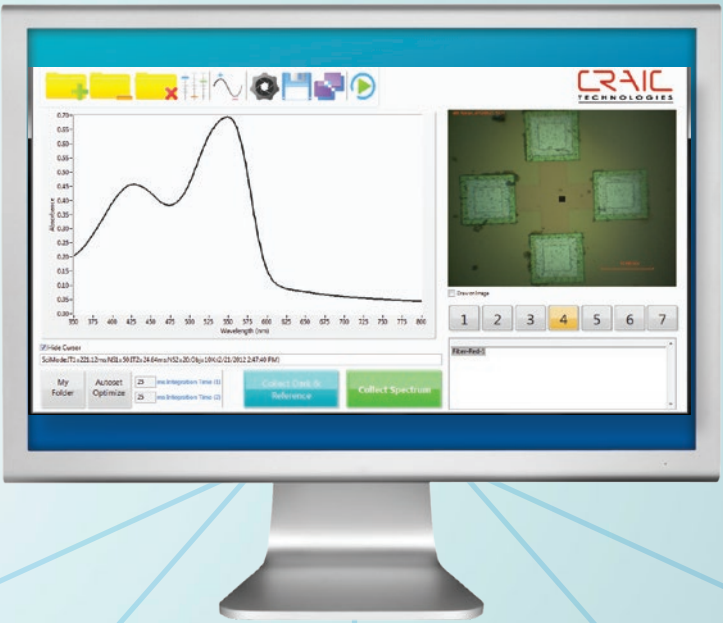
LambdaFire™ Software Suite Offers:

- Microspectrophotometer Control and Data Analysis in one easy-to-use package
- Image and spectral analysis features included with instrument control
- Microspectrophotometer automation control and programming
- Many plug-in modules available to add even more instrument capabilities
- Perfect for research as well as production with many features specific to each
- Designed for powerful analysis and ease-of-use from the experts in microspectroscopy.

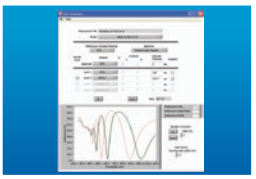
Powerful, Flexible Software to Meet Your Challenging Projects

CRAIC Technologies **LambdaFire™** software empowers users of CRAIC Technologies' microspectrophotometers with instrument control, spectral acquisition and full video imaging as well as sophisticated spectral, statistical and image analysis algorithms. Running under Windows™ as a native 64-bit program, LambdaFire™ gives you full control of your CRAIC Technologies instruments. This software also gives you the ability to acquire high quality spectra of microscopic samples by transmittance, absorbance, reflectance, polarization, fluorescence, photoluminescence or Raman and then to analyze those microspectra™ and images. Designed for the production environment as well as the laboratory, it incorporates many types of sophisticated tools for analyzing spectra and images. Plug-in modules also add functionality such as kinetic spectroscopy, 5D spectral mapping and film thickness measurements.

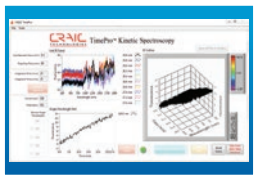
LambdaFire's™ powerful family of modular solutions for your microspectrometer!



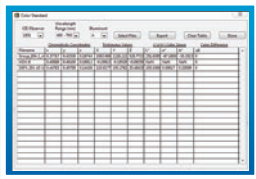
CRAIC 5D Spectral Mapping™



CRAIC FilmPro™ Thin Film Thickness



CRAIC TimePro™ Kinetic Microspectroscopy



CRAIC ColorPro™ Colorimetry Software



GeolImage™ Geological Analysis Software

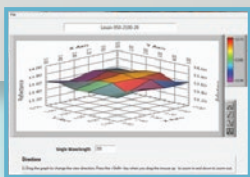
CRAIC™ Innovative Software Solutions

CRAIC 5D Spectral Mapping™

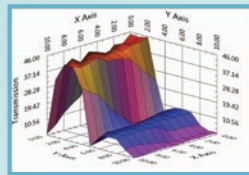
CRAIC Technologies™ **5D Spectral Mapping™** technology allows you to obtain highly detailed maps of the spectral response of objects on the microscopic scale. Featuring sub-micron spatial resolution, maps can be generated with thousands of points of the UV-visible-NIR transmittance, absorbance, reflectance, polarization, fluorescence and emission spectral response. 5D Spectral Mapping™ can also be used to mapping Raman, photoluminescence and kinetic responses as it is able to analyze up to five dimensions of data simultaneously.



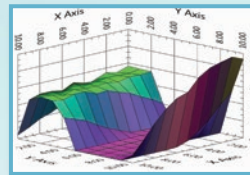
Manual and programmable stage control.



5D Spectral Mapping™ Spectral Plot



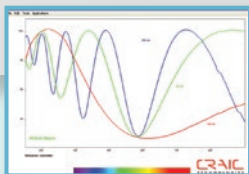
Changes over time may be plotted with 5D data.



High spatial resolution spectroscopy.

CRAIC FilmPro™ Thin Film Thickness

CRAIC **FilmPro™** is able to measure the film thickness values of thin films by reflectance or transmittance. You can do this over microscopic areas and with many different substrates. This allows you to analyze not only thin films on substrates such as silicon, but also thin films on glass or quartz commonly found in flat panel displays and other devices. When combined with 5D Spectral Mapping™, you can generate high spatial resolution maps of film thickness over a surface.



FilmPro™
SiO₂ on Silicon Spectra



FilmPro™
Film Thickness Recipe



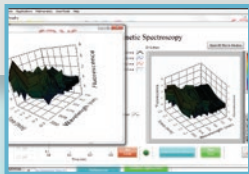
FilmPro™ - Film Thickness Layers Menu



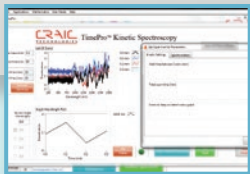
FilmPro™ - Film Thickness Results

CRAIC TimePro™ Kinetic Microspectroscopy

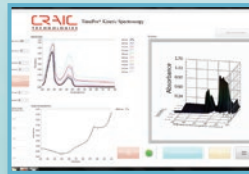
CRAIC **TimePro™** allows you to measure the spectral response of microscopic sample areas over time. Able to cover the full UV-visible-NIR range, **TimePro™** generates 3D displays over the time intervals you designate. It is capable of measuring the spectra by transmittance, reflectance, emission, polarization or Raman and show how a sample is changing.



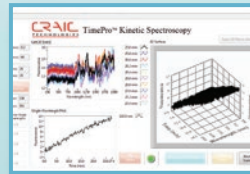
TimePro™ Microscale Kinetic Spectroscopy



TimePro™ Experimental Parameters



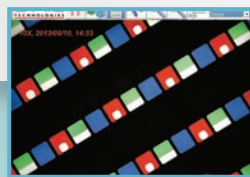
TimePro™ 3D View of Current Scans



TimePro™ kinetic microspectroscopy.

CRAIC ColorPro™ Colorimetry Software

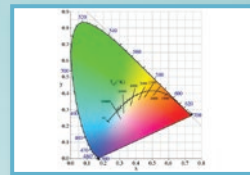
When added to a CRAIC microspectrometer, you are able to determine the colorimetric values of microscopic samples. Colorimetry calculations can be done on samples as small as 1 micron and on reflectance, transmittance, and even fluorescence microspectra™. Colorimetry spaces calculated with CRAIC microspectrometer data include CIE XYZ, CIE LAB, tristimulus values and more.



ColorPro™ Color Mask

Sample	XYZ	LAB	Tristimulus
1	0.496	38.12	1.96
2	0.349	13.24	0.81
3	0.143	-18.11	-0.43
4	0.008	-24.49	-0.05
5	0.043	13.24	0.81
6	0.349	13.24	0.81
7	0.496	38.12	1.96

ColorPro™ CIE Coordinates



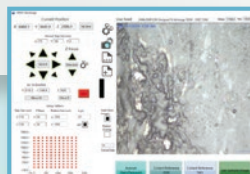
CIE Color Chart



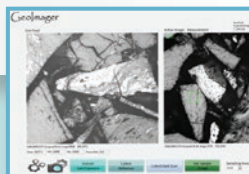
ColorPro™

GeolImage™ Geological Analysis Software

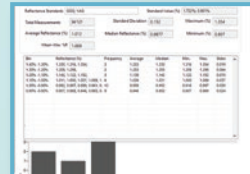
The CRAIC **GeolImage™** is a new tool for geological analysis using only high resolution digital imaging in place of spectroscopy. Images are collected from the camera and are analyzed pixel by pixel to measure vitrinite reflectance. The software can also automatically scan entire samples in addition to having a point counting option.



GeolImage™ Software - Automated



Software for vitrinite reflectance measurements.



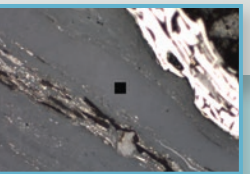
GeolImage™ Report



A point counting option for maceral identification.

CRAIC CoalPro™ Software

CRAIC **CoalPro™** software can be used with any CRAIC microspectrometer to add industry standard test methods for vitrinite reflectance measurements capabilities. Designed to comply with ISO 7404-5 and ASTM D2798 text methods, CoalPro™ is a key tool for any geological testing laboratory.



High-speed Optical Petrography



Software for vitrinite reflectance measurements



Industry standard reporting



ASTM and ISO compatible

CRAIC™ Standards and Consumables

CRAIC Technologies™ is the world's leader in developing standards to check the calibration and accuracy of UV-visible-NIR and Raman microspectrophotometers. CRAIC standards are designed to meet ASTM, ISO and SWGMAT guidelines for spectral instrument usage. Standards can also be made traceable to NIST and other internationally recognized certifying bodies' reference materials. And if the standards are used with CRAIC microspectrophotometers, the calibration routine is automated with a full report printed out at the completion of the test series. CRAIC standards are another facet of our complete solution to microspectroscopy.



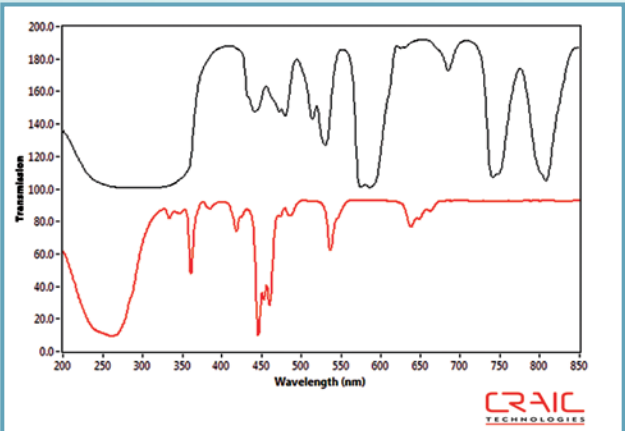
Reflectance Microspectrophotometer Standards traceable to NIST for easy and accurate microspectrophotometer calibration. Fluorescence, Diffuse, Specular, White, and color standards also available for precise measurements and reference use.



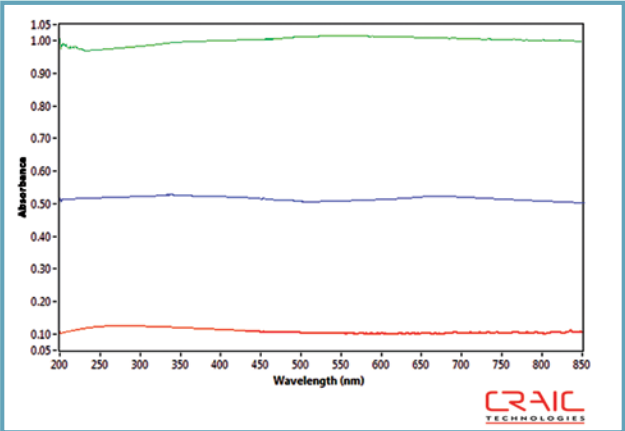
Vitrinite reflectance standards available in a wide range of reflectivity levels.



Wavelength and Photometric Standards traceable to NIST, offered in both transmittance and reflectance capabilities in order to calibrate your microspectrophotometer.



Microspectrophotometer calibration check using the standards traceable to NIST via LambdaFire™. Holmium and Didymium spectra stacked for photometric accuracy.



Microspectrophotometer wavelength calibration check using the standards traceable to NIST via LambdaFire™.

CRAIC™ Scientific Concierge Services™

Backed by a network of experienced scientists and service engineers.

With CRAIC Technologies Service, you've got the power of CRAIC Technologies™ on your side. Our solutions are focused on customer value creation through improving instrument performance, increasing uptime/efficiency and driving lab productivity. CRAIC Technologies Service offerings include:

Rapid response

CRAIC Technologies™ offers technical and support services with a team of highly experienced service professionals. With a fully computerized system, your service engineer will provide you with the most effective and responsive service in the industry.

Applications expertise and support

CRAIC Technologies™ has more UV-visible-NIR microspectrometer specialists than any other instrument manufacturer, offering superior applications support. Our extensive industry knowledge and depth of our support staff assure you of a rapid solution to any problem.

Preventing downtime with on-demand service when you need it

With CRAIC Technologies Service Plans, you are assured of rapid response to your microspectrophotometer repair request.

Concierge Service Plans

Platinum Service

This plan offers highest priority phone and email responses. In addition, this plan receives full parts and labor coverage. If needed, prompt on-site service.

Gold Service

This plan offers a high priority with rapid phone and email response times. If necessary, scheduled on-site service can be performed.

Silver Service

This plan includes phone and email support with discounted rates for on-site service calls.





◆ YOUR INSTRUMENT

◆ YOUR SOLUTION



CRAIC
TECHNOLOGIES

CRAIC Technologies - North America
948 North Amelia Avenue, San Dimas, California 91773 USA
e-mail: sales@microspectra.com | www.microspectra.com
Tel: +001-310-573-8180 | Fax: +001-310-573-8182

CRAIC Technologies - KOREA / MicroLab Songdo
#4103 Songdo Centroad Bldg C. Songdo, Yeonsu-Gu
Incheon, South Korea 22007
Tel: +82-32-831-8102 | e-mail: sales@microspectra.com



Copyright © 2022 CRAIC Technologies, Inc. CRAIC Technologies is an ISO 9001:2008 registered company. Specifications are subject to change without notice or any obligation on the part of the manufacturer. v030122-8