

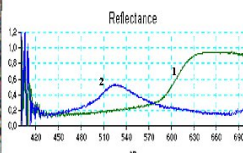
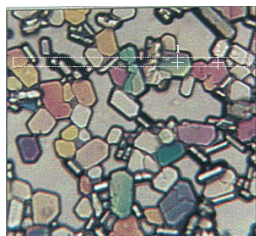
MICRO SPECTRAL SCANNER

The OEM μ Spectral Scanner is a components kit that can be interfaced to existing microscope ready to accept cameras with C-mount to obtain an hyper-spectral imaging system. With OEM μ Spectral Scanner kit it will be possible to acquire with extreme simplicity the spectral distribution of the different wavelengths (spectral composition) of every single point of the inspected object. This represents a great advantage compared to traditional spectrophotometers which can perform the spectral analysis of only a single point at a time, or integrate the radiation from a whole area, losing the punctual localised information of the area.

The hyper-spectral imaging on microscope allows the study of very small samples. Typical applications are in medicine, biology, forensic science, mineralogy and chemical laboratory.

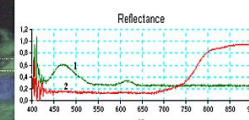
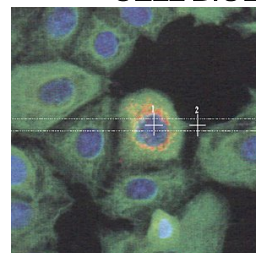


MINERALOGY



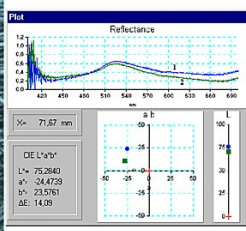
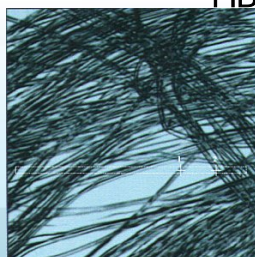
Identification of elements with Transmittances, Absorption, or fluorescence.

CELL BIOLOGIES



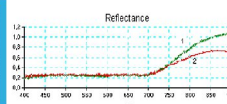
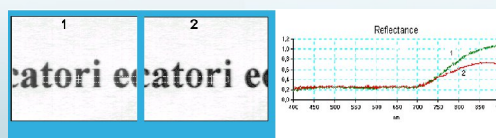
Discover if some agents are inside or outside the cell with micron accuracy. **VEGETATION:** Make measurement of life flow on single vegetals cells.

FIBERS



Color measurement throw CIE Lab and analysis of single fibers in textile.

FORENSIC

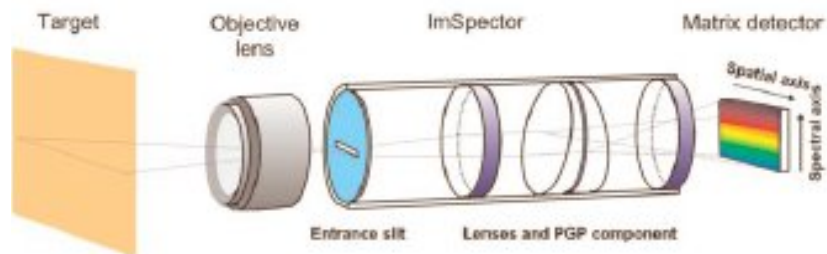


Check the nature of inks (mineral or organic). Some inks look alike but have very different responses in the near infrared.

The heart of the instrument is the ImSpector monochromator which, in association with a bidimensional matrixial camera, constitutes a spectrophotometer of great value. Once focused on the image, it is acquired line by line as in a normal scanner, but through a slit. ImSpector spectrometer's optic, with the exclusive very low distortion Prism-Grate-Prism patented system, breaches line's every point radiation on its spectral components, whose intensity is taken off from the camera composed by a bi-dimensional matrix of photosensible elements.



Each column of the stored image contains the whole spectral distribution of the point analysed..



The combination of high image quality with compactness and solidity make the Spectral Scanner the first low-cost image spectrometer, suitable for both industrial and scientific applications. In addition it's available in various spectral ranges from 400 to 2500 nm (NIR), making the whole system highly customizable for OEM applications.

Features

Available spectral range: - V10 ->400-1000nm

- N17 ->900-1700nm

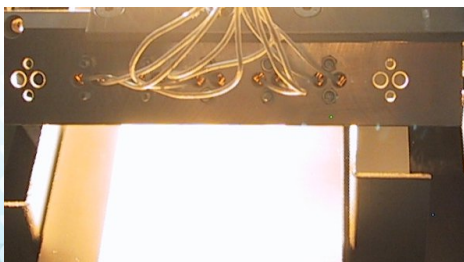
- N25 ->1000-2500nm

Spectral resolution: 3nm (V10) 7nm (N17) 10 nm (N25)

Available light sources : - 2 halogen lamps 20W arrays 45/0 configuration

- BackLight for transmittance acquisition

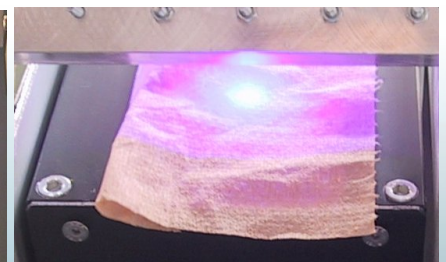
- UV laser for fluorescence acquisition



45°/0°



backlight



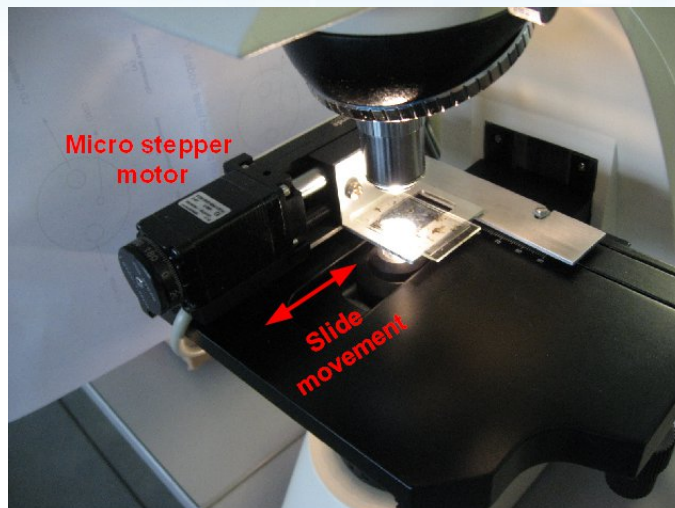
UV laser

Acquired area: typical 50x100 mm (customizable)

Spatial resolution: ~ 20 um (customizable)

Acquisition speed: 2mm/s

OEM MICRO SPECTRAL SCANNER KIT

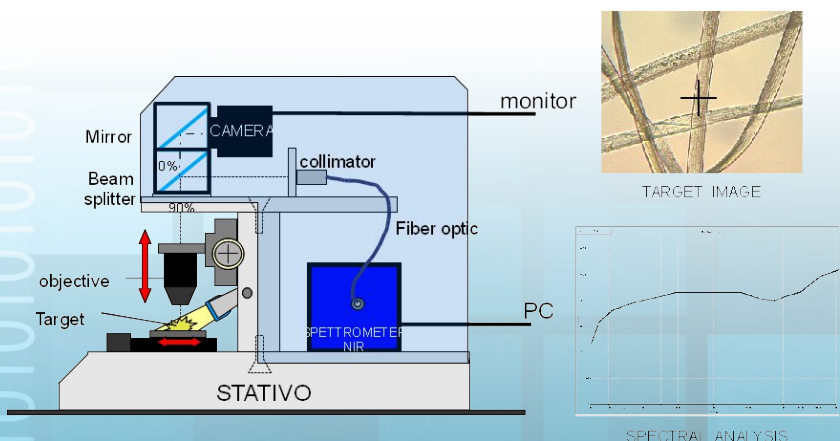
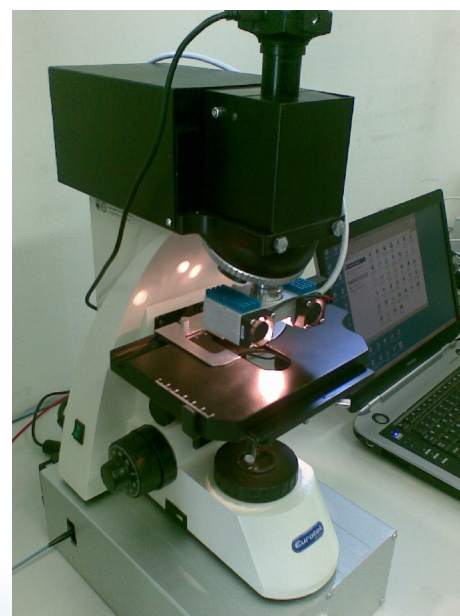


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SINGLE POINT SYSTEM

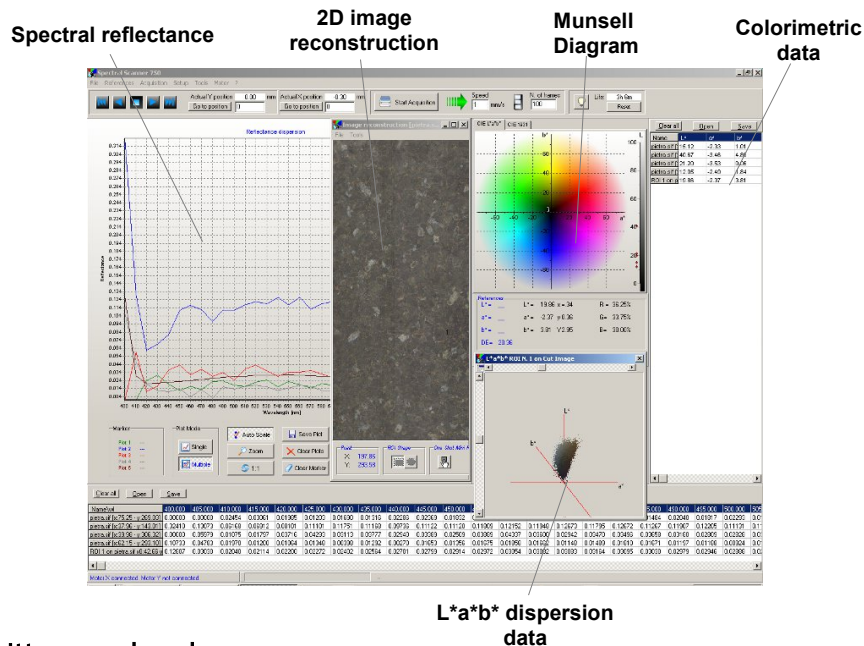
Description:

- 1) Stand microscope.
- 2) Objective 40X NIR optimized
- 3) illumination configuration: diffused or 45°/0°
- 4) Software SpecLab with plugin module for fiber recognition.
- 5) Combined spectrometer VIS / NIR (300-1000/1000-1700nm)
- 6) Concentric camera on analysis point to manage captured details..



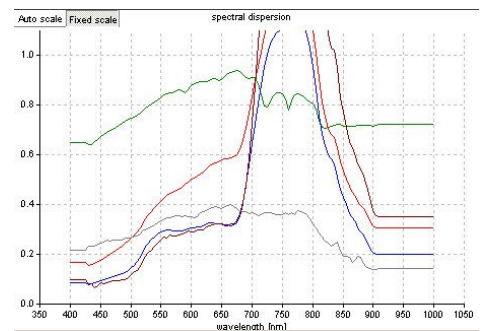
The software

SpectralScanner© is a spectral imaging software that captures the spectral composition of each point of the sample using a line spectrometer. The Software controls a mechanical device which moves the optical system and captures a series of two-dimensional frames. By interpreting each of these as an array of spectra, point by point, the Software reconstructs an entire image on the screen line by line, making available all the spectral data which are displayed numerically and in graphical form on a chart, through $L^*a^*b^*$ coordinates and diagram and in the Munsell color space.



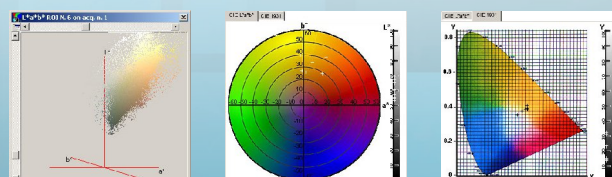
Reflectance, transmittance, absorbance

Many spectral imaging applications, like color measurement, require to determinate the absolute reflectance of the sample; Spectral Scanner calculates reflectance for every acquired pixel, evaluating the acquired signal ratio with a white reference sample. The mouse movement on the rendered image gives access to the spectral profiles of the selected pixels, instantly evaluates the colorimetric parameters and with one click lets you immediately save the data in various formats. Software filters allow narrow band analysis (up to 2nm) of the images. In the same way Spectral Scanner can render an image in transmittance mode for applications that require it.



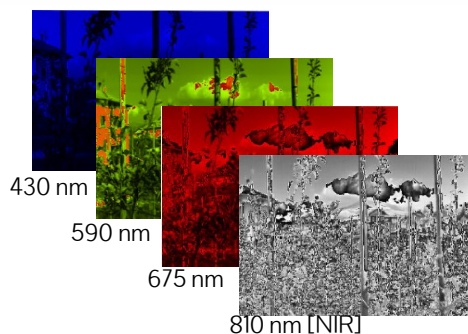
Color differences and equalities

Spectral Scanner performs absolute and relative color measurements using the CIE $L^*a^*b^*$ standard colorimetric coordinates. Such parameters and the DE parameter can be evaluated for the single pixel, for a selectable part of the image or for the whole image, making Spectral Scanner very versatile in spatial resolution. CIE 1931 or CIE 1964 standards can be selected with D65 or A illuminants.



Single wavelength selection

Spectral Scanner allows the selection of single bands with defined wavelengths and the visualization to screen of the rendered filtered images.



Data exportation

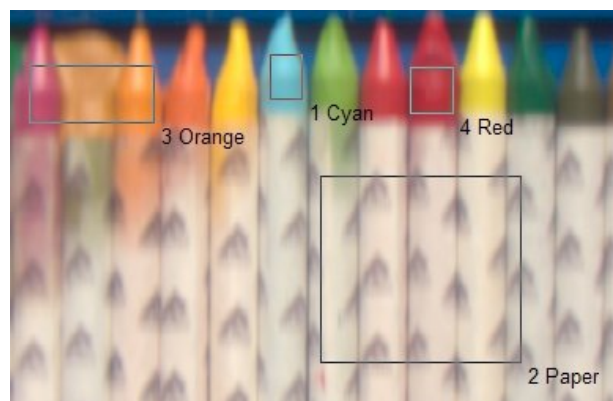
All the spectral reflectance data and colorimetric calculated values can be quickly exported for further elaborations with other mathematical applications and tools...

	400.000	405.000	410.000	415.000	420.000	425.000	430.000	435.000	440.000	445.000	450.000	455.000	460.000
Name/Vol													
A1.inf (s: 38.19 - v: 17.51)	0.00889	0.01285	0.01581	0.01581	0.02075	0.02372	0.02787	0.03554	0.04249	0.05429	0.06324	0.07016	0.08202
A1.inf (s: 43.75 - v: 13.01)	0.00593	0.00832	0.01086	0.01362	0.01670	0.01974	0.02468	0.02863	0.03469	0.04037	0.05523	0.06910	0.07700
A1.inf (s: 10.42 - v: 17.01)	0.00632	0.00988	0.01087	0.01285	0.01482	0.01383	0.01976	0.02273	0.02668	0.03557	0.04447	0.04941	0.05435
A1.inf (s: 130.21 - v: 23.42)	0.00297	0.00396	0.00297	0.00791	0.00988	0.01285	0.01680	0.02075	0.02866	0.03656	0.04545	0.05435	0.06324
RDI 1 on A1.inf (s: 51.74 - v: 40)	0.00591	0.00735	0.00897	0.01078	0.01252	0.01434	0.01613	0.01912	0.02247	0.02623	0.03024	0.03392	0.03777
chromaticity.inf (s: 7.37 - v: 25)	0.12419	0.12419	0.12419	0.12419	0.12419	0.12419	0.1243	0.11795	0.11842	0.11765	0.12703	0.12911	0.14443
RDI 2 on chromaticity.inf (s: 0)	0.13001	0.13001	0.13001	0.13001	0.13001	0.13001	0.12222	0.12308	0.12789	0.13420	0.14041	0.14609	0.15224

Image region Save & Load

It's possible to save in a file the regions of interest of an acquired spectral image and then reutilize them for further acquisitions. Useful for analyze the same zones of various samples.

The use of the file containing the positional data of the regions can be automated: all the acquisitions will have the same regions selected and analyzed; copy-and-paste of the regions is allowed also between two spectral images.



Advanced analysis tools

Spectral Scanner provides many tools for thorough comparative analysis of the acquired spectral images, useful when a high grade of colorimetric conformity with a sample reference is demanded. Moreover other application software are available by DV for advanced spectral analysis and color proof and simulation.

