HORIBA
Scientific

Combine the power of spectrofluorometry and microscopy

Beyond fluorescence microscopy!

www.fluorsolutions.com

JOBIN YVON
Technology

“Couple a microscope to your fluorometer to expand the capabilities of both!

Why do Spectral Microscopy?

Fluorescence microscopes with imaging cameras have become an essential tool for almost all biological microscopy and many materials applications. However, the spectral information that can be derived from these instruments is limited by the number of bands that can be imaged using filters, typically no more than three or four. Similarly, filters have a limit on the narrowness of the spectral resolution they can measure. Finally, of course, it is impractical to have infinite filter combinations to optimize the separation of two spectrally close peaks or labels.

So for a growing class of applications, it has become important to be able to measure very specific excitation and emission spectral bands, or even the entire spectrum at each point of the sample. To meet these needs, our microscope coupling allows you to go beyond simple filter-based fluorescence microscopy to specific, or full spectral analysis of spatially varying samples.

Another important application of microspectrofluorometry is measuring extremely small volume samples. The high collection efficiency of a microscope make it the ideal way to collect as much signal as possible from very small or low volume samples.

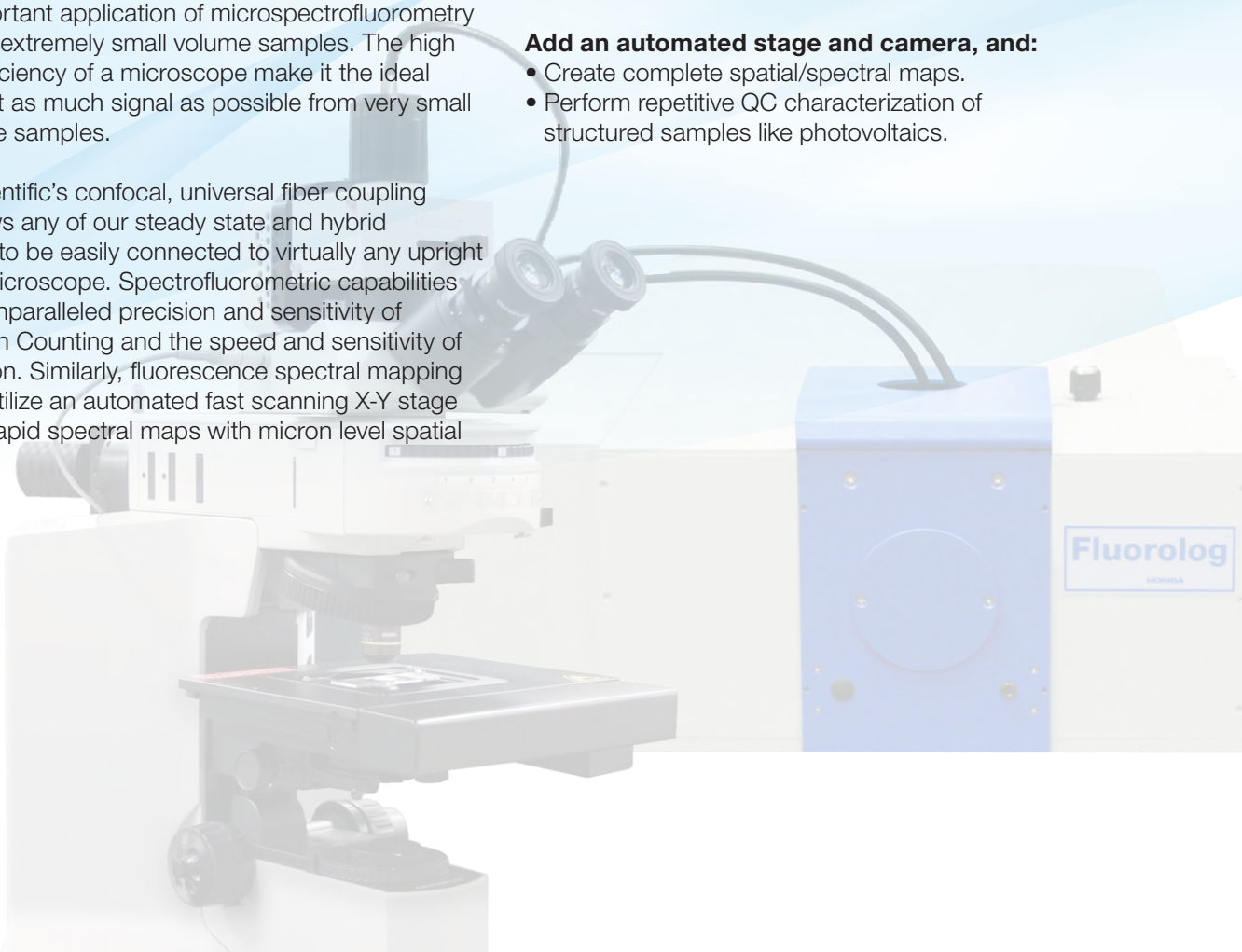
HORIBA Scientific’s confocal, universal fiber coupling solution allows any of our steady state and hybrid fluorometers to be easily connected to virtually any upright or inverted microscope. Spectrofluorometric capabilities include the unparalleled precision and sensitivity of Single-Photon Counting and the speed and sensitivity of CCD detection. Similarly, fluorescence spectral mapping capabilities utilize an automated fast scanning X-Y stage to generate rapid spectral maps with micron level spatial resolution.

Of course our microscope solutions preserve the microscope's native optical performance and capabilities. For example, they add no optics to the entire emission optical path. Use the high performance cooled fluorescence camera to image your field of interest. Once you identify a region to spectrally analyze, simply switch your filter cube to a beam splitter or an appropriate dichroic, divert the light to the fluorometer, and you are collecting high resolution spectra. Custom solutions are also available to measure in the UV and NIR regions, beyond the normal range of your microscope.

(For fluorescence lifetime and lifetime mapping microscopy (FLIM), see our dedicated DeltaMyc.)

Couple a microscope and:
- Measure complete spectra of samples as small as 1 µm.
- Get spectra from as little as a few molecules of sample.
- Perform localized FRET measurements.

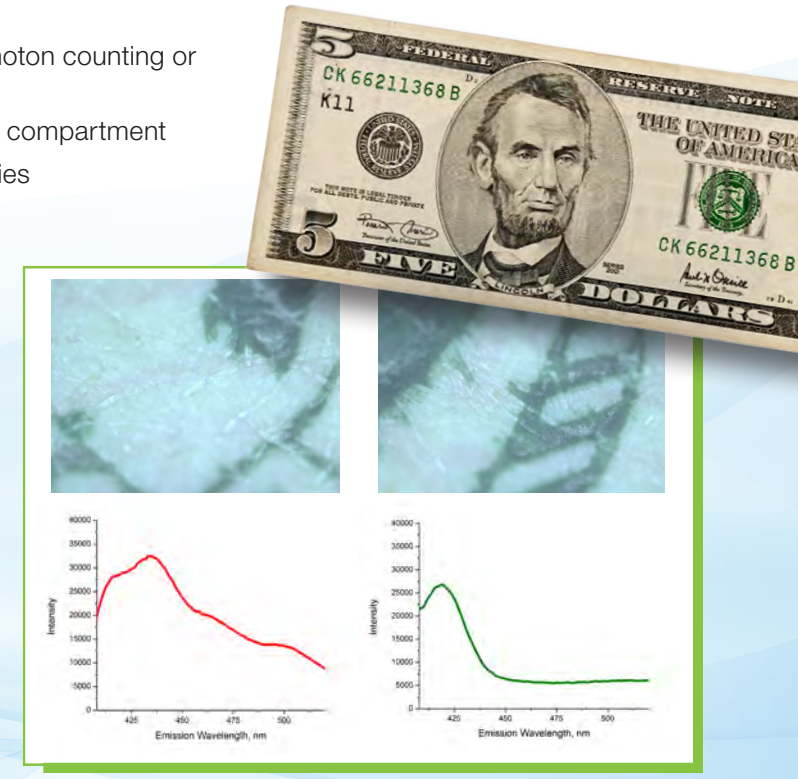
Add an automated stage and camera, and:
- Create complete spatial/spectral maps.
- Perform repetitive QC characterization of structured samples like photovoltaics.



Unique Features

The spectral acquisition and mapping analysis is easily controlled from the intuitive user interface of our FluorEssence™ software.

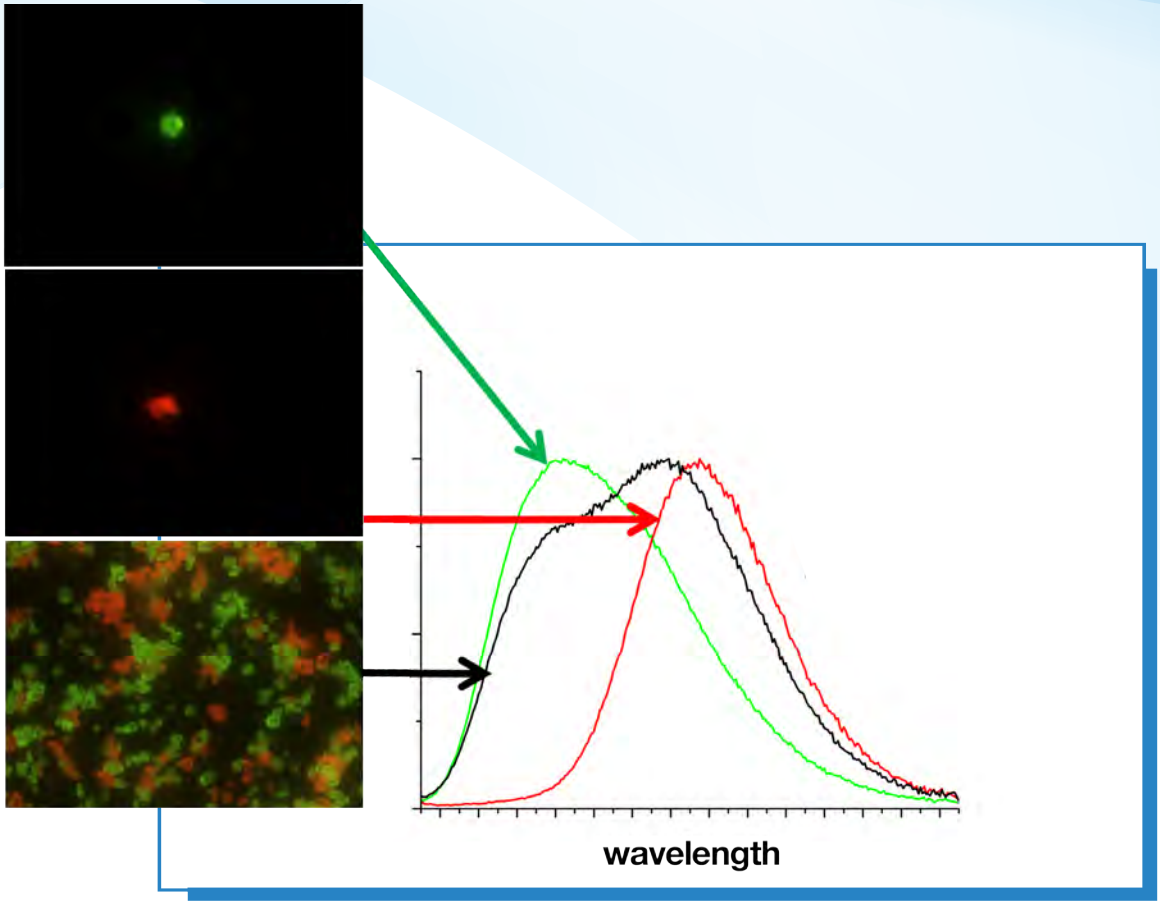
- Fully-integrated system, confocal detection and single-photon counting or CCD and array-based detection
- Easy to install mirror-based fiber coupling unit for sample compartment
- Widefield steady state fluorescence for comparative studies
- Adapter packages for all major microscopes
- C-mount compatibility for confocal pinhole fiber adapter
- UV-VIS and NIR fiber-coupling options
- Cooled fluorescence camera
- Fast mapping speed (data in seconds)



Data from a real and forged US 5 dollar bill. Fluorescence imaging shows no obvious differences. However it is easy to spectrally distinguish the real from a fake bill.

Applications

- Biological, as well as material science samples
- Cell and tissue analysis
- Intrinsic fluorescence
- Conjugated fluorescence labels and quantum dots
- Forensics and anti-counterfeiting
- Thin films
- Semiconductors
- Photovoltaics
- Fluorescence dyes
- Nanoparticles
- Quantum dots
- FRET



Resolving spectral contribution of multicolor phosphors

Complete microfluorometry systems

based on Olympus BX53 and IX73 upright or inverted microscopes with or without spatial mapping

HORIBA Scientific offers a whole suite of microspectrofluorometry solutions. Our offerings can be as simple as coupling a microscope to your fluorometer, to a complete solution including microscope, camera, and a scanning stage. Select the level of integration that best suits your needs.

Complete solutions:
Turnkey solutions include a complete upright or inverted Olympus fluorescence microscope and incorporate all needed coupling accessories to connect the microscope to any of our fluorometers. All you need are your samples.

Fluorolog with BX53

FluoroMax with IX73

Or couple to your existing microscope

with or without spatial mapping

Interface to an existing microscope:
Already have a microscope? We can couple any of our fluorometers to it and save you the cost of an additional microscope. Options include a cooled fluorescence imaging camera, a metal halide fluorescence illuminator, and a scanning stage to add spectral mapping capabilities.

Fluorolog with Zeiss MIcroscope

FluoroMax with Nikon MIcroscope

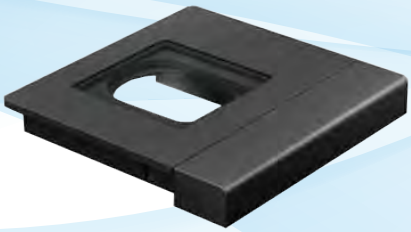
Fluorolog with Leica MIcroscope

Components

Universal C-mount emission fiber coupler, fiber and kinematic pinhole holder

Collimating lens fiber adapter for fluorescence excitation coupling

Mirror based fluorometer fiber adapter for sample compartment excitation and emission coupling



Automated X-Y stage with <1.0 µm repeatibility

ScopeLite™ 200 fluorescence excitation illuminator with liquid lightguide coupling

Specifications

Specification	Complete Microscope Solution	Interface to Existing Microscope
Microscope	Olympus® BX53 Olympus® IX73	User supplied
Objective Confocal pinholes Dimensions, Weight	Plan achromat x10 and x60, other magnifications available. 6 position turret Kinematic, 6 diameters, 0.1, 0.2, 0.4, 0.6, 0.8, 1 mm 68 cm x 46 cm x 60 cm, 40 kg (BX53) 90 cm x 50 cm x 75 cm, 65 kg (IX73)	User supplied Kinematic, 6 diameters, 0.1, 0.2, 0.4, 0.6, 0.8, 1 mm
Excitation source: Scopelite 200 (Optional)		
Wavelength range Illumination Adjustment Output Power Lamp Life Warm Up Long Term Drift Cooling Dimensions Weight	From 350 to 700 nm 5 preset % apertures: 0, 25, 50, 75, 100 7 Watts 2000 hrs 2 min <0.1% RMS Air cooled by fan 20 x 14.5 x 25.4 cm (WxDxH) 3.4 kg	From 350 to 700 nm 5 preset % Apertures: 0, 25, 50, 75, 100 7 Watts 2000 hrs 2 min <0.1% RMS Air cooled by fan 20 x 14.5 x 25.4 cm (WxDxH) 3.4 kg
Filters		
ND filter sliders	6 positions: 0, 0.3, 0.6, 1, 2 and 3 OD	User supplied
Fibers		
Multimode slit to round	UV-VIS : 1.5 m length, 250-850 nm wavelength range NIR : 1.5 m length, 350-2400 nm wavelength range	UV-VIS : 1.5 m length, 250-850 nm wavelength range NIR : 1.5 m length, 350-2400 nm wavelength range
Fiber Coupling		
Excitation Emission	Collimating lens adapters for Olympus, Universal C-mount adapter with pinhole holder	Collimating Lens Adapters for Olympus, Nikon, Leica and Zeiss Universal C-mount adapter with pinhole holder
Camera	Required for mapping option	Required for mapping option
Fluorescence camera	12 bits, 1.4 Mpix, cooled, low noise	12 bits, 1.4 Mpix, cooled, low noise
Motorized stage	Required for mapping option	Required for mapping option
Repeatibility Travel range Manual control Automatic control	<1.0 µm 75 x 50 mm With joystick Through FluorEssence software	Suitable stage Through FluorEssence software
Software/Computer		
FluorEssence PC requirements	Windows® 7, 32- or 64-bit At least three available USB ports 2 GB RAM 2 GB hard-disk space DVD-ROM drive Video resolution of at least 1280x800	Windows® 7, 32- or 64-bit At least three available USB ports 2 GB RAM 2 GB hard-disk space DVD-ROM drive Video resolution of at least 1280x800

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