Photon etc
A spectrum of solutions

5795 DE GASPE AVENUE, #222
MONTREAL, QUEBEC, H2S 2X3
CANADA

CIMA HYPERSPECTRAL CONFOCAL SYSTEM

EXPLORING THE 3 BIOLOGICAL WINDOWS

CIMA is specifically designed for researchers developing the next generation of nanomaterials, such as upconverting nanoparticles for cellular imaging.

Our unique platform provides excellent spectral resolution between 400 nm and 1700 nm: below 0.2 nm in the visible range and less than 0.6 nm in the infrared. Paired with one of the fastest and most sensitive cameras on the market, the galvanometer scanning head boasts an acquisition rate of more than 300 spectra per second.

CIMA provides three acquisition modes: confocal hyperspectral imaging, multispectral fluorescence imaging, and emission spectroscopy of a sample in cuvette.

TECHNICAL SPECIFICATIONS

Spectral Range	400 - 1700 nm	
Spectral Resolution	VIS < 0.2 nm	IR < 0.6 nm
	Custom resolution upon request	
Spatial Resolution	Diffraction Limited	
Microscope	Research grade inverted	
Objectives	20X, 40X, 60X	50X, 100X
	Other magnifications available upon request	
Cameras	Back-illuminated EMCCD	InGaAs linear array
Excitation Wavelength	980 nm *(Other wavelengths available)* 3 laser input ports UHP Mercury lamp 130W	
Maximum Scanning Speed	> 300 spectra/s	~ 100 spectra/s
Wavelength Absolute Accuracy	0.25 nm	
Motorized XYZ stage	120 mm x 75 mm x 150 µm	
Preprocessing	Spatial filtering, statistical tools, spectrum extraction, data normalization, spectral calibration	
Hyperspectral Data Format	FITS, HDF5	
Single Image Data Format	JPG, PNG, TIFF	
Graphical Format	HDF5, CSV	
Software	Computer with PHySpec™ control and analysis software included	

Confocal Mode	
Scanning region	300 µm x 300 µm (20x objective) 100 µm x 100 µm (60x objective)
Pinhole	30 to 200 µm
Cuvette mode	Option for Spectroscopic Measurements of Liquids in Cuvette
Cuvette size	10 x 10 mm (3.5 ml)
Fluorescence mode	
Camera	Megapixel color camera for fluorescence and sample vizualisation
Illumination lamp	UHP Mercury lamp 130W
Epifluorescence filter cubes	Up to 6 different filter cubes

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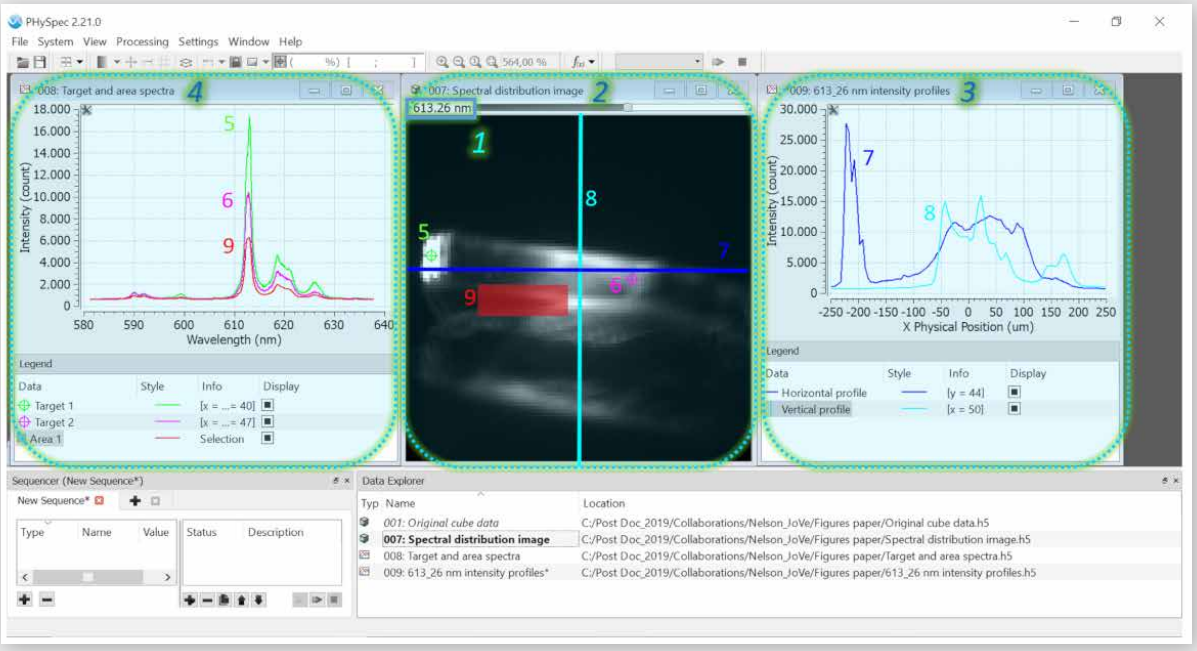
Hyperspectral Imaging as a Tool to Study Optical Anisotropy in Lanthanide-Based Molecular Single Crystals

Emille M. Rodrigues, Nelson Rutajoga, David Rioux, Jacob Yvon-Leroux, Eva Hemmer

jove
JOURNAL OF VISUALIZED EXPERIMENTS

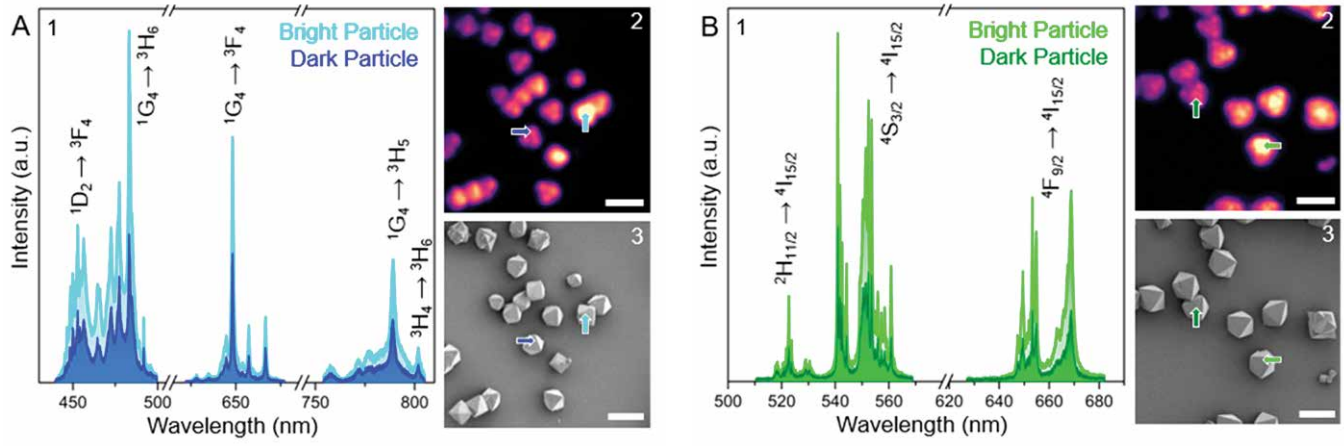


Screenshot of the PHySpec software showing the hyperspectral cube data (lanthanide (Ln3+)-based molecular single crystal) analysis process. Diverse spectral analysis methods can be applied on the acquired hyperspectral cube: 1 shows the wavelength which was chosen for the spectral image distribution shown in 2; 3 shows the 613.26 nm horizontal (7) and vertical (8) intensity profiles; 4 shows the emission spectra extracted from the targets 5 and 6 as well as from the area highlighted in 9

Microwave-Assisted Solvothermal Synthesis of Upconverting and Downshifting Rare-Earth-Doped LiYF4 Microparticles

Nikita Panov, Riccardo Marin, and Eva Hemmer

Inorganic Chemistry



Single-particle photoluminescence studies on (A) Yb3+/Tm3+- and (B) Yb3+/Er3+-codoped LiYF4 microparticles: (1) upconversion emission spectra extracted from hyperspectral cubes (corresponding images are shown in (2)) at two selected regions of interest (ROIs) exhibiting brighter or dimmer emission from RE3+- doped LiYF4 microparticles (selected ROIs are marked with bright and dark blue and green arrows, respectively, in (2) and (3)); (2) false-color hyperspectral images of the characteristic blue Tm3+ (440-500 nm) and green Er3+ (510-570 nm) emissions (color code: dark colors indicate low emission intensity, bright colors indicate high emission intensity); (3) SEM micrographs of the same microparticles subjected to optical investigation. Scale bars: 5 µm.