

Dichroic Mirrors and Filters for SPECTRA, CELESTA, and ZIVA Light Engines®

In fluorescence microscopy, [the filter set](#), consisting of excitation and emission bandpass filters and a dichroic beamsplitter, plays a critical role. It performs the essential functions of directing excitation light from the light source to the sample and then separating it on the basis of wavelength, from fluorescence emitted from the specimen. The filter set consists of excitation and emission bandpass filters and a dichroic beamsplitter. Optimized filter sets are critical because fluorescence emission from a microscopic specimen is many orders of magnitude ($>10^6$) weaker than the excitation from the light source. Recognizing optimized filter set specifications are critical for obtaining images with high signal:background contrast. Lumencor has developed uniquely high performance, multiband dichroic beamsplitters and multiband and single band emission filters for use with our [SPECTRA](#), [CELESTA](#), and [ZIVA](#) light engines®. These light engines are setting the standard for high performance, high brightness, turn-key solutions in solid-state lighting for life and industrial sciences.

Filters and Dichroics for SPECTRA Light Engines

Product Name	Part Number	Description	Note
SPECTRA VCGRnIR pentaband emitter	10-10859	Pentaband emission filter optimized for fluorescence microscopy using excitation from VCGRnIR output channels of SPECTRA light engine. 25 mm diameter in 3.5 mm mounting ring	For detection of DAPI, FITC, TRITC, Cy5, Cy7 and spectrally similar fluorophores in combination with pentaband dichroic 10-10860.
SPECTRA VCGRnIR pentaband dichroic	10-10860	Pentaband dichroic optimized for fluorescence microscopy using excitation from VCGRnIR output channels of SPECTRA light engine. Unmounted, 25 mm x 36 mm x 1 mm	For use in combination with pentaband emitter 10-10859.
SPECTRA BTY triple band emitter	10-10836	Triple band emission filter optimized for fluorescence microscopy using excitation from BTY output channels of SPECTRA light engine. 25 mm diameter in 3.5 mm mounting ring	For detection of CFP, YFP, mCherry and spectrally similar fluorophores in combination with triple band dichroic 10-10837.
SPECTRA BTY triple band dichroic	10-10837	Triple band dichroic optimized for fluorescence microscopy using excitation from BTY output channels SPECTRA light engines. Unmounted, 25 mm x 36 mm x 1 mm	For use in combination with triple band emitter 10-10836.

Filters and Dichroics for CELESTA and ZIVA Light Engines

Product Name	Part Number	Description	Note
CELESTA/ZIVA VCGRnIR pentaband emitter	10-10857	Pentaband emission filter optimized for fluorescence microscopy using excitation from VCGRnIR output channels of CELESTA and ZIVA light engines. 25 mm diameter in 3.5 mm mounting ring	For detection of DAPI, FITC, TRITC, Cy5, Cy7 and spectrally similar fluorophores in combination with pentaband dichroic 10-10858.
CELESTA/ZIVA VCGRnIR pentaband dichroic	10-10858	Pentaband dichroic optimized for fluorescence microscopy using excitation from VCGRnIR output channels of CELESTA and ZIVA light engines. Unmounted, 25 mm x 36 mm x 1 mm	For use in combination with pentaband emitter 10-10857.
CELESTA/ZIVA BTY triple band emitter	10-10834	Triple band emission filter optimized for fluorescence microscopy using excitation from B and T output channels of CELESTA and ZIVA light engines. 25 mm diameter in 3.5 mm mounting ring	For detection of CFP, YFP, mCherry and spectrally similar fluorophores in combination with triple band dichroic 10-10835.
CELESTA/ZIVA BTY triple band dichroic	10-10835	Triple band dichroic optimized for fluorescence microscopy using excitation from B and T output channels of CELESTA and ZIVA light engines. Unmounted, 25 mm x 36 mm x 1 mm	For use in combination with triple band emitter 10-10834.
Single band DAPI emitter, 440/37 nm	10-10871	Single band DAPI emitter, 440/37 nm, in mounting ring, 25.4 mm dia.	For detection of DAPI and spectrally similar fluorophores in combination with pentaband dichroic 10-10858.
Single band FITC emitter, 510/31 nm	10-10872	Single band FITC emitter, 510/31 nm, in mounting ring, 25.4 mm dia.	For detection of FITC, GFP and spectrally similar fluorophores in combination with pentaband dichroic 10-10858.
Single band TRITC emitter, 590/50 nm	10-10873	Single band TRITC emitter, 590/50 nm, in mounting ring, 25.4 mm dia.	For detection of TRITC, Cy3 and spectrally similar fluorophores in combination with pentaband dichroic 10-10858.
Single band Cy5 emitter, 691/64 nm	10-10874	Single band Cy5 emitter, 691/64 nm, in mounting ring, 25.4 mm dia.	For detection of Cy5 and spectrally similar fluorophores in combination with pentaband dichroic 10-10858.
Single band Cy7 emitter, 823/100 nm	10-10875	Single band Cy7 emitter, 823/100 nm, in mounting ring, 25.4 mm dia.	For detection of Cy7 and spectrally similar fluorophores in combination with pentaband dichroic 10-10858.
Single band emitter set DAPI/FITC/ TRITC/Cy5/Cy7	10-10888	Set consists of single band emitters 10-10871, 10-10872, 10-10873, 10-10874 and 10-10875	For detection of DAPI, FITC, TRITC, Cy5 and Cy7 and spectrally similar fluorophores in combination with pentaband dichroic 10-10858.

All emission filters and dichroics have standard dimensions and are supplied in an unmounted form. **Installation in filter cubes, filter wheels, or other instrumentation-specific mountings is required before use.**

The multiband emitters and dichroics are optimized for compatibility with the electronically selectable excitation outputs of **SPECTRA**, **CELESTA**, and **ZIVA** light engines® (Figure 1). This enables fast multicolor imaging without the need for filter wheels or other positioning devices to execute filter interchanges. Single bandpass filters are offered for use in situations where fluorescence crosstalk (e.g. detection of FITC fluorescence derived from violet (DAPI) excitation) confounds identification of fluorescently labeled components of the specimen.

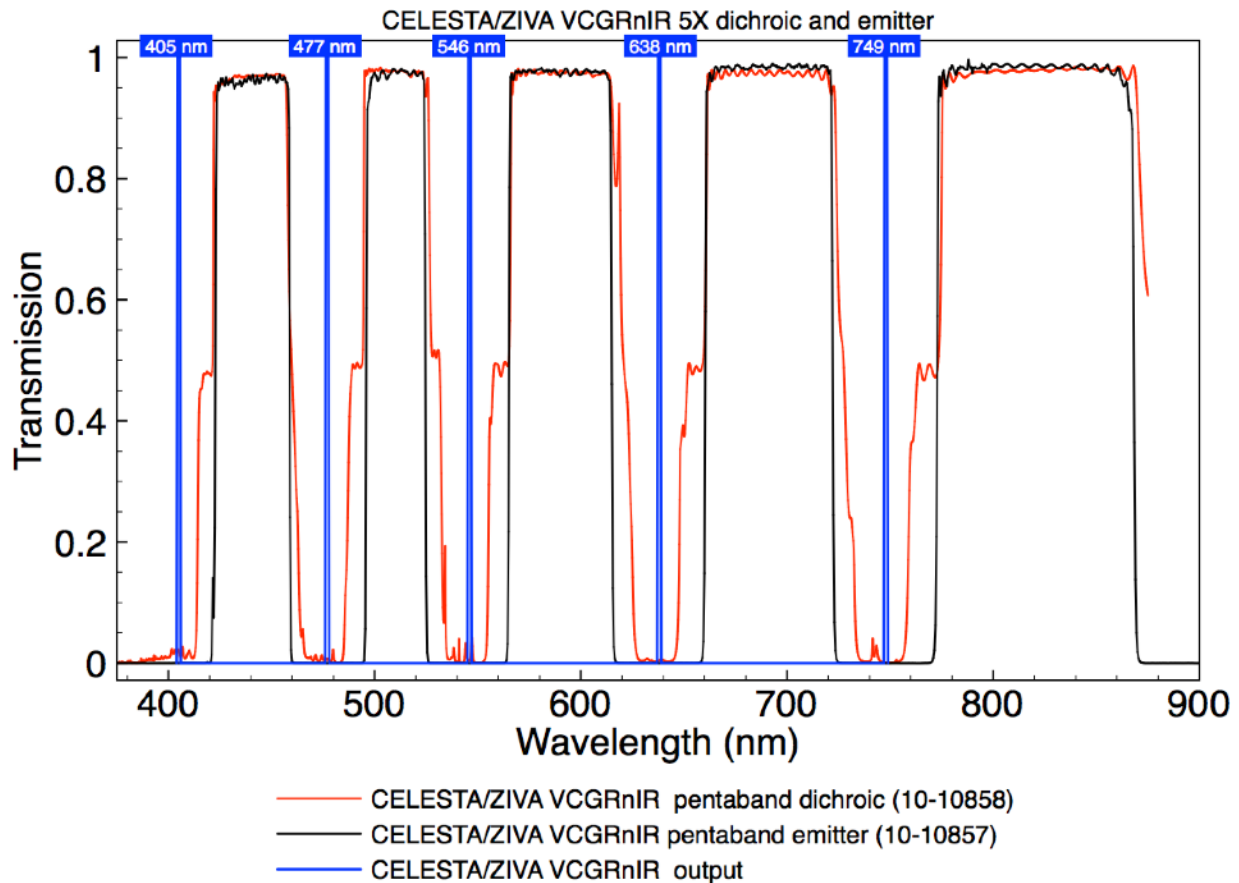


Figure 1. Transmission spectra of CELESTA/ZIVA VCGRnIR pentaband dichroic and emitter superimposed on the violet, cyan, green, red, and near-infrared output lines of the CELESTA and ZIVA light engines®.



Lumencor’s Earth Day Light Microscopy Imaging Competition is in full swing, offering the opportunity to win up to \$10,000 worth of state-of-the-art, solid-state lighting! Submit your images today and help us celebrate and promote a brighter, greener planet through the use of mercury-free illumination. Qualifying images must be acquired using Lumencor light engines.