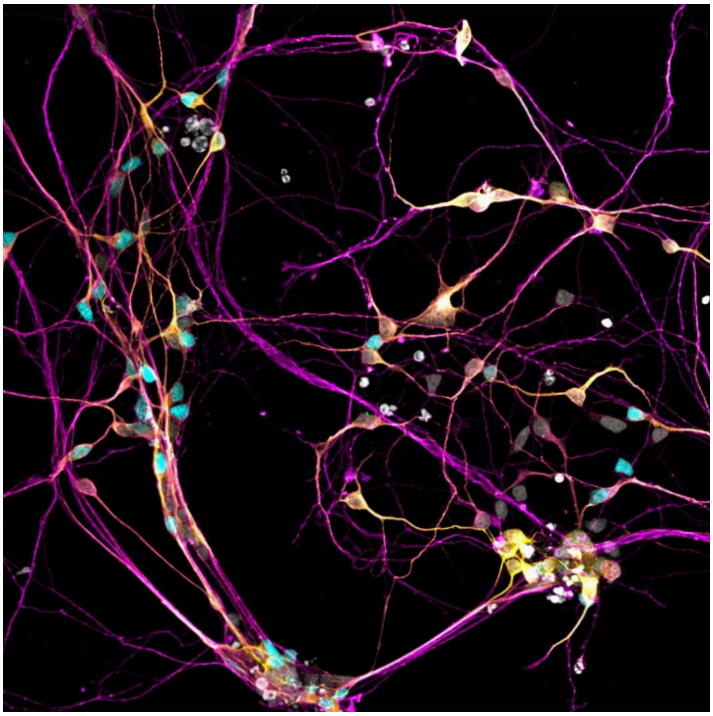


Image by CrestOptics

Integrated Array of Solid-State Lasers

Confocal • MERFISH • Super-Resolution • Optogenetics • FRAP • DNA-PAINT

The next generation of solid-state illumination is here. Lumencor's CELESTA and CELESTA quattro Light Engines offer individually addressable solid-state lasers with advanced electronic control to deliver unprecedented optical power and performance.

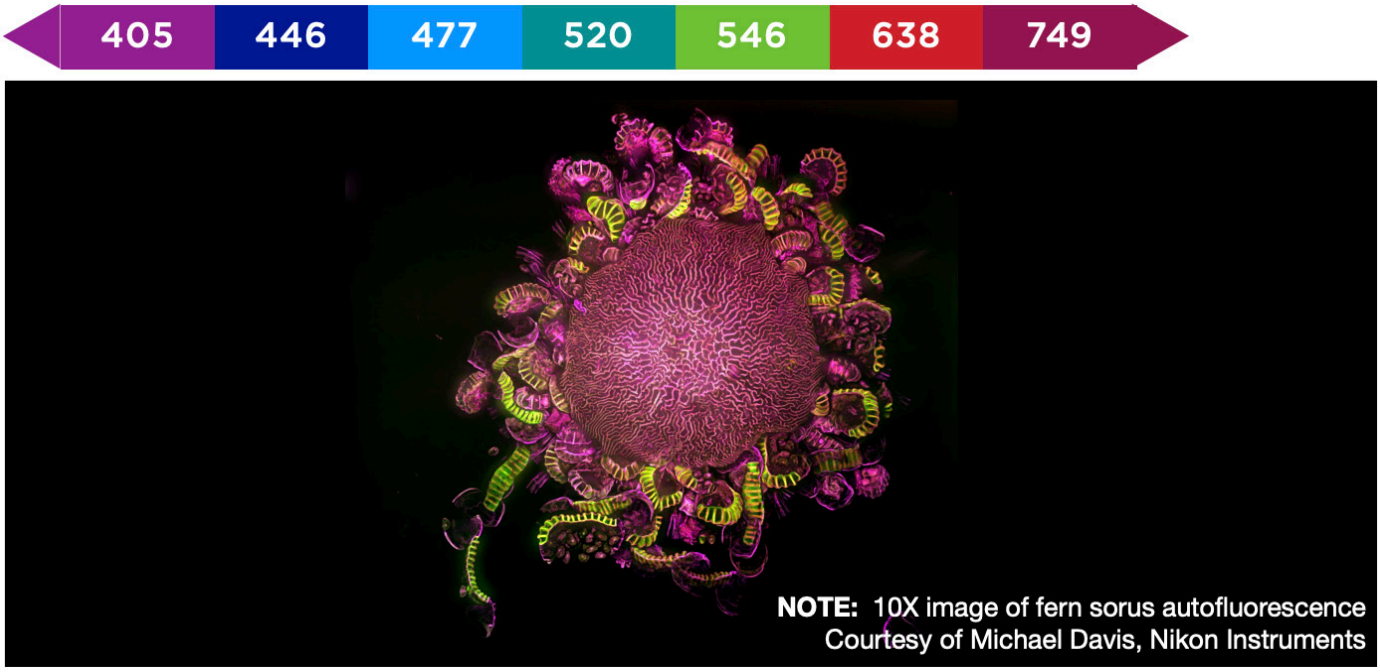
The CELESTA Light Engine delivers ~1,000 milliwatts of output power at the distal end of a 1.5 mm diameter optical fiber from each of its seven individually addressable lasers. The CELESTA quattro Light Engine provides an economical 4- or 5-line option with the same output power specifications. The laser outputs are refined by bandpass filters and merged into a common optical train directed to the light output port on the front panel. The light output port has a built-in adapter for facile connection to microscopes and other bioanalytical instruments through a SMA-terminated optical fiber. All these capabilities are assembled in a compact bench top device with a space-saving (15 cm x 35 cm) footprint.

CELESTA Light Engines feature an advanced control system based on an onboard computer with an embedded command library. This allows control using simple and intuitive text string commands sent to the Light Engine via USB/RS-232 or TCP serial protocols. These commands give access not only to the basic control functions of light source selection, on/off switching and output intensity adjustment, but also to an extensive panel of operating status reports and advanced control features.

Long-term stability is sustained by active power control circuitry. The light output is monitored and lasers controlled using an internal feedback loop to maintain constant output over time. A convenient GUI provides access to many of the command library functions. CELESTA controls are also implemented in several commonly used image acquisition software packages. TTL trigger inputs are provided for all output lines for applications requiring fast (100 microseconds) switching.

As with all Lumencor products, OEM customization is available upon request.

For more information on the CELESTA Light Engine, please contact us at info@lumencor.com. To receive a purchase quotation for a CELESTA Light Engine, please submit our online quotation request form.



Features and Operating Characteristics:

Features	Details
Sources	Class 4 lasers
Wavelengths	CELESTA: 405, 446, 477, 520, 546, 638, 749 nm; CELESTA quattro: 405, 477, 546, 638 ± 2 nm
Bandpass Filters	Integrally installed bandpass filters for spectral output refinement
Output Power	~1000 milliwatts per laser at the distal end of a 1.5 mm diameter optical fiber
Light Delivery	SMA terminated fiber
Safety Interlocks	Laser output contingent on manual (key) and remote (electronic) interlocks
Operational Control	Onboard computer with server/client architecture and embedded command library
Control Interfaces	Source selection, light output on/off and intensity via serial interface (RS-232/USB or TCP) Source selection and light output on/off via TTL
Software	Onboard GUI or PC-based image acquisition software
Power Requirements	220 W (24V DC/9.2A) power supply included
Warranty	24 months
Dimensions (W x L x H) Weight	145 mm x 340 mm x 203 mm (5.7 in x 13.4 in x 8.0 in) 8.7 kg /19.1 lbs

[1] CELESTA quattro provides the option of a fifth output, an optional 749 nm laser.
[2] Control pod connects to light engine USB port and controls source selection, light output on/off and intensity settings