



light engines for a

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LIGHT **BYTES:** November 2019

ZIVA[®] versus CELESTA[®]: It's all about the fiber

In 2018, Lumencor introduced the **CELESTA light engine** incorporating 7 individually addressable laser light sources. The **ZIVA light engine**, introduced at the 2019 Society for Neuroscience meeting in Chicago, while similar in some respects, is distinctive in being designed to couple into smaller bore optical fibers, as summarized below.

	ZIVA Light Engine	CELESTA Light Engine
Specified output fiber diameter (numerical aperture)*	0.1 mm (0.1)	1.5 mm (0.39)
Output power per laser line at distal end of fiber	~100 mW	~1000 mW
Brightness# per laser line	~400 W/mm ² sr	~1.1 W/mm ² sr

*multimode optical fiber. #Also referred to as radiance. Units: Watts per square millimeter per steradian.

The output of the ZIVA light engine* is suitable for structured illumination microscopy (SIM) and other super-resolution microscopy techniques. In these applications, it provides an alternative to more costly and hard-to-align single mode laser sources. The larger illumination field of the CELESTA light engine is preferred for applications such as spinning disk confocal microscopy, MERFISH or smFISH.

*Custom OEM configurations available upon request

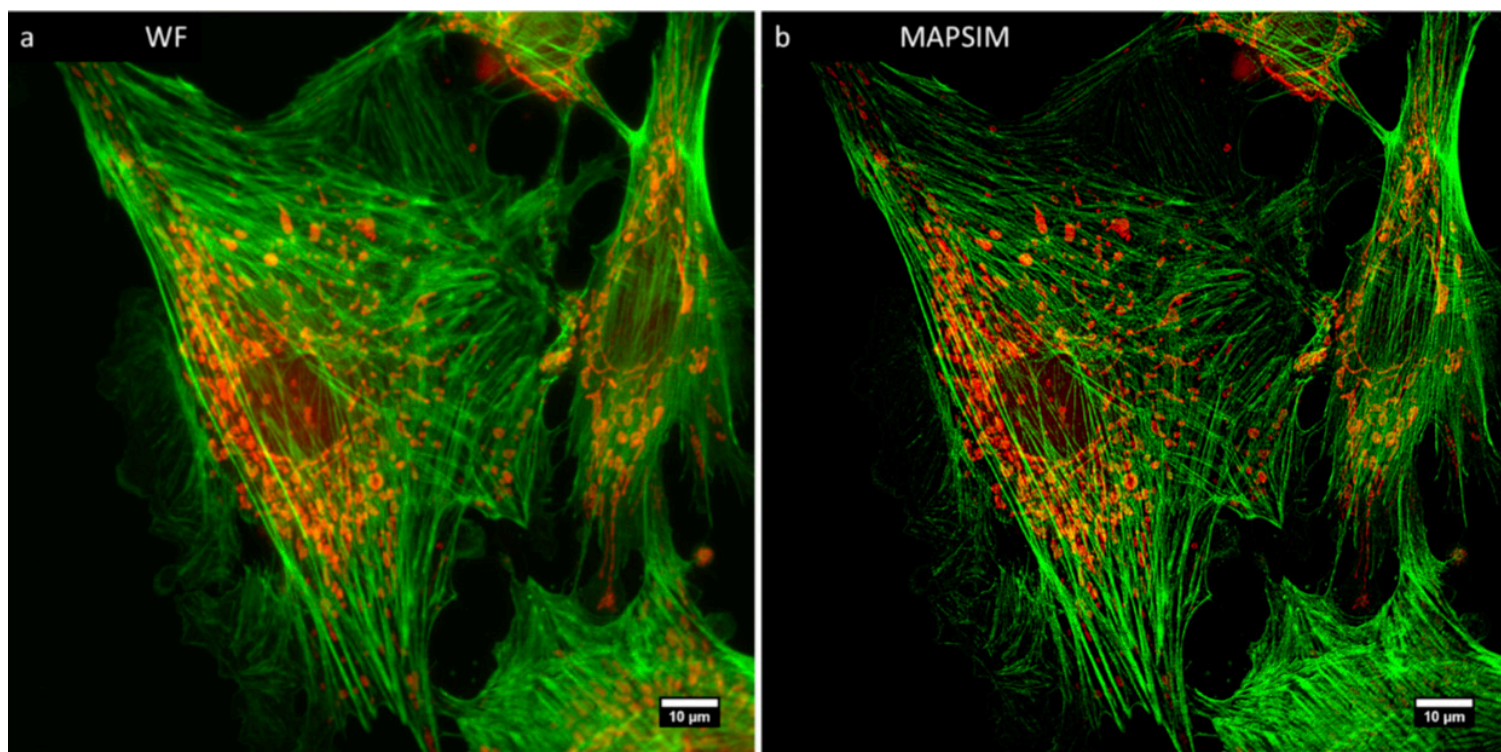


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Common Features of ZIVA and CELESTA Light Engines

- Same 7 laser lines (405 nm, 446 nm, 477 nm, 520 nm, 546 nm, 638 nm, 749 nm)
- Same compact 15 cm x 35 cm footprint
- Same onboard microprocessor-based control and feedback interface
- Same laser safety interlock configuration



100X widefield (a) and structured illumination microscopy (b) images of actin (green) and mitochondria (orange) in fixed bovine pulmonary endothelial cells. From Pospíšil et al, *GigaScience* (2018) 8:1–12



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