

RETRA Light Engine

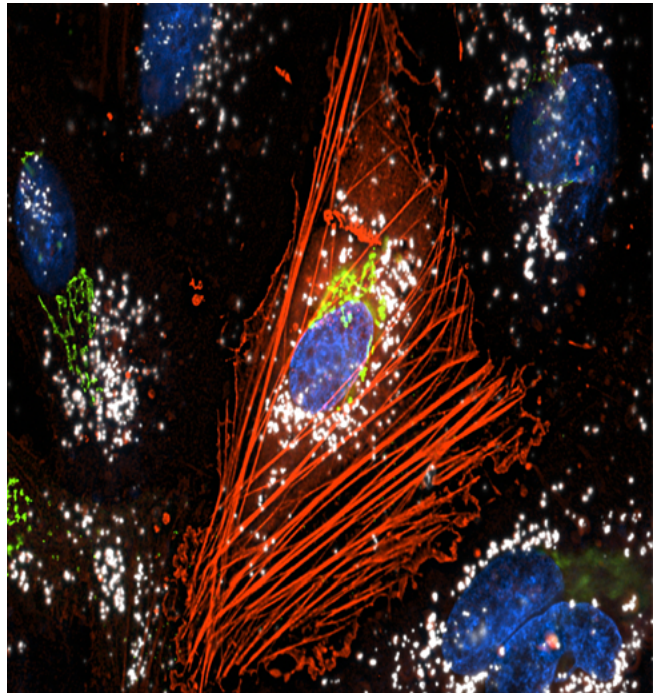


Image by Robert Zucker

Calcium Ratio Imaging

- 340 nm and 380 nm solid-state excitation sources with fast all-electronic switching
- Spectrally optimized for fura-2 excitation ratio imaging
- Source switching times ~50 μ s via TTL (~50 ms via serial)
- Liquid Light Guide (LLG) output coupling to microscope
- Independent control of source output intensities (5–100% in 1% steps)
- Low power consumption, fully pre-aligned, no routine maintenance

Lumencor's RETRA FURA Light Engine is the ideal light source for 340/380 nm fluorescence ratio imaging calcium using fura-2. Imaging of intracellular calcium has long been an important technique in cell biology, neuroscience and related fields. Excitation ratio imaging compensates for variations of indicator dye concentration within cells and between cells that might otherwise be erroneously interpreted as calcium level changes. Fura-2 is usually the preferred indicator dye for Ca^{2+} ratio imaging.

Historically, excitation ratio imaging has been conventionally implemented using a white light source in combination with mechanically alternated filters to select the desired excitation wavelengths (340 and 380 nm for fura-2). Lumencor's RETRA FURA Light Engine generates these excitation outputs from two discrete, electronically controlled, solid-state light sources. Electronic alternation of excitation wavelengths is faster and more reproducible than mechanical methods. In turn, this allows higher-speed data acquisition, providing increased temporal resolution for recording elementary processes in cell physiology.

A key requirement for live cell imaging is minimizing excitation light exposure to avoid phototoxicity and photobleaching effects. Independent electronic attenuation of the 340 and 380 nm outputs of the RETRA FURA Light Engine allows optimized image acquisition.

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

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

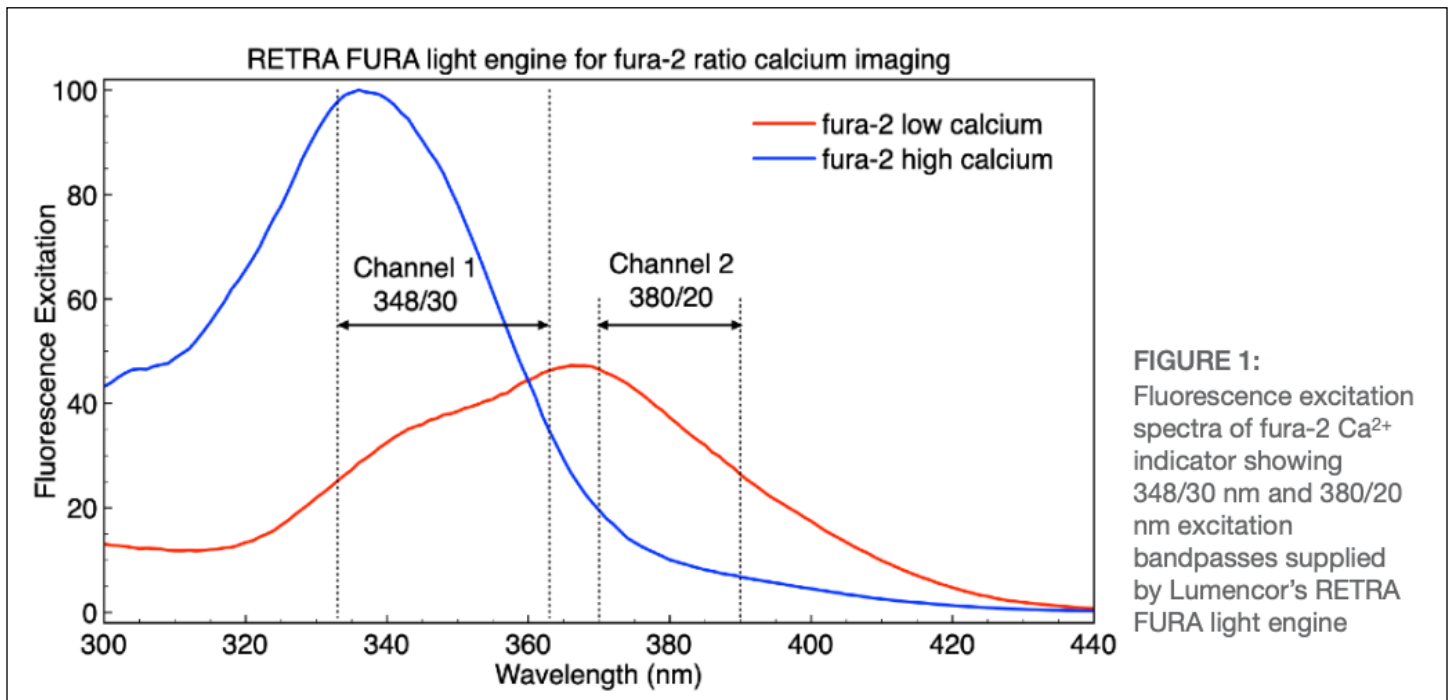


FIGURE 1: Fluorescence excitation spectra of fura-2 Ca²⁺ indicator showing 348/30 nm and 380/20 nm excitation bandpasses supplied by Lumencor’s RETRA FURA light engine

Features and Operating Characteristics:

Features	Details
Part Number	90-10607 [1]
Excitation Sources	2 independently-selectable solid-state sources
Bandpass Filters	Integrally installed 348/30 and 380/20 bandpass filters
Light Delivery	3 mm liquid light guide, 2 m length [2]
Control Interface	Source selection, light output on/off and intensity setting via RS232, USB or ethernet port. Source selection and light output on/off via TTL port.
Control Software	Onboard GUI or PC-based image acquisition software
Power Requirements	220 W (24V DC/9.2A) power supply
Warranty	24 months
Dimensions (W x L x H)	145 mm x 190 mm x 203 mm (5.7 in x 7.5 in x 8.0 in)
Weight	4.2 kg /9.5 lbs
Optional Accessories	BNC breakout cable for TTL triggering. Light Engine control pod [3]

[1] Includes Light Engine, DC power supply, power cord, liquid light guide and USB control cable. [2] Included with purchase. [3] Control pod connects to Light Engine USB port and controls source selection, light output on/off and intensity settings.