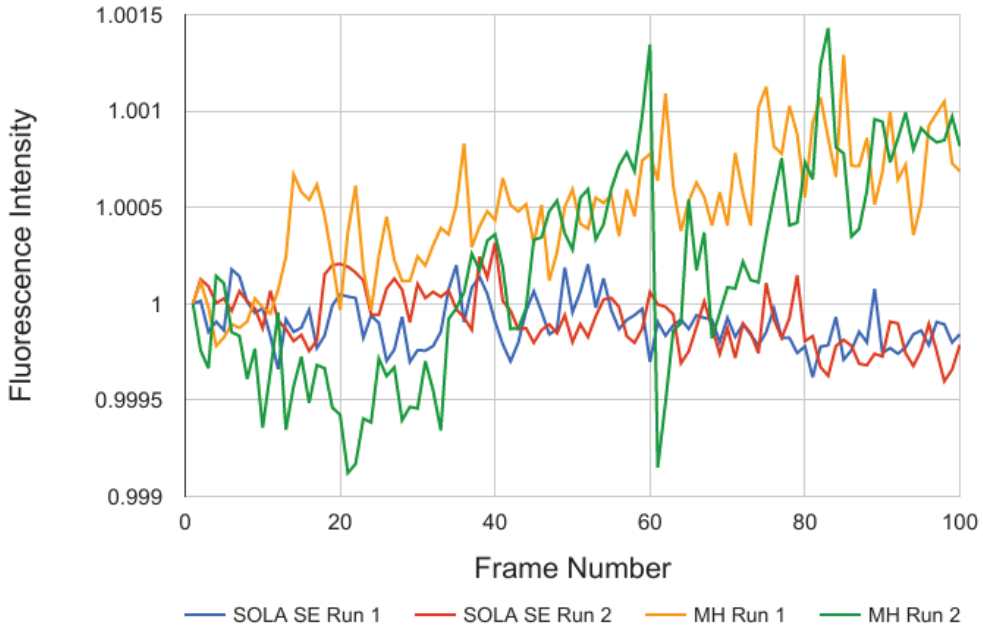
LIGHT **BYTES:** March 2017

Mercury by Another Name

Despite the name change, metal halide lamps are still essentially improved mercury vapour lamps. The concept of adding metallic iodides for spectral modification of mercury arc discharge lamps dates back to US patent 1,025,932 granted to Charles Steinmetz in 1912. However, a typical 120W metal halide bulb used for fluorescence microscopy contains about the same amount of mercury (~20 mg) as a 100W mercury short arc bulb used for the same application. Along with the mercury content itself, the associated bulb replacement costs and hazardous material handling constraints remain as well. Lumencor's solid state light engines eliminate these constraints entirely while delivering spectral content and output power at least equivalent to and in most cases superior to that of mercury and metal halide lamps. While these economic and environmental issues are clearly important, it is the performance advantages of solid state illumination such as temporal stability (see below) that are most readily appreciable to end users. Because as imaging techniques become more complex and multidimensional, data quality counts more than ever.



Temporal stability of fluorescence excited by SOLA SE light engine and 120W metal halide (MH) lamp

TECHNICAL DETAILS

- Specimen Bovine: Uniform FITC slide (Chroma)
- Microscope: Nikon Ti, 10X/0.3 NA, FITC filter set
- Light sources: **SOLA SE 365** (10% maximum output) or 120W metal halide (12.5% maximum output)
- Data collection: 100 frames, 50 ms exposure, 50 ms intervals (10 fps), ORCA-Flash4.0 sCMOS
- Fluorescence intensity = average gray level per frame, normalized to a value of 1.0 for the first frame.