

## LSFM IMAGING SPECKLE REDUCTION SUPERCONTINUUM LASER VS. LASER DIODES

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### The Application

**Light sheet fluorescence microscopy (LSFM) is an imaging technique in which the excitation beam is propagated through a cylindrical lens, which allows for illumination of a whole plane in the sample at once. Fluorescence is then collected at 90° from the optical axes of the illuminating beam.**

Traditional laser sources are not suitable for this application, since speckle due to light source coherence may be a problem in the image formation. Using a low spatial and temporal coherence source for this application may reduce speckle in the image and increase the quality of the images obtained. We generated scattering images of different samples, as shown in. **These images prove the suitability of the source for the application suggested.**

The main advantages of LSFM with respect to traditional microscopy techniques are as Optical sectioning, Speed and Reduced Photobleaching

BELOW. Light sheet microscopy images of a zebrafish using scattered light. Left image uses a CoolLed Laser diodes, Light Sheet thickness: 40  $\mu\text{m}$  Simultaneous emission at 405, 490, 580, 740nm conventional laser source. Right image uses the FYLA FYLA White light source Light Sheet thickness: 5  $\mu\text{m}$ .  $\Delta\lambda = 450\text{-}800\text{nm}$  showing a huge reduction of speckle noise and superior image quality

