MIR Supercontinuum Source

THORLABS

PRISM AWARDS WINNER

Thorlabs is proud to present the world's first commercially available femtosecond-laser-pumped MIR Supercontinuum Source. The SC4500 source emits over a wavelength range from approximately 1.3 µm to 4.5 µm (7700 cm^{-1} to 2200 cm^{-1}) and emits more than 300 mW of average output power in a collimated beam. The brightness of this source exceeds traditional Globars and even synchrotron sources by orders of magnitude.

The supercontinuum light is generated by pumping a dispersion-engineered indium fluoride (InF_3) fiber with a high-power femtosecond fiber laser. Unlike supercontinuum sources pumped in the long-pulse regime (picoseconds to nanoseconds), the spectrum of a femtosecond-pumped source is stable from pulse to pulse. As a result, our supercontinuum source provides output noise of less than 0.025% (RMS; 10 Hz to 1 MHz).

High brightness and low output noise make the SC4500 the ideal source for sensing and spectroscopy applications in the MIR. Applications range from environmental sensing of greenhouse gases to standoff detection in the field to spectroscopy in the lab using standard FTIR spectrometers.

An all-fiber design with proprietary fluoride-to-silica fiber splices offers robust, reliable, and maintenance-free performance.

Specifications

Wavelength Range	1.3 - 4.5 µm (7700 - 2200 cm^{-1})
Output Power	300 mW (Minimum)
MIR Output Power	110 mW (Minimum; 2.2 - 4.2 µm)
Output Power Stability	±1% (Room Temperature ±1 °C)
Intensity Noise	<0.025% (RMS; 10 Hz - 1 MHz)
Repetition Rate	50 MHz
Beam Output	Collimated; Single Spatial Mode
Dimensions	15.79" x 5.60" x 18.12" (401.0 x 142.2 x 460.2 mm)
Price	$ 49,500.00

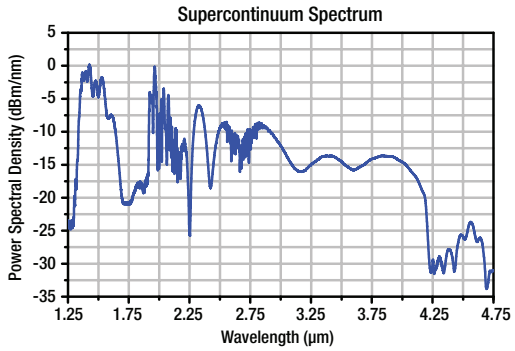
LASER RADIATION
AVOID EYE OR SKIN
EXPOSURE TO DIRECT
OR SCATTERED RADIATION
CLASS 4 LASER PRODUCT

Highlights

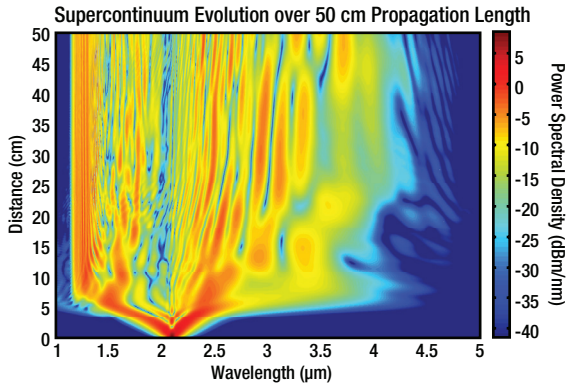
- Wavelength Coverage up to 4.5 µm
- <0.025% Intensity Noise Enables Highly Sensitive Measurements
- All-Fiber Design for Hands-Off, Reliable Operation
- Record-High Brightness Enables Remote and Standoff Detection
- Compatible with Standard FTIR Spectrometers

Applications

- Environmental Sensing
- Standoff Detection of Chemical and Biological Threats
- Absorption Spectroscopy with High Sensitivity
- Infrared Spectromicroscopy
- Ultrafast Spectroscopy
- Femtosecond Pulse Generation in the MIR



Typical power spectral density as a function of wavelength. Please note that this is a sample spectrum and that small variations may occur from unit to unit. The fine structure seen around 2.7 µm is due to water and CO_2 absorption in the beam path of the measurement setup. The sharp dropoff at 4.2 µm is also due to CO_2 absorption.



Simulation of supercontinuum generation in dispersion-engineered InF_3 fiber pumped by a 2.1 µm, 100 fs source. (See *Opt. Express* 2015 Nov 16; **23** (24): 30592 - 30602.)

For more information or to place an order, please contact us at techsupport@thorlabs.com.

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