

OVER 10 W TIME-AVERAGED POWER SUPERCONTINUUM GENERATION IN THE 1900-2600 NM SPECTRAL BAND

Michalska M., Grzes P., Swiderski J.

Institute of Optoelectronics, Military University of Technology, 2 Urbanowicza Street, 00-908 Warsaw, Poland

A mid-infrared supercontinuum generation with a time-averaged power of over 10 W, with wavelength coverage from 1.9 μm to over 2.6 μm , is reported. To broaden the bandwidth of the supercontinuum, a 1.55 μm all-fiber MOPA system delivering 1 ns pulses at a pulse repetition rate varied from 0.4 to 1 MHz was used as a seed source for one-stage thulium-doped fiber amplifier. The ratio of supercontinuum power for wavelengths longer than 2.4 μm was $\sim 30\%$, which is believed to be the one of the most efficient power distribution towards the red wavelengths in supercontinuum sources based on Tm-doped fibers.

The developed laser system was packed in the 125 mm x 252 mm x 344 mm rugged metal case with specialized high power FC/APC connector. All optical components and electronics were included in the package for a standalone unit requiring only power supply. It was tested for several months and no degradation of output parameters was observed.

The reported supercontinuum source is a cost effective tool for many applications requiring stable mid-infrared broadband beams with high average output power.