

Multimode supercontinuum generation in chalcogenide glass fibres. - DTU Orbit (08/11/2017)

Multimode supercontinuum generation in chalcogenide glass fibres.

Mid-infrared supercontinuum generation is considered in chalcogenide fibres when taking into account both polarisations and the necessary higher order modes. In particular we focus on high pulse energy supercontinuum generation with long pump pulses. The modeling indicates that when only a single polarisation in the fundamental mode is considered the obtainable supercontinuum bandwidth is substantially exaggerated compared to when both polarisations are taken into account. Our modeling shows that if the pump pulse is short enough (≤ 10 ps) then higher order modes are not important because of temporal walk-off. In contrast long pump pulses (≥ 40 ps) will efficiently excite higher order modes through Raman scattering, which will deplete the fundamental mode of energy and limit the possibility of obtaining a broadband supercontinuum.

General information

State: Published

Organisations: Department of Photonics Engineering, Fiber Sensors and Supercontinuum Generation

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Pages: 2513-2526

Publication date: 2016

Main Research Area: Technical/natural sciences

Publication information

Journal: Optics Express

Volume: 24

Issue number: 3

ISSN (Print): 1094-4087

Ratings:

BFI (2017): BFI-level 2

Web of Science (2017): Indexed yes

BFI (2016): BFI-level 2

Scopus rating (2016): CiteScore 3.48 SJR 1.487 SNIP 1.589

Web of Science (2016): Indexed yes

BFI (2015): BFI-level 2

Scopus rating (2015): SJR 1.976 SNIP 1.755 CiteScore 3.78

Web of Science (2015): Indexed yes

BFI (2014): BFI-level 2

Scopus rating (2014): SJR 2.349 SNIP 2.166 CiteScore 4.18

Web of Science (2014): Indexed yes

BFI (2013): BFI-level 2

Scopus rating (2013): SJR 2.358 SNIP 2.226 CiteScore 4.38

ISI indexed (2013): ISI indexed yes

Web of Science (2013): Indexed yes

BFI (2012): BFI-level 2

Scopus rating (2012): SJR 2.587 SNIP 2.145 CiteScore 3.85

ISI indexed (2012): ISI indexed yes

Web of Science (2012): Indexed yes

BFI (2011): BFI-level 2

Scopus rating (2011): SJR 2.579 SNIP 2.606 CiteScore 4.04

ISI indexed (2011): ISI indexed yes

Web of Science (2011): Indexed yes

BFI (2010): BFI-level 2

Scopus rating (2010): SJR 2.943 SNIP 2.466

Web of Science (2010): Indexed yes

BFI (2009): BFI-level 2

Scopus rating (2009): SJR 3.092 SNIP 2.669

Web of Science (2009): Indexed yes

BFI (2008): BFI-level 2

Scopus rating (2008): SJR 3.195 SNIP 2.393

Web of Science (2008): Indexed yes
Scopus rating (2007): SJR 3.27 SNIP 2.032
Web of Science (2007): Indexed yes
Scopus rating (2006): SJR 3.233 SNIP 2.326
Web of Science (2006): Indexed yes
Scopus rating (2005): SJR 3.334 SNIP 2.379
Web of Science (2005): Indexed yes
Scopus rating (2004): SJR 2.833 SNIP 2.499
Web of Science (2004): Indexed yes
Scopus rating (2003): SJR 2.688 SNIP 2.193
Web of Science (2003): Indexed yes
Scopus rating (2002): SJR 1.547 SNIP 1.673
Web of Science (2002): Indexed yes
Scopus rating (2001): SJR 1.442 SNIP 1.39
Web of Science (2001): Indexed yes
Scopus rating (2000): SJR 1.246 SNIP 0.714
Web of Science (2000): Indexed yes
Scopus rating (1999): SJR 1.381 SNIP 0.838

Original language: English

Electronic versions:

[oe_24_3_2513.pdf](#)

DOIs:

[10.1364/OE.24.002513](#)

Publication: Research - peer-review › Journal article – Annual report year: 2016