Optimizing Yb concentration of fiber amplifiers in the presence of transverse modal instabilities and photodarkening - DTU Orbit (09/11/2017)

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The Yb concentration of double-clad optical fiber amplifiers is numerically optimized with respect to maximizing the transverse modal instability threshold in the presence of absorption arising from photodarkening. The pump cladding area is scaled with the Yb concentration to approximately maintain the pump absorption in operation. It is found that approximate analytical expressions can predict the optimized concentration levels found in numerical simulations with sufficient accuracy to be useful in fiber design. (C) 2016 Optical Society of America

General information

State: Published
Organisations: Department of Photonics Engineering, Fiber Optics, Devices and Non-linear Effects
Authors: Lægsgaard, J. (Intern)
Pages: 1966-1970
Publication date: 2016
Main Research Area: Technical/natural sciences

Publication information

Journal: Applied Optics
Volume: 55
Issue number: 8
ISSN (Print): 1559-128X
Ratings:
BFI (2017): BFI-level 1
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 1.61 SJR 0.633 SNIP 1.095
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 0.826 SNIP 1.225 CiteScore 1.66
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 1.066 SNIP 1.534 CiteScore 2.04
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 0.991 SNIP 1.616 CiteScore 1.98
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 1.046 SNIP 1.496 CiteScore 1.79
ISI indexed (2012): ISI indexed no
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 1.044 SNIP 1.777 CiteScore 1.92
ISI indexed (2011): ISI indexed no
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 1.082 SNIP 1.636
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 2
Scopus rating (2009): SJR 1.222 SNIP 1.71
Web of Science (2009): Indexed yes
BFI (2008): BFI-level 2
Scopus rating (2008): SJR 1.334 SNIP 1.711
Web of Science (2008): Indexed yes
Scopus rating (2007): SJR 1.216 SNIP 1.613
Web of Science (2007): Indexed yes
Scopus rating (2006): SJR 1.135 SNIP 1.748

Web of Science (2006): Indexed yes
Scopus rating (2005): SJR 1.192 SNIP 1.767
Web of Science (2005): Indexed yes
Scopus rating (2004): SJR 1.053 SNIP 1.889
Web of Science (2004): Indexed yes
Scopus rating (2003): SJR 1.236 SNIP 1.679
Web of Science (2003): Indexed yes
Scopus rating (2002): SJR 1.221 SNIP 1.922
Web of Science (2002): Indexed yes
Scopus rating (2001): SJR 1.424 SNIP 1.724
Web of Science (2001): Indexed yes
Scopus rating (2000): SJR 1.102 SNIP 1.04
Scopus rating (1999): SJR 2.032 SNIP 0.99
Original language: English
OPTICS, GAIN SATURATION, DOPED SILICA, POWER, THRESHOLD, DEPENDENCE
Electronic versions:
manus.pdf. Embargo ended: 26/01/2017
DOIs:
10.1364/AO.55.001966

Source: FindIt
Source-ID: 2298577197
Publication: Research - peer-review › Journal article – Annual report year: 2016