Brought to you by INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA

Scopus Search Sources Lists SciVal ↗ Create account Sign in

Document details

‹ Back to results | 1 of 1

Export Download Print E-mail Save to PDF Add to List More... ›

Full Text View at Publisher

2019 14th IEEE Malaysia International Conference on Communication: Emerging Technologies in IoE and 5G, MICC 2019
December 2019, Article number 9037494, Pages 48-53
14th IEEE Malaysia International Conference on Communication, MICC 2019; Selangor; Malaysia; 2 December 2019 through 4 December 2019; Category numberCFP1927C-ART; Code 158634

Investigation of Q-switched and mode-locked erbium-doped fiber laser using graphene oxide-saturable absorber (Conference Paper)

Allah, B.A.H.G.[a], Eltaif, T.A.[b], Omer, M.[a], Khan, S.[a]

[a]International Islamic University, Department Electrical and Computer Engineering, Malaysia
[b]Faculty of Engineering and Technology, Multimedia University

Abstract

View references (19)

This paper experimentally investigates a simple configuration of an erbium-doped fiber laser (EDFL) cavity to generate mode-locked and Q-switched pulses utilize graphene oxide as saturable absorber (GO-SA). The GO-SA chip is a chip placed as a sandwich between two fiber ferrules and incorporates a ring laser cavity to generate a pulse train. Results indicate that the cavity of passive Q-switching EDFL is capable of providing pulses at 1532nm with a pulse width within a range of 5.32μs to 2.6μs, a repetition rate of 59.5kHz to 71.74kHz, a pulse energy of 364.64nJ to 668.95nJ, and an output power ranging from 0.062mW to 0.136mW, when the configuration is pumped by a 980nm laser diode, the power of which gradually increases from 21.7mW to 47.9mW. The output of the GO-SA needs to be connected to 200m of a single-mode fiber (SMF) to generate mode-locked pulses at 1559nm when the pump power is 157.6mW. As a result, an output power of 1.29mW is delivered with a repetition rate of 1.002MHz. © 2019 IEEE.

SciVal Topic Prominence

Topic: Saturable Absorbers | Erbium-Doped Fiber | Mode-locked Fiber Lasers

Prominence percentile: 99.458

Funding details

Funding sponsor	Funding number	Acronym
International Islamic University Malaysia	RIGS15-148-0148	IIUM
Multimedia University	MMUI/180246	MMU

Funding text

This work was supported by International Islamic University Malaysia, (RIGS15-148-0148) and Multimedia University, project SAP ID: MMUI/180246. The authors thank University Malaya for providing training and equipment for this research.

Metrics View all metrics ›

PlumX Metrics
Usage, Captures, Mentions, Social Media and Citations beyond Scopus.

Cited by 0 documents

Inform me when this document is cited in Scopus:

Set citation alert ›

Set citation feed ›

Related documents

Tunable Fe^{2+}:ZnSe passively Q-switched Ho^{3+}-doped ZBLAN fiber laser around 3 μm
Li, J. , Luo, H. , Wang, L.
(2015) Optics Express

2.78 μm passively Q-switched Er^{3+}-doped ZBLAN fiber laser based on PLD-Fe^{2+}:ZnSe film
Zhang, T. , Feng, G. , Zhang, H.
(2016) Laser Physics Letters

Compact watt-level passively Q-switched ZrF4-BaF<... fiber laser at 2.8 μm using Fe^{2+}:ZnSe saturable absorber mirror
Zhang, T. , Feng, G. , Zhang, H.
(2016) Optical Engineering

View all related documents based on references

Find more related documents in Scopus based on:

Authors ›

ISBN: 978-172814737-6
Source Type: Conference Proceeding
Original language: English
DOI: 10.1109/MICC48337.2019.9037494
Document Type: Conference Paper
Volume Editors: Beng G.K.,Arsad N.,Mansor M.F.

Sponsors: IEEE Malaysia Communication Society and Vehicular Technology Society Joint Chapter (Com-VT)
Publisher: Institute of Electrical and Electronics Engineers Inc.

References (19)

View in search results format >

All | Export | Print | E-mail | Save to PDF | Create bibliography

1 Wei, C., Zhu, X., Wang, F., Xu, Y., Balakrishnan, K., Song, F., Norwood, R.A., (...), Peyghambarian, N.
Graphene Q-switched 2.78 μm Er^{3+}-doped fluoride fiber laser

(2013) *Optics Letters*, 38 (17), pp. 3233-3236. Cited 125 times.
http://www.opticsinfobase.org/view_article.cfm?gotourl=http%3A%2F%2Fwww%2Eopticsinfobase%2Eorg%2FDirectPDFAccess%2F1745ABEA-B111-E817-D82
3233%2Epdf%3Fda%3D1%26id%3D260354%26seq%3D0%26mobile%3Dno&org=Elsevier%20Inc
doi: 10.1364/OL.38.003233

View at Publisher

2 Li, J.F., Luo, H.Y., He, Y.L., Liu, Y., Zhang, L., Zhou, K.M., Rozhin, A.G., (...), Turistyn, S.K.
Semiconductor saturable absorber mirror passively Q-switched 2.97 μm fluoride fiber laser

(2014) *Laser Physics Letters*, 11 (6), art. no. 065102. Cited 66 times.
http://iopscience.iop.org/1612-202X/11/6/065102/pdf/1612-202X_11_6_065102.pdf
doi: 10.1088/1612-2011/11/6/065102

View at Publisher

3 Wei, C., Zhu, X., Norwood, R.A., Peyghambarian, N.
Passively Q-switched 2.8-μm nanosecond fiber laser

(2012) *IEEE Photonics Technology Letters*, 24 (19), art. no. 6280620, pp. 1741-1744. Cited 54 times.
doi: 10.1109/LPT.2012.2215021

View at Publisher

4 Gao, L., Huang, W., Zhang, J.D., Zhu, T., Zhang, H., Zhao, C.J., Zhang, W., (...), Zhang, H.
Q-switched mode-locked erbium-doped fiber laser based on topological insulator Bi_2Se_3deposited fiber taper

(2014) *Applied Optics*, (23), pp. 5117-5122. Cited 28 times.
http://www.opticsinfobase.org/view_article.cfm?gotourl=http%3A%2F%2Fwww%2Eopticsinfobase%2Eorg%2FDirectPDFAccess%2F9778A60E-ED28-3827-F212
5117%2Epdf%3Fda%3D1%26id%3D297395%26seq%3D0%26mobile%3Dno&org=Elsevier%20Inc
doi: 10.1364/AO.53.005117

View at Publisher

5 Keller, U., Miller, D.A.B., Boyd, G.D., Chiu, T.H., Ferguson, J.F., Asom, M.T.
Solid-state low-loss intracavity saturable absorber for Nd:YLF lasers: An antiresonant semiconductor Fabry-Perot saturable abso

(1992) *Optics Letters*, 17 (7), pp. 505-507. Cited 554 times.
doi: 10.1364/OL.17.000505

View at Publisher

6 Iijima, S.
Helical microtubules of graphitic carbon

(1991) *Nature*, 354 (6348), pp. 56-58. Cited 35580 times.
doi: 10.1038/354056a0

View at Publisher

7 Sakakibara, Y., Rozhin, A.G., Kataura, H., Achiba, Y., Tokumoto, M.
Carbon nanotube-poly(vinylalcohol) nanocomposite film devices: Applications for femtosecond fiber laser mode lockers and opt

(2005) *Japanese Journal of Applied Physics, Part 1: Regular Papers and Short Notes and Review Papers*, 44 (4 A), pp. 1621-1625. Cited 92 times.
doi: 10.1143/JJAP.44.1621

View at Publisher

8 Wang, Y., Qu, Z., Liu, J., Tsang, Y.H.
Graphene oxide absorbers for watt-level high-power passive mode-locked Nd:GdVO $_4$ Laser Operating at 1

(2012) *Journal of Lightwave Technology*, 30 (20), art. no. 6269036, pp. 3259-3262. Cited 61 times.
doi: 10.1109/JLT.2012.2213334

View at Publisher

9 Zhu, G., Zhu, X., Balakrishnan, K., Norwood, R.A., Peyghambarian, N.
Fe^{2+}: ZnSe and graphene Q-switched singly Ho^{3+}-doped ZBLAN fiber lasers at 3 μm

(2013) *Optical Materials Express*, 3 (9), pp. 1365-1377. Cited 96 times.
http://www.opticsinfobase.org/DirectPDFAccess/E034A62A-9A8E-CFD3-95E6E19C46EB05C0_260261/ome-3-9-1365.pdf?da=1&id=260261&seq=0&mobile=no
doi: 10.1364/OME.3.001365

View at Publisher

10 Luo, Z., Zhou, M., Weng, J., Huang, G., Xu, H., Ye, C., Cai, Z.
Graphene-based passively Q-switched dual-wavelength erbium-doped fiber laser

(2010) *Optics Letters*, 35 (21), pp. 3709-3711. Cited 401 times.
http://www.opticsinfobase.org/view_article.cfm?
gotourl=http%3A%2F%2Fwww%2Eopticsinfobase%2Eorg%2FDirectPDFAccess%2FC9B420B2%2DA347%2D953D%2DE9A857929A3045EF%5F206974%2Epd
doi: 10.1364/OL.35.003709

View at Publisher

11 Liu, J., Wu, S., Yang, Q.-H., Wang, P.
Stable nanosecond pulse generation from a graphene-based passively Q-switched Yb-doped fiber laser

(2011) *Optics Letters*, 36 (20), pp. 4008-4010. Cited 201 times.
http://www.opticsinfobase.org/view_article.cfm?
gotourl=http%3A%2F%2Fwww%2Eopticsinfobase%2Eorg%2FDirectPDFAccess%2F9B682764%2D0CBB%2D3F2B%2DEEBEE9A63C85421F%5F222996%2Epd
doi: 10.1364/OL.36.004008

View at Publisher

12 Liu, J., Xu, J., Wang, P.
Graphene-based passively Q-switched 2 μm thulium-doped fiber laser

(2012) *Optics Communications*, 285 (24), pp. 5319-5322. Cited 72 times.
doi: 10.1016/j.optcom.2012.07.063

View at Publisher

13 Zen, D.I.M., Saidin, N., Damanhuri, S.S.A., Harun, S.W., Ahmad, H., Ismail, M.A., Dimyati, K., (...), Bhadra, S.K.
Mode-locked thulium-bismuth codoped fiber laser using graphene saturable absorber in ring cavity

(2013) *Applied Optics*, 52 (6), pp. 1226-1229. Cited 20 times.
http://www.opticsinfobase.org/ao/viewmedia.cfm?uri=ao-52-6-1226&seq=0
doi: 10.1364/AO.52.001226

View at Publisher

14 Liu, L., Hattori, H.T., Mironov, E.G., Khaleque, A.
Composite chromium and graphene oxide as saturable absorber in ytterbium-doped Q-switched fiber lasers

(2014) *Applied Optics*, (6), pp. 1173-1180. Cited 20 times.
http://www.opticsinfobase.org/view_article.cfm?gotourl=http%3A%2F%2Fwww%2Eopticsinfobase%2Eorg%2FDirectPDFAccess%2F8B6AF93B-0AFC-FF81-B90
1173%2Epdf%3Fda%3D1%26id%3D279525%26seq%3D0%26mobile%3Dno&org=Elsevier%20Inc
doi: 10.1364/AO.53.001173

View at Publisher

15 Fan, D., Mou, C., Bai, X., Wang, S., Chen, N., Zeng, X.

Passively Q-switched erbium-doped fiber laser using evanescent field interaction with gold-nanosphere based saturable absorbe

(2014) *Optics Express*, 22 (15), pp. 18537-18542. Cited 65 times.
http://www.opticsinfobase.org/view_article.cfm?gotourl=http%3A%2F%2Fwww%2Eopticsinfobase%2Eorg%2FDirectPDFAccess%2F98C509EF-B284-2173-523D
18537%2Epdf%3Fda%3D1%26id%3D297128%26seq%3D0%26mobile%3Dno&org=
doi: 10.1364/OE.22.018537

View at Publisher

16 Ismail, E.I., Kadir, N.A., Latiff, A.A., Ahmad, H., Harun, S.W.

Black phosphorus crystal as a saturable absorber for both a Q-switched and mode-locked erbium-doped fiber laser

(2016) *RSC Advances*, 6 (76), pp. 72692-72697. Cited 39 times.
http://pubs.rsc.org/en/journals/journalissues
doi: 10.1039/c6ra14008d

View at Publisher

17 Ahmad, H., Faruki, M.J., Tiu, Z.C., Thambiratnam, K.

Sub-nanometer tuning of mode-locked pulse by mechanical strain on tapered fiber

(2017) *Optics Communications*, 387, pp. 84-88. Cited 8 times.
doi: 10.1016/j.optcom.2016.11.039

View at Publisher

18 Ahmad, H., Zulkifli, A.Z., Kiat, Y.Y., Harun, S.W.

Q-switched fibre laser using 21 cm Bismuth-erbium doped fibre and graphene oxide as saturable absorber

(2014) *Optics Communications*, 310, pp. 53-57. Cited 9 times.
doi: 10.1016/j.optcom.2013.07.053

View at Publisher

19 Azooz, S.M., Harun, S.W., Ahmad, H., Halder, A., Paul, M.C., Pal, M., Bhadra, K.

Mode-locked thulium ytterbium co-doped fiber laser with graphene oxide paper saturable absorber

(2015) *Chinese Physics Letters*, 32 (1), art. no. 014204. Cited 10 times.
http://iopscience.iop.org/0256-307X/32/1/014204/pdf/0256-307X_32_1_014204.pdf
doi: 10.1088/0256-307X/32/1/014204

View at Publisher

Allah, B.A.H.G.; International Islamic University, Department Electrical and Computer Engineering, Malaysia;
email:belal@iium.edu.my
© Copyright 2020 Elsevier B.V., All rights reserved.

About Scopus

What is Scopus
Content coverage
Scopus blog
Scopus API
Privacy matters

Language

日本語に切り替える
切换到简体中文
切換到繁體中文
Русский язык

Customer Service

Help
Contact us

ELSEVIER

Terms and conditions ↗ Privacy policy ↗

Copyright © Elsevier B.V ↗. All rights reserved. Scopus® is a registered trademark of Elsevier B.V.
We use cookies to help provide and enhance our service and tailor content. By continuing, you agree to the use of cookies.

RELX