(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
12 February 2009 (12.02.2009)

PCT

(10) International Publication Number
WO 2009/018664 A3

(51) International Patent Classification:
H01S 3/08 (2006.01) *H01S 3/091* (2006.01)
H01S 3/067 (2006.01) *H01S 3/098* (2006.01)

(21) International Application Number:
PCT/CA2008/001437

(22) International Filing Date: 8 August 2008 (08.08.2008)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/935,353 9 August 2007 (09.08.2007) US

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(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:
— *with international search report*
— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

(88) Date of publication of the international search report:
26 March 2009

(54) Title: TUNABLE MODE-LOCKED LASER

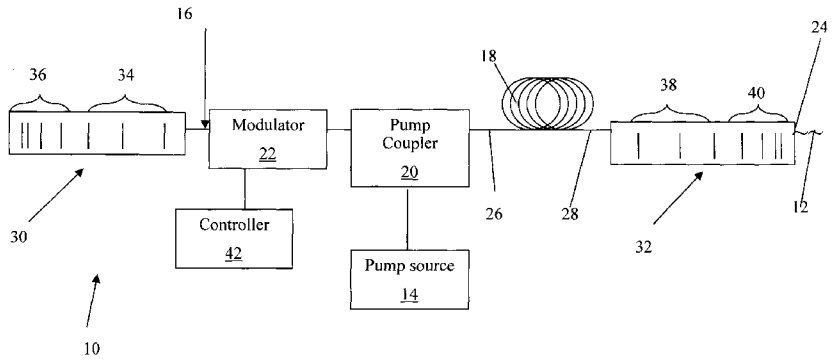

Figure 1

(57) Abstract: A tunable laser cavity for selectively emitting laser light (12) having a first wavelength and a second wavelength using pump light emitted by a pump light source (14). The tunable laser cavity includes an optical resonator (16), the optical resonator (16) having a configuration, optical properties and dimensions such that a first round-trip time of the laser light (12) having the first wavelength in the optical resonator differs from a second round-trip time of the laser light (12) having the second wavelength in the optical resonator (16); a gain medium (18) inserted in the optical resonator (16), the gain medium (18) being responsive to the pump light for converting the pump light to the laser light (12); a pump light input port (20) optically coupled to the gain medium (18) for receiving the pump light and conveying the pump light to the gain medium (18); an optical intensity modulator (22) inserted in the optical resonator (16) for absorbing a portion of the laser light (12) as the laser light (12) propagates back and forth in the optical resonator (16), the optical intensity modulator (22) having a light absorption coefficient that is modulated with a modulation period, the modulation period being selectively adjustable between a first modulation period value and a second modulation period value, the first and second round-trip times being substantially equal to a respective integer multiple of respectively the first and second modulation period values; and an output port (24) for releasing the laser light from the optical resonator (16).

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/CA2008/001437

A. CLASSIFICATION OF SUBJECT MATTER
IPC: ***H01S 3/08*** (2006.01) , ***H01S 3/067*** (2006.01) , ***H01S 3/091*** (2006.01) , ***H01S 3/098*** (2006.01)
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
H01S 3/08, H01S 3/067, H01S 3/091, H01S 3/098

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic database(s) consulted during the international search (name of database(s) and, where practicable, search terms used)
Databases: Delphion, West, Canadian Patents Database, IEEEXplore, Google
Keywords: mode-locked laser, tunable/tun* laser, first/second wavelength, optical resonator, optical intensity modulator, modulation period

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 6 631 145 B1 (Tamura et al.) 7 October 2003 (07-10-2003) *abstract; col. 4, lines 43-58; col. 6, line 58 - col. 10, line 34; col. 14, line 47 - col. 18, line 50; col. 23, lines 1-44; Fig. 19*	1-26
A	US 6 845 108 B1 (Liu et al.) 18 January 2005 (18-01-2005) *abstract; col. 2, line 20 - col. 6, line 65; col. 9, line 34 - col. 10, line 57*	1-26
A	US 7 046 704 B2 (Fischer) 16 May 2006 (16-05-2006) *abstract; col. 1, line 53 - col. 3, line 57*	1-26
A	Okhotnikov et al., "Mode-locked ytterbium fiber laser tunable in the 980-1070-nm spectral range", Optics Letters, Vol. 28, No. 17, pages 1522-1524, 1 September 2003 (01-09-2003) *whole document*	1-26
A	Sotobayashi et al., "Wavelength tunable passively mode-locked bismuth oxide-based erbium-doped fiber laser", Optics Communications, Vol. 237, pages 399-403, 6 April 2004 (06-04-2004) *whole document*	1-26

[X] Further documents are listed in the continuation of Box C. [X] See patent family annex.

* Special categories of cited documents :
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Date of the actual completion of the international search	Date of mailing of the international search report
26 January 2009 (26-01-2009)	2 February 2009 (02-02-2009)

Name and mailing address of the ISA/CA
Canadian Intellectual Property Office
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Authorized officer
Daniela Savin 819- 934-4890

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 03/043149 A1 (Duguay et al.) 22 May 2003 (22-05-2003) *abstract; page 2, line 4 - page 4, line 22; claims 1-14*	1-26
A	US 6 091 744 (Sorin et al.) 18 July 2000 (18-07-2000) *abstract; col. 1, line 30 - col. 3, line 54*	1-26

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CA2008/001437

Patent Document Cited in Search Report	Publication Date	Patent Family Member(s)	Publication Date
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