US009411102B2

(12) **United States Patent**
Gidon

(10) **Patent No.: US 9,411,102 B2**
(45) **Date of Patent: Aug. 9, 2016**

(54) **DEVICE FOR EMITTING AND GUIDING AN INFRARED RADIATION**

(75) Inventor: **Serge Gidon**, La Murette (FR)

(73) Assignee: **Commissariat A L'Energie Atomique Et Aux Energies Alternatives**, Paris (FR)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 42 days.

(21) Appl. No.: **14/112,707**

(22) PCT Filed: **Apr. 18, 2012**

(86) PCT No.: **PCT/IB2012/051947**

§ 371 (c)(1),
(2), (4) Date: **Oct. 18, 2013**

(87) PCT Pub. No.: **WO2012/143869**

PCT Pub. Date: **Oct. 26, 2012**

(65) **Prior Publication Data**

US 2014/0054460 A1 Feb. 27, 2014

(30) **Foreign Application Priority Data**

Apr. 19, 2011 (FR) 11 53380

(51) **Int. Cl.**

G01J 5/00	(2006.01)
G02B 6/10	(2006.01)
G02B 6/26	(2006.01)
G01N 21/3504	(2014.01)
G01N 33/00	(2006.01)
G01N 21/17	(2006.01)

(52) **U.S. Cl.**

CPC ***G02B 6/26*** (2013.01); ***G01N 21/3504*** (2013.01); ***G01N 33/0009*** (2013.01); ***G02B 6/102*** (2013.01); *G01N 21/1702* (2013.01)

(58) **Field of Classification Search**

CPC G01J 5/00; G01N 21/61; G02B 6/10; G02B 6/12

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

5,834,777	A *	11/1998	Wong	250/343
7,418,166	B1	8/2008	Kapur et al.	
2007/0120057	A1	5/2007	Tsai et al.	
2011/0073875	A1	3/2011	Griebenow et al.	
2011/0174799	A1*	7/2011	Ali et al.	219/446.1
2012/0267532	A1*	10/2012	Udrea et al.	250/338.5
2014/0291704	A1*	10/2014	Ali et al.	257/88

FOREIGN PATENT DOCUMENTS

WO WO-00/04616 A1 1/2000

OTHER PUBLICATIONS

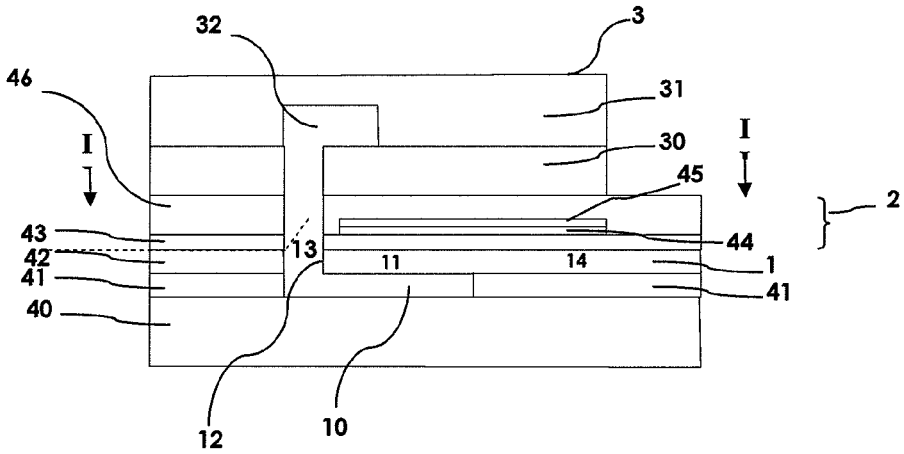
Kasberger, J., et al.; "*Grating-Coupling of Thermal Radiation as an Essential Element of a Fully Integrated IR-Absorption Sensor System*;" Proceedings Sensor + Test 2008; pp. 161-166; dated 2008; abstract retrieved on Nov. 21, 2013 from <http://www.jku.at/content/e263/e16099/e16086/e173791/?view=PUBD&feid=268&pub_id=27808>.

International Search Report and Written Opinion for Application No. PCT/IB2012/051947; dated Jul. 11, 2012.

* cited by examiner

Primary Examiner — Casey Bryant
(74) *Attorney, Agent, or Firm* — Alston & Bird LLP

(57) **ABSTRACT**

Device for emitting and guiding an infrared radiation comprising a waveguide (**1**) and means (**5**) for emitting an infrared radiation (R), characterized in that said means (**5**) for emitting an infrared radiation (R) are formed at the surface or inside the waveguide (**1**), in such a way that the radiation emitted is transmitted to the waveguide (**1**) which transports it.

10 Claims, 3 Drawing Sheets