

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
6 December 2007 (06.12.2007)

PCT

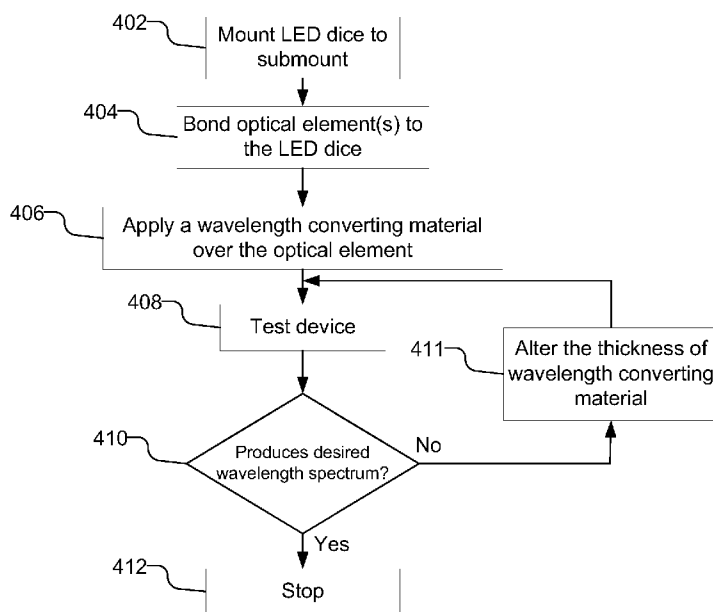
(10) International Publication Number  
**WO 2007/138554 A3**

- (51) International Patent Classification:  
*H01L 33/00* (2006.01)
- (21) International Application Number:  
PCT/IB2007/052029
- (22) International Filing Date: 30 May 2007 (30.05.2007)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:  
11/444,592 31 May 2006 (31.05.2006) US
- (71) Applicant (for MC only): **KONINKLIJKE PHILIPS ELECTRONICS N.V.** [NL/NL]; Groenewoudseweg 1, NL-5621 BA Eindhoven (NL).
- (71) Applicant (for all designated States except US): **PHILIPS LUMILEDS LIGHTING COMPANY, LLC** [US/US]; 370 West Trimble Road, San José, California 95131 (US).
- (72) Inventors: **PAOLINI, Steve**; c/o 370 West Trimble Road, San José, California 95131 (US). **CAMRAS, Michael, D.**; c/o 370 West Trimble Road, San José, California 95131 (US). **CHAO PUJOL, Oscar, A.**; c/o 370 West Trimble Road, San José, California 95131 (US). **STERANKA,**

- Frank, M.**; c/o 370 West Trimble Road, San José, California 95131 (US). **EPLER, John, E.**; c/o 370 West Trimble Road, San José, California 95131 (US).
- (74) Agents: **ROLFES, Johannes, G., A.** et al.; Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, 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, 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, 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, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

[Continued on next page]

(54) Title: COLOR CONTROL BY ALTERATION OF WAVELENGTH CONVERTING MEMBER



(57) Abstract: A light emitting device is produced by depositing a layer of wavelength converting material over the light emitting device, testing the device to determine the wavelength spectrum produced and correcting the wavelength converting member to produce the desired wavelength spectrum. The wavelength converting member may be corrected by reducing or increasing the amount of wavelength converting material. In one embodiment, the amount of wavelength converting material in the wavelength converting member is reduced, e.g., through laser ablation or etching, to produce the desired wavelength spectrum.

WO 2007/138554 A3



**Published:**

— *with international search report*

**(88) Date of publication of the international search report:**

14 February 2008

## INTERNATIONAL SEARCH REPORT

International application No

PCT/IB2007/052029

## A. CLASSIFICATION OF SUBJECT MATTER

INV. H01L33/00

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)

H01L

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

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, INSPEC

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2006/105478 A1 (CAMRAS MICHAEL D [US] ET AL) 18 May 2006 (2006-05-18) cited in the application paragraphs [0004], [0050] - [0052]; figures 4,3,2,1B paragraphs [0053], [0054]; figures 5,6 paragraph [0057]; figures 8,9	1-10
X	US 2003/089918 A1 (HILLER NORBERT [US] ET AL) 15 May 2003 (2003-05-15) abstract paragraphs [0002] - [0006], [0008] - [0013], [0016], [0020], [0036] paragraphs [0038], [0039], [0042] - [0044]; figures 2,3A-B paragraphs [0045] - [0048] paragraph [0052] claims 1,2,17,18	1-6,8-10

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

\* Special categories of cited documents:

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

- \*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- \*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- \*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- \*Z\* document member of the same patent family

Date of the actual completion of the international search

10 October 2007

Date of mailing of the international search report

30/10/2007

Name and mailing address of the ISA/

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Tinjod, Frank

## INTERNATIONAL SEARCH REPORT

International application No

PCT/IB2007/052029

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6 956 247 B1 (STOCKMAN STEPHEN A [US]) 18 October 2005 (2005-10-18)	8-10
A	column 4, lines 3-30; figure 3 column 6, lines 56-67; figure 5 column 7, lines 7-16	3
X	EP 1 394 867 A (SAMSUNG ELECTRO MECH [KR]) 3 March 2004 (2004-03-03)	8-10
A	abstract paragraphs [0001], [0003], [0005], [0007], [0008], [0010] - [0012] paragraph [0036]; figure 6 paragraph [0035]; figure 5 paragraphs [0046] - [0048]; figures 8A-E	3
X	US 2005/184638 A1 (MUELLER GERD O [US] ET AL) 25 August 2005 (2005-08-25)	8-10
A	paragraph [0033]; figure 5	3
X	US 2005/274967 A1 (MARTIN PAUL S [US] ET AL) 15 December 2005 (2005-12-15) cited in the application abstract paragraph [0049]; figure 8 paragraphs [0057] - [0059], [0061], [0062]; figure 11	8,10
A	US 2005/269582 A1 (MUELLER GERD O [US] ET AL) 8 December 2005 (2005-12-08) cited in the application paragraphs [0032], [0033]	3,7,9,10
A	GOLLER M ET AL: "Micromachining of ceramics with excimer laser radiation" JOURNAL OF THE EUROPEAN CERAMIC SOCIETY UK, vol. 12, no. 4, 1993, pages 315-321, XP002454421 ISSN: 0955-2219 abstract page 315, column 2, lines 1-4 page 316, column 1, lines 6-12,32-43 page 319, paragraph 3.4-LARGE-AREA-MACHINING - page 320; figures 7a-b page 320, paragraph CONCLUSIONS	3,4,7,9, 10

## INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/IB2007/052029

Patent document cited in search report	Publication date	Patent family member(s)	Publication date	
US 2006105478	A1	18-05-2006	EP 1657757 A2	17-05-2006
			JP 2006352061 A	28-12-2006
			US 2006105482 A1	18-05-2006
			US 2006258028 A1	16-11-2006
US 2003089918	A1	15-05-2003	AU 2002340310 A1	12-05-2003
			CA 2464141 A1	08-05-2003
			EP 1446838 A2	18-08-2004
			JP 2005508093 T	24-03-2005
			KR 20050042005 A	04-05-2005
			WO 03038902 A2	08-05-2003
US 6956247	B1	18-10-2005	EP 1601027 A2	30-11-2005
			JP 2005340850 A	08-12-2005
EP 1394867	A	03-03-2004	CN 1481032 A	10-03-2004
			JP 2004096113 A	25-03-2004
			KR 20040021028 A	10-03-2004
			US 2004041220 A1	04-03-2004
US 2005184638	A1	25-08-2005	EP 1566848 A2	24-08-2005
			JP 2005244226 A	08-09-2005
US 2005274967	A1	15-12-2005	EP 1605526 A2	14-12-2005
			JP 2006037097 A	09-02-2006
US 2005269582	A1	08-12-2005	CN 1977393 A	06-06-2007
			EP 1756877 A1	28-02-2007
			WO 2005119797 A1	15-12-2005
			JP 2006005367 A	05-01-2006
			KR 20070042956 A	24-04-2007