(19) World Intellectual Property Organization

International Bureau



(43) International Publication Date 22 November 2007 (22.11.2007)

(10) International Publication Number WO 2007/134300 A3

(51) International Patent Classification:

(21) International Application Number:

PCT/US2007/068902

(22) International Filing Date: 14 May 2007 (14.05.2007)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

60/747,158 12 May 2006 (12.05.2006) US

(71) Applicants (for all designated States except US): PHO-TON DYNAMICS, INC. [US/US]; 5970 Optical Court, San Jose, CA 95138 (US). THE UNITED STATES OF AMERICA AS REPRESENTED BY THE SECRE-TARY OF NAVY [US/US]; Washington, DC (US).

(72) Inventors; and

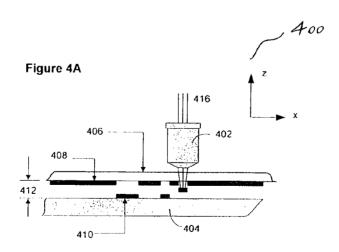
(75) Inventors/Applicants (for US only): BIRRELL, Steven, Edward [US/US]; 34 Annette Park Drive, Bozeman, MT 59715 (US). CABLE, Alan [GB/US]; 997 Edenbury Lane, San Jose, CA 95136 (US). VISSER, Joel [US/US]; 10900 Little Holland Road, Manhattan, MT 59741 (US). YOUNG, Lydia, J. [US/US]; 2266 St. Francis Drive, Palo Alto, CA 94303 (US). KWAK, Justin [KR/US]; 165 Campbell Drive, Mountain View, CA 94043 (US).

ELDRING, Joachim [DE/US]; 8136 Rolling Hills Drive, Bozeman, MT 59715 (US). BAILEY, Thomas, H. [US/US]; 731 Portofino Place, San Jose, CA 95136 (US). PIQUE, Alberto [US/US]; 1574 Eton Way, Crofton, MD 21114 (US). AUYEUNG, Raymond [US/US]; 3430 Kings Cross Road, Alexandria, VA 22303 (US).

- (74) Agents: TABIBI, Ardeshir et al.; Townsend And Townsend And Crew Llp, Two Embarcadero Center, 8th Floor, San Francisco, CA 94111-3834 (US).
- (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, 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, 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: DEPOSITION REPAIR APPARATUS AND METHODS



(57) Abstract: An apparatus includes integrated review, material removal and material deposition functions. The apparatus performs the review, material removal and material deposition operations along the same optical axis. The apparatus includes, in part, a camera, a pair of lenses, and one or more lasers. A first lens is used to focus the camera along the optical axis on a structure formed on the target substrate undergoing review. The first lens is also used to focus the laser beam on the structure to remove a material present thereon if the reviewed structure is identified as requiring material removal. The second lens is used to focus the laser beam on a ribbon to transfer a rheological compound from a recessed well formed in the ribbon to the structure if the reviewed structure is identified as requiring material deposition.





WO 2007/134300 A3



Published:

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

6 November 2008

- 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

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US07/68902

A. CLASSIFICATION OF SUBJECT MATTER IPC: G06K 9/00(2006.01);G02F 1/153(2006.01),1/15(2006.01);F21S 4/00(2006.01);H05B 39/04(2006.01)	
USPC: 382/100;359/267,265;362/225;250/214AL 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) U.S.: 382/100; 359/267, 265; 362/225; 250/214AL	
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched NONE	
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) EAST	
C. DOCUMENTS CONSIDERED TO BE RELEVANT	
Category * Citation of document, with indication, where a	appropriate, of the relevant passages Relevant to claim No.
X US 6,441,943 B1 (ROBERTS et al.) 27 August 2002 34-35; col. 12, lines 56-59; col. 14, lines 37-45; col. 34, lines 4-6.	
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	"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
"E" earlier application or patent published on or after the international filing date	considered novel or cannot be considered to involve an inventive step
"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)	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
"O" document referring to an oral disclosure, use, exhibition or other means	being obvious to a person skilled in the art
"P" document published prior to the international filing date but later than the priority date claimed	"&" document member of the same patent family
Date of the actual completion of the international search	Date of mailing of the international search report
01 August 2008 (01.08.2008)	1 29 AUG 2008 2 1 1
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (571) 273-3201	ANH HONG DO Telephone No. 571-272-7387

Form PCT/ISA/210 (second sheet) (April 2007)