

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
27 March 2008 (27.03.2008)

(10) International Publication Number
WO 2008/036984 A3

(51) International Patent Classification:

HOIB 1/24 (2006.01) C25D 5/54 (2006.01)
HOIB 1/22 (2006.01) C23C 18/02 (2006.01)
C23C 18/14 (2006.01) C25D 5/10 (2006.01)

[US/US]; 5561 Country Club Parkway, San Jose, California 95138 (US). **FLEMING, Robert** [US/US]; 6477 San Anselmo Way, San Jose, California 95119-1926 (US).

(21) International Application Number:

PCT/US2007/079345

(74) Agent: **MAHAMEDI, Van**; Suite 201, 4880 Stevens Creek Blvd., San Jose, CA 95129 (US).

(22) International Filing Date:

24 September 2007 (24.09.2007)

(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, 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

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

60/826,746 24 September 2006 (24.09.2006) US

(71) Applicant (for all designated States except US): **SHOCK-ING TECHNOLOGIES INC** [US/US]; Suite 1, 2161 OToole Avenue, San Jose, California 95131 (US).

(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),

(72) Inventors; and

(75) Inventors/Applicants (for US only): **KOSOWSKY, Lex**

[Continued on next page]

(54) Title: TECHNIQUE FOR PLATING SUBSTRATE DEVICES USING VOLTAGE SWITCHABLE DIELECTRIC MATERIAL AND LIGHT ASSISTANCE

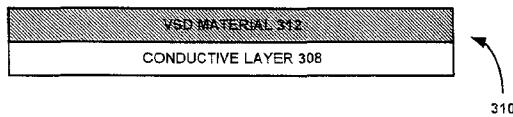


FIG. 3A

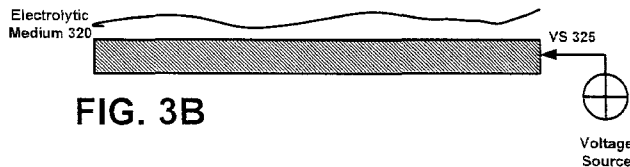


FIG. 3B

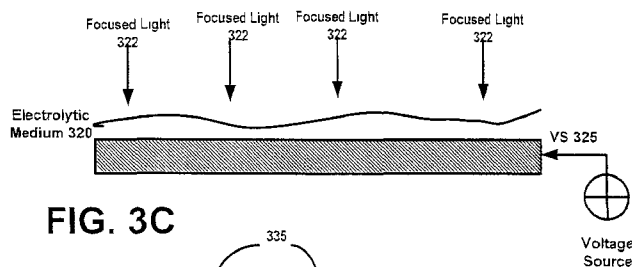


FIG. 3C

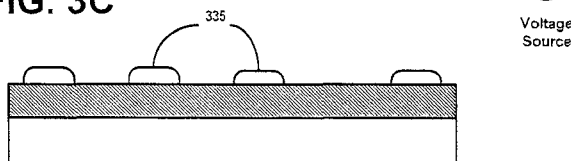


FIG. 3D

(57) Abstract: An electroplating process is performed using a substrate that includes a thickness of voltage switchable dielectric (VSD) material having photoactive components that are dispersed, mixed or dissolved in a binder of the VSD material. A pattern of conductive elements may be formed on the substrate by switching the VSD material from a dielectric state to a conductive state using, in part, voltage generated by directing light onto the thickness and VSD material.

WO 2008/036984 A3



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).

— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

Published:

— *with international search report*

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

24 December 2008

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2007/079345

A. CLASSIFICATION OF SUBJECT MATTER

INV. H01B1/24 H01B1/22 C23C18/14 C25D5/54 C23C18/02
C25D5/10

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)
HOIB HOIC C23C C25D

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 , WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P, X	WO 2007/062171 A (SHOCKING TECHNOLOGIES INC [US]; KOSOWSKY LEX [US]) 31 May 2007 (2007-05-31) claim 1; figures 7,8 page 4, paragraph 16 - page 5, paragraph 19 page 11, paragraph 53 - page 13, paragraph 59	12, 24
X	JP 2000 062076 A (UNIV KUMAMOTO) 29 February 2000 (2000-02-29) abstract <p style="text-align: center;">----- -/--</p>	1-7, 11-25

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
- "P1" 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.
- "&" document member of the same patent family

Date of the actual completion of the international search

30 October 2008

Date of mailing of the international search report

07/11/2008

Name and mailing address of the ISA/

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

Authorized officer

Gault, Nathalie

INTERNATIONAL SEARCH REPORT

International application No

PCT/US2007/079345

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	-& DATABASE WPI Week 200022 Thomson Scientific, London, GB; AN 1999-481796 XP002501636 & JP 2000 062076 A (UNIV KUMAMOTO) 29 February 2000 (2000-02-29) abstract -----	1-7, 11-25
X	JP 63 195275 A (CANON KK) 12 August 1988 (1988-08-12) abstract -----	18-21, 25
X	US 6 797 145 B2 (KOSOWSKY LEX [US]) 28 September 2004 (2004-09-28) cited in the application claims 1,2,5-8,12; figures 3-8 column 6, lines 44-51 column 8, lines 41-53 column 9, line 16 - column 11, line 38 -----	12, 24
A	US 5 807 509 A (SHRIER KAREN P [US] ET AL) 15 September 1998 (1998-09-15) column 9, lines 43-65; claim 1 -----	1-25

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2007/079345

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. As all required additional search fees were timely paid by the applicant, this international search report covers allsearchable claims.
2. As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.
3. As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-17,19-21

method and substrate thereof with layer of VSD made
conductive in part through direct voltage and in part
through light with subsequent electroplating step

2. claims: 18, 22-25

system, method and system thereof with layer of VSD made
conductive through light with simultaneous electroplating
step

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/US2007/079345

Patent document cited in search report	A	Publication date	Patent family member(s)	Publication date
WO 2007062171	A	31-05-2007	EP 1958271 A2 US 2007126018 A1	20-08-2008 07-06-2007
JP 2000062076	A	29-02-2000	OP 2942829 B2	30-08-1999
JP 63195275	A	12-08-1988	NONE	
us 6797145	B2	28-09-2004	AU 6531600 A WO 0117320 A1 US 2003079910 A1	26-03-2001 08-03-2001 01-05-2003
US 5807509	A	15-09-1998	AT 227881 T AU 698588 B2 AU 3233095 A BR 9508407 A CA 2194865 A1 CN 1423287 A CN 1154759 A DE 69528833 D1 DE 69528833 T2 EP 0771465 A1 JP 3905123 B2 JP 10503054 T WO 9602924 A1	15-11--2002 05-11--1998 16-02--1996 23-12--1997 01-02--1996 11-06--2003 16-07--1997 19-12--2002 28-08--2003 07-05--1997 18-04--2007 17-03--1998 01-02--1996