

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
21 December 2007 (21.12.2007)

PCT

(10) International Publication Number
WO 2007/144565 A3

(51) International Patent Classification:

H01L 31/18 (2006.01) **H01L 27/142** (2006.01)
B23K 26/08 (2006.01)

(21) International Application Number:

PCT/GB2007/001952

(22) International Filing Date: 25 May 2007 (25.05.2007)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

0611738.6 14 June 2006 (14.06.2006) GB

(71) Applicant (for all designated States except US): **EX-ITECH LIMITED** [GB/GB]; Oxford Instrument Park, Yarnton, Oxford OX5 1QU (GB).

(72) Inventor; and

(75) Inventor/Applicant (for US only): **BANN, Robert** [GB/GB]; Exitech Limited, Oxford Industrial Park, Yarnton, Oxford OX5 1QU (GB).

(74) Agent: **ROCK, Olaf, Colin**; Rock and Company, Trelawn, The Green, Cassington, Witney OX29 4DN (GB).

(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, 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.

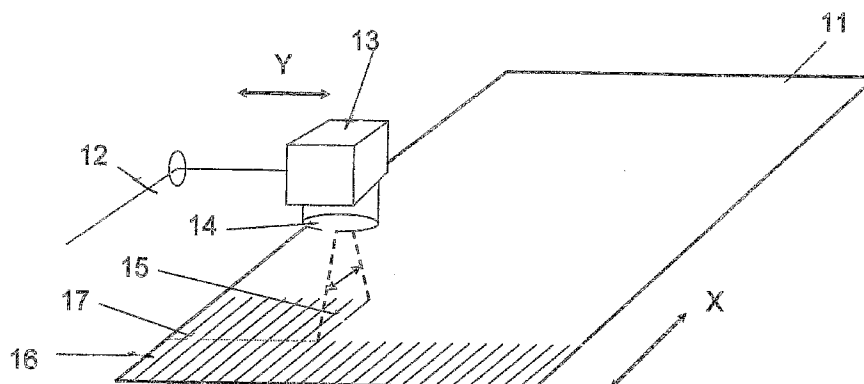
(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, 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).

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:
14 February 2008

(54) Title: PROCESS FOR LASER SCRIBING



(57) Abstract: A method for accurately laser scribing lines in thin coatings on a panel, typically a solar panel (11), utilising a laser beam scanner unit (13) including an optical system and a scanner lens characterised by the steps of: using the unit (13) to move a laser beam (12) in a first direction (X) to scribe sections of lines (15) on the panel (11) that are a fraction of the total line length required; moving the unit (13) continuously with respect to the panel (11) in a second direction (Y) perpendicular to the first direction (X) to form a band (16) of scribe lines; positioning the scanner unit (13) so that the starting position of scribe lines in each band next to be processed overlap exactly the finishing position ends of scribe lines in the last band that has been processed so that all scribe lines interconnect; and repeating the using and moving steps to form a plurality of parallel bands of scribe lines to cover the full area of the panel with continuous scribe lines.

WO 2007/144565 A3

INTERNATIONAL SEARCH REPORT

International application No
PCT/GB2007/001952

A. CLASSIFICATION OF SUBJECT MATTER
INV. H01L31/18 B23K26/08 H01L27/142

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 B23K C03C

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.
A	WO 01/41967 A (FIRST SOLAR LLC [US]; POWELL RICKY C [US]) 14 June 2001 (2001-06-14) abstract; claims; figures -----	1-8
A	JP 2006 041322 A (KANEKAFUCHI CHEMICAL IND) 9 February 2006 (2006-02-09) the whole document -----	1-8
A	JP 11 298017 A (KANEKAFUCHI CHEMICAL IND) 29 October 1999 (1999-10-29) the whole document -----	1-8
A	US 5 373 137 A (MCLAUGHLIN JOSEPH L [US]) 13 December 1994 (1994-12-13) abstract; claims; figures -----	1-8
-/--		

☒ 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

18 December 2007

Date of mailing of the international search report

27/12/2007

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

Hamdani, Fayçal

INTERNATIONAL SEARCH REPORT

International application No

PCT/GB2007/001952

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2003/209527 A1 (BORGESON FRANK A [US] ET AL BORGESON FRANK A [US] ET AL) 13 November 2003 (2003-11-13) cited in the application abstract; claims; figures -----	1-8
A	EP 0 213 546 A (FUJI ELECTRIC RES [JP]) 11 March 1987 (1987-03-11) abstract; claims; figures -----	1-8
A	EP 1 061 589 A (KANEKAFUCHI CHEMICAL IND [JP]) 20 December 2000 (2000-12-20) abstract; claims; figures -----	1-8

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/GB2007/001952

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 0141967	A	14-06-2001	AU 2056201 A US 6300593 B1	18-06-2001 09-10-2001
JP 2006041322	A	09-02-2006	NONE	
JP 11298017	A	29-10-1999	NONE	
US 5373137	A	13-12-1994	NONE	
US 2003209527	A1	13-11-2003	EP 1423229 A1 JP 2005519762 T TW 572804 B WO 03013778 A1 US 2003029848 A1	02-06-2004 07-07-2005 21-01-2004 20-02-2003 13-02-2003
EP 0213546	A	11-03-1987	DE 3676906 D1 JP 62040986 A US 4734550 A	21-02-1991 21-02-1987 29-03-1988
EP 1061589	A	20-12-2000	AU 766727 B2 US 6455347 B1	23-10-2003 24-09-2002