

(51) International Patent Classification:
H01L 31/042 (2006.01) *H01L 21/20* (2006.01)(21) International Application Number:
PCT/US2009/061280(22) International Filing Date:
20 October 2009 (20.10.2009)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
61/107,143 21 October 2008 (21.10.2008) US
12/580,719 16 October 2009 (16.10.2009) US(71) Applicant (for all designated States except US): **VARIAN SEMICONDUCTOR EQUIPMENT ASSOCIATES** [US/US]; 35 Dory Road, Gloucester, MA 01930 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **KELLERMAN, Peter, L.** [US/US]; 94 John Wise Avenue, Essex, MA 01929 (US). **CARLSON, Frederick** [US/US]; 68 Miller Road, Potsdam, NY 13676 (US). **SINCLAIR, Frank** [US/US]; 14 Royal Street, Quincy, MA 02170 (US).(74) Agent: **CHOI, Changhoon**; Varian Semiconductor Equipment Associates, Inc., 35 Dory Road, Gloucester, MA 01930 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, 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, PE, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

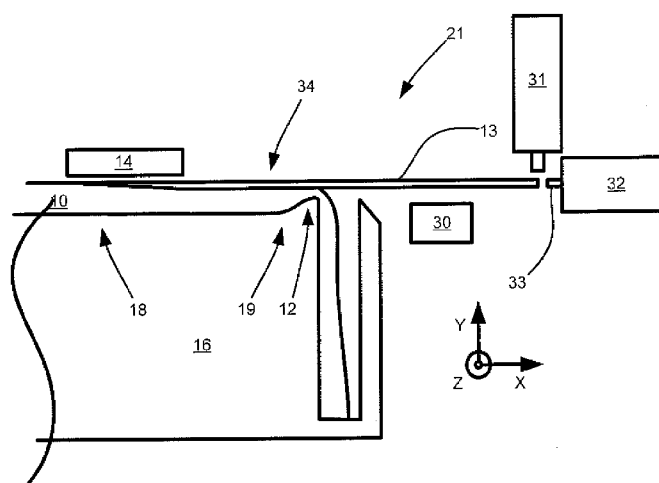
(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

- with international search report (Art. 21(3))
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))

(88) Date of publication of the international search report:
5 August 2010

(54) Title: REMOVAL OF A SHEET FROM A PRODUCTION APPARATUS

**FIG. 3**

(57) Abstract: A melt of a material is cooled and a sheet of the material is formed in the melt. This sheet is transported, cut into at least one segment, and cooled in a cooling chamber. The material may be Si, Si and Ge, Ga, or GaN. The cooling is configured to prevent stress or strain to the segment. In one instance, the cooling chamber has gas cooling.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2009/061280**A. CLASSIFICATION OF SUBJECT MATTER*****H01L 31/042(2006.01)i, H01L 21/20(2006.01)i***

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 31/042; B29B 7/90; B29C 67/16; B29C 69/00; C03B 17/06; C03B 19/00

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

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

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

eKOMPASS(KIPO internal) & Keywords: cooling, sheet, melt

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	JP 02-137913 A (OLYMPUS OPTICAL CO., LTD.) 28 May 1990 See claim 1 and fig. 1.	1-20
A	WO 2006-044929 A1 (CORNING INCORPORATED et al.) 27 April 2006 See claim 9 and fig. 6.	1-20
A	JP 03-093633 A (OLYMPUS OPTICAL CO., LTD.) 18 April 1991 See claim 1 and fig. 1.	1-20



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 application or patent 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 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

"&" document member of the same patent family

Date of the actual completion of the international search

08 JUNE 2010 (08.06.2010)

Date of mailing of the international search report

09 JUNE 2010 (09.06.2010)

Name and mailing address of the ISA/KR

Korean Intellectual Property Office
Government Complex-Daejeon, 139 Seonsa-ro, Seo-
gu, Daejeon 302-701, Republic of Korea

Facsimile No. 82-42-472-7140

Authorized officer

KIM Min Soo

Telephone No. 82-42-481-8249



INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/US2009/061280

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
JP 02-137913 A	28.05.1990	None	
WO 2006-044929 A1	27.04.2006	CN 101044100 A0	26.09.2007
		EP 1812354 A1	01.08.2007
		JP 2008-516888 A	22.05.2008
		JP 2008-516888 T	22.05.2008
		KR 10-2007-0067215 A	27.06.2007
		KR20070067215A	27.06.2007
		US 2006-0081009 A1	20.04.2006
JP 03-093633 A	18.04.1991	None	