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- (71) Applicant (for all designated States except US): **REFLECTIVITY, INC.** [US/US]; Suite 103, 3910 Freedom Circle, Santa Clara, CA 95054 (US).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): **PATEL, Satyadev, R.** [US/US]; Apt. #86, 5201 Laguna Oaks Drive, Elk Grove, CA 95758 (US). **HUIBERS, Andrew, G.** [US/US]; Apartment #7, 1760 California Street, Mountain View, Ca 94041 (US).
- (74) Agent: **MUIR, Gregory, R.**; Reflectivity, Inc., Suite 103, 3910 Freedom Circle, Santa Clara, CA 95054 (US).
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(54) Title: A METHOD FOR MAKING A MICROMECHANICAL DEVICE BY USING A SACRIFICIAL SUBSTRATE

(57) Abstract: A method is disclosed for forming a micromechanical device. The method includes fully or partially forming one or more micromechanical structures multiple times on first substrate (5a). A second substrate is bonded onto the first substrate so as to cover the multiple areas each having one or more micromechanical structures, so as to form a substrate assembly. The substrate assembly is then separated into individual dies, each die having the one or more micromechanical structures held on a portion (21) of the first substrate, with a portion of the second substrate bonded to the first substrate portion. Finally, the second substrate portion is removed from each die (3a-3d) to expose the one or more micromechanical structures on the first substrate portion. The invention is also directed to a method for forming a micromechanical device, including: forming one or more micromechanical structures in one or more areas on a first substrate; bonding caps onto the first substrate so as to cover the one or more areas each having one or more micromechanical structures, so as to form a substrate (10) assembly; after a period of time, removing the caps to expose the one or more micromechanical structures. During the period of time between bonding the caps and later removing the caps, the substrate assembly can be singulated, inspected, irradiated, annealed, die attached, shipped and/or stored.

# INTERNATIONAL SEARCH REPORT

International application No.

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**A. CLASSIFICATION OF SUBJECT MATTER**

IPC(7) : H01L 21/00, 21/30, 21/46, 21/301  
 US CL : 438/51, 456, 458, 464

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. : 438/51, 456, 458, 464, 50, 52, 53, 455, 457, 459, 460, 461, 462, 463, 465

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)  
 NONE

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A,E	US 6,383,833 B1 (SILVERBROOK) 07 May 2002 (07.05.2002), Figs. 5-8; col. 4, lines 6-24.	1-129
A,E	US 6,387,778 B1 (BONIN et al) 14 May 2002 (14.04.2002), see entire document.	1-129
A	US 5,923,995 A (KAO et al) 13 July 1999 (13.07.1999), see entire document.	1-129
A,P	US 2001/0041381 A1 (CHOI) 15 November 2001 (15.11.2001), see entire document.	1-129
A	JP 1-301178 A (TSUGAI et al) 05 December 1989 (5.12.1989), see entire document.	1-129
A	JP 5-95046 A (YAKAMI et al) 16 April 1993 (16.04.1993), see entire document.	1-129

Further documents are listed in the continuation of Box C.

See patent family annex.

* Special categories of cited documents:	
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"P" document published prior to the international filing date but later than the priority date claimed	

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Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. (703) 305-3230	Authorized officer <b>VIKTOR SMKOVIC</b> Telephone No. (703) 308-1782 <i>Bence Pank</i>
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