

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
1 May 2003 (01.05.2003)

PCT

(10) International Publication Number
WO 03/036736 A3

(51) International Patent Classification⁷: **H01L 45/00**,
H03H 9/00

(21) International Application Number: PCT/US02/34558

(22) International Filing Date: 28 October 2002 (28.10.2002)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/339,604 26 October 2001 (26.10.2001) US

(71) Applicant (for all designated States except US): **AXON TECHNOLOGIES CORP.** [US/US]; 7702 East Double-tree Ranch Road, Suite 300, Scottsdale, AZ 85258 (US).

(72) Inventor; and

(75) Inventor/Applicant (for US only): **KOZICKI, Michael, N.** [US/US]; 4624 South 23rd Street, Phoenix, AZ 85048 (US).

(74) Agent: **ZEMAN, Laura, J.**; Snell & Wilmer, L.L.P., 400 East Van Buren, One Arizona Center, Phoenix, AZ 85004-2202 (US).

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW.

(84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

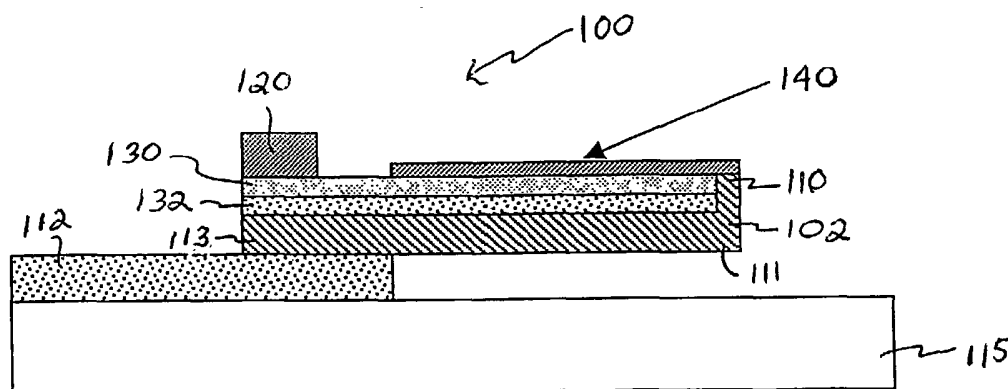
Published:

— with international search report

(88) Date of publication of the international search report:
18 December 2003

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: TUNABLE CANTILEVER APPARATUS AND METHOD FOR MAKING SAME



(57) Abstract: Mass distribution within programmable surface control devices is controlled by the presence or absence of an electrodeposition of metal and/or metal ions from a solid solution upon application of a suitable electric field. One such programmable surface control device includes a tunable cantilever assembly (100) whose resonant frequency is changed by depositing and dissolving an electrodeposit (140) on a surface of a solid electrolyte layer (130) using an electric field applied between sacrificial electrode (120) and conducting cantilever tip (110).



WO 03/036736 A3

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 02/34558

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 H01L45/00 H03H9/00

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)
IPC 7 H01L H03H B81B

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, PAJ, INSPEC, COMPENDEX

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 97 48032 A (AXON TECHNOLOGIES CORP; ARIZONA STATE UNIVERSITY) 18 December 1997 (1997-12-18) page 7, line 17 -page 10, line 5; figure 1 page 26, line 22 -page 27, line 19; figure 9	1-5, 11-13
A	CHEN G Y ET AL: "Adsorption-induced surface stress and its effects on resonance frequency of microcantilevers" JOURNAL OF APPLIED PHYSICS, vol. 77, no. 8, 15 April 1995 (1995-04-15), pages 3618-3622, XP002101782 ISSN: 0021-8979 the whole document	1,6,11, 19

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in 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

2 September 2003

Date of mailing of the international search report

09/09/2003

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

Köpf, C

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 02/34558

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 6 263 736 B1 (THUNDAT THOMAS G ET AL) 24 July 2001 (2001-07-24) column 3, line 66 -column 5, line 45; figure 1 -----	1,6,11, 19

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 02/34558

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 9748032	A	18-12-1997	US 5761115 A	02-06-1998
			AU 716236 B2	24-02-2000
			AU 3292697 A	07-01-1998
			CA 2261639 C	12-02-2002
			CN 1226990 A	25-08-1999
			EP 0939957 A2	08-09-1999
			JP 2000512058 T	12-09-2000
			KR 2000016088 A	25-03-2000
			US 5914893 A	22-06-1999
			US 5896312 A	20-04-1999
			WO 9748032 A2	18-12-1997
			US 6084796 A	04-07-2000
<hr/>				
US 6263736	B1	24-07-2001	NONE	
<hr/>				