# ${\bf (19)}\ World\ Intellectual\ Property\ Organization$

International Bureau





(43) International Publication Date 31 August 2006 (31.08.2006)

(10) International Publication Number WO 2006/091462 A3

- (51) International Patent Classification: *H01G 4/08* (2006.01) *H01C 1/12* (2006.01)
- (21) International Application Number:

PCT/US2006/005423

(22) International Filing Date:

15 February 2006 (15.02.2006)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

11/062,751 22 February 2005 (22.02.2005) US

- (71) Applicants (for all designated States except US): OAK-MITSUI INC. [US/US]; 80 1st Street, Hoosick Falls, New York 12090 (US). OHMEGA TECHNOLO-GIES, INC. [US/US]; 4031 Elenda Street, Culver City, California 90232 (US).
- (72) Inventors: ANDRESAKIS, John, A.; 60 Longwood Drive, Clifton Parks, NY 12065 (US). PRAMANIK, Pranabes, K.; 45 Longwood Drive, Clifton Park, NY 12065 (US). MAHLER, Bruce; 1936 Mccrea, Thousand Oaks, California 91362 (US). BRANDLER, Daniel; 4357 Wildwest Road, Moorpark, CA 93021 (US).
- (74) Agents: ROBERTS, Richard et al.; ROBERTS & ROBERTS, LLP, P.o. Box 484, Princeton, New Jersey 08542-0484 (US).

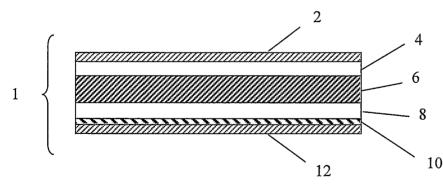
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, 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, 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
- (88) Date of publication of the international search report: 22 November 2007

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: MULTILAYERRED CONSTRUCTION FOR RESISTOR AND CAPACITOR FORMATION



electrical resistance material layer electroplated onto a second electrically conductive layer.

(57) Abstract: The invention concerns multilayered constructions useful for forming resistors and capacitors, for the manufacture of printed circuit boards or other microelectronic devices. The multilayered constructions comprise sequentially attached layers comprising: a first electrically conductive layer, a first thermosetting polymer layer, a heat resistant film layer, a second thermosetting polymer layer, and a nickel-phosphorus





WO 2006/091462

# INTERNATIONAL SEARCH REPORT

International application No. PCT/US 06/05423

A. CLASSIFICATION OF SUBJECT MATTER

IPC (8): H01G 4/08; H01C 1/12 (2007.01)

USPC: 338/309; 361/303

According to International Patent Classification (IPC) or to both national classification and IPC

#### FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

USPC: 361/303; 338/309

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched USPC: 361/303; 338/309 (text search - see terms below)

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

PubWEST (USPT,PGPB,EPAB,JPAB); Google Scholar

Search terms: Ni, P, nickel, phosphorus

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.			
Υ	US 6,693,793 B2 (KUWAKO et al.) 17 February 2004 (17.02.2004) col 3, ln 46; col 5, ln 66; col 6, ln 49, Abstract	1-20			
Y	US 2003/0231099 A1 (SCHEMENAUR et al.) 18 December 2003 (18.12.2003) para [0045]; [0002];	1-20			
Υ	US 5,155,655 A (HOWARD et al.) 13 October 1992 (13.10.1992) col 5, ln 61; col 17, ln 49; col. 6, ln 53; col 15, ln 4	4-8			
Υ	US 4,888,574 A (RICE et al.) 19 December 1989 (19.12.1989) Abstract	11-12			
Υ	US 5,689,227 A (NGUYEN et al.) 18 November 1997 (18.11.1997) col 2, ln 3; col 6, ln 60	13			

		Furthe	r documents are listed in the continuation of Box C.	[	
I	*	Special	categories of cited documents:	"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand
I			nt defining the general state of the art which is not considered particular relevance		date and not in conflict with the application but cited to understand the principle or theory underlying the invention
١	"E"	earlier a	pplication or patent but published on or after the international ate	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive
l	"L"	docume	nt which may throw doubts on priority claim(s) or which is		step when the document is taken alone
١			establish the publication date of another citation or other reason (as specified)	"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is
		docume means	nt referring to an oral disclosure, use, exhibition or other		combined with one or more other such documents, such combination being obvious to a person skilled in the art

means document published prior to the international filing date but later than

"&" document member of the same patent family

Date of mailing of the international search report

Date of the actual completion of the international search

**04** SEP 2007

29 May 2007 (29.05.2007)

the priority date claimed

Name and mailing address of the ISA/US

Mail Stop PCT, Attn: ISA/US, Commissioner for Patents

P.O. Box 1450, Alexandria, Virginia 22313-1450

Facsimile No. 571-273-3201

Authorized officer:

PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774