



(43) International Publication Date  
23 December 2010 (23.12.2010)

(10) International Publication Number  
**WO 2010/147701 A3**

(51) International Patent Classification:

A61N 1/32 (2006.01) A61N 1/26 (2006.01)  
A61N 1/04 (2006.01)

(21) International Application Number:

PCT/US2010/031917

(22) International Filing Date:

21 April 2010 (21.04.2010)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

61/187,098 15 June 2009 (15.06.2009) US

(71) Applicant (for all designated States except US): **ELC MANAGEMENT LLC** [US/US]; 767 Fifth Avenue, New York, New York 10153 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **IONITA-MAN-ZATU, Vasile** [US/US]; 256 Haypath Road, Old Bethpage, New York 11804 (US). **LOMBARDI, Jack** [US/US]; 20 Burn Lane, Massapequa, New York 11758 (US).

(74) Agents: **HAERTER, Martin W.** et al.; 155 Pinelawn Road, Suite 345 South, Melville, New York 11747 (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, TH, 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, LR, 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:

24 February 2011

(54) Title: MICROCURRENT-GENERATING TOPICAL OR COSMETIC SYSTEMS, AND METHODS OF MAKING AND USING THE SAME

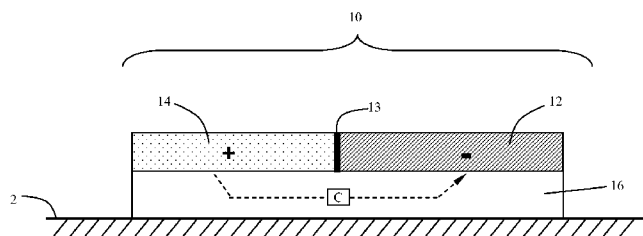


FIG. 1

(57) Abstract: The present invention relates to a topical or cosmetic system that includes a metal and a semiconductor element. One element acts as an electron donor and the other element acts as an electron acceptor. Such metal and semiconductor elements are in contact through a metal/semiconductor junction. The system also includes an electrically conductive medium that extends across the skin surface and electrically connects the metal and semiconductor elements. The electrical resistance of the conductive medium is significantly smaller than that of the metal/semiconductor junction, so that the majority of electrical current generated between the metal element and the semiconductor element flows across the skin surface through the conductive medium in the absence of any power source. The present invention also relates to methods of using the above-described system for preventing or treating skin damage.



WO 2010/147701 A3

**A. CLASSIFICATION OF SUBJECT MATTER***A61N 1/32(2006.01)i, A61N 1/04(2006.01)i, A61N 1/26(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)

A61N 1/32; G06F 15/16; H04J 3/22; H04B 7/02

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) &amp; Keywords: skin, damage, semiconductor, cosmetic, electrode, transdermal, power source

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	JP 3748278 B2 (POLYTRONICS, INC.) 09 December 2005 See claim 1, paragraph [0013], figure 5	1-11, 14-17
A	US 2005-0004550 A1 (YING SUN et al.) 06 January 2005 See claim 1, paragraph [0032], figure 1	1-11, 14-17
A	US 5246417 A (RONALD P. HAAK et al.) 21 September 1993 See claim 1, column 5, lines 60-68, figure 1	1-11, 14-17
A	US 2001-0029347 A1 (HIROYUKI KASANO) 11 October 2001 See claim 1, abstract, figure 1B	1-11, 14-17
A	US 6289241 B1 (JOSEPH B. PHIPPS) 11 September 2001 See claim 1, abstract, figure 2	1-11, 14-17



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

"&amp;" document member of the same patent family

Date of the actual completion of the international search

22 DECEMBER 2010 (22.12.2010)

Date of mailing of the international search report

**23 DECEMBER 2010 (23.12.2010)**

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

JEON, CHANG IK

Telephone No. 82-42-481-8303



**INTERNATIONAL SEARCH REPORT**

International application No.

**PCT/US2010/031917****Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)**

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☒ Claims Nos.: 12-13  
because they relate to subject matter not required to be searched by this Authority, namely:  
Claims 12 and 13 pertain to methods for treatment of human body by therapy and thus relate to a subject matter which this International Searching Authority is not required to search under Article 17(2)(a)(i) and Rule 39.1(iv) PCT.
2. ☐ Claims Nos.:  
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

**Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)**

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

**Remark on Protest**

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☐ No protest accompanied the payment of additional search fees.

**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International application No.

**PCT/US2010/031917**

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
JP 3748278 B2	09.12.2005	JP 08173554 A	09.07.1996
US 2005-0004550 A1	06.01.2005	AU 2004-255182 A1	20.01.2005
		AU 2004-255182 B2	27.05.2010
		AU 2004-255184 A1	20.01.2005
		AU 2004-255184 B2	27.05.2010
		AU 2004-255186 A1	20.01.2005
		AU 2004-255187 A1	20.01.2005
		CA 2530593 A1	20.01.2005
		CA 2530598 A1	20.01.2005
		CA 2530603 A1	20.01.2005
		CA 2530766 A1	20.01.2005
		CN 1826153 A	30.08.2006
		CN 1826153 C0	30.08.2006
		CN 1826154 A	30.08.2006
		CN 1826154 C0	30.08.2006
		CN 1829552 A0	06.09.2006
		CN 1832776 A0	13.09.2006
		EP 1638644 A1	29.03.2006
		EP 1641524 A1	05.04.2006
		EP 1644076 A1	12.04.2006
		EP 1651309 A1	03.05.2006
		JP 2007-537767 A	27.12.2007
		KR 10-2006-0038960 A	04.05.2006
		KR 10-2006-0057545 A	26.05.2006
		KR 10-2006-0101206 A	22.09.2006
		KR 10-2006-0101851 A	26.09.2006
		US 2004-0267169 A1	30.12.2004
		US 2004-0267237 A1	30.12.2004
		US 2005-0004508 A1	06.01.2005
		US 2005-0004509 A1	06.01.2005
		US 2005-0010161 A1	13.01.2005
		US 2005-0010192 A1	13.01.2005
		US 2005-0015042 A1	20.01.2005
		US 2005-148996 A1	07.07.2005
		US 2007-0060862 A1	15.03.2007
		US 7476221 B2	13.01.2009
		US 7476222 B2	13.01.2009
		US 7477939 B2	13.01.2009
		US 7477940 B2	13.01.2009
		US 7477941 B2	13.01.2009
		US 7479133 B2	20.01.2009
		US 7480530 B2	20.01.2009
		WO 2005-004979 A1	20.01.2005
		WO 2005-004981 A2	20.01.2005
		WO 2005-004982 A2	20.01.2005
		WO 2005-004983 A2	20.01.2005
US 5246417 A	21.09.1993	CA 2121591 C	28.05.2002

**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International application No.

**PCT/US2010/031917**

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2001-0029347 A1	11.10.2001	EP 0616545 A1	28.09.1994
		EP 0616545 B1	16.07.1997
		JP 3406315 B2	07.03.2003
		KR 10-0222281 B1	01.10.1999
		US 5445606 A1	29.08.1995
		WO 93-11830 A1	24.06.1993
US 2001-0029347 A1	11.10.2001	EP 1142605 A2	10.10.2001
		EP 1142605 A3	26.02.2003
		JP 2001-286569 A	16.10.2001
		US 6622037 B2	16.09.2003
US 6289241 B1	11.09.2001	US 5125894 A	30.06.1992
		US 5443442 A	22.08.1995
		US 5591124 A	07.01.1997
		US 5622530 A	22.04.1997
		US 6004309 A	21.12.1999