



(51) International Patent Classification:

G01N 27/00 (2006.01) **G01R 27/26** (2006.01)
G01N 27/22 (2006.01) **A61B 5/05** (2006.01)

(21) International Application Number:

PCT/US2011/035618

(22) International Filing Date:

6 May 2011 (06.05.2011)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

61/332,755 8 May 2010 (08.05.2010) US
61/453,852 17 March 2011 (17.03.2011) US

(71) Applicants (for all designated States except US):

THE REGENTS OF THE UNIVERSITY OF CALIFORNIA [US/US]; 1111 Franklin Street, 12th Floor, Oakland, California 94607-5200 (US). **BRUIN BIOMETRICS, LLC** [US/US]; 10960 Wilshire Blvd., Suite 950, Los Angeles, California 90024 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **SARRAFZADEH, Majid** [US/US]; 255 Heath Terrace, Anaheim Hills, Cali-

fornia 92807 (US). **KAISER, William** [US/US]; 15520 Casiano Court, Los Angeles, California 90077 (US). **MEHRNIA, Alireza** [US/US]; 6531 Boelter Hall, Los Angeles, California 90095 (US). **BATES-JENSEN, Barbara** [US/US]; 300 South Vinado Ave., Pasadena, California 91107 (US). **WANG, Frank** [US/US]; 21909 San Fernando Ave., Cupertino, California 95014 (US). **LAM, Yeung** [US/US]; 4646 Willis Ave., Apt. 301, Sherman Oaks, California 91403 (US). **FLESCHE, Michael** [US/US]; 714 N. Foothill Road, Beverly Hills, California 90210 (US). **BOYSTAK, Joseph** [US/US]; 125 Ketch Mall, Marina Del Rey, California 90292 (US).

(74) Agent: **O'BANION, John**; O'banion & Ritchey LLP, 400 Capitol Mall, Suite 1550, Sacramento, California 95814 (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,

[Continued on next page]

(54) Title: SEM SCANNER SENSING APPARATUS, SYSTEM AND METHODOLOGY FOR EARLY DETECTION OF ULCERS

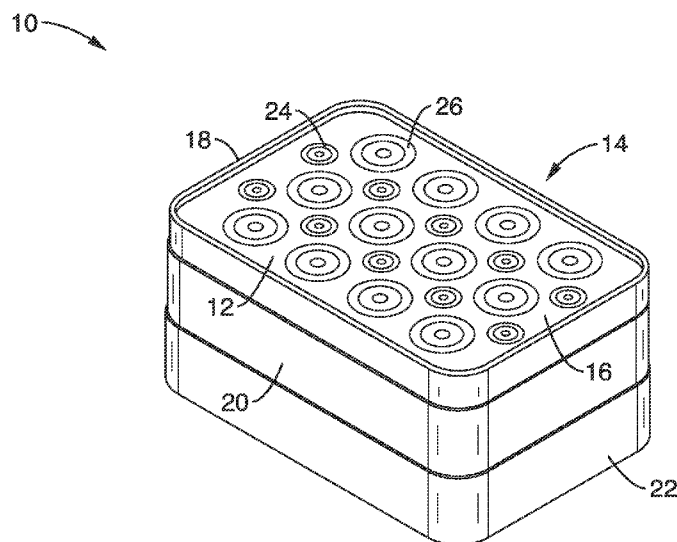


FIG. 1

(57) Abstract: A handheld, conforming capacitive sensing apparatus configured to measure Sub-Epidermal Moisture (SEM) as a mean to detect and monitor the formation of pressure ulcers. The device incorporates an array of electrodes which are excited to measure and scan SEM in a programmable and multiplexed manner by a battery-less RF-powered chip. The scanning operation is initiated by an interrogator which excites a coil embedded in the apparatus and provides the needed energy burst to support the scanning/reading operation. Each electrode measures the equivalent sub-epidermal capacitance corresponding and representing the moisture content.



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 (AL, 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, RS, 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 April 2012