



(51) International Patent Classification:
H01L 31/0224 (2006.01)

(21) International Application Number:
PCT/US2011/024503

(22) International Filing Date:
11 February 2011 (11.02.2011)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
61/304,030 12 February 2010 (12.02.2010) US

(71) Applicant (for all designated States except US): **HER-AEUS MATERIALS TECHNOLOGY LLC** [US/US];
24 Union Hill Road, West Conshohocken, PA 19428 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **PHAM, Tung Thanh** [US/US]; 101 Windham Lane, West Conshohocken, PA 19428 (US). **ZHANG, Weiming** [US/US]; 551 Partridge Court, Blue Bell, PA 19422 (US).

(74) Agents: **SCHWARZE, William W.** et al.; Panitch Schwarze Belisario & Nadel LLP, One Commerce Square, Suite 2200, 2005 Market Street, Philadelphia, PA 19103 (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 (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:

— without international search report and to be republished upon receipt of that report (Rule 48.2(g))

(54) Title: METHOD FOR APPLYING FULL BACK SURFACE FIELD AND SILVER BUSBAR TO SOLAR CELL

(57) Abstract: A method is provided for applying back contact silver busbars to an aluminum back surface field (BSF) of a solar cell. The method involves providing a solar cell substrate having a front side and a back side; printing a full aluminum backing layer on the back side of the solar cell substrate; drying the printed aluminum backing layer to yield a full aluminum layer; printing and drying a peeling paste on the full aluminum layer in areas where the silver busbars are desired; printing and drying a front contact silver paste on the front side of the solar cell substrate to produce a front grid electrode; co-firing and cooling the front and back sides of the solar cell, wherein during firing the peeling paste wets excess aluminum powder in the aluminum layer, such that during cooling of the solar cell the peeling paste contracts, solidifies, and peels off with the excess aluminum powder to leave a full aluminum BSF having open areas; and printing, drying, and firing a back contact silver paste on the open areas of the BSF to yield silver busbars.

