

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

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
22 July 2010 (22.07.2010)

(10) International Publication Number
WO 2010/081661 A3

PCT

(51) International Patent Classification:

H01L 31/068 (2006.01) **C11D 11/00** (2006.01)
H01L 31/18 (2006.01) **H01L 21/3213** (2006.01)
C11D 3/39 (2006.01) **H01L 21/02** (2006.01)
C11D 7/32 (2006.01)

(21) International Application Number:

PCT/EP2010/000076

(22) International Filing Date:

11 January 2010 (11.01.2010)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

61/144,479 14 January 2009 (14.01.2009) US
61/225,685 15 July 2009 (15.07.2009) US

(71) Applicant (*for all designated States except US*):
MALLINCKRODT BAKER BV [NL/NL]; P.O. Box 1,
NL-7400 AA Deventer (NL).

(72) Inventors; and

(75) Inventors/Applicants (*for US only*): **HOOGBOOM, Joannes T.V.** [NL/NL]; Brink 13A, Deventer, NL-7411BR (NL). **OOSTERHOLT, Johannes A.E.** [NL/NL]; Citroenvlinder 50, Hoogeveen, NL-7908 VW (NL). **RITMEIJER, Sabrina** [NL/NL]; Kuipersdijk 25, Enschede, NL-7512 CA (NL). **GROENEWOUD, Lucas M.H.** [NL/NL]; Lemelerveldseweg 21, Heino, NL-8141 PS (NL).

(74) Agents: **WESTWOOD, Joanna** et al.; Withers & Rogers LLP, Goldings House, 2 Hays Lane, London SE1 2HW (GB).

(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, 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:

7 October 2010

(54) Title: SOLUTION FOR INCREASING WAFER SHEET RESISTANCE AND/OR PHOTOVOLTAIC CELL POWER DENSITY LEVEL

(57) Abstract: Treating thin film amorphous or mono- or multi-crystalline silicon wafer substrate for use in a photovoltaic cell, the wafer substrate having at least one of a pn- or np junction and a partial phosphosilicate or borosilicate glass layer on a top surface of the wafer substrate, to increase at least one of (a) the sheet resistance of the wafer and (b) the power density level of the photovoltaic cell made from said wafer. The treatment solution being an acidic treatment solution of a buffered oxide etch (BOE) solution of at least one tetraalkylammonium hydroxide, acetic acid, at least one non-ionic surfactant, at least one metal chelating agent, a metal free source of ammonia, a metal free source of fluoride ions, and water, mixed with an oxidizer solution and optionally water.



WO 2010/081661 A3