



(51) International Patent Classification:
C09K 13/08 (2006.01) *H01L 31/00* (2006.01)

(21) International Application Number:
PCT/EP2010/063209

(22) International Filing Date:
9 September 2010 (09.09.2010)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
61/244,090 21 September 2009 (21.09.2009) US

(71) Applicants (for all designated States except US): **BASF SE** [DE/DE]; 67056 Ludwigshafen (DE). **GP SOLAR GMBH** [DE/DE]; Turmstraße 22, 78467 Konstanz (DE).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **BRAUN, Simon** [DE/DE]; Gontardstr. 8, 68163 Mannheim (DE). **PRÖLB, Julian** [DE/DE]; Bennigsenstr. 40, 67549 Worms (DE). **MELNYK, Ihor** [UA/DE]; Torkelbergstrasse 25, 78465 Konstanz (DE). **MICHEL, Michael** [DE/DE]; Hornstrasse 19, 10963 Berlin (DE). **MATHIJSEN, Stefan** [DE/DE]; Zasiusstrasse 8, 78462 Konstanz (DE).

(74) Agent: **FITZNER, Uwe**; Hauser Ring 10, 40878 Ratingen (DE).

(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, 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))

(54) Title: AQUEOUS ACIDIC ETCHING SOLUTION AND METHOD FOR TEXTURING THE SURFACE OF SINGLE CRYSTAL AND POLYCRYSTAL SILICON SUBSTRATES

(57) Abstract: An aqueous acidic etching solution suitable for texturing the surface of single crystal and polycrystal silicon substrates and containing, based on the complete weight of the solution, 3 to 10% by weight of hydrofluoric acid; 10 to 35% by weight of nitric acid; 5 to 40% by weight of sulfuric acid; and 55 to 82% by weight of water; a method for texturing the surface of single crystal and polycrystal silicon substrates comprising the step of (1) contacting at least one major surface of a substrate with the said aqueous acidic etching solution; (2) etching the at least one major surface of the substrate for a time and at a temperature sufficient to obtain a surface texture consisting of recesses and protrusions; and (3) removing the at least one major surface of the substrate from the contact with the aqueous acidic etching solution; and a method for manufacturing photovoltaic cells and solar cells using the said solution and the said texturing method.

