



(43) International Publication Date
17 December 2009 (17.12.2009)

(10) International Publication Number
WO 2009/152378 A1

(51) International Patent Classification:
H01L 31/0368 (2006.01) *H01L 31/0376* (2006.01)

(21) International Application Number:
PCT/US2009/047109

(22) International Filing Date:
11 June 2009 (11.06.2009)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

61/131,687	11 June 2008 (11.06.2008)	US
61/131,688	11 June 2008 (11.06.2008)	US
61/131,698	11 June 2008 (11.06.2008)	US
61/133,028	24 June 2008 (24.06.2008)	US
61/210,545	20 March 2009 (20.03.2009)	US

(71) Applicant (for all designated States except US): **SOLAR IMPLANT TECHNOLOGIES INC.** [US/US]; 809b Cuesta Drive, #134, Mountain View, CA 94040 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **ADIBI, Babak** [GB/US]; 439 Knoll Drive, Los Altos, CA 94024 (US). **MURRER, Edward, S.** [US/US]; 1583 Pleasant View Rd., Aptos, CA 95003 (US).

(74) Agent: **HAVERSTOCK, Thomas, B.**; 162 N. Wolfe Rd., Sunnyvale, CA 94086 (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, 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,

[Continued on next page]

(54) Title: FORMATION OF SOLAR CELL-SELECTIVE EMITTER USING IMPLANT AND ANNEAL METHOD

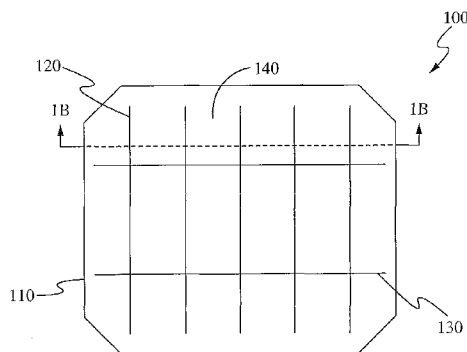


Fig. 1A

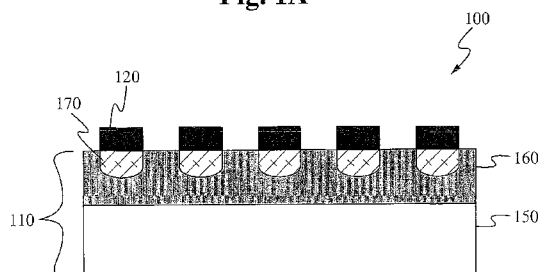


Fig. 1B

(57) Abstract: A method of forming a solar cell, the method comprising: providing a semiconducting wafer having a pre-doped region; performing a first ion implantation of a dopant into the semiconducting wafer to form a first doped region over the pre-doped region, wherein the first ion implantation has a concentration-versus-depth profile; and performing a second ion implantation of a dopant into the semiconducting wafer to form a second doped region over the pre-doped region, wherein the second ion implantation has a concentration-versus-depth profile different from that of the first ion implantation, wherein at least one of the first doped region and the second doped region is configured to generate electron-hole pairs upon receiving light, and wherein the first and second ion implantations are performed independently of one another.



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, 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))*
- *with amended claims and statement (Art. 19(1))*