

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

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
16 December 2021 (16.12.2021)



(10) International Publication Number
WO 2021/248209 A1

(51) International Patent Classification:

G01N 21/64 (2006.01) G01N 21/88 (2006.01)
G01J 1/58 (2006.01) H02S 50/15 (2014.01)

(21) International Application Number:

PCT/AU2021/050604

(22) International Filing Date:

11 June 2021 (11.06.2021)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

2020901949 12 June 2020 (12.06.2020) AU

(71) Applicant: **NEWSOUTH INNOVATIONS PTY LIMITED** [AU/AU]; Rupert Myers Building, Level 2, Gate 14, Barker Street, UNSW Sydney, New South Wales 2052 (AU).

(72) Inventors: **KUNZ, Oliver**; c/o NewSouth Innovations Pty Limited, Rupert Myers Building, Level 2, Gate 14, Barker Street, UNSW Sydney, New South Wales 2052 (AU). **REY,**

Germaine Antoine; c/o NewSouth Innovations Pty Limited, Rupert Myers Building, Level 2, Gate 14, Barker Street, UNSW Sydney, New South Wales 2052 (AU). **TRUPKE, Thorsten**; c/o NewSouth Innovations Pty Limited, Rupert Myers Building, Level 2, Gate 14, Barker Street, UNSW Sydney, New South Wales 2052 (AU). **PADUTHOL, Appu Rshikesan**; c/o NewSouth Innovations Pty Limited, Rupert Myers Building, Level 2, Gate 14, Barker Street, UNSW Sydney, New South Wales 2052 (AU).

(74) Agent: **FB RICE PTY LTD**; Level 23, 44 Market St, Sydney, New South Wales 2000 (AU).

(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, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, IT, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW,

(54) Title: OUTDOOR PHOTOLUMINESCENCE IMAGING OF PHOTOVOLTAIC MODULES

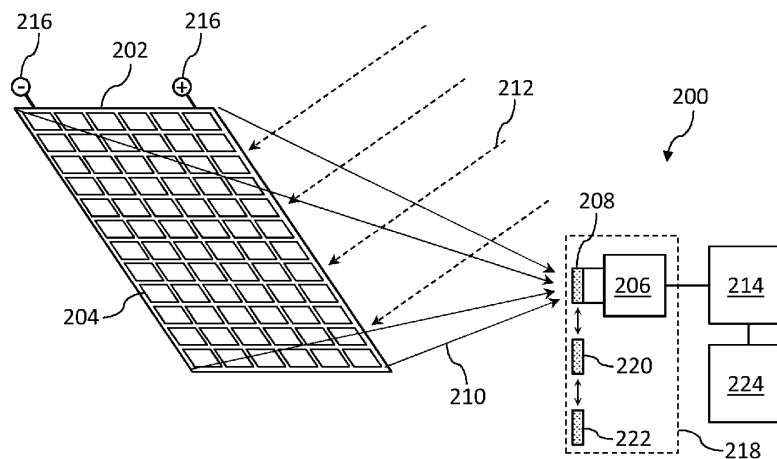


Fig. 2

(57) Abstract: Methods and apparatus are presented for measuring a photoluminescence (PL) response, preferably a spatially resolved image of a PL response, from an object exposed to solar irradiation. In certain embodiments signals from the object are measured in two or more different spectral bands selected such that one of the measured signals has a higher PL component relative to ambient reflectance compared to another measured signal, enabling the PL component to be enhanced by a suitable differencing procedure. In other embodiments a signal from an object is measured in a spectral band selected such that at least 20% of the measured signal comprises PL generated from the object by the solar irradiation. The methods and apparatus have particular application to outdoor inspection of photovoltaic modules without having to modulate the operating point of the modules.

[Continued on next page]



WO 2021/248209 A1

SA, SC, SD, SE, SG, SK, SL, ST, SV, SY, TH, TJ, TM, TN,
TR, TT, TZ, UA, UG, US, UZ, VC, VN, WS, 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, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, 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, KM, ML, MR, NE, SN, TD, TG).

Published:

— with international search report (Art. 21(3))