

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

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
27 June 2019 (27.06.2019)



(10) International Publication Number
WO 2019/125690 A1

- (51) International Patent Classification:
H01L 27/146 (2006.01)
- (21) International Application Number:
PCT/US2018/062019
- (22) International Filing Date:
20 November 2018 (20.11.2018)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
62/609,903 22 December 2017 (22.12.2017) US
2020625 20 March 2018 (20.03.2018) NL
- (71) Applicant: **ILLUMINA, INC.** [US/US]; 5200 Illumina Way, San Diego, California 92122 (US).
- (72) Inventor: **CAI, Xiuyu**; 5200 Illumina Way, San Diego, California 92122 (US).
- (74) Agent: **ZIEGLER, Kristian E.**; Heslin Rothenberg Farley & Mesiti P.C., 5 Columbia Circle, Albany, New York 12203 (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, 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, 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, SA, 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.

(54) Title: TWO-FILTER LIGHT DETECTION DEVICES AND METHODS RELATED TO SAME

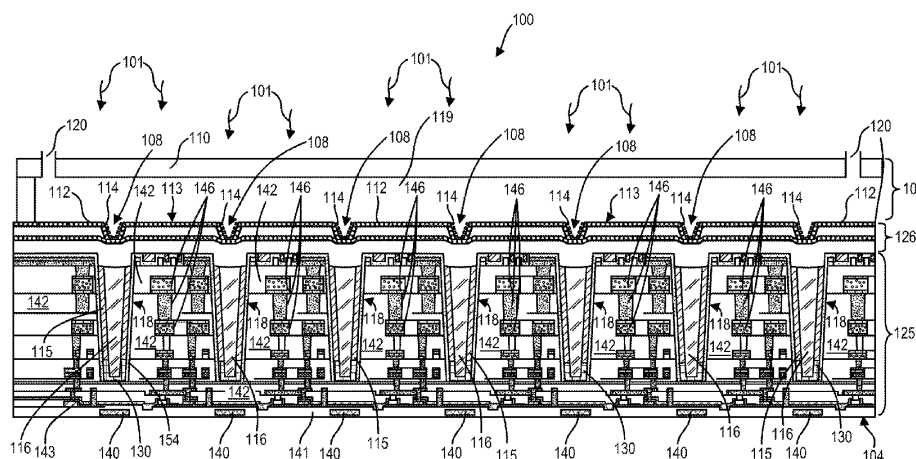


FIG. 1

(57) Abstract: Light detection devices and corresponding methods are provided. The devices include a reaction structure to contain a reaction solution and at least one reaction site that generates light emissions in response to incident excitation light after treatment with the reaction solution. The devices also include a plurality of light sensors and device circuitry. The devices further include a plurality of light guides extending toward at least one corresponding light sensor from input regions that receive the excitation light and the light emissions from at least one corresponding reaction recess. The light guides comprise a first filter region that filters the excitation light and permits the light emissions of a first wavelength to pass to the at least one corresponding light sensor, and a second filter region that filters the excitation light and the permits light emissions of a second wavelength to pass to the at least one corresponding light sensor.

[Continued on next page]

(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))