

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

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
09 January 2020 (09.01.2020)



(10) International Publication Number
WO 2020/008200 A1

- (51) **International Patent Classification:**
H01L 27/15 (2006.01) *H01L 33/24* (2010.01)
- (21) **International Application Number:**
PCT/GB2019/051894
- (22) **International Filing Date:**
04 July 2019 (04.07.2019)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**
1811109.6 06 July 2018 (06.07.2018) GB
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- (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:** MONOLITHIC LED ARRAY AND A PRECURSOR THERETO

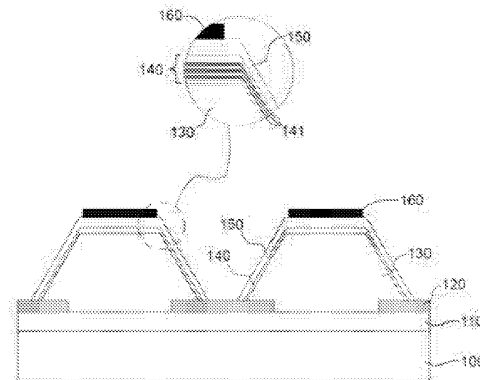


Figure 1b

(57) **Abstract:** The present invention provides a monolithic LED array precursor comprising: a plurality of LED structures sharing a first semiconductor layer, wherein the first semiconductor layer defines a plane of the LED array precursor, each LED structure comprising: (i) a second semiconductor layer on the first semiconductor layer, having an upper surface portion parallel to the plane of the LED array precursor, the second semiconductor layer having a regular trapezoidal cross-section normal to the upper surface portion, such that the second semiconductor layer has sloped sides; (ii) a third semiconductor layer on the second semiconductor layer, having an upper surface portion parallel to the plane of the LED array precursor, the third semiconductor layer having a regular trapezoidal cross-section normal to the upper surface portion, such that the third semiconductor layer has sloped sides parallel to the sloped sides of the second semiconductor layer; (iii) a fourth semiconductor layer on the third semiconductor layer, having an upper surface portion parallel to the plane of the LED array precursor, the fourth semiconductor layer having a regular trapezoidal cross-section normal to the upper surface portion, such that the fourth semiconductor layer has sloped sides parallel to the sloped sides of the third semiconductor layer; and (iv) a primary electrical contact on the fourth semiconductor layer, wherein the contact is only on the upper surface portion of the fourth semiconductor layer which is parallel to the plane of the LED array precursor; wherein the third semiconductor layer

[Continued on next page]

WO 2020/008200 A1

(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))

comprises a plurality of quantum well sub-layers, the quantum well sub-layers having a greater thickness on a portion parallel to the plane of the LED array precursor and a reduced thickness on a portion which is not parallel to the plane of the LED array precursor.