

(12) International Application Status Report

Received at International Bureau: 19 July 2018 (19.07.2018)

Information valid as of: 07 December 2018 (07.12.2018)

Report generated on: 26 February 2020 (26.02.2020)

(10) Publication number:

WO2019/027154

(43) Publication date:

07 February 2019 (07.02.2019)

(26) Publication language:

Korean (KO)

(21) Application Number:

PCT/KR2018/007838

(22) Filing Date:

11 July 2018 (11.07.2018)

(25) Filing language:

Korean (KO)

(31) Priority number(s):

10-2017-0088366 (KR)

(31) Priority date(s):

12 July 2017 (12.07.2017)

(31) Priority status:

Priority document received (in compliance with PCT Rule 17.1)

(51) International Patent Classification:

F21S 2/00 (2006.01); **G02B 19/00** (2006.01); **F21V 19/00** (2006.01); **F21K 9/60** (2016.01); **F21Y 115/10** (2016.01)

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(54) Title (EN): OPTICAL LENS, LIGHTING MODULE, AND LIGHT UNIT COMPRISING SAME

(54) Title (FR): LENTILLE OPTIQUE, MODULE D'ÉCLAIRAGE ET UNITÉ DE LUMIÈRE COMPRENANT CES DERNIERS

(54) Title (KO): 광학 렌즈, 조명 모듈 및 이를 구비한 라이트 유닛

(57) Abstract:

(EN): A lighting module disclosed in an embodiment comprises: a circuit board having a plurality of first recesses; a light-emitting element arranged on the circuit board; and an optical lens which has a plurality of protrusion portions, and which is arranged on the light-emitting element. The circuit board comprises an absorbing layer arranged on the periphery of each of the first recesses. The optical lens comprises a bottom surface, a second recess having an incident surface at the center area of the bottom surface, and a first emission surface having a curved surface. The protrusion portions protrude from the bottom surface toward the circuit board. The second recess is arranged on the light-emitting element. Parts of the protrusion portions are arranged in the first recesses. The circuit board comprises an absorbing layer provided on the upper portion thereof so as to surround at least one of the plurality of protrusion portions. The absorbing layer surrounding the protrusion portion is arranged in an area corresponding to 2.5 times the radius of the protrusion portion or less from the center of the protrusion portion, and the center of the protrusion portion may be arranged in a range corresponding to 0.3 to 0.95 times the radius of the bottom surface from the center of the bottom of the second recess.

(FR): La présente invention concerne, selon un mode de réalisation, un module d'éclairage comprenant : une carte de circuit imprimé comprenant une pluralité de premiers évidements; un élément électroluminescent disposé sur la carte de circuit imprimé; et une lentille optique présentant une pluralité de parties saillantes, placée sur l'élément électroluminescent. La carte de circuit imprimé comprend une couche absorbante disposée sur la périphérie de chacun des premiers évidements. La lentille optique comprend une surface inférieure, un second évidement présentant une surface incidente au niveau de la zone centrale de la surface inférieure, et une première surface d'émission présentant une surface incurvée. Les parties saillantes font saillie à partir de la surface inférieure en direction de la carte de circuit imprimé. Le second évidement est disposé sur l'élément électroluminescent. Des portions des parties saillantes sont disposées dans les premiers évidements. Une couche absorbante est disposée sur la partie supérieure de la carte de circuit imprimé de façon à entourer au moins une partie saillante de la pluralité de parties saillantes. La couche absorbante entourant la partie saillante est disposée dans une zone correspondant à au plus 2,5 fois le rayon de la partie

saillante depuis son centre, et le centre de la partie saillante peut être disposé dans une plage correspondant à 0,3 à 0,95 fois le rayon de la surface inférieure à partir du centre du fond du second évidement.

(KO): 실시 예에 개시된 조명 모듈은, 복수의 제 1리세스를 갖는 회로 기판; 상기 회로 기판 상에 배치된 발광 소자; 복수의 돌기부를 갖고 상기 발광 소자 상에 배치된 광학 렌즈를 포함한다. 상기 회로 기판은 상기 제 1리세스 각각의 들레에 배치된 흡수층을 포함한다. 상기 광학 렌즈는 바닥 면, 상기 바닥 면의 센터 영역에 입사면을 갖는 제 2리세스, 및 곡면을 갖는 제 1출사 면을 포함한다. 상기 돌기부는 상기 바닥 면으로부터 상기 회로 기판 방향으로 돌출된다. 상기 제 2리세스는 상기 발광 소자 상에 배치된다. 상기 제 1리세스에는 상기 돌기부의 일부가 배치된다. 상기 회로 기판은 상부에 상기 복수의 돌기부 중 적어도 하나를 감싸는 흡수층을 포함한다. 상기 돌기부를 감싸는 상기 흡수층은 상기 돌기부의 중심으로부터 상기 돌기부의 반경의 2.5배 이하의 영역에 배치되며, 상기 돌기부의 중심은 상기 제 2리세스의 바닥 중심으로부터 상기 바닥 면의 반경의 0.3 내지 0.95의 범위에 배치될 수 있다.

International search report:

Received at International Bureau: 26 November 2018 (26.11.2018) [KR]

International Report on Patentability (IPRP) Chapter II of the PCT:

Not available

(81) Designated States:

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, 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

European Patent Office (EPO) : 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

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African Regional Intellectual Property Organization (ARIPO) : BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW

Eurasian Patent Organization (EAPO) : AM, AZ, BY, KG, KZ, RU, TJ, TM