

(12) International Application Status Report

Received at International Bureau: 10 April 2008 (10.04.2008)

Information valid as of: 10 October 2008 (10.10.2008)

Report generated on: 07 December 2019 (07.12.2019)

(10) Publication number:

WO2008/126695

(43) Publication date:

23 October 2008 (23.10.2008)

(26) Publication language:

Japanese (JA)

(21) Application Number:

PCT/JP2008/056013

(22) Filing Date:

28 March 2008 (28.03.2008)

(25) Filing language:

Japanese (JA)

(31) Priority number(s):

2007-100930 (JP)

(31) Priority date(s):

06 April 2007 (06.04.2007)

(31) Priority status:

Priority document received (in compliance with PCT Rule 17.1)

(51) International Patent Classification:

H01L 21/205 (2006.01); *H01L 33/06* (2010.01); *H01L 33/16* (2010.01); *H01L 33/32* (2010.01)

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(54) Title (EN): NITRIDE SEMICONDUCTOR LIGHT EMITTING DEVICE AND PROCESS FOR PRODUCING THE SAME

(54) Title (FR): DISPOSITIF ÉLECTROLUMINESCENT À SEMI-CONDUCTEUR DE NITRURE ET SON PROCÉDÉ DE PRODUCTION

(54) Title (JA): 窒化物系半導体発光素子、および窒化物系半導体発光素子を作製する方法

(57) Abstract:

(EN): Active layer (17) is provided so as to emit light of 440 to 550 nm emission wavelength. First conductive gallium nitride semiconductor region (13), the active layer (17) and second conductive gallium nitride semiconductor region (15) are arranged along the direction of given axis (Ax). The active layer (17) has a well layer of hexagonal $\text{In}_X\text{Ga}_{1-X}\text{N}$ (0.16#X#0.4, X: strain formulation), and the indium formulation X is represented by a strain formulation. The m-face of the hexagonal $\text{In}_X\text{Ga}_{1-X}\text{N}$ is oriented in the direction of given axis (Ax). The thickness of the well layer is greater than 3 nm but not greater than 20 nm. By causing the thickness of the well layer to exceed 3 nm, there can be prepared a light emitting device of 440 nm or greater light emission wavelength.

(FR): L'invention concerne une couche active (17) prévue pour émettre une lumière à une longueur d'onde d'émission de 440 à 550 nm. Une première zone conductrice à semi-conducteur de nitride de gallium (13), la couche active (17) et une seconde zone

conductrice à semi-conducteur de nitride de gallium (15) sont agencées le long de la direction d'un axe donné (Ax). La couche active (17) inclut une couche de puits d' $\text{In}_X\text{Ga}_{1-X}\text{N}$ hexagonale ($0.16 \leq X \leq 0.4$, X : formulation de souche), et la formulation d'indium X est représentée par une formulation de souche. La face m d' $\text{In}_X\text{Ga}_{1-X}\text{N}$ hexagonale est orientée dans la direction de l'axe donné (Ax). L'épaisseur de la couche de puits se situe entre 3 nm et 20 nm. Un dispositif électroluminescent de longueur d'onde d'émission de 440 nm ou plus peut être préparé en amenant l'épaisseur de la couche de puits à dépasser 3 nm.

(JA): 活性層 17 は、波長 440 nm 以上 550 nm 以下の範囲の発光波長の光を発生するように設けられる。第 1 導電型窒化ガリウム系半導体領域 13、活性層 17 および第 2 導電型窒化ガリウム系半導体領域 15 は、所定の軸 Ax の方向に配列されている。活性層 17 は、六方晶系 $\text{In}_X\text{Ga}_{1-X}\text{N}$ ($0.16 \leq X \leq 0.4$ 、X は歪み組成) からなる井戸層を含み、インジウム組成 X は歪み組成で表されている。六方晶系 $\text{In}_X\text{Ga}_{1-X}\text{N}$ の m 面が所定の軸 Ax の方向に向いている。井戸層の厚さは 3 nm より大きく 20 nm 以下である。井戸層の厚みを 3 nm 以上にすることによって、発光波長 440 nm 以上の発光素子を作製することができる。

International search report:

Received at International Bureau: 05 May 2008 (05.05.2008) [JP]

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, BR, BW, BY, BZ, CA, CH, 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, 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, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW

European Patent Office (EPO) : AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR

African Intellectual Property Organization (OAPI) : BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

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

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