

CORRECTED VERSION

(19) World Intellectual Property Organization
International Bureau(43) International Publication Date
1 November 2007 (01.11.2007)

PCT

(10) International Publication Number
WO 2007/123496 A1

(51) International Patent Classification:

H01L 21/00 (2006.01) **H01L 33/00** (2006.01)

(21) International Application Number:

PCT/SG2007/000117

(22) International Filing Date: 25 April 2007 (25.04.2007)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

60/794,775 25 April 2006 (25.04.2006) US

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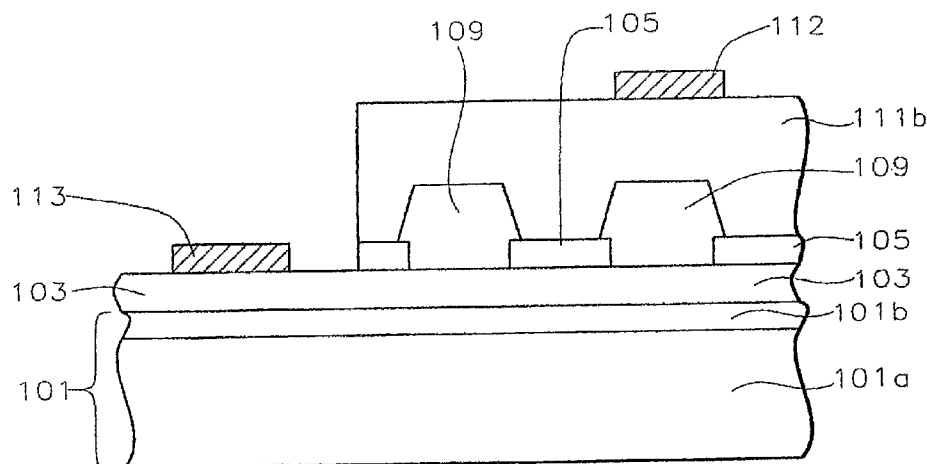
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(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, 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.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),

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(54) Title: METHOD OF ZINC OXIDE FILM GROWN ON THE EPITAXIAL LATERAL OVERGROWTH GALLIUM NITRIDE TEMPLATE

(57) Abstract: A growth method is proposed for high quality zinc oxide comprising the following steps: (1) growing a gallium nitride layer on a sapphire substrate around a temperature of 1000⁰ C; (2) patterning a SiO₂ mask into stripes oriented in the gallium nitride <1 110> or <1 120> direction; (3) growing epitaxial lateral overgrowth of (ELO) gallium nitride layers by controlling the facet planes via choosing the growth temperature and the reactor; (4) depositing zinc oxide films on facets ELO gallium nitride templates by chemical vapor deposition (CVD). Zinc oxide crystal of high quality with a reduced number of crystal defects can be grown on a gallium nitride template. This method can be used to fabricate zinc oxide films with low dislocation density lower than 10⁴/cm², which will find important applications in future electronic and optoelectronic devices.

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European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

- *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*
- *of inventorship (Rule 4.17(iv))*

Published:

- *with international search report*

(48) Date of publication of this corrected version:

6 December 2007

(15) Information about Correction:

see PCT Gazette No. 49/2007 of 6 December 2007

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.