

Title (en)
N-CO-DOPED SEMICONDUCTOR SUBSTRATE

Title (de)
N-CO-DOTIERTES HALBLEITERSUBSTRAT

Title (fr)
SUBSTRAT SEMI-CONDUCTEUR CO-DOPE N

Publication
EP 3900016 A1 20211027 (FR)

Application
EP 19829153 A 20191218

Priority
• FR 1873952 A 20181221
• EP 2019086123 W 20191218

Abstract (en)
[origin: WO2020127605A1] Method for manufacturing a monocrystalline semiconductor material from nitride of a group 13 element, in particular GaN, comprising the steps of: depositing at least one monocrystalline layer by 3-dimensional epitaxial growth on a starting substrate, said layer comprising zones derived from the growth of basal facets, and zones derived from the growth of facets with different orientations, referred to as non-basal facets; introducing an n-doping gas comprising a first chemical element chosen among chemical elements from group 16 of the periodic table, and at least one second chemical element chosen among the chemical elements of group 14 of the periodic table, such that the concentration of the second element in the zones derived from the growth of basal facets is greater than $1.0 \times 10^{17}/\text{cm}^3$, and the concentration of the first element in the zones derived from the growth of non-basal facets is less than $2.0 \times 10^{18}/\text{cm}^3$.

IPC 8 full level
H01L 21/02 (2006.01)

CPC (source: EP KR US)
C30B 25/02 (2013.01 - US); **C30B 29/403** (2013.01 - US); **H01L 21/02378** (2013.01 - EP KR); **H01L 21/02389** (2013.01 - EP KR US); **H01L 21/024** (2013.01 - EP KR); **H01L 21/0242** (2013.01 - EP KR); **H01L 21/02458** (2013.01 - EP KR); **H01L 21/0254** (2013.01 - EP KR US); **H01L 21/02576** (2013.01 - EP KR); **H01L 29/2003** (2013.01 - US)

Designated contracting state (EPC)
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

Designated extension state (EPC)
BA ME

DOCDB simple family (publication)
WO 2020127605 A1 20200625; CN 113874981 A 20211231; EP 3900016 A1 20211027; FR 3091020 A1 20200626; FR 3091020 B1 20230210; JP 2022515212 A 20220217; KR 20210139218 A 20211122; US 11990335 B2 20240521; US 2022068641 A1 20220303

DOCDB simple family (application)
EP 2019086123 W 20191218; CN 201980091923 A 20191218; EP 19829153 A 20191218; FR 1873952 A 20181221; JP 2021536102 A 20191218; KR 20217023173 A 20191218; US 201917415921 A 20191218