US009029867B2

(12) **United States Patent**
Walukiewicz et al.

(10) **Patent No.: US 9,029,867 B2**
(45) **Date of Patent: May 12, 2015**

(54) **MULTI-COLOR LIGHT EMITTING DEVICES WITH COMPOSITIONALLY GRADED CLADDING GROUP III-NITRIDE LAYERS GROWN ON SUBSTRATES**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 340 days.

(21) Appl. No.: **13/541,836**

(22) Filed: **Jul. 5, 2012**

(65) **Prior Publication Data**

US 2013/0026484 A1 Jan. 31, 2013

Related U.S. Application Data

(60) Provisional application No. 61/505,954, filed on Jul. 8, 2011.

(51) **Int. Cl.**
H01L 33/00 (2010.01)
H01L 29/778 (2006.01)

(52) **U.S. Cl.**
CPC ***H01L 29/778*** (2013.01); *H01L 29/7787* (2013.01)

(58) **Field of Classification Search**
CPC H01L 29/778; H01L 29/664361; H01L 29/8252; H01L 29/7787; H01L 29/42369; H01L 29/6642
USPC 257/76, 77, 103, E21.09, 29.091
See application file for complete search history.

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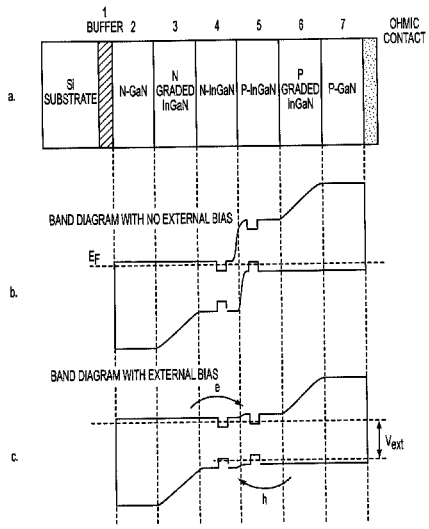
(57) **ABSTRACT**

A light emitting device includes a substrate, multiple n-type layers, and multiple p-type layers. The n-type layers and the p-type layers each include a group III nitride alloy. At least one of the n-type layers is a compositionally graded n-type group III nitride, and at least one of the p-type layers is a compositionally graded p-type group III nitride. A first ohmic contact for injecting current is formed on the substrate, and a second ohmic contact is formed on a surface of at least one of the p-type layers. Utilizing the disclosed structure and methods, a device capable of emitting light over a wide spectrum may be made without the use of phosphor materials.

16 Claims, 4 Drawing Sheets