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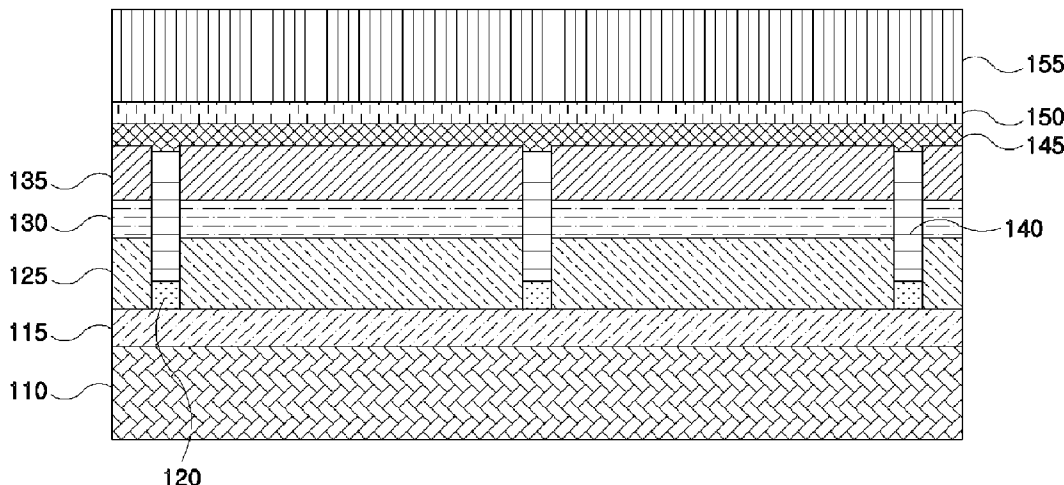
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(54) Title: MANUFACTURING METHOD OF VERTICALLY STRUCTURED GAN LED DEVICE

[Fig. 8]



(57) Abstract: The present invention relates to a manufacturing method of a vertically structured GaN-based LED, especially to a manufacturing method of a vertically structured GaN-based LED device having improved yield and device characteristics by minimizing the physical stress applied to an LED device when performing a separation process of a sapphire substrate. And, a manufacturing method of a vertically structured GaN LED of the present invention is comprised of the steps of: (a) forming a buffer layer on a sapphire substrate to be removed; (b) growing a GaN-based LED structure having an n-type GaN layer, an active layer, and a p-type GaN layer to form multiple LED devices separately on the buffer layer formed in the above step (a); (c) forming an electrode layer and a structure supporting layer sequentially on the multiple LED devices formed in the above step (b); and (d) separating the sapphire substrate from the multiple LED devices formed in the above step (b) by removing the buffer layer using a CLO process.

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According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

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Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean Utility models and applications for Utility models since 1975
Japanese Utility models and applications for Utility models since 1975

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

e-KIPASS(KIPO internal) : "Light emitting diode", "sacrificial layer", "buffer layer", "supporting layer", "chemical lift-off"

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y A	KR 10-0648813 B1 (LG INNOTEK CO. LTD, LG ELECTRONICS INC.) 23 NOVEMBER 2006 See the abstract, page 4 line 5-page 5 line 19, figures 3(a)-3(g), claims 1-11	1, 2 3-8
Y A	WO 03/088318 A2 (ORIOLE, INC.) 23 OCTOBER 2003 See the abstract, paragraphs [0037]-[0049], figures 6-15, claims 10-42	1, 2 3-8
A	JP 2005-051100 A (SHINETSU HANDOTAI KK) 24 FEBRUARY 2005 See the abstract, figures 1-5	1-8
A	US 20060189020 A1 (SAMSUNG ELECTRO-MECHANICS CO. LTD.) 24 AUGUST 2006 See the abstract, figures 1-4	1-8
A	US 20050173692 A1 ((SAMSUNG ELECTRO-MECHANICS CO. LTD.) 11 AUGUST 2005 See the abstract, figures 5(a)-5(f)	1-8

 Further documents are listed in the continuation of Box C. See patent family annex.

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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