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(54) **Title:** MULTILAYER STRUCTURE AND ITS FABRICATION PROCESS

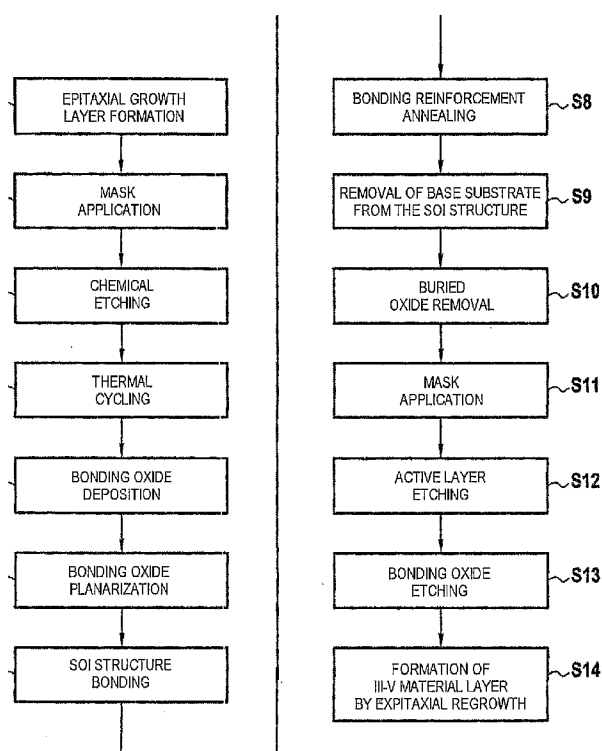


FIG.2

(57) **Abstract:** The invention relates to a process for fabricating a multilayer structure, comprising at least the following steps : a) epitaxial growth (S1) of a growth layer on a silicon substrate; b) formation of at least one pattern (S2, S3) in the growth layer, - c) deposition of an oxide layer (S5) on the silicon substrate; d) transfer of a silicon active layer (S7-S10) onto the oxide layer; e) formation of a cavity (S11, S12) in the silicon active layer and in the oxide layer above each pattern; and f) growth in the cavity of a III-V material (S14) from each exposed pattern of the growth layer.



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A. CLASSIFICATION OF SUBJECT MATTER INV. H01L21/20		
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B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) H01L		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
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C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2004/012037 A1 (VENKATESAN SURESH [US] ET AL) 22 January 2004 (2004-01-22)	11
A	paragraphs [0027] - [0033]; figures 13-33 -----	1-10
A	US 4 876 210 A (BARNETT ALLEN M [US] ET AL) 24 October 1989 (1989-10-24) paragraphs [0137] - [0144]; figure 6 -----	1-11
A	US 2004/232428 A1 (SENDA MASANOBU [JP] ET AL) 25 November 2004 (2004-11-25) figure 3 -----	1-11
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<div style="display: flex; justify-content: space-between;"> <input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C. <input checked="" type="checkbox"/> See patent family annex. </div>		
<div style="display: flex;"> <div style="flex: 1;"> <p>* Special categories of cited documents:</p> <p>*A* document defining the general state of the art which is not considered to be of particular relevance</p> <p>*E* earlier document but published on or after the international filing date</p> <p>*L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>*O* document referring to an oral disclosure, use, exhibition or other means</p> <p>*P* document published prior to the international filing date but later than the priority date claimed</p> </div> <div style="flex: 1;"> <p>*T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>*X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</p> <p>*Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art</p> <p>*G* document member of the same patent family</p> </div> </div>		
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Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016		Authorized officer Wolff, Gerhard

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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	CHRIQUI YVES ET AL: "Material and optical properties of GaAs grown on (001) Ge/Si pseudo-substrate" MATERIALS RESEARCH SOCIETY SYMPOSIUM PROCEEDINGS, MATERIALS RESEARCH SOCIETY, PITTSBURG, PA, US, vol. 809, 13 April 2004 (2004-04-13), pages 89-94, XP009091002 ISSN: 0272-9172 abstract	1-11
A	EP 0 306 153 A1 (CANON KK [JP]) 8 March 1989 (1989-03-08) example 3	1-11

INTERNATIONAL SEARCH REPORT

Information on patent family members

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Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 2004012037	A1	22-01-2004	AU 2003281568 A1 EP 1525614 A1 WO 2004010496 A1	09-02-2004 27-04-2005 29-01-2004
US 4876210	A	24-10-1989	NONE	
US 2004232428	A1	25-11-2004	JP 3966207 B2 JP 2004297010 A	29-08-2007 21-10-2004
EP 0306153	A1	08-03-1989	AU 623601 B2 DE 3853387 D1 DE 3853387 T2	21-05-1992 27-04-1995 24-08-1995