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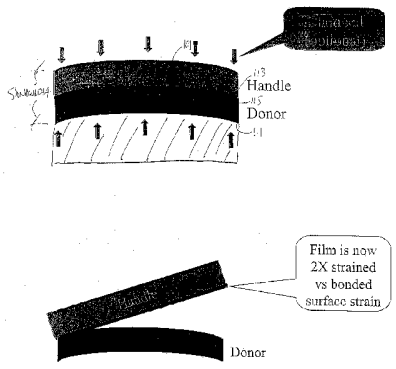
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(54) Title: METHOD AND SYSTEM FOR FABRICATING A STRAINED SEMICONDUCTOR LAYER



(57) Abstract: A method for forming a strained layer of semiconductor material, *e.g.,* silicon, germanium, Group III/V, silicon germanium alloy. The method includes providing a non-deformable surface region having a first predetermined radius of curvature, which is defined by R(1) and is defined normal to the surface region. The method includes providing a first substrate (*e.g.,* silicon wafer) having a first thickness. Preferably, the first substrate has a face, a backside, and a cleave plane defined within the first thickness. The method includes a step of overlying the backside of the first substrate on a portion of the surface region having the predetermined radius of curvature to cause a first bend within the thickness of material to form a first strain within a portion of the first thickness. The method provides a second substrate having a second thickness, which has a face and a backside. The method includes a step of overlying the face of the second substrate on a portion of the face of the first substrate to cause a second bend within the thickness of material to form a second strain within a portion of the second thickness. A step of joining the face of the second substrate to the face of the first substrate form a sandwich structure while maintaining the first bend in the first substrate and the second bend in the second substrate. Preferably, joining occurs using a low temperature process such as plasma activated bonding or the like.

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INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER
IPC: **H01L 21/46**(2006.01);**H01L 21/30**(2006.01)

USPC: 438/455,457,458,464
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)
U.S. : 438/455,457,458,464

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

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 4,059,428 (Andrews) November 1977	1-34
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A	US 6,902616 (Yamazaki et al.) June 2005	1-34

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

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