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(71) Applicant (for all designated States except US): **INTERNATIONAL BUSINESS MACHINES CORPORATION** [US/US]; New Orchard Road, Armonk, NY 10504 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **CHIDAMBARAO, Dureseti** [US/US]; 29 Old Mill Road, Weston, CT 06883 (US). **DOKUMACI, Omer, H.** [TR/US]; 32E Winthrop Court, Wappingers Falls, NY 12590 (US). **GLUSCHENKOV, Oleg, G.** [RU/US]; 150 Academy Street, Apt. 9H, Poughkeepsie, NY 12601 (US).

(74) Agent: **ULRICH, Lisa, J.**; IBM Corporation, Zip 482, 2070 Route 52, Hopewell Junction, NY 12533 (US).

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(54) Title: SILICON DEVICE ON Si:C-OI and SGOI AND METHOD OF MANUFACTURE

(57) Abstract: A semiconductor structure and method of manufacturing is provided. The method of manufacturing includes forming shallow trench isolation (STI) (25) in a substrate and providing a first material (30) and a second material (40) on the substrate. The first material (30) and the second material (40) are mixed into the substrate by a thermal anneal process to form a first island (50) and second island (55) at an nFET region and a pFET region, respectively. A layer of different material is formed on the first island (50) and the second island (55). The STI relaxes and facilitates the relaxation of the first island (50) and the second island (55). The first material (30) may be deposited or grown Ge material and the second material (40) may deposited or grown Si:C or C. A strained Si layer is formed on at least one of the first island (50) and the second island (55).



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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US04/20904

A. CLASSIFICATION OF SUBJECT MATTER

IPC: **H01L 21/8238**(2006.01),**21/76**(2006.01),**21/311**(2006.01)

USPC: 438/154,199,223,224,226,227,228,933,938

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. : 438/154,199,223,224,226,227,228,933,938

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.
X --- Y	US 2002/0061615 (Kawagoe et al.) 23 May 2002 (23.05.2002), see Paragraphs 0084, 0172-0174.	1, 3,4,6,8-12 ----- 7,14,15
X --- Y	US 2003/0162348 (Yeo et al.) 28 August 2003 (23.08.2003), see Paragraphs 0005, 0009, 0010, 0012.	18, 22 ----- 19
AE	US 7,037,770 (Chidambarrao et al.) 2 May 2006 (02.05.2006), see columns 5-6, lines 39-27.	1-22
Y	US 2001/0003364 (Sugawara et al.) 14 June 14, 2001 (14.06.2001), see Paragraph 0008	7, 14,15,19

☒ Further documents are listed in the continuation of Box C.

☐ See patent family annex.

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"A"	document defining the general state of the art which is not considered to be of particular relevance	"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
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"O"	document referring to an oral disclosure, use, exhibition or other means	"&"	document member of the same patent family
"P"	document published prior to the international filing date but later than the priority date claimed		

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Mail Stop PCT, Attn: ISA/US
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Facsimile No. (571) 273-3201

Authorized officer

Carl Whitehead

Telephone No. (571) 272-1702

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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	U.S. 6,492,216 (Yeo et al.) 10 December 2002 (10.12.2002), see Abstract	1
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Y		14
Y	US 6,399,970 (Kubo et al.) 4 June 2002 (04.06.2002), see Abstract	7,14,15,19