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(54) Title: METHOD FOR FORMING TRENCH ISOLATION USING A GAS CLUSTER ION BEAM GROWTH PROCESS

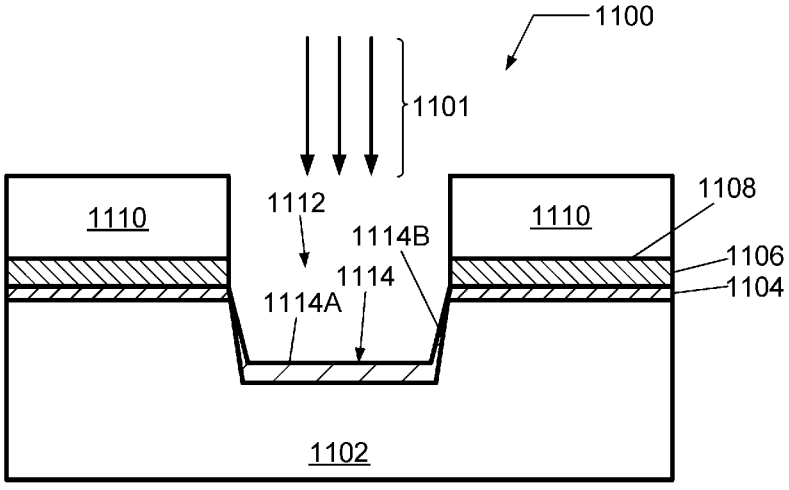


FIG. 1B

(57) Abstract: A method of forming shallow trench isolation on a substrate (152, 252, 1102, 1202, 1302) using a gas cluster ion beam (GCIB) (128, 1101, 1201, 1301) is described. The method comprises generating a GCIB (128, 1101, 1201, 1301), and irradiating the substrate (152, 252, 1102, 1202, 1302) with the GCIB (128, 1101, 1201, 1301) to form a shallow trench isolation structure (1100, 1200, 1300) by growing a dielectric layer (1114, 1204, 1312) in at least one region on the substrate (152, 252, 1102, 1202, 1302).

WO 2010/090903 A3

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A. CLASSIFICATION OF SUBJECT MATTER
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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

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal, INSPEC

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 01/84612 A1 (EPION CORP [US]) 8 November 2001 (2001-11-08) page 1, line 6 - line 11; figures 2a-6 page 10, line 17 - line 36 page 13, line 15 - line 36	1-15
X	US 2007/099380 A1 (KIM JAE-HOON [KR]) 3 May 2007 (2007-05-03) paragraph [0040] - paragraph [0046]; figures 1a-1h	16-20
X	US 2003/132471 A1 (MATSUI MICHIHARU [JP] ET AL) 17 July 2003 (2003-07-17) figure 23	16-20
X	US 2002/014407 A1 (ALLEN LISA P [US] ET AL) 7 February 2002 (2002-02-07)	1
A	paragraph [0011]; figure 6	2-20

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[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
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Name and mailing address of the ISA/	Authorized officer
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2

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INTERNATIONAL SEARCH REPORT

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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	TOYODA N ET AL: "High quality optical thin film formation with low energy gas cluster ion beam irradiation" 2002 14TH INTERNATIONAL CONFERENCE ON ION IMPLANTATION TECHNOLOGY PROCEEDINGS (IEEE CAT. NO.02EX505) IEEE PISCATAWAY, NJ, USA, 2003, pages 701-704, XP002593164 ISBN: 0-7803-7155-0 the whole document	1-20

INTERNATIONAL SEARCH REPORT

Information on patent family members

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