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28 February 2013

(54) **Title:** CARBON CONTAINING LOW-K DIELECTRIC CONSTANT RECOVERY USING UV TREATMENT

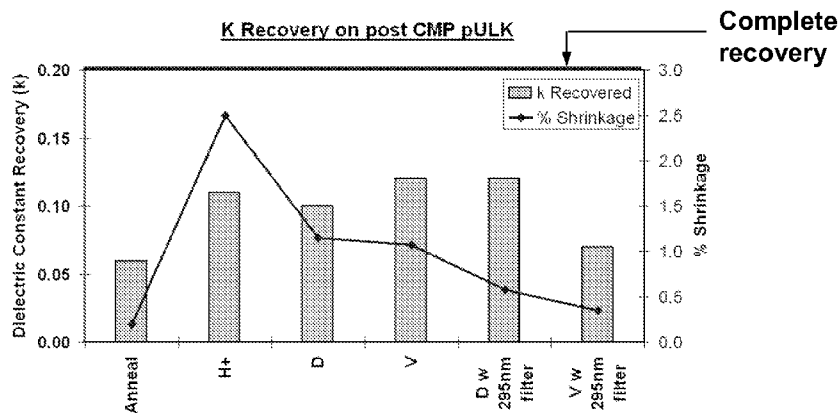


FIG. 5

(57) **Abstract:** A method for the ultraviolet (UV) treatment of carbon-containing low-k dielectric and associated apparatus enables process induced damage repair. The methods of the invention are particularly applicable in the context of damascene processing to recover lost low-k property of a dielectric damaged during processing, either pre-metallization, post-planarization, or both. UV treatments can include an exposure of the subject low-k dielectric to a constrained UV spectral profile and/or chemical silylating agent, or both.

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A. CLASSIFICATION OF SUBJECT MATTER***H01L 21/31(2006.01)i, H01L 21/26(2006.01)i, H01L 21/324(2006.01)i***

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)

H01L 21/31; H01L 21/768; H01L 21/469; H01L 21/4763; C03C 3/247; C03C 3/16; B32B 9/04; B05D 3/06; H01L 21/283; C23C 16/00

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

Japanese utility models and applications for utility models

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

eKOMPASS(KIPO internal) & Keywords: carbon-containing, low-k, dielectric, UV treatment, wavelength, silylating agent, dielectric constant

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2010-0261349 A1 (BART VAN SCHRAVENDIJK et al.) 14 October 2010	1-7, 17, 19-23, 31-33
Y	See abstract; figures 1-3; and paragraphs [0003], [0012]-[0014], [0024]-[0056].	,35-37 8-16, 18, 24-30, 34 ,38,39
Y	US 6566278 B1 (KEITH R. HARVEY et al.) 20 May 2003	38,39
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	See paragraphs [0089], [0135], [0136].	
Y	US 2002-0015850 A1 (TORU NAKAMURA et al.) 07 February 2002	11-13
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 Further documents are listed in the continuation of Box C. See patent family annex.

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"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

"&" document member of the same patent family

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INTERNATIONAL SEARCH REPORT

International application No.

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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.
Y	See paragraphs [0009], [0044], [0049]. US 2002-0187627 A1 (YU-SHEN YUANG) 12 December 2002 See paragraphs [0023]-[0025].	27-30

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