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[Continued on next page]

(54) Title: PROCESS SEQUENCE FOR FORMATION OF PATTERNED HARD MASK FILM (RFP) WITHOUT NEED FOR PHOTORESIST OR DRY ETCH

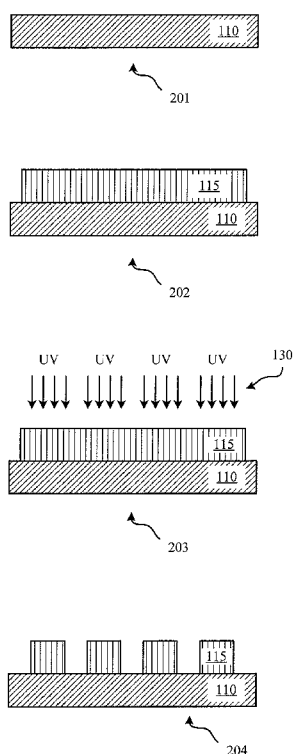


FIG. 2

(57) Abstract: Method and systems for patterning a hardmask film using ultraviolet light is disclosed according to one embodiment of the invention. Embodiments of the present invention alleviate the processing problem of depositing and etching photoresist in order to produce a hardmask pattern. A hardmask layer, such as, silicon oxide, is first deposited on a substrate within a deposition chamber. In some cases, the hardmask layer is baked or annealed following deposition. After which, portions of the hardmask layer are exposed with ultraviolet light. The ultraviolet light produces a pattern of exposed and unexposed portions of hardmask material. Following the exposure, an etching process, such as a wet etch, may occur that removes the unexposed portions of the hardmask. Following the etch, the hardmask may be annealed, baked or subjected to a plasma treatment.



ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV,
MC, MK, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR),
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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2009/033250**A. CLASSIFICATION OF SUBJECT MATTER****H01L 21/027(2006.01)i, G03F 7/00(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)

IPC: G03F 7/20, G03C 5/56, H01L 21/302

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 since 1975

Japanese Utility models and applications for Utility models since 1975

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

eKOMPASS(KIPO internal) & keyword : hard mask, UV, expose, etching

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2007-0212648 A1 (LALBAHADOERSING, S.) 13 September 2007 See figs. 4a-4c, paras. [0012],[0016],[0020]-[0024], and [0062]-[0064]	1-32
Y	US 06511793 B1 (CHO, S.-J. et al.) 28 January 2003 See abstract, figs. 1A-1D, column 2 lines 9-46	1-32
Y	US 06852640 B2 (GUTSCHE, M.) 08 February 2005 See abstract, claims 1 and 15-16	1-32



Further documents are listed in the continuation of Box C.



See patent family annex.

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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
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