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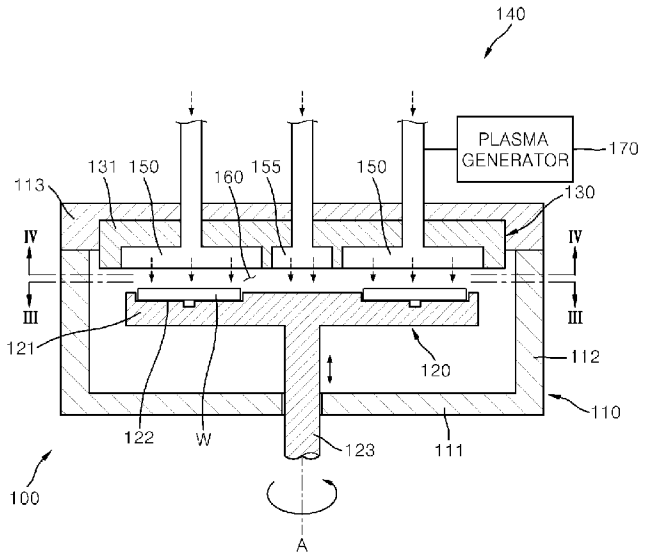
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[Continued on next page]

(54) **Title:** APPARATUS, METHOD FOR DEPOSITING THIN FILM ON WAFER AND METHOD FOR GAP-FILLING TRENCH USING THE SAME

Fig. 2



(57) **Abstract:** Provided are an apparatus and method for depositing a thin film, and a method for gap-filling a trench in a semiconductor device. The thin film depositing apparatus includes a plurality of substrates provided on the same space inside a reactor, wherein deposition of the thin film and partial etching of the deposited thin film are repeated to form the thin film on the plurality of substrates by exposing the substrates to two or more source gases and an etching gas supplied together at predetermined time intervals while rotating the substrates. According to exemplary embodiments, it is possible to concurrently or alternatively perform deposition and etching of a thin film, so that a thin film with good gap-fill capability can be deposited.

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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)

IPC 8 : H01L 21/205

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)

eKIPASS(KIPO internal) "ALD", "ALE", "deposition", "etch", "precursor", "rotation"

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X Y A	JP 63-276221 A (MITSUBISHI ELECTRIC CORP), 14 November 1988 see figures 1-7, page 132 left column line 19- page 133 right column line2	1 2, 11-13, 16-18, 20-24 3-10, 14-15, 19
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☐ Further documents are listed in the continuation of Box C.

☒ 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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