(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
5 April 2001 (05.04.2001)

PCT

(10) International Publication Number
WO 01/24257 A1

(51) International Patent Classification[7]: H01L 21/768, C23C 18/18, H01L 21/00

(21) International Application Number: PCT/US00/26612

(22) International Filing Date:
27 September 2000 (27.09.2000)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
09/410,110 30 September 1999 (30.09.1999) US

(71) Applicant: LAM RESEARCH CORPORATION [US/US]; 4650 Cushing Parkway, Fremont, CA94538 (US).

(72) Inventor: HYMES, Diane, J.; 5617 Algonquin Way, San Jose, CA 95138 (US).

(74) Agent: PENILLA, Albert, S.; Martine, Penilla & Kim, LLP, 710 Lakeway Drive, Suite 170, Sunnyvale, CA 94085 (US).

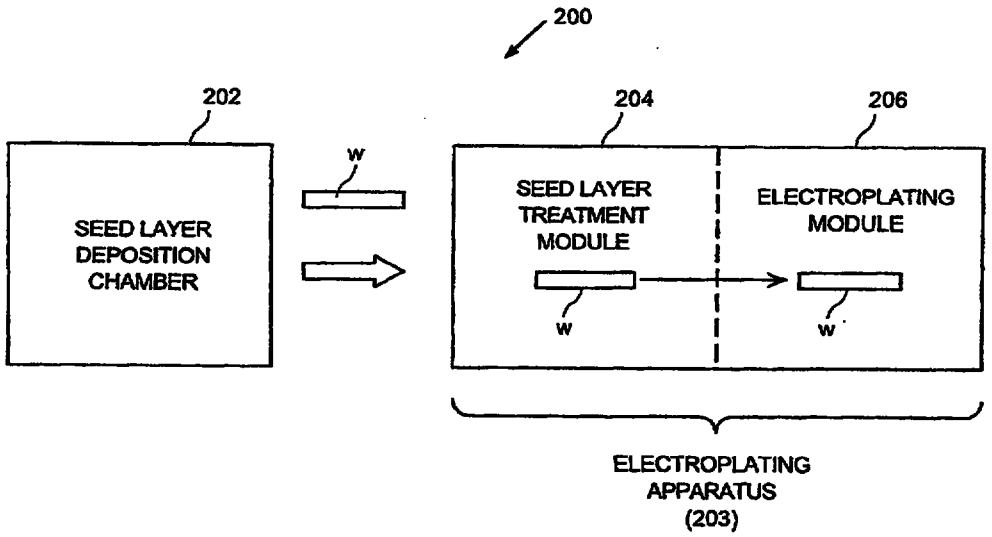
(81) Designated States *(national)*: CN, IL, JP, KR, SG.

(84) Designated States *(regional)*: European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).

Published:
— *With international search report.*
— *Before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments.*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: METHODS AND APPARATUS FOR TREATING SEED LAYER IN COPPER INTERCONNCTIONS



(57) Abstract: A method for making semiconductor interconnect features in a dielectric layer is provided. The method includes depositing a copper seed layer over a barrier layer that is formed over the dielectric layer and into etched features of the dielectric layer. The copper seed layer is then treated to remove an oxidized layer from over the copper seed layer. The method then moves to electroplating a copper fill layer over the treated copper seed layer. The copper fill layer is configured to fill the etched features of the dielectric layer.

WO 01/24257 A1