PCT WORLD INTELLECTUAL PROPERTY ORGANIZATION
International Bureau

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 7 : H01L	A2	(11) International Publication Number: WO 00/39839
		(43) International Publication Date: 6 July 2000 (06.07.00)

(21) International Application Number: PCT/US99/31075

(22) International Filing Date: 28 December 1999 (28.12.99)

(30) Priority Data:
09/222,551 29 December 1998 (29.12.98) US

(71) Applicant: LAM RESEARCH CORPORATION [US/US]; 4650 Cushing Parkway, Fremont, CA 94538–6470 (US).

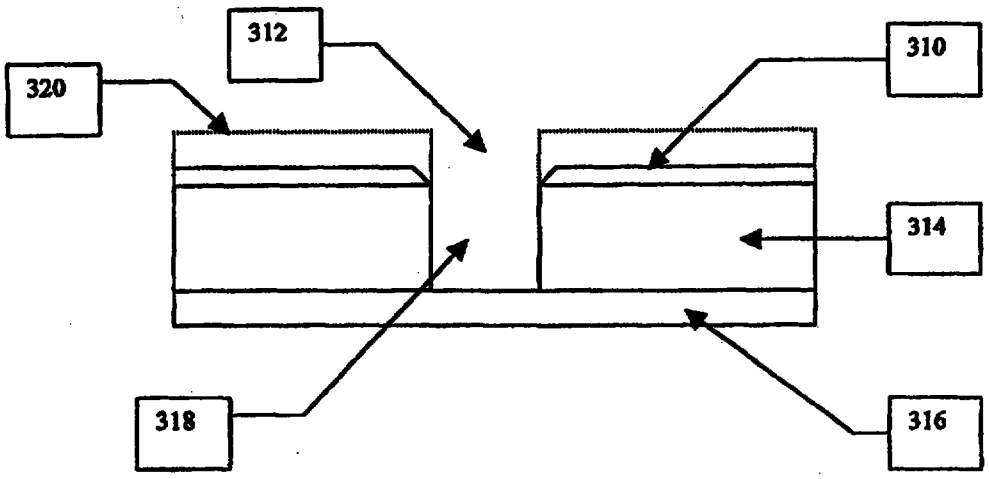
(72) Inventor: MARQUEZ, Linda; 4850 Valpey Park Avenue, Fremont, CA 94538 (US).

(74) Agent: NGUYEN, Joseph, A.; Beyer & Weaver LLP, P.O. Box 61059, Palo Alto, CA 94306 (US).

(81) Designated States: IL, JP, KR, SG, European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).

Published
Without international search report and to be republished upon receipt of that report.

(54) Title: HIGH ASPECT RATIO SUB–MICRON CONTACT ETCH PROCESS IN AN INDUCTIVELY–COUPLED PLASMA PROCESSING SYSTEM



(57) Abstract

The invention relates to a method of etching a feature in an oxide layer using a photoresist mask, the oxide layer being disposed above an underlying layer of a substrate inside an inductively–coupled plasma processing chamber. The method includes flowing an etchant source gas that includes CH^2F^2,C^4F^8 and O^2 or $C^3H^3F^5$,C^4F^8 and O^2 into the plasma processing chamber. The method further includes forming a plasma from the etchant source gas. The method additionally includes etching through the oxide layer of the substrate with the plasma, wherein the etching substantially stops on the underlying layer, the underlying being one of a silicon layer, a tungsten–based layer or a TiN layer.