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(71) Applicant *(for all designated States except US)*: LAM RESEARCH CORPORATION [US/US]; 4650 Cushing Parkway, Fremont, CA 94538–6470 (US).

(72) Inventors; and
(75) Inventors/Applicants *(for US only)*: WICKER, Thomas, E. [US/US]; 4430 Fairview Road, Reno, NV 89511 (US). MARASCHIN, Robert, A. [US/US]; 21629 Edward Way, Cupertino, CA 95014 (US). KENNEDY, William, S. [US/US]; 46 Cape Hatteras Court, Redwood Shores, CA 94065 (US).

(74) Agent: PETERSON, James, W.; Burns, Doane, Swecker & Mathis, L.L.P., P.O. Box 1404, Alexandria, VA 22313–1404 (US).

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(54) Title: LOW CONTAMINATION HIGH DENSITY PLASMA ETCH CHAMBERS AND METHODS FOR MAKING THE SAME

(57) Abstract

A high density plasma processing chamber including an electrostatic chuck for holding a wafer, and consumable parts that are highly etch resistant, less susceptible to generating contamination and temperature controllable is disclosed. The consumable parts include a chamber liner having a lower support section and a wall that is configured to surround the electrostatic chuck. The consumable parts also include a liner support structure having a lower extension, a flexible wall, and an upper extension. The flexible wall is configured to surround an external surface of the wall of the chamber liner, and the liner support flexible wall is spaced apart from the wall of the chamber liner. The lower extension of the liner support is however, configured to be in direct thermal contact with the lower support section of the chamber liner. Additionally, a baffle ring is part of the consumable parts, and is configured to be assembled with and in thermal contact with the chamber liner and the liner support. A heater is capable of being thermally connected to the liner support for thermal conducting a temperature from the liner support to the chamber liner and the baffle ring. In a most preferred embodiment, the chamber liner and the baffle ring are made from materials that are innocuous to materials on the wafer being etched. In this manner, once these materials are exposed to the energy of the high density plasma sputtering, volatile products will be produced that are substantially similar to volatile etch products produced during the etching of surface layers of the wafer. These volatile products can then be removed from the chamber.

