

EDGE ELECTRODES WITH DIELECTRIC COVERS

ABSTRACT OF THE DISCLOSURE

[48] The embodiments provide apparatus and methods for removal of etch byproducts, dielectric films and metal films near the substrate bevel edge, and chamber interior to avoid the accumulation of polymer byproduct and deposited films and to improve process yield. In an exemplary embodiment, a plasma processing chamber configured to clean a bevel edge of a substrate is provided. The plasma processing chamber includes a substrate support configured to receive the substrate. The plasma processing chamber also includes a bottom edge electrode surrounding the substrate support. The bottom edge electrode and the substrate support are electrically isolated from one another by a bottom dielectric ring. A surface of the bottom edge electrode facing the substrate is covered by a bottom thin dielectric layer. The plasma processing chamber further includes a top edge electrode surrounding a top insulator plate opposing the substrate support. The top edge electrode is electrically grounded. A surface of the top edge electrode facing the substrate is covered by a top thin dielectric layer. The top edge electrode and the bottom edge electrode oppose one another and are configured to generate a cleaning plasma to clean the bevel edge of the substrate.

Figure 1A