PROCESS CHAMBER FOR ETCHING LOW K AND OTHER DIELECTRIC FILMS

ABSTRACT

Methods and process chambers for etching of low-k and other dielectric films are described. For example, a method includes modifying portions of the low-k dielectric layer with a plasma process. The modified portions of the low-k dielectric layer are etched selectively over a mask layer and unmodified portions of the low-k dielectric layer. Etch chambers having multiple chamber regions for alternately generating distinct plasmas are described. In embodiments, a first charge coupled plasma source is provided to generate an ion flux to a workpiece in one operational mode, while a secondary plasma source is provided to provide reactive species flux without significant ion flux to the workpiece in another operational mode. A controller operates to cycle the operational modes repeatedly over time to remove a desired cumulative amount of the dielectric material.

Fig. 2