ABSTRACT

CONTROLLED GAS MIXING FOR SMOOTH SIDEWALL RAPID ALTERNATING ETCH PROCESS

A method for etching features in a silicon layer disposed below a mask in a plasma processing chamber a plurality of cycles is provided. A deposition phase forming a deposition on the silicon layer in the plasma processing chamber is provided comprising providing a deposition gas into the plasma processing chamber wherein the deposition gas comprises a halogen containing etchant component and a fluorocarbon deposition component, forming the deposition gas into a plasma, which provides a net deposition on the silicon layer, and stopping the flow of the deposition gas. A silicon etch phase is provided, comprising providing a silicon etch gas into the plasma processing chamber that is different than the deposition gas, forming the silicon etch gas into a plasma to etch the silicon layer, and stopping the flow of the silicon etch gas.

FIG. 1



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