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(54) Title: METHOD FOR ETCHING LOW K DIELECTRICS

(57) Abstract

The present disclosure pertains to a method for plasma etching of low k materials, particularly organic polymeric–based low k materials. The method employs an etchant plasma where the major etchant species are generated from a halogen other than fluorine and oxygen. The preferred halogen is chlorine. The volumetric (flow rate) or atomic ratio of the halogen: oxygen in the plasma source gas ranges from about 1:20 to about 20:1. When the halogen is chlorine, the preferred atomic ratio of chlorine: oxygen ranges from about 1:10 to about 5:1. When this atomic ratio for chlorine: oxygen is used, the etch selectivity for the low k material over adjacent oxygen–comprising or nitrogen–comprising layers is advantageous, typically in excess of about 10:1. The plasma source gas may contain additives in an amount of 15 % or less by volume which are designed to improve selectivity for the low k dielectric over an adjacent material, to provide a better etch profile, or to provide better critical dimension control, for example.