

ABSTRACT

PLASMA ETCHING METHOD

The present invention is a plasma etching method that is implemented under plasma conditions using a process gas, wherein at least one gas selected from a hydrofluoroether represented by a formula (I) is used as the process gas, wherein R represents a hydrogen atom or a fluoroalkyl group represented by $C_n F_{2n+1}$, and m and n represent integers that satisfy $1 \leq m \leq 3$ and $3 \leq (m+n) \leq 4$. This plasma etching method enables the etching rate of a silicon oxide film decreases, and the productivity achieved by the etching process deteriorates when a plurality of non-processing targets (e.g., silicon nitride, silicon, and organic film) are formed on the substrate, and conditions whereby a high selectivity ratio is achieved with respect to each material, are selected. This plasma etching method can implement high etching selectivity with respect to silicon nitride, silicon, and an organic material while achieving a sufficiently high etching rate without using oxygen and hydrogen when etching silicon oxide.

