

PLASMA ETCHING METHOD

ABSTRACT

A plasma etching method can form a hole having a required opening diameter in a silicon nitride
5 layer, while suppressing a tip end portion of the hole from being narrowed. The plasma etching method
includes a first process of supplying a processing gas containing oxygen and fluorocarbon into a plasma
processing apparatus; and a second process of etching a silicon nitride layer 106a of a processing target
object with a first mask 106 by exciting the processing gas into plasma. Further, the second process is
performed in a state where an organic film ad generated from the processing gas is formed on an inner
10 wall of an opening of the first mask 106 by gradually reducing a temperature of the processing target
object from a first temperature T1(80°C) to a second temperature T2(40°C).

(Figure 1)