WE CLAIM

1. An etching method of etching a multilayered film including a first film and a second film that have different permittivities and are alternately stacked on top of each other, the etching method comprising:

preparing, within a processing vessel of a plasma processing apparatus, a processing target object having the multilayered film and a mask provided on the multilayered film; and

etching the multilayered film by exciting a processing gas containing a hydrogen gas, a hydrofluorocarbon gas, a fluorine-containing gas, a hydrocarbon gas, a boron trichloride gas and a nitrogen gas within the processing vessel.

2. The etching method of Claim 1,

wherein the hydrofluorocarbon gas is a CH_2F_2 gas, a CH_3F gas or a CHF_3 gas.

3. The etching method of Claim 1,

wherein the fluorine-containing gas is a NF_3 gas or a SF_6 gas.

4. The etching method of Claim 1,

wherein the hydrocarbon gas is a CH_4 gas.

5. The etching method of Claim 1,

wherein the first film is a silicon oxide film, and the second film is a silicon nitride film.

6. The etching method of Claim 1,

wherein the first film is a silicon oxide film, and the second film is a polysilicon film.

7. The etching method of Claim 1,

wherein the first film and the second film are stacked in twenty-four or more layers in total.

8. The etching method of Claim 1,

wherein the mask is made of amorphous carbon.