CLAIMS

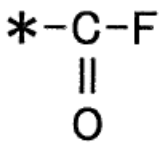
1. An etching method comprising an etching step in which an etching target including an oxide is placed in a chamber, and the oxide included in the etching target is etched in the chamber by using an etching gas containing a fluorine-containing compound including a functional group represented by a chemical formula below,

wherein the oxide is at least one of a metal oxide or a semimetal oxide;

wherein in the etching step, the etching is performed without generating a plasma of the etching gas in the chamber;

wherein in the chemical formula below, a symbol * means a bonding point with another atom or atomic group;

[Chem. 1]



wherein the etching target includes the oxide film and a non-etching target film selected from a silicon film, a silicon nitride film, and an organic film; and

wherein an etching selectivity ratio defined as (etching rate of the oxide film)/(etching rate of the non-etching target film) is 6.0 or more.

2. The etching method according to claim 1, wherein in the etching step, the etching is performed with the etching gas without using the plasma of the etching gas.

3. The etching method according to claim 1, wherein a plasma generation source is located at a position away from the chamber, and in the etching step, the etching is performed in the chamber by the plasma of the etching gas generated outside the chamber by the plasma generation source.

4. The etching method according to any one of claims 1 to 3, wherein the fluorine-containing compound has from 1 to 5 carbon atoms.

5. The etching method according to any one of claims 1 to 3, wherein the fluorine-containing compound has from 1 to 3 carbon atoms.

6. The etching method according to any one of claims 1 to 3, wherein the fluorine-containing compound is at least one of carbonyl fluoride or oxalyl fluoride.

7. The etching method according to any one of claims 1 to 6, wherein a metal of the metal oxide contains at least one selected from tungsten, titanium, tantalum, ruthenium, iridium, and rhodium.

8. The etching method according to any one of claims 1 to 7, wherein a semimetal of the semimetal oxide contains silicon.