

WHAT IS CLAIMED IS:

1. A plasma etching method for plasma-etching a ground surface of a wafer by a plasma etching apparatus after the wafer with a tape attached to its surface on one side is subjected to grinding of its surface on an other side by a grinding wheel while supplying grinding water,

the plasma etching apparatus including an electrostatic chuck for holding the wafer through the tape by an electrostatic force generated by supplying direct current power to electrodes disposed inside, and a reduced-pressure chamber which accommodates the electrostatic chuck holding the wafer, the pressure inside which is reduced, in which a reaction gas is brought into a plasma state, and in which plasma etching of the wafer is conducted,

the plasma etching method comprising:

a drying step of applying heat to the tape to remove water present in the tape, wherein the drying step is only performed with the tape contacting an upper surface of a heater table, the heater table being a vacuum table including a porous plate in communication with a suction source, the porous plate having a heater disposed therein;

an electrostatic holding step of supplying direct current power to the electrodes of the electrostatic chuck to generate static electricity and to thereby

electrostatically hold the wafer, after the drying step;
and

an etching step including reducing the pressure in the reduced-pressure chamber, and plasma-etching the ground surface of the wafer held by the electrostatic chuck by the reaction gas brought into the plasma state, after the electrostatic holding step.

2. The method of claim 1, wherein the heater table is heated for about one minute.

3. The method of claim 1, wherein the heater incorporated into the heating table is provided over substantially the entire upper surface of the heating table.

4. The method of claim 1, wherein the etching step is performed on the wafer at the same time that the drying step is being performed upon a subsequent wafer scheduled to be subjected to the etching step next.