CLAIMS

[Claim 1] A substrate holding device for clamping a substrate in a processing chamber in which plasma processing is carried out, the substrate holding device comprising: a chuck main body having positive and negative electrodes; a dielectric chuck plate having a rib portion capable of bringing a peripheral edge portion of the substrate into surface contact therewith, and multiple support portions provided upright and arranged at predetermined intervals in an internal space surrounded by the rib portion; a DC power supply for applying a DC voltage between the two electrodes; an AC power supply for passing an alternating current through capacitance of the chuck plate; first measuring means for measuring the alternating current passing through the capacitance of the chuck plate; and removing means for removing an AC component superimposed on the alternating current from a plasma produced in the processing chamber during the plasma processing.

[Claim 2] The substrate holding device according to claim 1, further comprising control means for controlling operation of the DC power supply and the AC power supply, wherein the control means controls the DC voltage applied between the two electrodes so that an alternating current value measured with the first measuring means is in a predetermined range.

[Claim 3] The substrate holding device according to any one of claims 1 and 2, further comprising: gas introduction means for introducing a predetermined gas into the internal space; and second measuring means for measuring a gas flow rate of the gas introduced into the internal space, wherein

the control means controls the DC voltage applied between the two electrodes so that the gas flow rate measured with the second measuring means is in a predetermined range.

[Claim 4] The substrate holding device according to any one of claims 1 to 3, wherein the removing means is any one of a filter circuit for filtering out AC components in a specific frequency band and a digital signal processor which functions as a filter for filtering out AC components in a specific frequency band.

CLAIMS

[Claim 1] A substrate holding device for clamping a substrate in a processing chamber in which plasma processing is carried out, the substrate holding device comprising:

a chuck main body having positive and negative electrodes;

a dielectric chuck plate having a rib portion capable of bringing a peripheral edge portion of the substrate into surface contact therewith, and multiple support portions provided upright and arranged at predetermined intervals in an internal space surrounded by the rib portion;

a DC power supply for applying a DC voltage between the two electrodes;

an AC power supply for passing an alternating current through capacitance of the chuck plate;

first measuring means for measuring the alternating current passing through the capacitance of the chuck plate;

removing means for removing an AC component superimposed on the alternating current from a plasma produced in the processing chamber during the plasma processing; and

control means for controlling operation of the DC power supply and the AC power supply,

wherein the control means controls the DC voltage applied between the two electrodes so that an alternating current value measured with the first measuring means is in a predetermined range, and

wherein the predetermined range is determined from variations in impedance value due to warpage in the substrate, the variations in impedance value being measured in advance and stored in the control means.

[Claim 2] The substrate holding device according to claim 1, further comprising: gas introduction means for introducing a predetermined gas into the internal space; and second measuring means for measuring a gas flow rate of the gas introduced into the internal space, wherein

the control means controls the DC voltage applied between the two electrodes so that the gas flow rate measured with the second measuring means is in a predetermined range.

[Claim 3] The substrate holding device according to any one of claims 1 and 2, wherein the removing means is any one of a filter circuit for filtering out AC components in a specific frequency band and a digital signal processor which functions as a filter for filtering out AC components in a specific frequency band.