

WHAT IS CLAIMED IS:

1. A substrate processing apparatus comprising:
 - a support unit including a chuck configured to support a substrate;
 - a gas supply unit including a first gas supply part configured to supply process gas to a central area of the substrate supported by the chuck;
 - a dielectric plate disposed to face the substrate supported by the chuck;
 - an upper electrode spaced apart from the dielectric plate while surrounding the dielectric plate when viewed from a top;
 - a lower electrode disposed to face the upper electrode while surrounding the chuck when viewed from the top; and
 - an insulating ring interposed between the chuck and the lower electrode,
 - wherein the chuck includes a stepped portion such that a height of a central area of the chuck is higher than a height of an edge area of the chuck and the edge area of the chuck is not in contact with an edge area of the substrate,
 - wherein the insulating ring surrounds the stepped portion of the chuck forming a stepped portion and the lower electrode surrounds the stepped portion of the insulating ring,
 - wherein the insulating ring and the lower electrode are spaced apart from a bottom surface of the edge area of the substrate, and
 - wherein the dielectric plate, the upper electrode, and the lower electrode are provided, such that a volume of a space, in which the process gas supplied by the gas supply unit flows, is larger in the edge area of the substrate supported by the chuck than the central area of the substrate supported by the chuck, when viewed from the top.
2. The substrate processing apparatus of claim 1, wherein the chuck is connected with a power source.

3. The substrate processing apparatus of claim 1, wherein the upper electrode is grounded.

4. The substrate processing apparatus of claim 1, wherein the lower electrode is grounded.

5. The substrate processing apparatus of any one of claim 2 to 4, wherein the apparatus further includes a controller,

wherein the controller is configured to:

control the support unit and the gas supply unit such that the power source applies power to the chuck to generate plasma at the edge area of the substrate supported by the chuck when the first gas supply part supplies the process gas.

6. The substrate processing apparatus of claim 5, wherein the gas supply unit further includes a second gas supply part configured to supply the process gas through a space between the dielectric plate and the upper electrode which are provided on the edge area of the substrate supported by the chuck.

7. A method for processing a substrate using the substrate processing apparatus of claim 1, the method comprising:

processing the edge area of the substrate supported by the chuck by supplying plasma,

wherein the process gas is supplied only to the central area of the substrate, when the edge area of the substrate is processed.

8. A substrate processing apparatus comprising:

a support unit configured to support a substrate in a process space;
a gas supply unit to supply process gas to the substrate supported by the support unit;
a dielectric plate disposed to face the substrate supported by the support unit; and
an upper electrode spaced apart from the dielectric plate while surrounding the dielectric plate when viewed from a top;

wherein the support unit includes:

a chuck having a support surface to support the substrate and connected with a power source; and

a lower electrode disposed to face the upper electrode while surrounding the chuck when viewed from the top,

an insulating ring interposed between the chuck and the lower electrode,

wherein the chuck includes a stepped portion such that a height of a central area of the chuck is higher than a height of an edge area of the chuck and the edge area of the chuck is not in contact with an edge area of the substrate,

wherein the insulating ring surrounds the stepped portion of the chuck forming a stepped portion and the lower electrode surrounds the stepped portion of the insulating ring,

wherein the insulating ring and the lower electrode are spaced apart from a bottom surface of the edge area of the substrate,

wherein the gas supply unit includes:

a first gas supply part configured to supply the process gas to a central area of the substrate supported by the chuck; and

a second gas supply part configured to supply the process gas through a space between the dielectric plate and the upper electrode which are provided on the edge area of the substrate supported by the chuck,

wherein the support unit, the dielectric plate, and the upper electrode are provided,

such that a volume of a space, in which the process gas supplied by the gas supply unit flows, is larger in the edge area of the substrate supported by the chuck than the central area of the substrate supported by the chuck, when viewed from the top.

9. The substrate processing apparatus of claim 1, wherein the gas supply unit further includes a second gas supply part configured to supply the process gas through a space between the dielectric plate and the upper electrode which are provided on the edge area of the substrate supported by the chuck.

10. The substrate processing apparatus of 9, wherein the apparatus further includes a controller,

wherein the controller is configured to:

control the first gas supply part and the second gas supply part such that only the first gas supply part supplies the process gas, when processing the edge area of the substrate supported by the chuck.

11. The substrate processing apparatus of claim 10, wherein the controller is configured to:

control the support unit and the gas supply unit such that the power source applies power to the chuck to generate plasma at the edge area of the substrate supported by the chuck when the first gas supply part and/or the second gas supply part supplies the process gas.