CLAIMS

WHAT IS CLAIMED IS:

1. A reaction chamber applied to semiconductor processing equipment comprising an insulating chamber, a first heating body, a second heating body, and an isolation protection structure, wherein:

the first heating body and the second heating body are arranged in the insulating chamber at an interval, and a carrier device for carrying a wafer is arranged on the second heating body;

the isolation protection structure is arranged in the insulating chamber, located between the first heating body and the second heating body, forms a reaction space, and isolates the first heating body and the second heating body from the reaction space, an opening is arranged on a side of the isolation protection structure close to the second heating body and is configured to accommodate the carrier device, and a carrying surface of the carrier device is exposed in the reaction space; and

an inlet opening and an outlet opening are arranged on sidewalls on two sides of the insulating chamber, and the inlet opening and the outlet opening communicate with the reaction space.

2. The reaction chamber according to claim 1, wherein the isolation protection structure includes a first isolating member, a second isolating member, and a third isolating member, wherein:

the first isolating member is arranged at the second heating body, is configured to cover a surface of the second heating body neighboring to the reaction space, and includes the opening;

the second isolating member is arranged at the first heating body and configured to cover a surface of the first heating body neighboring the reaction space; and

two third isolating members are provided and extend along a gas flow direction from the inlet opening to the outlet opening, the two third isolating members are arranged on two sides of the carrier device at an interval, and each third isolating member of the two third isolating members connects between the second isolating member and the second heating body.

3. The reaction chamber according to claim 2, wherein the carrier device includes a rotation table and a carrier plate for carrying the wafer arranged on the rotation table, and the rotation table is located in the opening and rotatably connected to the second heating body through a rotating shaft; and

the rotation table includes a protrusion table, the carrier plate is arranged on the protrusion table, the rotation table includes an edge member protruding relative to an outer peripheral wall of the protrusion table, the first isolating member includes a first flange at an edge of the opening, and the first flange partially overlaps with the edge member to shield a gap between the edge member and the first isolating member.

4. The reaction chamber according to claim 3, wherein two surfaces of the rotation table and the second heating body that face to each other are a conical concave surface and a conical convex surface and are arranged at an interval, and an inlet channel is arranged in the second heating body for introducing a rotating drive gas into a gap between the conical concave surface and the conical convex surface to drive the rotation table to rotate.

5. The reaction chamber according to claim 4, wherein the first isolating member includes two first sub-isolating members, one second sub-isolating member, and two third sub-isolating members arranged around the carrier device, the two first sub-isolating members, the one second sub-isolating member, and the two third sub-isolating members cooperate to form the opening, wherein:

the two first sub-isolating members are located on an upstream side of the gas flow direction and are symmetrically arranged relative to the carrier device;

the second sub-isolating member is located on a downstream side of the gas flow direction and corresponds to a central area of the reaction space;

the two third sub-isolating members are located on the downstream side of the gas flow direction, correspond to edge areas of the reaction space, and are symmetrically arranged relative to the carrier device; and

the second sub-isolating member and the second heating body form an intermediate exhaust channel, and gaps between the two third sub-isolating members and the second sub-isolating member form edge exhaust channels, an inlet end of the intermediate exhaust channel and inlet ends of the edge exhaust channels communicate with the gap between the conical concave surface and the conical convex surface, and an outlet end of the intermediate exhaust channel and outlet ends of the edge exhaust channels are located at one end of the second sub-isolating member away from the carrier device.

6. The reaction chamber according to claim 5, wherein a second flange is arranged at an edge of the second sub-isolating member neighboring to a third sub-isolating member, the

second flange partially overlaps with the third sub-isolating member to shield a gap between the second sub-isolating member and the third sub-isolating member.

7. The reaction chamber according to any one of claims 2 to 6, wherein the first isolating member includes a first inclined surface and a second inclined surface, the first inclined surface is located upstream of the gas flow direction and is joined with a lower end of the inlet opening, and a distance between the first inclined surface and the second isolating member gradually decreases along the gas flow direction; and

the second inclined surface is located downstream of the gas flow direction and is joined with a lower end of the outlet opening, and a distance between the second inclined surface and the second isolating member gradually increases along the gas flow direction.

8. The reaction chamber according to claim 7, wherein an opening size of the outlet opening gradually increases along the gas flow direction, and a minimum opening size of the outlet opening is equal to an opening size of a conjunction of the reaction space with the outlet opening.

9. The reaction chamber according to claim 2, wherein the second isolating member includes a thermally conductive isolating plate made of a thermally conductive material and an isolating layer covering an entire outer surface of the thermally conductive isolating plate.

10. The reaction chamber according to claim 9, wherein the thermally conductive material is graphite, and a material used for the isolating layer includes silicon carbide.

11. The reaction chamber according to claim 2, wherein the second isolating member and the third isolating member both include insulating isolating plates made of an insulating material.

12. The reaction chamber according to claim 1, wherein the first heating body and the second heating body are heated in an induction heating method, the first heating body and the second heating body both include a flat member and an arc member, and the flat member of the first heating body and the flat member of the second heating body are arranged at an interval opposite to each other, the flat member and the arc member form a hollow chamber, and at least one isolating layer is arranged in the hollow chamber to isolate the hollow chamber to form a plurality of sub-hollow chambers, and the isolating layer is configured to cause heating temperatures at different positions of the first heating body and the second heating body to be consistent.

13. The reaction chamber according to claim 1 or 12, wherein the insulating chamber is a cylindrical chamber formed by two semi-annular insulating covers and two disk-shaped insulating covers that are joint with each other, wherein the inlet opening and the outlet opening are provided on the two disk-shaped insulating covers, respectively.

14. A semiconductor processing equipment comprising a reaction chamber and an induction coil for heating the reaction chamber, the reaction chamber adopts the reaction chamber according to any one of claims 1 to 13, wherein the induction coil is wound externally

around the insulating chamber and is configured for inductively heating the first heating body and the second heating body.

15. The semiconductor processing equipment according to claim 14, wherein the semiconductor processing equipment is applied to an epitaxial growth process.