

CLAIMS

WHAT IS CLAIMED IS:

1. A collection assembly sleeved on a base and configured to collect particle impurities in a semiconductor pre-cleaning chamber, comprising a protection plate (100) and a collection plate group arranged at an interval in the semiconductor pre-cleaning chamber, wherein the protection plate (100) is annular, ~~and a plurality of first through-holes (110) for a process gas of the semiconductor pre-cleaning chamber to pass~~ are arranged at the protection plate (100), the first through-holes (110) are arranged opposite to the collection plate group, the collection plate group includes at least one annular collection plate (210) arranged fixedly and at an interval; and

at least the collection plate is located on a side of a gas outlet end of the first through-holes and configured to capture at least a part of the particle impurities in the semiconductor pre-cleaning chamber passing through the first through-holes (110) is captured by the at least one collection plate (210).

2. The collection assembly according to claim 1, wherein ~~the collection plate is annular and arranged opposite to the protection plate, and orthogonal projections of all the first through-holes of the protection plate on a horizontal plane are within an orthogonal projection of the collection plate on the horizontal plane.~~ a surface of the at least one collection plate (210) opposite to the protection plate (100) is a plane.

3. The collection assembly according to claim 2, wherein the at least one collection plate (210) is arranged parallel to the protection plate (100);
and/or, an outer edge portion of at least one of the at least one collection plate (210) has an annular protrusion (212) extending in a direction toward the protection plate (100),

~~and a gap is provided between the annular protrusion (212) and the protection plate (100). a surface of the collection plate opposite to the protection plate is a plane, and the plane is parallel to the protection plate or is inclined relative to the protection plate.~~

4. The collection assembly according to claim ~~21~~, wherein a surface of the at least one collection plate ~~(210) opposite to~~opposite to the protection plate ~~(100)~~ has a concave structure.

5. The collection assembly according to claim 4, wherein the concave structure ~~includes is~~ an annular ~~concave~~ groove (211) arranged around ~~a circumference of the collection plate~~ an axis, the axis is a geometric centerline of the protection plate (100), and a shape of a longitudinal cross-section of the annular groove (211) is of a rectangle, an arc, a triangle, or a stepped shape.

~~6. The collection assembly according to claim 5, wherein a shape of a longitudinal cross-section of the annular groove includes a rectangle, an arc, or a triangle.~~

~~76.~~ The collection assembly according to ~~any one of claims 1 to 6~~claim 1, wherein an projection of one of an outer peripheral edge of the collection plate includes an annular protrusion extending toward a direction close to the protection plate, and a gap is provided between an end of the annular protrusion close to the protection plate and the protection plate the at least one collection plate (210) closest to the protection plate (100) on a horizontal plane is a first projection, and projections of all the first through-holes (110) at the protection plate (100) on the horizontal plane are within the first projection.

~~87.~~ The collection assembly according to any one of claims 1 to 6, wherein ~~the a~~ surface of the at least one collection plate (210) opposite to the protection plate (100) is a roughened surface.

~~98.~~ The collection assembly according to any one of claims 1 to 6, wherein ~~the collection assembly further includes~~ a distance adjustment ~~structure piece configured to adjust a distance~~is provided between the at least one collection plate (210) and the protection plate (100) and/or between adjacent two collection plates (210).

~~10.~~ The collection assembly according to ~~claim 9,~~ wherein ~~the distance adjustment structure includes at least one distance adjustment piece, the at least one distance adjustment piece is arranged between the collection plate and the protection plate and is located at an inner or outer peripheral edge of the protection plate, and the distance between the collection plate and the protection plate is adjusted by setting a number and/or thickness of the distance adjustment piece.~~

~~119.~~ The collection assembly according to any one of claims 1 to 6, wherein each of the at least one collection plate (210) is also provided with a connection member (220) for fixed connection, the connection member (220) being arranged at an inner ~~or outer peripheral edge portion~~ of the collection plate (210), or the connection member (220) being arranged at an outer edge portion of the collection plate (210), and a plurality of threaded holes being correspondingly arranged at the connection member and the protection plate and distributed at intervals along a circumference of the protection plate; and

~~the collection assembly further includes a plurality of fastening screws, the fastening screws being threadedly connected to the threaded holes in a one-to-one correspondence and configured to fixedly connect the connection member to the protection plate.~~

~~1210.~~ The collection assembly according to any one of claims 1 to 6, wherein the collection plate group includes at least two collection plates (210) ~~are arranged at intervals along a direction away from the protection plate~~, except a collection plate (210) of the at least two collection plates (210) farthest to the protection plate (100), ~~a plurality of straight second~~ through-holes are arranged at the other collection plates (210), axes of the straight plurality of second through-holes of ~~two~~ neighboring collection plates (210) do not coincide, and axes of the straight second through-holes of the collection plate (210) closest to the protection plate (100) do not coincide axes of the first through-holes (110) of the protection plate (100).

~~1311.~~ A semiconductor pre-cleaning chamber comprising a chamber body (510), a Faraday cup (560) arranged in the chamber body (510), a base (590) configured to carry a waferwork piece (800) to be processed, and the collection assembly according to any one of claims 1 to ~~1210~~, wherein ~~the protection plate of~~ the collection assembly is sleeved on the base (590), and ~~when the base is in a process position~~, the protection plate (100) cooperates with the Faraday cup (560) in a process to divide space inside the chamber body (510) into an upper sub-chamber, and a lower sub-chamber.