

Claims

1. A substrate holding apparatus comprising:

a top ring body provided with a first portion, wherein a first hole is provided at an outside of the first portion and a second hole is provided at an inside of the first portion;

an elastic film provided with a second portion capable of being engaged with the first portion is provided, wherein the elastic film comprises a first face and a second face opposite the first face, a plurality of areas being formed between the first face and the top ring body, the second face being capable of holding a substrate;

a first line capable of pressuring a first area via the first hole located at the first area among the plurality of areas;

a second line capable of exhausting the first area via the second hole located at the first area;

a measurement instrument whose measurement value varies based on a flow volume of the first area;

a third line communicating with a second area among the plurality of areas, the second area being different from the first area, the third line being capable of pressuring or exhausting the second area; and

a determiner configured to, when the substrate is

adsorbed to the second face, determine whether the substrate is adsorbed to the second face based on the measurement value, wherein the second portion is a convex portion.

2. The substrate holding apparatus according to claim 1, wherein the convex portion is ring-shaped.

3. The substrate holding apparatus according to claim 1 or claim 2, wherein no holes are formed on the elastic film.

4. The substrate holding apparatus according to one of claims 1-3, wherein an existence of the second portion increases a difference between the flow volume in the first area when the substrate is adsorbed to the second face and the flow volume in the first area when the substrate is not adsorbed to the second face.

5. The substrate holding apparatus according to one of claims 1-4, wherein the measurement instrument is a pressure gauge capable of measuring a flow value of the second line.

6. The substrate holding apparatus according to one of claims 1-4, wherein the measurement instrument is a pressure gauge capable of measuring a pressure of the first line or

the second line.

7. The substrate holding apparatus according to one of claims 1-6, further comprising a determiner configured to determine whether the substrate is adsorbed to the second face based on the measurement value.

8. An elastic film used with a top ring body provided with a first hole at an outside of a first portion and a second hole at an inside of the first portion to configure a substrate holding apparatus, the elastic film comprising:

a first face provided with a second portion capable of being engaged with the first portion, a plurality of areas being formed between the first face and the top ring body; and

a second face opposite the first face, the second face being capable of holding a substrate, wherein

the second portion is a convex portion,

the first hole is located at a first area among the plurality of areas, and the first area is capable of being pressured via the first hole,

the second hole is located at the first area, and the first area is capable of being exhausted via the second hole,

the substrate holding apparatus is provided with a

measurement instrument whose measurement value varies based on a flow volume of the first area, the measurement value is used for determining whether the substrate is adsorbed to the second face, and

a second area among the plurality of areas is capable of being pressured or exhausted, the second area being different from the first area.

9. The elastic film according to claim 8, wherein the convex portion is ring-shaped.

10. The elastic film according to claim 8 or claim 9, wherein no holes are formed on the elastic film.

11. The elastic film according to one of claims 8-10, wherein an existence of the second portion increases a difference between the flow volume in the first area when the substrate is adsorbed to the second face and the flow volume in the first area when the substrate is not adsorbed to the second face.

12. The elastic film according to one of claims 8-10, wherein a second portion is provided both side of the second line in a vertical plane including the second line exhausting

the first area, and the second portion and the top ring body are contacted with each other, thereby the first area is sealed.