

WHAT IS CLAIMED IS:

1. An apparatus for processing a substrate, the apparatus comprising:
 - a housing having a processing space therein;
 - a transfer robot configured to load the substrate into the processing space or
 - 5 unload the substrate from the processing space;
 - a support unit including a chuck configured to support the substrate in the processing space and a lift pin configured to move the substrate in an up-down direction;
 - a dielectric plate having a lower surface disposed to face an upper surface of
 - 10 the chuck;
 - a gap measurement unit configured to measure a gap between the dielectric plate and the substrate supported by the lift pin or a gap between the dielectric plate and the chuck; and
 - a controller for controlling the support unit and the gap measurement unit to
 - 15 move the lift pin upward and measure the gap in a state in which the lift pin is moved upward,
 - wherein the controller:
 - stores an upper limit corresponding to a first gap from the lower surface of the dielectric plate and/or a lower limit corresponding to a second gap from the lower
 - 20 surface of the dielectric plate, the second gap being smaller than the first gap; and
 - determines whether to load the substrate into the processing space or whether to unload the substrate from the processing space, by comparing the measured gap with the upper limit and/or the lower limit.
- 25 2. The apparatus of claim 1, wherein the gap measurement unit includes:

an irradiation part configured to irradiate light; and
a light-receiving part disposed on a travel path of the light and configured to receive the light.

5 3. The apparatus of claim 2, wherein the housing includes a pair of view ports configured to face each other,

wherein the irradiation part is installed on one of the pair of view ports, and
wherein the light-receiving part is installed on the other view port.

10 4. The apparatus of claim 2, wherein the gap measurement unit includes a plurality of gap measurement units, and

wherein when viewed from above, a travel path of light irradiated by an irradiation part of one of the gap measurement units is perpendicular to a travel path of light irradiated by an irradiation part of another one of the gap measurement units.

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5. The apparatus of claim 1, wherein the gap measurement unit:

measures a gap between an upper surface of the substrate and the lower surface of the dielectric plate when the substrate is placed on the lift pin; and

measures a gap between the upper surface of the chuck and the lower surface
20 of the dielectric plate when the substrate is not placed on the lift pin.

6. The apparatus of claim 1, wherein the controller:
25 compares the gap and the upper limit when loading the substrate into the

processing space; and

controls the transfer robot to load the substrate into the processing space when the gap is greater than the upper limit.

5 7. The apparatus of claim 1, wherein the controller:
compares the gap and the upper limit when loading the substrate into the processing space; and
controls the apparatus to generate an interlock when the gap is smaller than the upper limit.

10 8. The apparatus of claim 1, wherein the controller:
compares the gap with the upper limit and the lower limit when unloading the substrate from the processing space; and
controls the transfer robot to unload the substrate from the processing space
15 when the gap is smaller than the upper limit and greater than the lower limit.

 9. The apparatus of claim 1, wherein the controller:
compares the gap with the upper limit and the lower limit when unloading the substrate from the processing space; and
20 controls the apparatus to generate an interlock when the gap is greater than the upper limit or smaller than the lower limit.

 10. A method for transferring a substrate using the apparatus of claim 1, the method comprising:
25 moving the lift pin upward;

measuring the gap in a state in which the lift pin is moved upward; and
determining whether to load the substrate into the processing space or
whether to unload the substrate from the processing space, based on the measured
gap.

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11. The method of claim 10, wherein whether to load the substrate into
the processing space or whether to unload the substrate from the processing space is
determined by comparing the measured gap with an upper limit corresponding to a
first gap from the lower surface of the dielectric plate and a lower limit
10 corresponding to a second gap from the lower surface of the dielectric plate, the
second gap being smaller than the first gap.

12. The method of claim 11, wherein the gap and the upper limit are
compared with each other when the substrate is loaded into the processing space, and
15 wherein the substrate is loaded into the processing space when the gap is
greater than the upper limit.

13. The method of claim 11, wherein the gap and the upper limit are
compared with each other when the substrate is loaded into the processing space, and
20 wherein an interlock is generated when the gap is smaller than the upper
limit.

14. The method of claim 11, wherein the gap is compared with the upper
limit and the lower limit when the substrate is unloaded from the processing space,
25 and

wherein the substrate is unloaded from the processing space when the gap is smaller than the upper limit and greater than the lower limit.

15. The method of claim 11, wherein the gap is compared with the upper
5 limit and the lower limit when the substrate is unloaded from the processing space,
and

wherein an interlock is generated when the gap is greater than the upper limit
and smaller than the lower limit.