

CLAIMS

1. A substrate cleaning device comprising:
 - a substrate rotating mechanism that rotates a substrate; and
 - a first nozzle and a second nozzle that eject an ultrasonic cleaning solution toward a predetermined surface of the substrate that is rotated, wherein
 - the first nozzle and the second nozzle are held in one casing, and
 - wherein the one casing is supported at a side of the substrate such that the first nozzle and/or the second nozzle ejects an ultrasonic cleaning solution on a bevel of the substrate that is rotated in a tangential direction of the substrate,
 - wherein the one casing is arranged at the side of the substrate such that
 - an ejection angle of the ultrasonic cleaning solution on the substrate from the first nozzle and the second nozzle is adjustable,
 - a first distance between the substrate and the first nozzle, and
 - a second distance between the substrate and the second nozzle are adjustable.
2. The substrate cleaning device according to claim 1, wherein an ultrasonic cleaning solution from the first nozzle

and an ultrasonic cleaning solution from the second nozzle reach the predetermined surface after being mixed with each other, or

are mixed with each other after reaching the predetermined surface.

3. The substrate cleaning device according to claim 1, wherein the first nozzle and the second nozzle are attached to a tip end of an arm that turns about a turning shaft and eject an ultrasonic cleaning solution on a first surface of the substrate.

4. The substrate cleaning device according to claim 1, wherein

the first nozzle ejects an ultrasonic cleaning solution on a first surface of the substrate that is rotated, and

the second nozzle ejects an ultrasonic cleaning solution on a second surface opposite to the first surface of the substrate that is rotated.

5. The substrate cleaning device according to claim 1, wherein the first nozzle and/or the second nozzle ejects an ultrasonic cleaning solution on an edge portion of the substrate that is rotated.

6. The substrate cleaning device according to claim 1, wherein the first nozzle and the second nozzle eject an ultrasonic cleaning solution to an edge portion of the

substrate while swinging in a vicinity of the substrate rotating mechanism.

7. A substrate cleaning method comprising
ejecting an ultrasonic cleaning solution from a first nozzle and a second nozzle held in one casing toward a predetermined surface of a substrate while rotating the substrate,

wherein the one casing is arranged at a side of the substrate such that

the first nozzle and/or the second nozzle
ejects an ultrasonic cleaning solution on a bevel of the
substrate that is rotated in a tangential direction of the
substrate,

an ejection angle of the ultrasonic cleaning solution on the substrate from the first nozzle and the second nozzle is adjustable,

a first distance between the substrate and the first nozzle, and

a second distance between the substrate and the second nozzle are adjustable.

8. The substrate cleaning method according to claim 7, wherein

an ultrasonic cleaning solution ejected from the first nozzle and an ultrasonic cleaning solution ejected from the second nozzle are different from each other in at least one

of frequency, electric power, flow rate, temperature, and type of fluid of the ultrasonic cleaning solutions.

~~9. The substrate cleaning device according to claim 1, wherein the first nozzle and/or the second nozzle that ejects an ultrasonic cleaning solution on the bevel is supported movably within a range inside a first tangential direction and a second tangential direction of the substrate in a horizontal plane of the substrate, and the ultrasonic cleaning solution is ejected toward the bevel of the substrate in the first tangential direction and the second tangential direction.~~

~~109.~~ A system for cleaning a substrate, comprising:

a casing;

a substrate rotating mechanism housed in the casing, configured to rotate a substrate;

a first nozzle, housed in the casing, configured to eject an ultrasonic cleaning solution toward a predetermined surface of the substrate that is rotated; and

a second nozzle, housed in the casing, configured to eject an ultrasonic cleaning solution toward a predetermined surface of the substrate that is rotated,

wherein at least one of the first nozzle and the second nozzle is coupled to a transducer via a flow path, and

the casing is supported at a side of the substrate

such that the at least one of the first nozzle and the second nozzle is held at a position where it is possible to supply an ultrasonic cleaning solution on a bevel of the substrate that is rotated in a tangential direction of the substrate, and

wherein the one casing is arranged at the side of the substrate such that

an ejection angle of the ultrasonic cleaning solution on the substrate from the first nozzle and the second nozzle is adjustable,

a first distance between the substrate and the first nozzle, and

a second distance between the substrate and the second nozzle are adjustable.