Claims

1. A substrate cleaning apparatus, comprising:

a chuck assembly for receiving and clamping a substrate, the chuck assembly including a chuck having a receiving cavity for holding the substrate;

at least one first nozzle, spraying liquid onto a top surface of the substrate; and

an ultra or mega sonic device, disposed above the top surface of the substrate and a top surface of the chuck for providing an ultra or mega sonic cleaning to the substrate, a gap formed between the ultra or mega sonic device and the top surface of the substrate and the top surface of the chuck, the gap being fully and continuously filled with the liquid so that an entire underneath of the ultra or mega sonic device being filled with the liquid all the time during the cleaning process.

2. The apparatus according to claim 1, wherein the chuck assembly further comprises:

a rotating spindle, fixed with the chuck;

a rotating driving mechanism, connected to the rotating spindle for driving the rotating spindle and the chuck to rotate;

supporting pins, disposed in the receiving cavity of the chuck for supporting the substrate; and

clamp devices, mounted on the chuck for clamping the substrate.

3. The apparatus according to claim 2, wherein the rotating spindle is hollow and fixed at the bottom of the chuck, and the bottom of the chuck defines a through-hole communicating with the receiving cavity and the rotating spindle, a second nozzle passes through the through-hole of the chuck and the rotating spindle for cleaning the bottom surface of the substrate.

4. The apparatus according to claim 3, wherein the second nozzle has at least one liquid channel extending from the bottom end to the top end of the second nozzle and penetrating the top end of the second nozzle for spraying liquid onto the bottom surface of the substrate.

5. The apparatus according to claim 4, wherein corresponding to every liquid channel, the bottom end of the second nozzle defines an inlet for supplying the liquid to the liquid channel.

6. The apparatus according to claim 2, wherein the bottom of the chuck defines a plurality of drain holes, the plurality of drain holes communicate with the receiving cavity.

7. The apparatus according to claim 6, wherein the bottom of the chuck inside the receiving cavity has a slope surface which is conductive to the liquid in the receiving cavity flowing to the drain holes.

8. The apparatus according to claim 2, wherein every clamp device has a clamp pin for clamping the substrate by means of centrifugal force.

9. The apparatus according to claim 2, wherein the opening shape of the receiving cavity matches with the shape of the substrate.

10. The apparatus according to claim 2, wherein the substrate is a mask and the opening shape of the receiving cavity is substantially square.

11. The apparatus according to claim 10, wherein there are four clamp devices mounted on the chuck and located at four corners of the receiving cavity.

12. The apparatus according to claim 11, wherein every clamp device has a clamp pin, the top end of the clamp pin defines a substantial right-angle slot for clamping the corner of the mask.

13. The apparatus according to claim 11, wherein there are four supporting pins located at the four corners of the receiving cavity and corresponding to the four clamp devices.

14. The apparatus according to claim 2, wherein the top surface of the substrate and the top surface of the chuck are on the same plane.