Claims

1. Processing apparatus, comprising:

a base;

a chamber plate at a fixed acute angle to the base, with the chamber plate including a down-facing substrate processing chamber;

a chuck plate on a platform below the chamber plate, with the chuck plate pivotal from an open position wherein the platform is at an acute angle to the chamber plate, to a closed position wherein the platform is parallel to the chamber plate;

a chuck holder on the platform movable from a load/unload position wherein a wafer chuck may be loaded onto or removed from the platform, to a hold position wherein the chuck is secured onto the platform.

2. The apparatus of claim 1 with a first side of the down-facing substrate processing chamber vertically above a second side of the down-facing substrate processing chamber, and with a vacuum port at the first side of the down-facing substrate processing chamber connectable to a vacuum source, and a liquid inlet and a liquid drain at the second side of the down-facing substrate processing chamber.

3. The apparatus of claim 1 further including a liquid de-gasifier supported on the chamber plate and connected to the liquid inlet, with the de-gassifier including a tank, a tank vacuum source connected to the tank, a spray nozzle in the tank connected to a liquid source, and pressure equalization line connecting the tank to the down-facing substrate processing chamber.

4. The apparatus of claim 3 with the tank vertically above the processing chamber.

5. The apparatus of claim 1 further including at least one actuator for moving the platform linearly into sealing engagement with the chamber plate.

6. The apparatus of claim 1 with the down-facing substrate processing chamber having an upper surface oriented at an angle of 10-30 degrees to horizontal.

7. The apparatus of claim 1 with the down-facing substrate processing chamber having a volume of 0.5 to 2.5 liters.

8. The apparatus of claim 1 further including a vacuum seal on the platform sealing against the chamber plate, and a chuck seal sealing against the chuck, when the platform is sealed against the chamber plate.

9. The apparatus of claim 1 with the chuck holder including a chuck fitting on a shaft, a spring urging the chuck fitting into the hold position, and a chuck actuator operable to move the chuck fitting into the load/unload position, against the force of the spring.

10. A vacuum pre-wet apparatus, comprising

a base;

a chamber plate having a substrate processing chamber oriented at a fixed angle relative to the base;

a chuck plate on a platform assembly;

a pivot actuator connected to the platform assembly for pivoting the platform assembly from a first position where the chuck plate is at an acute angle to the processing chamber, to a second position wherein the chuck plate is parallel to the processing chamber; and

at least one lift actuator attached to the platform assembly and to the chamber plate, for moving the chuck plate linearly into sealing engagement with the chamber plate.

11. The apparatus of claim 10 with the pivot actuator supported on the platform assembly.

12. The processing apparatus of claim 6 with the platform horizontal when in the load/unload position.

13. A vacuum pre-wet apparatus for pre-wetting a substrate in a chuck, comprising

a chamber plate having a down-facing processing chamber;

a chuck plate on a platform assembly below the chamber plate, with the chuck plate adapted to receive a chuck holding a substrate;

a pivot actuator connected to the platform assembly for pivoting the platform assembly from a first position where the chuck plate is at an angle to the chamber plate, to a second position wherein the chuck plate is parallel to the chamber plate; and

at least one lift actuator attached to the platform assembly for moving the chuck plate linearly into and out of sealing engagement with the chamber plate while the platform assembly is in the second position.

14. The apparatus of claim 13 with the pivot actuator supported on the platform assembly.

15. The apparatus of claim 13 wherein the pivot actuator is a linear actuator and the chuck plate is attached to the chamber plate via a hinge.

16. The apparatus of claim 13 with the at least one lift actuator also attached to the chamber plate.