

What is claimed is:

1. A substrate cleaning apparatus comprising:

a substrate holding mechanism configured to hold and rotate a substrate;

5 a cleaning-liquid supply nozzle configured to supply a cleaning liquid onto ~~the~~ a substrate held by the substrate holding mechanism;

a roll cleaning tool configured to clean the substrate by rubbing the substrate in the presence of the cleaning liquid; ~~and~~

10 a suction system coupled to the roll cleaning tool and configured to suck the cleaning liquid from the substrate through the roll cleaning tool during cleaning of the substrate with the roll cleaning tool, and

an inner rinsing liquid supply system configured to rinse the roll cleaning tool from within thereof,

wherein the suction system includes:

15 a cleaning liquid suction pipe coupled to the roll cleaning tool; and

a vacuum line coupled to the cleaning liquid suction pipe,

wherein the inner rinsing liquid supply system includes: an inner rinsing liquid supply line coupled to the cleaning liquid suction pipe, and configured to supply an inner rinsing liquid to the roll cleaning tool through the cleaning liquid suction pipe to perform a
20 self-cleaning of the roll cleaning tool.

2. The substrate cleaning apparatus according to claim 1, wherein the suction system further includes:

~~a cleaning liquid suction pipe coupled to the roll cleaning tool;~~

25 ~~—— a vacuum line coupled to the cleaning liquid suction pipe; and~~

a suction valve attached to the cleaning liquid suction pipe.

3. The substrate cleaning apparatus according to claim 2, further comprising a

controller configured to control operation of the suction valve, the controller being configured to keep the suction valve open during cleaning of the substrate with the roll cleaning tool.

5 4. The substrate cleaning apparatus according to claim 2, wherein:

the roll cleaning tool includes a shaft and a sponge member that covers a peripheral surface of the shaft;

the shaft has a main flow passage extending in the shaft, a plurality of openings formed in the peripheral surface of the shaft, and a plurality of branch flow passages
10 providing fluid communication between the main flow passage and the plurality of openings; and

the cleaning liquid suction pipe is coupled to the main flow passage.

5. The substrate cleaning apparatus according to claim 2, ~~further comprising an~~
15 ~~inner rinsing liquid supply line coupled to the cleaning liquid suction pipe, wherein a~~
connection point between the cleaning liquid suction pipe and the inner rinsing liquid supply line ~~being is~~ located between the suction valve and the roll cleaning tool.

6. A substrate cleaning method comprising:

20 supplying a cleaning liquid onto a substrate from a cleaning-liquid supply nozzle
and rubbing a roll cleaning tool against the substrate in the presence of the cleaning liquid
to thereby clean the substrate,

~~while~~ sucking the cleaning liquid from the substrate through the roll cleaning
tool by use of a suction system, which is coupled to the roll cleaning tool, during cleaning
25 of the substrate with the roll cleaning tool, and

performing, after cleaning of the substrate, a self-cleaning of the roll
cleaning tool by use of an inner rinsing liquid supply system configured to rinse the roll
cleaning tool from within thereof,

supply line coupled to the cleaning liquid suction pipe, and configured to supply an inner rinsing liquid to the roll cleaning tool through the cleaning liquid suction pipe to perform a self-cleaning of the roll cleaning tool.

- 5 8. The substrate processing apparatus according to claim 7, wherein the suction system further includes a suction valve attached to the cleaning liquid suction pipe.