

Spin Coater

User Manual



Manufacturer: M&R Nano Technology

Equipment: multi-stage spin coater and two-stage spin coater

Location: 2F Cleanroom, Lithography Bay, Complex for Research Excellence

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1 Use Restrictions

- Only trained and certified users are allowed to operate this instrument.
- Please wear nitrile gloves and proper personal protective equipment (PPE).

1.1 Size Restrictions

- Two-stage spin coater: pieces
- Multi-stage spin coater: Pieces, 2 to 8" wafers

If the pieces are smaller than 1.5cm x 1.5cm, please use blue tape to prevent the leaked resist from entering into the pump.

2 Pre-Use Checklist

- Check that the evacuation switch is closed.
- Check that the aluminum foil liner is installed completely.
- Check if the aluminum foil liner and lid plastic wrap is cleaned.

Then, you can check in.



Figure 1 Evacuation switch schematic. Left depicts closed, and right depicts open.

3 Standard Operating Procedures

3.1 Two-stage Spin Coater



Figure 2 Overview of the Two-stage Spin Coater

3.1.1 Power On the System

- 1) Check in after completing the pre-use checklist.
- 2) Press the red switch button to turn on the spin coater.

3.1.2 Sample Loading

- 1) Check the sample size is larger than 1.5cm * 1.5cm. (If smaller, use blue tape to prevent resist from being sucked in.)
- 2) Place the sample in the center of the chuck.
- 3) Press the vacuum switch and confirm the vacuum gauge reading above 60 cmHg.

3.1.3 Setup parameters

- 1) Before adjusting parameters, cover the lid (for safety).
- 2) Adjust sufficient time for programming steps 1 and 2 (such as 900 seconds).
- 3) Press the **START** button. Step 1 starts counting, and the chuck starts rotating. The rpm display shows the current step 1 reading. **Adjust the RPM** using the speed dial until the desired setting is achieved.
- 4) After finishing setting up step 1, adjusting time less than the step1 time. It will skip to step 2, and the rpm display will show step 2 reading. Adjust step 2 rpm. After finishing, press and rotate to release the **RESET** button.
- 5) Set desired step 1 and step 2 rotation times, additional 1-2 seconds for acceleration time.
- 6)



Figure 3 Parameter Setting Panel

3.1.4 Resist Spinning (Before spinning, check the switch of the universal suction hood is open and operational)

- 1) Remove the lid.
- 2) Add the resist.
- 3) Place the lid.
- 4) Press the **START** button to run the recipe.
- 5) After spinning, press and rotate to release the RESET button, turn off the vacuum, and unload the sample.
- 6) For multiple samples, repeat the above steps.

3.1.5 Power Off the System

- 1) Press the power button to shut down.
- 2) After completing the pre-shutdown checklist, swipe the access card.
- 3) If the resist contaminates the chamber wall, chuck, or cover, clean with acetone.

3.2 Multi-stage Spin Coater

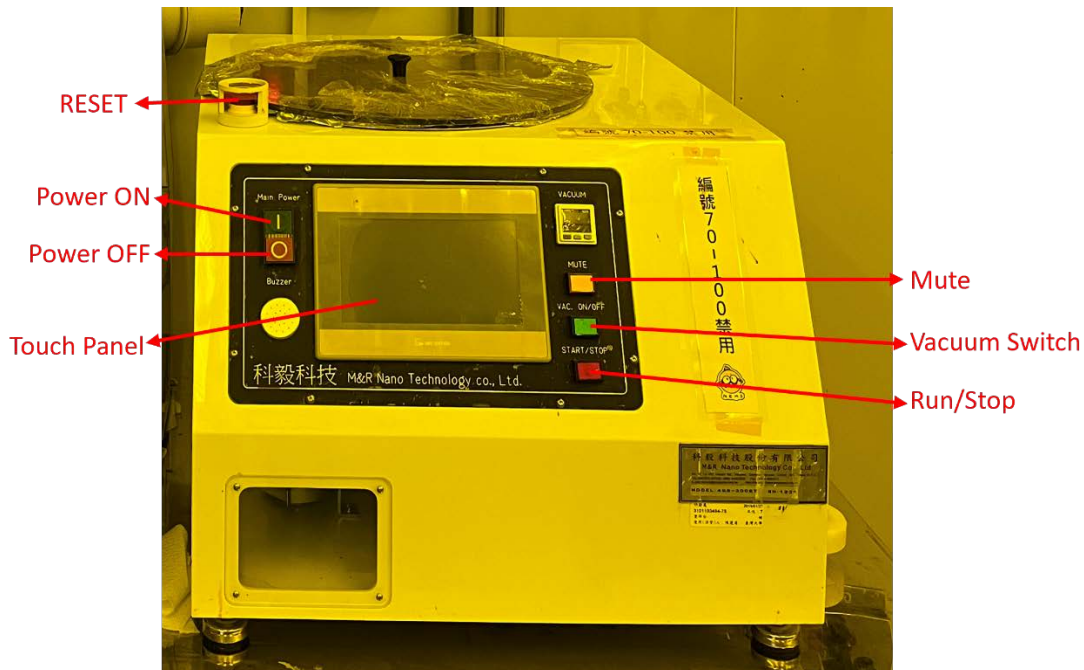


Figure 4 Overview of the Multi-stage Spin Coater

3.2.1 Power On

- 1) After completing the pre-use checklist, swipe the access card.
- 2) Press the green power ON button to turn on the spin coater.

3.2.2 Recipe Setup

- 1) Touch any area on the control panel.
- 2) Formula Setup → Enter password 1111 → Save Formula
- 3) Enter formula number (user can use numbers 00~69), formula name, speed settings for each segment, acceleration/deceleration time, operating time → Save → Return to the main menu

Note:

Acceleration/deceleration time unit: 0.01 sec

Operating time unit: 0.1 sec



Figure 5 Formula Writing Interface

3.2.3 Resist Spinning

- 1) Return to the main menu of the control panel □ Automatic Control □ Formula Selection □ Select the previously set formula number □ Load
- 2) Open the universal suction head switch and confirm suction.
- 3) Remove the upper cover.
- 4) Place the wafer in the center of the chuck using the fixture (not required for fragments).
- 5) Press the vacuum button and confirm the vacuum is below -70, and the sample is securely held.
- 6) Press the start button to ensure the wafer spins at the center and then stops spinning (do not let the speed exceed 1000 during the test spin).
- 7) Apply the resist.
- 8) Close the upper cover.
- 9) Press the start button to execute the set spinning parameters.
- 10) After spinning, relieve the vacuum and remove the sample.
- 11) If multiple samples, repeat the above steps.



Figure 6 Automatic Control Interface

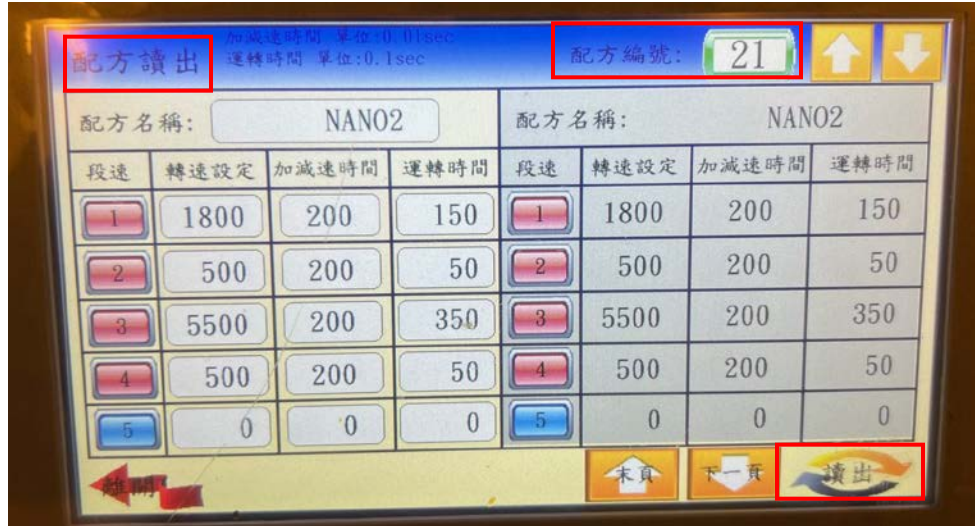


Figure 7 Formula Loading Interface

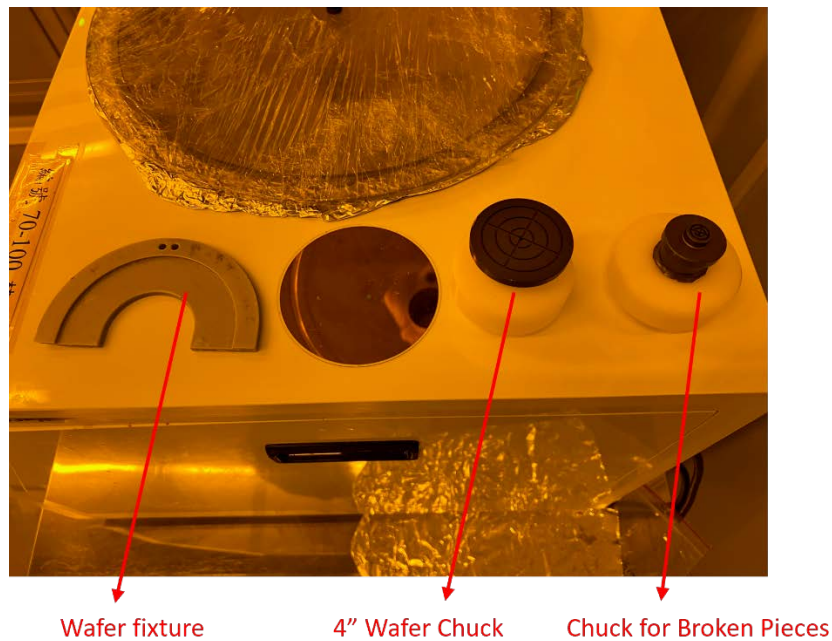


Figure 8 Wafer Fixture and Chucks

3.2.4 Power OFF

- 1) Press the red power OFF button to shut down.
- 2) You can check out after completing the post-uses checklist.

4 Post-Use Checklist

- Check if the vacuum switch is off.
- Replace the aluminum foil.
- Check if the plastic wrap of lid needs to be replaced.
- Clean and remove the resist.

After everything is all set, you can check out.

5 Troubleshooting

- Insufficient vacuum:
 - Samples are too small.
 - Excessive resist on the chuck requires cleaning using acetone.
 - Patterns or dirt on the backside of the sample, please clean it or fix it with blue tape.
- Unable to center the wafer:
 - Please practice more.