Laurell Spin Coater Operating Instructions

Laurell WS-65 Spin Coater

You MUST reserve the machine and begin a session in iLabs.

1. SCOPE
   a. The purpose of this document is to describe requirements and basic operating instructions for the Model Laurell WS-650 Spin Coater. This tool is intended for coating samples of various sizes.
2. SAFETY
   a. Be sure that you are trained and signed off to use this equipment. This machine is to be used by trained personnel only. For training, consultation, questions, problems and recipes contact Cleanroom Engineer or Lab Manager.
   b. Be sure to keep the lid closed before beginning operation. The lid is equipped with an interlock switch that prevents operation of the spinner if the lid is not closed.
   c. In order to prevent liquid from entering the vacuum path, keep a tight vacuum seal between the substrate and the chuck whenever liquid is applied.
   d. If you are unsure about any procedure or indication while operating this equipment, be sure to contact a staff member for assistance.
3. APPLICABLE DOCUMENTS, MATERIALS AND REQUIREMENTS
   a. For more information about the detailed operation of this tool refer to the Laurell MCF manual – "Instruction for the Spin Coater (Model Laurell WS-650)" File name: Laurel spincoater MCF instructions.pdf
   b. Appendix A: How to program the controller
   c. Appendix B: How to Thoroughly Clean the Spin Coater after Your Use
   d. Appendix C: Features of the Laurell WS-650 Spin Coater

4. SETUP
   a. Maintain a clean environment around the spin coater to minimize particle generation during spin coating. Use Acetone or IPA and cleanroom wipes to clean the area on the spin coater deck.
   b. Open the lid, line the inside of the spin processor bowl with aluminum foil if not already lined. The spin coater bowl MUST always be covered with aluminum foil. See Fig1 and Fig. 2
   c. Make sure to change the aluminum foil lining of the spin coater bowl after you are done with your spin coating tasks. See Fig1 and Fig. 2
   d. Make sure that compressed gas is connected to the equipment and that the vacuum pump is operational, i.e. that the facilities for the tool are working.
   e. Choose the correct chuck adapter and O-ring according to your substrate size.The **SUBSTRATE SHOULD BE LARGE ENOUGH** to cover the O-ring **COMPLETELY**.
   f. Before you dispense the liquid, check the O-ring condition.
      i. Make sure the O-rings are intact, clean, and fully seated.
      ii. Make sure the spinner chuck is clean and free of any residual polymer.

5. CENTERING
   a. Place substrate on the spinner chuck and center it. Use centering tool if substrate is round and 3 inches or greater in diameter.
6. OPERATION
   a. Select the program to be run using the ‘Select Process’ key by highlighting it using the arrow keys. See Fig. 3 and Fig. 4. See Appendix A for inputting program (recipe) parameters.
   b. Press the vacuum button on the controller to hold down your substrate.
   c. Close the lid.
   d. Apply as little liquid as possible onto the substrate surface.
      i. Use only the amount that can completely cover the entire surface.
      ii. Excess liquid will contaminate the substrate backside.
   e. Press the ‘Run Mode’ key to run the highlighted process. The program name will appear on title line.
   f. Press the ‘Start’ key to start the program. Error message will be displayed when any of the following criteria is not met.
      i. Low vacuum.
      ii. Low compressed air pressure.
      iii. Lid is open.
   g. A message ‘Done’ will be displayed on the screen when the process is completed.
   h. Press the vacuum ~~V~~ key on the controller
   i. Open the lid.
   j. Remove sample from vacuum chuck.
   k. Place new sample on vacuum chuck, center it and begin process again from step b this section.

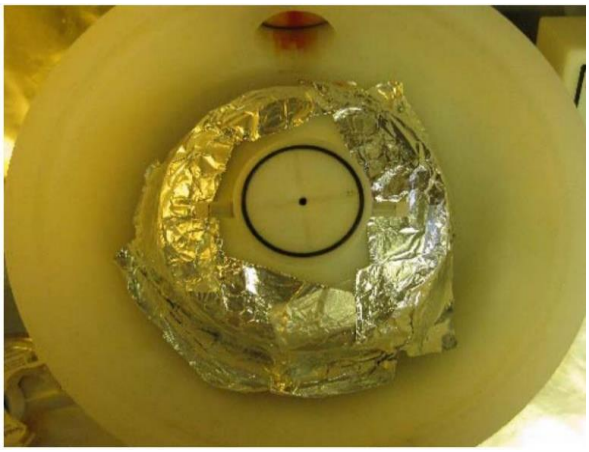


Figure 1 Aluminum foil lining spin coater bowl

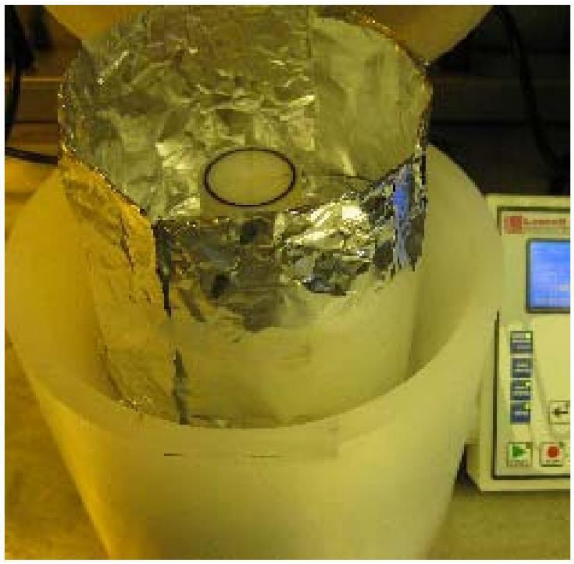


Figure 2 Aluminum foil cylinder lining spin coater bowl

Figure 3 Laurell 650 Controller

Figure 4 Laurell 650 Program screen

7. CLEANUP

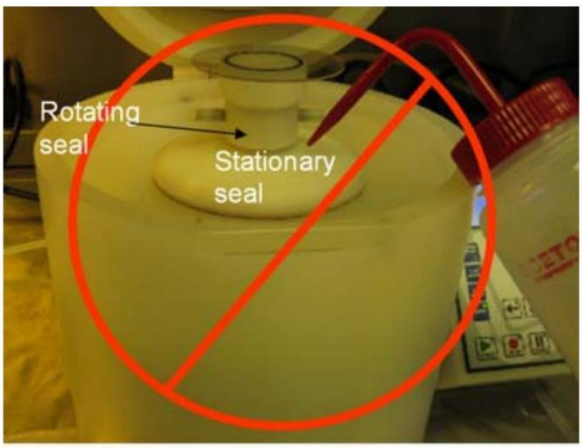
a. Remove aluminum foil and place it in a chemical waste plastic bag.
b. Check the chuck and the O-rings and clean if dirty. If leakage from the O-ring seal is suspected, the O-ring needs to be removed, cleaned, reinstalled, or replaced if necessary.
c. Thoroughly clean up the spin coater following the guideline in Appendix B.
d. When you are done with your work, clean up all contamination thoroughly using wipes with appropriate solvents.
    i. Do not forget the inside of the lid, the wafer chuck, and the rotating seal.
e. Turn off the power supply.
f. Close the vacuum valve on the right-hand side of the controller
g. Turn off the switch to the vacuum pump.

Appendix A: How to program the 650 controller

1. In the "Select Sequence" mode, selecting an existing program will choose that program, otherwise selecting the empty line will create a new program.
2. Press the 'Edit Mode' key. If this is a new program, a program name will be assigned. The program name will appear on the title line.
3. Use the navigation keys (←→↑↓) to move from line to line, or the 'Tab<' key to move from field to field. The 'Tab>' keys enable the field to be editable. Make changes to the field by using the ↑ and ↓ arrow keys.
4. For example, add or delete steps by highlighting the 'steps' field with the 'tab' key, and increase or decrease the number using the ↑ or ↓ arrow keys.
5. Set the value for 'Rpm' and 'Acel' digit by digit. Switch between the digits using the ← or → arrow keys.
6. Move from one step to another using the 'FWD' or ' REV' Key.
7. The valve and sensor parameters are not applicable to this spin processor
8. When finishing programming, press the 'Run Mode' key.

Appendix B: How to Thoroughly Clean the Spin Coater after Your Use

1. Dispose of the Aluminum liner in a plastic bag.
2. Rinse and wipe dry any remaining contamination inside the processor bowl and on the lid with acetone.
    a. DO NOT flood the process chamber during cleaning.
3. Wipe clean the chuck surface with acetone wipes.
4. Empty liquid in the drain collector (on the back of the processor) into a waste bottle.
    a. Wipe clean the drain collector and screw it back on.
    b. Label any new photoresist used on the waste label.
5. Clean the outside of the spin processor.
6. Wipe clean the key pad if dirty, DO NOT spray or flush the key pad.



Please DO NOT flood this area

Please DO NOT force any liquid or compressed air into the vacuum path

Appendix C: Features of the Laurell WS-650 Spin Coater

1. Digital process controller:100-8000 rpm, with 0.5 rpm resolution,
2. Hold up to 6 inch wafer or 4 inch square substrate,
3. The 650 controller holds up to twenty 51-step programs,
4. 1.75 inch natural propylene vacuum chuck holds 50mm through 150 mm substrates
5. Fragment adapters:
    a. Microscope slide adapter: 1”×3” microslides
    b. Fragment adapter for holding 10mm through 50mm pieces
    c. Wafer alignment tool
    d. With EPDM O-rings for common solvent systems, and Viton O-rings for acids, CH2Cl2, Chloroform, THF, and toluene systems. (Please let us know when acid or toluene needs to be used.)