Laurell spinner #2 (left side of desk) is reserved for spinning polyimide materials ONLY.

This manual assumes that the machine is always in its proper resting state, with the standard vacuum chuck in place, and basic operation is completed by putting the machine back in that condition. Even so, check to see that the waste chemical collection jar at the rear of the machine is empty before you begin. Turn on the hot plate and let it warm up to the desired temperature before starting. The standard process temperature is 90C. Acetone must not be used to clean this machine. Use IPA.

0. Turn on the vacuum and compressed air utilities to this machine.

1. Turn on power using toggle button at the rear right of the machine, wait for boot sequence to complete. A three line menu will appear:
2. Press the down arrow twice \(\downarrow\ \downarrow\) to select line 3, ‘static’

3. Press edit mode \(\text{Edit mode}\). (Step 3 should not normally need to be done. If you will use the Static program as-is, skip to Step 3g and check the parameters of all three pages and if correct, skip to Step 4. If not correct, perform steps 3b thru 3h.)

   a. Hit down arrow once \(\downarrow\) and you will come to page 1 of the static routine.

   ![Image](image1.png)

   b. This shows the operational parameters for step 001 of 003 steps.

   c. To modify any parameters on this page, use the up and down arrows \(\uparrow\ \downarrow\) to highlight the desired line.

   d. Then use page up \(\uparrow\) and page down \(\downarrow\) buttons to step forward or backward through the individual parameter fields.

   e. Once a field is highlighted, use the up and down arrows \(\uparrow\ \downarrow\) to change the value of the parameter.

   f. Repeat steps d. and e. until all parameter fields on the page are correct.

   g. To change to the parameter page of the next step of the program, use the reverse and forward buttons \(\leftarrow\rightarrow\) to change the step number. Then perform steps c., d. and e. until all parameters are set.

   h. Repeat steps g., then c., d., and e., until all pages of the program have been modified to suit needs.
i. Standard operating process is: three steps, spreading, spinning, and spin down. Spreading is done for 2 secs at 500 rpm. Spinning is done at 1500 rpm for 30 secs. Spin down is done for 2 secs to 50 rpm. **If you find it necessary to change these parameters, you must change them back to the standard settings when you are done.**

(Steps 002 and 003 parameter pages for static spin program, shown above)

4. When you are ready to run a spin program, press the run mode button 🟢. The last line of the parameter page will now say ‘need vacuum’ (because the vacuum chuck is not sealed).

5. Open the lid. If the standard spin chuck is of appropriate size for your plate (2”, 3” or 4” square), *(if not, see **NOTE 1** at the bottom of this document)*

   a. Center your substrate on the vacuum chuck.

   b. Engage vacuum service by pressing the vacuum button on the control panel. The last line of the parameter page should now say ‘Lid is Open’.

   c. Dispense your polyimide material from a loaded, plastic syringe, fitted with a 0.2 um filter. Only put enough fluid on the substrate to cover about 20 to 30% of the surface area of the plate, leaving at least 0.5” of space between the outer fluid edge and the closest substrate edge.
Material must not be allowed to flow off the side of a substrate before spinning or during the initial ramp up or it could be pulled around under the substrate and get pulled into the vacuum system. This is very bad for the O-ring vacuum seal holding the plates on the chucks, and for the electronics and motor underneath the chuck. (The diagram underneath, illustrates how to gauge appropriate coverage of a plate. If you imagine the plate in nine equal sectors you should aim to dispense a circle that would encase the middle square, and extend out to leave a half inch margin from the edge. Any fluid dispense level between those circles is appropriate.)

d. Close the lid and hit the Start button.

e. The countdown of each step will be indicated on the display. When the program completes its finals step, the bottom line of the parameter page will say “Done’.
6. Open the lid. (The ‘Done’ message will not reset and the machine will not run again if you do not)
   a. Press the vacuum button again to disengage the vacuum.
   b. Remove substrate and place on hot plate.
   c. Start hot plate timer. (Standard hotplate flash time is 90 secs or more)
   d. Place a new substrate on the spin chuck and repeat steps 5a thru 6c until all substrates are coated and flash baked. Watch the timer and remove your substrate at the appropriate time (90 secs). If the spin cycle of the next plate finishes while the previous substrate is still on the hot plate, the wet coating on the just spun plate will be forced to wait, and this could allow some difficult wetting chemicals to begin to de-wet the surface in the form usually of little pinholes.

7. When the last substrate is done being spun, it is time to clean up.
   a. Leave the utilities ON even though you may be tempted to turn them off first.
      This will maintain some positive pressure on seals to prevent chemical fumes from being sucked into the motor.
   b. Use a series of wipers to wipe down the inside surfaces of the spin coater and discard.
   c. Wipe excess spin material into the rear waste collection drain hole.
   d. Use IPA on wipers to wipe down the surfaces again.

   **DO NOT SPRAY IPA INTO BOWL DIRECTLY FROM THE SPRAY BOTTLES!**
e. Wipe down the inner surfaces several times until you are sure that there is no residual chemical left in the machine. Remember to push a wiper into the drain hole to clean the drain.

f. Close the lid.

g. While supporting the chemical waste collection jar from underneath, unscrew it from the machine and take it over to the waste chemical collection jugs in the hood. Dump excess chemical into the waste collection container that is for waste polyimide chemical, fill out the log sheet to record the amount and type of waste added.

h. Wipe out the container with IPA/wipes until clean, and then reinstall on the machine.

i. Turn off power to the machine, turn off the vacuum and nitrogen utilities and close the lid.

j. Turn off the hot plate once your last substrate comes off, and when it is cooled, wipe down the top surface with an IPA/wiper. Do not do this when it is still hot.

The main cautionary pages from the manufacturer’s manual:

- Care should be taken not to flood the process chamber during cleaning.
- If unit is equipped with a vacuum chuck, it is important not to allow chemicals or chemical cleaners to enter the vacuum path.
- NEVER flood or spray solvent such as acetone or any other type of cleaner directly onto the keypad surface. Doing so may cause keypad failure. Always wet a wipe or cloth with the solvent and gently wipe the keypad surface.

**NOTE!**
The vacuum path is not designed for any pressure. Air pressure or any liquid forced or drawn into the vacuum chuck will very likely damage the vacuum sensor, seals, motor and electronics. This type of damage is not covered by our warranty.

- **CLEANING** - Clean, rinse, then dry your spin processor after each use, taking care to prevent any chemicals from entering the vacuum path. A good practice is to cover the chuck during bowl cleaning. This can be done with a cover with vacuum turned on or use a cover such as Petri dish. **ALSO DO NOT FLOOD**
NOTE1: If you would like to use one of the other chucks for this spinner, they are designed to fit ON TOP of the standard chuck. The standard chuck should not be removed. Just place the chuck you would like to use on top of the standard chuck, and use accordingly. Substrates must extend past the o-ring of any chuck used in spinning to prevent fluids from being sucked around the backside of a substrate and onto and past the o-ring seals. It is better to use a smaller chuck than one that is exactly the same size as your substrate.

If a special chuck is used, remove it at the beginning of the cleanup process, wipe it down well with an IPA/wipe and place back in the chuck storage box.

For any questions or technical problems, please see this machine’s primary manager,

Bentley Wall, 330-221-7048