

**Laurell WS-400A 6NPP/Lite
Spinner SOP**

Prerequisites for operating the Spinner:

- a) Receive “one on one” training and certification from UFNF Staff Member.
- b) Obtain a UFNF ID (if you do not already have one) by completing the UFNF Lab Use Request Form.

Safety

- Moving Components – The User should be aware at all times of the moving components associated with this tool. The spinner lid must be closed while processing your sample. The spinner lid is interlocked and will not operate with the lid open. DO NOT ATTEMPT TO DEFEAT THIS INTERLOCK.

The Laurell spinner is only to be used to apply photoresists and PMMA. Contact UFNF Staff if you would like to use something else.

Equipment Specifications:

Maximum RPM: 6000

Max sample size: 6” diameter

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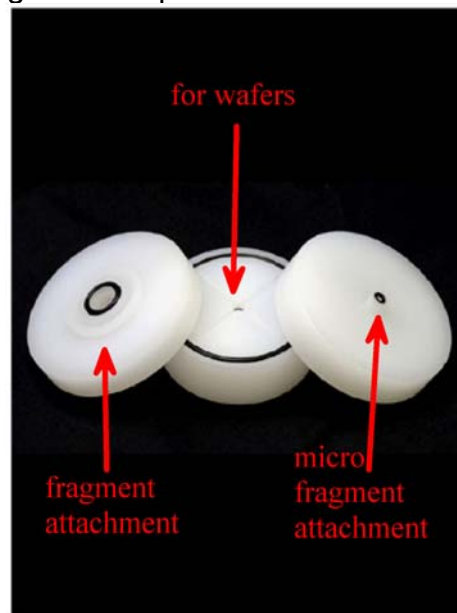
- 1) Preparation
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Operating Instructions:**1) Preparation**

- a) **Caution: DO NOT ALLOW ANY FLUID TO ENTER THE VACUUM CHUCK OR UNDER THE CHUCK ASSEMBLY-----SEE FIGURE 1. DO NOT DISPENSE FLUIDS ONTO FRAGMENT SAMPLES UNLESS IT IS ROTATING.**

**Figure 1**

- b) If coating sample fragments use a "Fragment Adapter". For samples $\geq 12\text{mm}$ use the adapter shown on the left in Figure 2. For samples $\leq 12\text{mm}$, use the "Micro Fragment" adapter shown on the right in Figure 2. The adapters fit over the wafer chuck. If coating a full wafer, remove the fragment adapter.



- c) Open the cover and verify that the fragment adapter is clean and that the single o-ring is in place. If cleaning is needed, follow steps 16-17 below. Also, notify UFNF Staff via email if the chuck is found contaminated.
- d) Verify the display reads "PGM" for in the upper left corner. If not,

depress the F1 key. Note: if you run the spinner with "OFF" displayed in the upper left corner, the recipe runs automatically from start to finish. The step time is dictated by the program and you may not increment the recipe using the "STEP" button.

- e) Select the program you want to run by holding down the "PROGRAM" button, and using the up/down arrow keys to scroll through the programs. The program letter selection will be indicated in the upper right hand area of the display. Note: If none of the available programs are satisfactory, you may make changes to spin recipes J-R. See Programming Instructions below.
- f) Verify that the spin speed is correct in each of the recipe steps by depressing the "STEP" key to move through each step in the program. On the top line of the display, "001/002" means your viewing the spin speed for step 1 of 2 total recipe steps. "002/002" means your viewing the spin speed for step 2 of 2.

2) Fragment Coating

- a) Verify the display reads PGM in the upper left corner, if not, press F1.
- b) The spinner will be operated using a 2 step recipe in manual step mode. Manual step mode means that the recipe will proceed to the next step only when the "STEP" key on the controller is depressed.
- c) Press the "STEP" key until "001/002" is displayed. Now, when the "RUN STOP" button is depressed, the program will start on step 1.
- d) Step 1 is for hand dispensing at 1000 rpm and step 2 is the thickness casting spin speed.
- e) **CAUTION: DISPENSING FLUIDS ONTO FRAGMENT SAMPLES THAT ARE NOT SPINNING IS NOT ALLOWED ON THIS COATER AND WILL DAMAGE THE SPIN MOTOR AND VACUUM VALVE.**
- f) Press "RUN". The wafer will spin at 1000 RPM until you depress the "STEP" button.
- g) Fill pipette with 0.1-0.2 ml of resist.
- h) Carefully place your syringe or tippet through the top hole in the spinner (it helps to rest the pipette against the edge of the hole) with the end approximately 2-4mm above the center of your sample. Place your free hand on the controller "STEP" button.
- i) Squeeze the fluid out and press the "STEP" button. If you wait too long than between the end of dispense and the high speed step, thickness may be affected.
- j) Allow ≥ 30 seconds for the resist to dry and depress "STOP". Note: Allowing the sample to spin longer will not change final resist thickness.
- k) Proceed to step 5 "Cleaning".

3) Wafer Coating / Static Dispense

- a) Verify the display reads PGM in the upper left corner, if not depress F1.
- b) Place wafer on spin chuck as centered as possible by eye and Select recipe S. Verify the recipe step is set for 100 RPM and spin the wafer to check centering. The wafer should not wobble more than 2 mm. Re-center if needed.
- c) Select your spin recipe. Verify the spin speed is what you need.
- d) Fill pipette with .5ml of resist and dispense in the center of the wafer and immediately press "RUN".
- e) Spin for ≥ 30 seconds or until the resist color changes stop and depress "STOP".
- f) Press the VACUUM and remove the sample.
- g) Proceed to step 5 "Cleaning".

4) Recipe Table

Note: If you write your own recipe, please use recipe letters J through R.

**Table 1 –
Fragment Recipes**

Recipe Letter	A	B	C	D
Step 1	1000	1000	1000	1000
Step 2	2000	3000	4000	5000

Wafer Recipes

Recipe Letter	E	F	G	H
Step 1	2000	3000	4000	5000

5) Cleaning

- a) Place a "dummy" sample of equivalent or smaller size (if possible) on the spinner chuck. Depress "VAC" and spin the dummy on recipe step 2. While spinning, dispense acetone onto the center of the dummy sample for => 10 seconds. This will clean the chuck and flush the bowl. Remove the fragment adapter. Dispense a small amount of acetone onto a clean wipe and lightly wipe the o-ring seal. Replace adapter.
- b) Place chemical contaminated items in a plastic zip lock bag and seal it. Place the bag in the solvent waste receptacle.
- c) Fill out the equipment usage log sheet.

6) Programming

1. Place the system in "Programming" mode by pressing the F1 key. PGM will be displayed in the upper left corner of the display.
2. Select the program letter (H-R) to be modified using the up/down arrow keys. The program letter selection will be indicated in the upper right hand area of the display.
3. To change step values, use the up/down arrows. To move the edit cursor between fields, use the </> arrows. Press the enter key every time you change values within a step. This must be done for each step.
4. Use ADD STEP to create new steps and the DEL STEP keys to remove steps. Up to 51 steps can be programmed.
5. Note: the ACL at the bottom of each step screen stands for acceleration. A setting of 015 is fine for most applications. Increasing this value will change the acceleration or deceleration from one step to the next. The number to the right is the calculated acceleration (not actual) based on the ACL value. Calculated deceleration values should not exceed 100 RPM/sec and acceleration should not exceed 32000 RPM/sec.
6. Use the STEP key to step through the program and verify the correctness of all values.

Revision 2

9/16/05

B. Lewis