

Procedure for making SU-8-2100 masters with Laurell Spinner

Clean and spin

- 1) Open main valve on N2 Tank, regulator should already be set between 60 and 70 psi.
- 2) Open inline valve on regulator, flashing CDA (Clean Dry Air) on LCD should disappear.
- 3) Line spinner top lid with foil, center wafer on chuck.
- 4) Flip red switch on vacuum pump, vacuum should stop flashing on LCD.
- 5) Press **PROGRAM SELECT** key to cycle through available programs, selected program will be indicated by a letter (A-T) in upper right corner of LCD.
- 6) Choose program **[A]**
7 s at 30 RPM
- 7) Press **VACUUM** on spinner keypad to secure wafer, close spinner lid.
- 8) Press **RUN/STOP** key to start program, observe rotation of wafer (note: program will stop if lid is opened).
- 9) Press **VACUUM** to disengage vacuum, open spinner lid to reset.
- 10) Adjust wafer as necessary, repeat steps 5-9.
- 11) Press **PROGRAM SELECT** key to select program **[B]**
50 s at 3500 RPM.
- 12) Press **VACUUM** on spinner keypad to secure wafer, close lid.
- 13) Press **RUN/STOP** key to start.
- 14) Spray wafer with isopropyl alcohol (IPA) twice, open spinner lid to reset.
- 15) Press **VACUUM** to disengage vacuum.
- 16) Place wafer on a 125 C hotplate. Let bake 10 min. Remove wafer and place on a clean wipe.
- 17) Turn hotplate OFF then ON and let cool to 65 C. Set hotplate temperature to 65 C.
- 18) Center wafer, repeat steps 5-9, open spinner lid to reset.
- 19) Pour room temperature SU-8-2100 from small container until half dollar diameter is achieved.
- 20) Press **PROGRAM SELECT** key to select program **[E]**
100 RPM/s ramp to 500 RPM, maintain for 35 s
0 RPM
250 RPM/s ramp to 2000 RPM, total duration 8 s
- 21) Press **VACUUM** on spinner keypad to secure wafer, close spinner lid.
- 22) Press **RUN/STOP** key to start, open lid when to reset finished.
- 23) Press **PROGRAM SELECT** key to select program **[D]**
45 s at 60 RPM
- 24) Press **VACUUM** on spinner keypad to secure wafer, close lid.
- 25) Press **RUN/STOP** key to start, remove edge bead in one of two ways: A) With a weigh spatula, or B) with an acetone-soaked swab.
- 26) Open lid, disengage vacuum, remove wafer, and wipe off any SU-8 tendrils or excess SU-8 on the bottom of the wafer.
- 27) Place wafer on a 4" wafer (or tin foil) on the hotplate. Once all wafers are on the hotplate, set it to 95 C for 120 min and cover with aluminum top. Enable AUTO OFF. It takes about 1 h for the hotplate to cool to room temperature. When cooled, protect from ambient light.
- 28) Close inline valve on regulator, and main valve on N2 tank.
- 29) Wipe down spinner if there is heavy buildup, spinner will go into standby mode after 10 minutes. DON'T force fluids into the center of the vacuum port, will damage unit.

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Prepared for the Tiny Biotoools Lab

30) Place swabs and cleanwipes in waste container under hood to evaporate solvent, AWAY from the hotplate.

Expose (using Blak-Ray B-100A UV Lamp)

31) Turn on the UV lamp and let warm up for 15 minutes.

32) Once the hotplate is cool (step 27), carefully separate 3'' wafers from 4'' wafers using a razor blade.

33) On the exposure tray, build a sandwich with wafer, film, and filter glass. Make sure the emulsion (dull) side of the mask is down.

34) Place wafer sandwich under lamp for 90 seconds.

35) Place wafer back on hotplate. When all wafers have been positioned, set hotplate to 95 °C for 120 min. Enable AUTO OFF. Protect from ambient light when taking wafer off hotplate.

Develop

36) When done, separate 3'' wafers from 4'' wafers; pour just enough SU-8 developer in a crystallization dish to cover the wafer; place one wafer in dish and periodically swirl until all unexposed PR is removed; wait 3 additional minutes; on the second wafer, wait 5 min once all SU-8 is gone

37) Rinse with IPA; if white residue appears, rinse with acetone (2-3 sec) and then with IPA; blow dry with nitrogen

38) Bake on hotplate at 150C for 30 min