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Purpose
To describe how to program and spin photoresist using the Headway PWM32 spinner.

Relevant literature
Headway PWM32 manual.

Introduction
        The Headway PWM32 spinner is a robust spinner capable of spinning very small samples, say 5x5mm, up to 150mm wafers. It has been installed with an overflow receptacle that should keep our wetbench clean and tidy as shown on Figure 1.

Wafer Chucks

        The spinner has several chucks available as shown on Figure 2. One should chose a chuck appropriate to the size of the sample being spun.
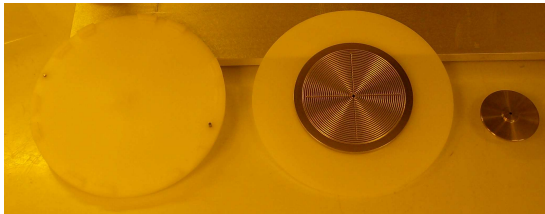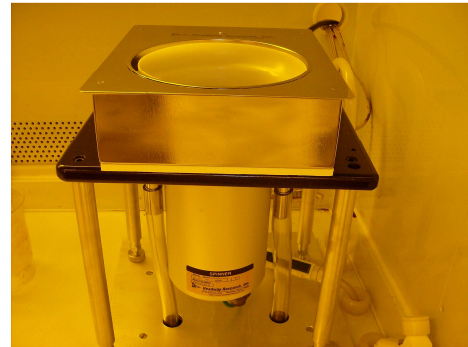

Figure 1: Headway PWM32 spinner on its receptacle mount.

Figure 2: Chucks available for the Headway spinner.

The Teflon chuck shown on Figure 2 is to be used for samples that need to be mounted without vacuum. This is the chuck that one would use for example to mount a MEMS sample with backside as well as front side patterns or thin membranes. There are 2 chucks like the one shown in the middle on Figure 2: one for 100-150mm wafers and one for 50-100mm wafers (either chuck is adequate for 100mm wafers). The small chuck shown in Figure 2 is for very small samples. All of these chucks are installed by simply aligning the D-shape notch with the shaped shaft and pushing down (pulling up to unload). *Make sure that a vacuum O-ring is present in the chuck head to ensure proper vacuum*.

        Another chuck, from our previous spinner, is available for samples such as microscope slides for which the small chuck is not adequate. As of this writing, the chuck is getting refurbished to be compatible with the spinner (February 2009).

Keeping the spinner clean

        The best way to keep the spinner clean is to use aluminum foil as shown on Figure 3. The spinner should be clean with clean foil as you first come to use it. Please take out the old foil and leave it in the wetbench with the solvent soaked wipes to evaporate. Once the solvents have evaporated from the foil, throw it away in the plastic box specially marked recycling.

Figure 3: Aluminum foil is used to keep the spinner head area clean.

Spinning: entering recipes and spinning photoresist

Figure 4 shows the spinner controller module.   Up to 10 recipes, numbered 0 to 9, can be entered and edited. Each recipe can have several steps. To enter a recipe, follow the steps outlined below:

1. Turn on the controller or reset using the green foot pedal

2. Push "Recipe" followed by a number, 0-9, that you wish to use or edit

3. Push "Step" and 1

4. Push "Speed/Ramp", enter desired spin speed, push "ON or ENTER"

5. Push "Speed/Ramp" again, enter desired acceleration rate, then push "ON or ENTER"

6. Push "Step Terminate" and enter desired spin time

7. Optional: push "Step" and 2 (3,4, …) and repeat steps 4-6 for a multiple step recipe

8. Push "Step" and 0 to end your recipe. The display should say "Ready".

9. Note 1: steps can be modified and *added* to an existing recipe but cannot be removed. To remove a step, one needs to erase the entire recipe. Push "Recipe", push "Clear", push recipe number you wish erased; you will be left with a recipe that has zero steps.

10. Note 2: When the last step of a recipe terminates, the spinner decelerates to zero at its maximum deceleration rate. To control the rate of deceleration, you may add a step to make the speed zero with zero time but set the ramp to a satisfactory rate.
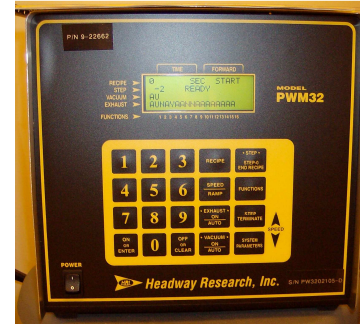

Figure 4: PWM32 controller box used to write recipes.

To spin, load your sample on the chuck, put on the flying saucer like cover and step on the *green* foot-switch button. You may stop the recipe at any time by stepping on the *red* foot-switch button. If you cancel a recipe, you need to hit the *green* button to reset.