

University of Minnesota Nano Center

Headway Spinner- Standard Operating Procedure

Badger Name: K2 Spinner Headway

Model: AC101E

Location: Keller-Bay 2

Revision: 5

Revisionist: Laura Parmeter

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1. Description

1.1. The Headway spinner is used for applying photoresist or other light-sensitive viscous liquids uniformly on a substrate. Spin speed and length of spin time can be altered to achieve desired film thickness. See the posted graph for the Microposit 1805, 1813 1818, and AZ 9260 photoresist spin curves.

2. Safety

2.1. Test the spin cycle starting at 0 rpm's after loading the sample on the chuck and turning on the vacuum. Excessive wobbling may result in the sample flying off the chuck and causing injury.

3. Restrictions/Requirements

- 3.1.** Completed the Photolithography short course.
- 3.2.** Partial samples or whole substrates are okay.
- 3.3.** Line the cup with clean room wipes to keep the build up at a minimum.
- 3.4.** Do not program any spin speed higher than 6000 rpms.

4. Required Facilities

- 4.1.** Vacuum 25" Hg
- 4.2.** Spinner exhaust: 1"
- 4.3.** Drain $\frac{3}{4}$ "

5. Definitions

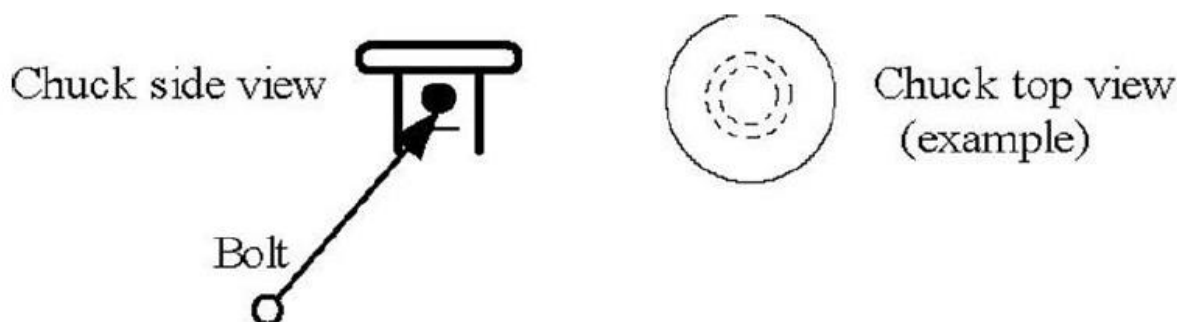
5.1. Chuck metal piece the wafer sits on

6. Setup

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- 6.1. There are several chucks available for use. Choose a chuck with a wafer stage that is smaller than the sample. This may not be possible with the small-sample chucks. In the latter case, clean the chuck with solvent after use.
- 6.2. To remove the existing chuck, locate the correct size Allen wrench and insert into the bolt using the mirror to view the location and turn left one or two turns to loosen, do not detach.
- 6.3. Pull the chuck STRAIGHT UP until it is off.
- 6.4. Place the new chuck on the spindle with the bolt on the flat edge – the spindle is not round. Tighten by turning the bolt right with the Allen wrench until tight.



- 6.5. The vacuum handle is located on the left side of the wet bench, turn it to the ON position and listen for a hissing sound. If you hear any, this could mean that the chuck is not properly installed and needs to be removed and reinstalled.
- 6.6. Located above the spinner on the upper panel are the Headway controls. You can change the spin-speed parameters in the duration of the spin.

7. Operating Instructions

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- 7.1.** Set the time of the spin on the dial labeled TIME on the control panel (the timer fails at times so have a stop watch handy). The dial is divided into 0, 20, 40, 60, 80, 100 and 120 seconds.
- 7.2.** Place the sample on the chuck using either a tweezers or the 4 or 6 inch whole wafer placement tool.
- 7.3.** Turn on the vacuum.
- 7.4.** Test the spin cycle starting at 0 (zero) rpm's after loading the sample on the chuck and turning on the vacuum. To activate the spin, press the foot pedal located under the vacuum ON/OFF lever on the floor. One side of the foot pedal starts the spin, depressing the opposite side stops the spin.
- 7.5.** Ramp to the maximum spin speed slowly, watching the sample and continually checking the sample for wobble, and re-adjust if necessary. Excessive wobbling may result in the sample flying off the chuck and causing injury.
- 7.6.** Dispense the material onto the substrate that is to be spun on.
- 7.7.** Activate the spin cycle by depressing the foot pedal. It will stop automatically after the set time is done (or press the off pedal when your timer's set time is reached).
- 7.8.** Turn off the vacuum.
- 7.9.** Remove the sample from the chuck.
- 7.10.** Remove the wipes from the cup and toss them in the red hazardous waste bins and clean the cup with acetone and clean room wipes.

8. Problems/Troubleshooting

8.1. Poor vacuum

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- 8.1.1.** The substrate is not placed properly on the chuck. Re-position and re-spin wafer.
- 8.1.2.** The screw holding the chuck is not properly installed.
- 8.1.3.** The chuck is not placed on the spindle properly.
- 8.1.4.** Lack of facilities' vacuum. Notify maintenance personnel.
- 8.1.5.** O-ring on the inside of the chuck that mates with the spindle has come off.