

GENERAL PROCESS AND OPERATION SPECIFICATION

BIDTEC SP100 Spin Coater

I. SCOPE

1. The purpose of this document is to describe requirements and basic operating instructions for the BIDTEC SP100 Spin Coater. This tool is intended for coating photoresist on samples of various sizes.

II. SAFETY

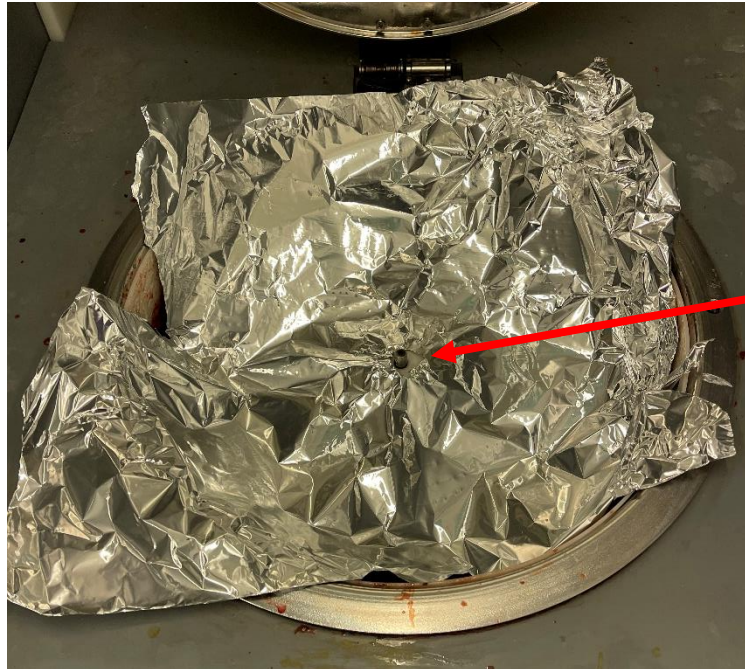
1. Only trained users can operate this equipment.
2. Keep the basin lid closed before beginning operation. The lid is equipped with an interlock switch that prevents operation if the lid is not closed.
3. The red button on the control panel can be used to stop the spindle at any time.
4. Wear safety glasses. Samples may slip of the chuck at high speed and shatter.
5. Always keep the protective window in the lowest position when possible. This helps the tool act as a fume hood and protects against high-velocity debris.
6. If you are unsure about any procedure or indication while operating this equipment, please contact a staff member or trainer for assistance.

III. APPLICABLE DOCUMENTS, MATERIALS AND REQUIREMENTS

1. For more information about the detailed operation of this tool refer to the BIDTEC factory manual. (Ask AggieFab staff for a copy)
2. Appendix A: Definition of keypad buttons
3. Appendix B: Definition of display variables

IV. OPERATION

1. Set up:
 - a. Put on a second layer of gloves.
 - b. Turn on the power supply switch located in the back left hand side of the control panel.
 - c. Turn on the vacuum switch on the inner left side of the spin coater.
 - d. Line the spin coater basin with aluminum foil.
 - i. Take two sheets of aluminum foil. They should be a little longer than the basin diameter.
 - ii. Place the sheets in a “+” shape centered on the spindle.
 - iii. Push the foil through the chuck spindle until it goes through both sheets.
 - iv. Shape the foil so that photoresist will stay contained within the foil.
 1. The spindle hole should not be the lowest point in the foil.



Chuck Spindle

Figure 1: Covering the entire basin with aluminum foil

2. Place the chuck on the spindle:
 - a. Select a chuck. (Fig 2) Make sure the top O-ring or grooves are just smaller than your sample.
 - b. Place the chuck on the spindle
 - i. Align the D-shaft of the spindle with the D-shaft hole in the chuck.
 - ii. Some chucks have a worn-down flat edge so it may look more rounded than usual.

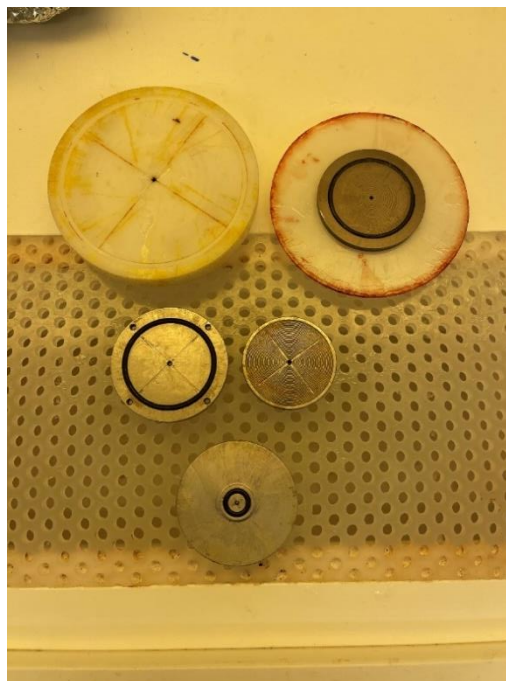


Figure 2: Available wafer chucks. Use a chuck that has O-ring/grooves that are just smaller than your sample.

3. Center sample on the chuck:
 - a. Center your sample on the chuck as best as possible.
 - b. Close the lid and press the green start button to check for any wobbling.
 - c. Press the red “Stop” button and adjust the sample if needed.
 - d. Repeat until the sample is relatively center.
4. Prepare photoresist:
 - a. Before applying photoresist to the sample, grab a plastic bag and a pipette from the cabinet under the spin coater.
 - b. Use the pipette to take photoresist from out of the bottle.
 - i. Take photoresist from the middle of the bottle (not on the top surface or bottom of the bottle). This prevents unwanted bubbles from forming.
5. Apply photoresist:
 - a. Starting from the center of the sample, slowly apply the photoresist.
 - i. The photoresist should cover most of the sample and be a little away from the edges.
 - b. If the photoresist is concentrated in the center of the sample, streaks will form which will result in an uneven layer of photoresist.
 - c. After applying photoresist, squirt any extra photoresist from the pipette into the aluminum foil surrounding the bowl.
 - i. **DO NOT PLACE EXCESS PHOTORESIST BACK INTO THE BOTTLE.**
 - d. Wrap the pipette on the corner of the foil or set it on a cleanroom wipe.
 - e. Close the basin lid.



Figure 3: Wrapped pipette

6. Set Spin Parameters:
 - a. Press “Setup”.
 - b. Select the desired recipe number. “1” is usually used, but 0-9 are available.
 - c. Press “1” on the keypad for parameter set up.

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- d. Change the spin parameters as needed. After changing each number, press “Enter”. If a wrong number is put in press “CLR”. To finish either press “ENTER” until you get to the end, or press “END” to get to “WAITING FOR START”.
 - i. Enter Speed #1
 - ii. Enter Acceleration rate to reach Speed #1
 1. The units are in seconds.
 - iii. Enter Timer #1
 1. This the time in seconds it will spin at speed #1
 - iv. Enter Speed #2
 - v. Enter Accel/Decel rate for Speed #2
 1. The units are in seconds.
 - vi. Enter Timer #2
 1. Note: To bypass Speed #2 and Timer #2, simply set the Speed #2 the same as Speed #1 and Timer #2 to zero.
 - vii. Enter Final Speed
 1. Generally, the final speed is zero
 - viii. Enter Accel/Decel speed for Final Speed
 1. 5 or 10 seconds is suggested. 0 will make the chuck stop immediately, and the sample may fall off.
 - ix. Enter Final Speed Timer
 1. Since the final speed is zero, the final speed timer along with everything after this is generally also zero.
7. Run the tool:
 - a. Lower the protective window.
 - b. Press the green “Start” button on the control panel.
 - i. Be ready to hit the red “Stop” button should the sample fall off the chuck as it’s spinning.
8. Clean up:
 - a. Remove the chuck and place it in the shelf above the basin.
 - b. Place all photoresist contaminated trash (pipettes, cleanroom wipes, etc.) in the aluminum foil.
 - c. Carefully remove and ball up the aluminum foil
 - i. Beginning on the outside edges, curl the aluminum foil inward so that all the photoresist is contained inside.
 - ii. While curling, keep the spindle hole as high as possible to prevent leakage.
 - iii. Don’t squeeze the foil ball too hard since it may rupture and/or squirt.
 - d. Place the aluminum foil in the plastic bag.
 - e. Close the basin lid.
 - f. Turn off the vacuum and main power switch.
 - g. Lower the protective window.
 - h. Take off your second layer of gloves and place them in the plastic bag.
 - i. Close the bag and throw it in the trash by the spin coater.

V. SIGNATURES AND REVISION HISTORY

Revision History:

Revision	Author	Date	Changes
Original Issue	M. Pier	3 March 2021	
Rev A	Elijah Colter	1 January 2022	Revised to match modern format. General clarity corrections.

Approvals:

Technical Manager Signature: *Sandra G. Malhotra* _____

Date: _____ 1/5/2022 _____