

Savannah S200 ALD Operating Procedures

Running a deposition

1. Preheat the precursor: connect both of the heater jacket inputs. Set the jacket temperature to the desired temperature. See table below for precursor heater settings.
2. Preheat the chamber (heaters 8 and 9) to the desired deposition temperature. All processes should be run at temperatures between 120-250C.
3. Vent chamber.
4. Load sample in center of chamber. Smaller wafers may need a shim to keep in place.
5. Pump down chamber by pressing the PUMP button.
6. Open the valve on the precursor bottle
7. Load recipe by right clicking on table, select recipe from folder.
8. Do not make any changes to the recipe before discussing them with Bob. If you do make changes, save the changes in your personal recipe folder.
9. Press the RUN button to start the process. The process can be stopped before all cycles have completed by pressing the ABORT button.
10. Confirm that the pressure pulses during each cycle.
11. When the process is complete, a green READY message will appear in the upper left-hand corner of the operating screen.
12. Vent the chamber when the process is complete by pressing the VENT button.
13. Remove sample.
14. Put system in idle state (see System Idle section).
15. Log your time.

System Idle:

1. Pump down the chamber by pressing the PUMP button.
2. Set heaters 8 & 9 to 100°C.
3. Set active precursor heaters to 0°C.
4. Close all precursor valves, except for H₂O
5. Unplug all heater jackets.
6. Perform a pump and purge on precursor valves used during deposition, except for H₂O. (Note: the first precursor is at valve 0, second precursor at valve 1, and so on). If you properly closed the precursor valve, the pressure will no longer spike after a few pump/purge cycles.

Precursor	Heating jacket temperature
Trimethylaluminum	Room temp
TDMA-Ti	75C
TDMA-Zr	75C
Ni amidinate	125C
Sr	75C

O₂ Plasma Chamber Operation -

1. Turn on the vacuum pump on the floor next to the chamber
2. Depress the AC ON button
3. Unlock the door
4. Remove the chamber lid.
5. Place your samples on quartz slide
6. Place the lid back on
7. Close and lock the door
8. Depress the vacuum button to pump down the chamber
 - a. The chamber base pressure to run a process is 0.5 torr
9. Moving the selector knob changes what is displayed on the screen.
10. By adjusting the set point knob you can change the RF set point if RF is the option that the selector knob is pointing towards
11. Using the small digital display you can change the process time using the small buttons on the display. After reaching the desired time make sure to acknowledge the time selection by pressing the Reset Button on the display.
12. Once the base pressure is reached and the time has been selected depress the Process Start button.
13. The system will beep and oxygen should begin to flow into the chamber. Make sure to check the oxygen flowmeter on the side of the instrument. A flow rate of 1-2 is good. If there is no flow check the meter and contact Bob.
14. The system will run until the timer stops the process. You can manually abort the process at any time by toggling the Process Abort switch.
15. At the end of the process vent the chamber by pressing the vacuum button
 - a. This process should take about 30 seconds
 - b. DO NOT force the door and chamber lids open. They should open easily.
16. Remove your samples, press the AC power button, and turn off the vacuum pump.