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## Anatech SCE-108 Barrel Asher standard operating procedure

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## Anatech SCE-108 Barrel Asher standard operating procedure

### Keywords

barrel Asher SOP, anatech SCE-108, oxygen plasma, resist removal, DE02 SOP



## Standard Operating Procedure (SOP)

Anatech SCE-108 Barrel Asher

(DE-02)

*In case of fire or injury please call 911 (511 from campus phones)*

**If there is an error on the system/tool please report it  
in IRIS, the staff will take care of it**

**Please *DO NOT* run diagnosis without a staff  
member's approval**

### General safety tips and common mistakes

- 1) If the system is not running, make sure you are logged into the tool on IRIS.
- 2) The password for the tool is "100"
- 3) **The quartz boat/wafers are very hot after the process is done! Make sure you allow them to cool down before handling.**
- 4) For small pieces use a carrier wafer and place your pieces horizontally.
- 5) If there are too many wafers in the chamber, the plasma may not ignite. Reduce the number of wafers in the chamber. Consult a staff member if the problem persisted.

# Anatech SCE-108 Barrel Asher



- Primary tool owner: Sam Azadi.  
For questions regarding process development and characterization of etch contact Sam Azadi at: [azadi@seas.upenn.edu](mailto:azadi@seas.upenn.edu)  
Problems with the tool **MUST** be reported on IRIS. Do not contact primary tool owner with tool issues directly.

## Procedure Overview

- 1) Vent the chamber
- 2) Load sample(s)
- 3) Pump the chamber
- 4) Choose/modify recipe
- 5) Run etch
- 6) Pump the chamber

## Tool Overview:

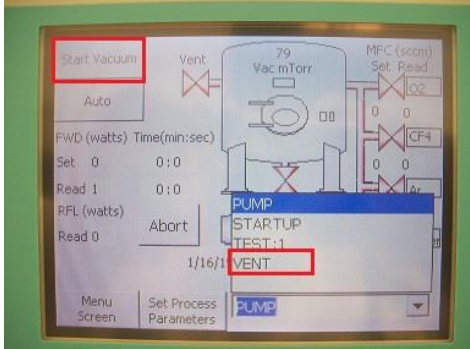
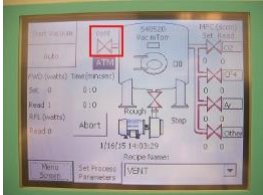
Anatech SCE-108 Barrel Asher is an isotropic etch tool, equipped with O<sub>2</sub>, CF<sub>4</sub>, Ar, and N<sub>2</sub> gases. This tool is ideal for removing photoresist and other organic materials.

The tool is connected to a roughing pump that reduces the pressure to ~ 20 mTorr. Once the desired mixture of gases is introduced in the chamber, the plasma is ignited using the specified RF power. This plasma diffuses towards where the wafers/samples are and etches the material wherever it is exposed in all directions.

The rate of etch depends on the pressure of the gas, the power, the amount of material/ number of wafers and the placement in the chamber. The chamber is not temperature controlled and heats up as the time goes on, which increases the reaction rate.

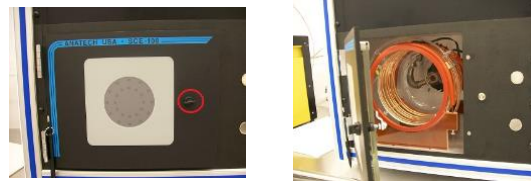
Tool training video can be found here

## Full procedure:

Log into the tool via IRIS	
If the alarm page is on; click "Exit"	
<p><b>1. Vent the chamber:</b></p> <p>1.1. Choose "<b>VENT</b>" from "<b>Recipe Name</b>" tab on the bottom right part of the screen</p> <p><b>Attention!</b> The "process completed" alarm may appear again if you don't go through the steps quickly enough. If that happens, click exit and proceed to the next step</p> <p>1.2. Make sure the system is on "<b>Auto</b>". If on "Manual" you can change it to "Auto" by clicking on it, in the top left corner of the screen.</p> <p>1.3. Click on "<b>Start Vacuum</b>" on the top left corner of the screen.</p> <p><b>Notes:</b></p> <p>a) The chamber is evacuated in the beginning but starts venting automatically.</p> <p>b) Venting is done when the flashing "ATM" appears under the vent pump schematic drawing.</p>	 

### 1. Load sample(s):

- 1.1. Open the chamber door.
- 1.2. Load the wafer onto the quartz boat and place the boat in the middle of the chamber.
- 1.3. Close the chamber door.

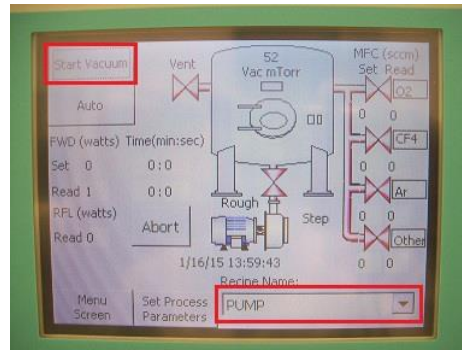


### 2. Pump the chamber:

- 2.1. Choose "PUMP" from "Recipe Name" tab on the bottom right part of the screen
- 2.2. Click on "Start Vacuum" on the top left corner of the screen

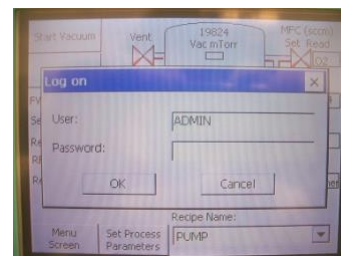
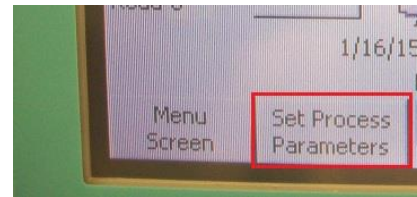
Note:

- a) Make sure the system is on "Auto".
- b) Once pumping is done, if the alarm page appeared, click "Exit".



### 3. Choose/Modify recipe:

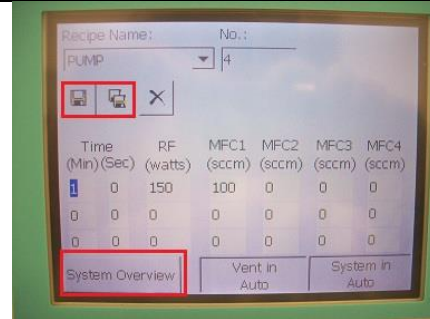
- 3.1. Click on "Set Process Parameters"
- 3.2. Log on as admin by typing "100" in the password bar. Then click "OK".
- 3.3. Click on "Set Process Parameters" again
- 3.4. From the "Recipe Name" drop bar menu on the top left, choose your desired recipe.
- 3.5. Type in the desired time or make the necessary modifications to the recipe. You will have to click on the "enter" button each time you change a value.



- 3.6. Save/Save as the recipe
- 3.7. Click on **“System Overview”**

**Note:**

- a) *Make sure you consult a staff member before creating a new recipe.*



#### 4. Run etch:

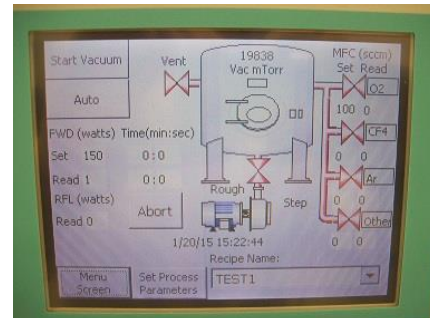
- 4.1. Choose the desired recipe from the **“Recipe Name”** drop bar on the bottom right part of the screen.
- 4.2. Make sure the system is in the **“Auto”** mode
- 4.3. Click **“Start Vacuum”** on the top left corner of the screen.

**Note:** keep an eye on any possible errors and take a photo of the error message if you got one.

- 4.4. Once the process is complete, the tool automatically vents the chamber, and the alarm message appears. Click **“Exit”** on the alarm.

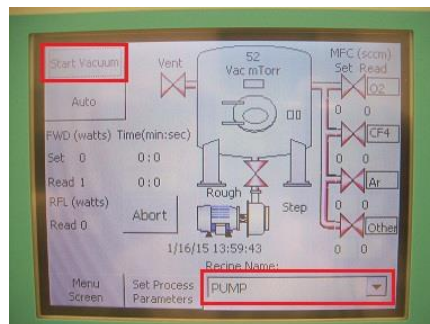
**Caution!** The sample(s), the quartz boat, and chamber are extremely hot!

- 4.5. Open the lid and take your sample(s) out.
- 4.6. Put the boat back inside the chamber and close the lid



#### 5. Pump the chamber

- 5.1. Choose **“PUMP”** from **“Recipe Name”** tab on the bottom right part of the screen
- 5.2. Click on **“Start Vacuum”** on the top left corner of the screen



Log out of the tool via IRIS once the pumping is done

Feel free to contact the staff members with any questions about your process and the tool.