Standard Operating Procedure (SOP)

Rapid Thermal Annealer - 02

(RTA-02)

In case of emergency, please call 911

For any other major safety concern, contact EHRS at 215-898-4453 or via email: ehrs@ehrs.upenn.edu

If there is an error on the system/tool please report it on NEMO, we will take care of it

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

General safety tips and common mistakes

DO NOT use Kapton tape to secure your samples.

Before running your process, run the recipe with a dummy sample at least once. This will condition the chamber and ensure the process runs as expected.

The system allows door opening if the sample temperature is lower than 95º C. This is still very hot. Use caution and handle samples with appropriate tweezers.
The RTAs must not be left unattended.
The processes' time limits associated with each temperature range are:

> up to 500º C - 15 min.
> 500 ºC to 800º C - 5 min.
> 800 ºC to 1000º C - 1 min.
> 1000 ºC to 1200º C - 30 sec.

AET Thermal RX

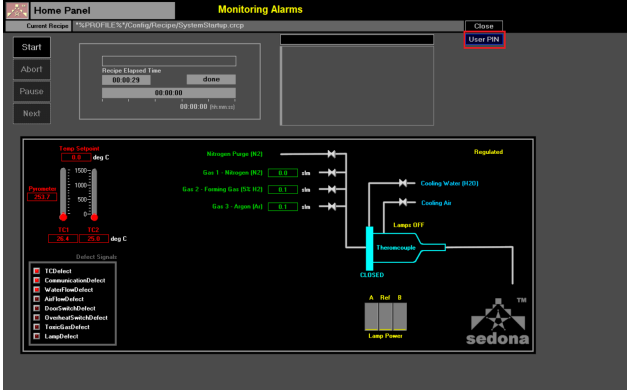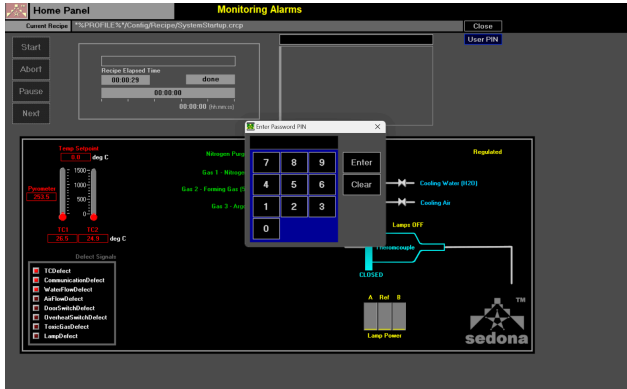## Procedure Overview

Check if the tool is in an idle state.
Load your sample(s).
Select, modify, and run your recipe.
Unload your sample(s).
Put the system into an idle state.

Tool Overview:

The Rapid Thermal Annealer-02 anneals the sample up to 1200° C. The processes can be run under atmospheric pressure in Nitrogen, Forming Gas, and Argon environments. The tool can hold 4'' wafers or smaller chips.

Full procedure:

Enable Tool	
0. Log into the tool via NEMO.	
1. Click on the "User PIN" icon. 1.1 Type 054321 and press enter.	

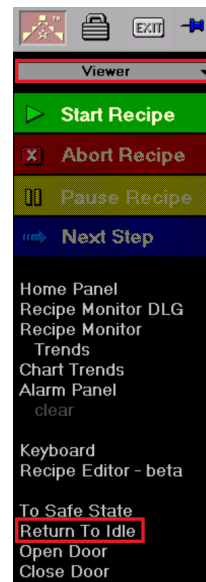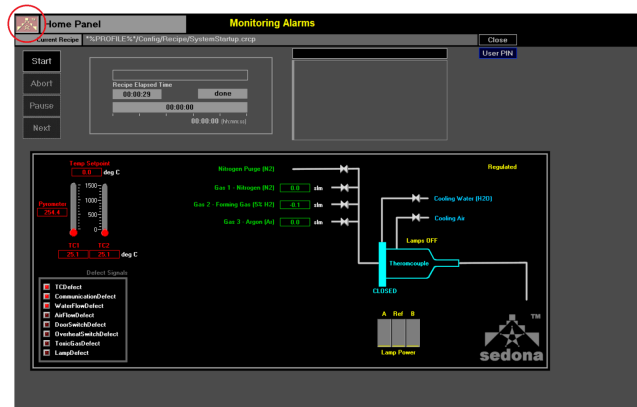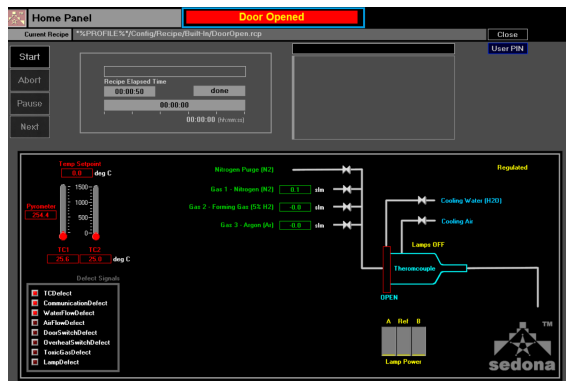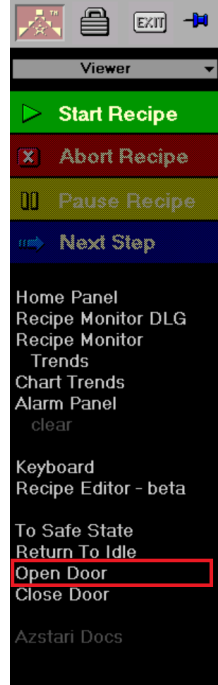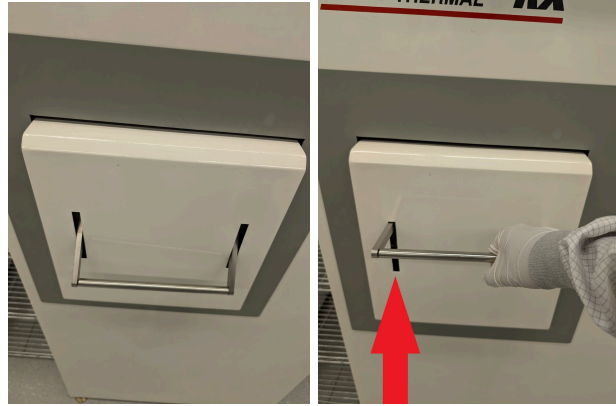|	
Load Sample	
2. Make sure that the tool is in an idle state. 2.1 - Click on the top left icon 2.2 - Run the "Return To Idle" recipe in the viewer menu. Return To Idle **3. Open the door.** 3.1 – Run the "Open Door" recipe in the viewer menu. Do not try to open the door before running the "Open Door" recipe. The door is expected to be latched.	

3.2 – The software will display a "Door Opened" message.

Door Opened

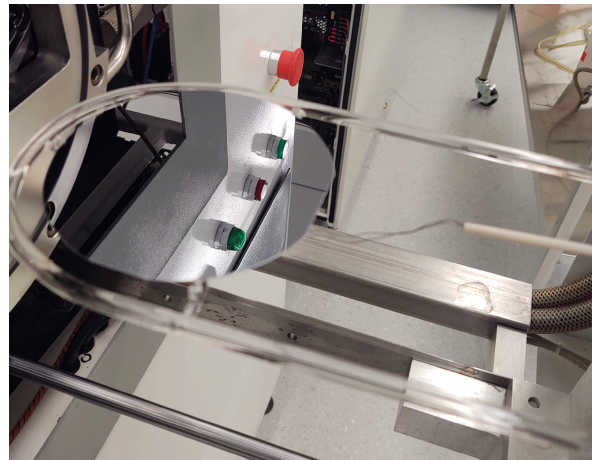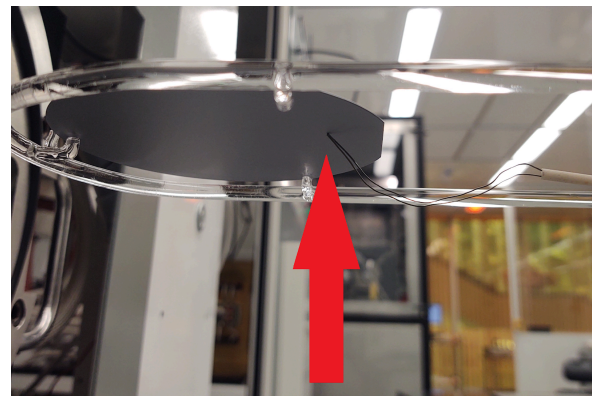|	
3.3 - Raise the door handle.	
3.4 - Pull the door.	

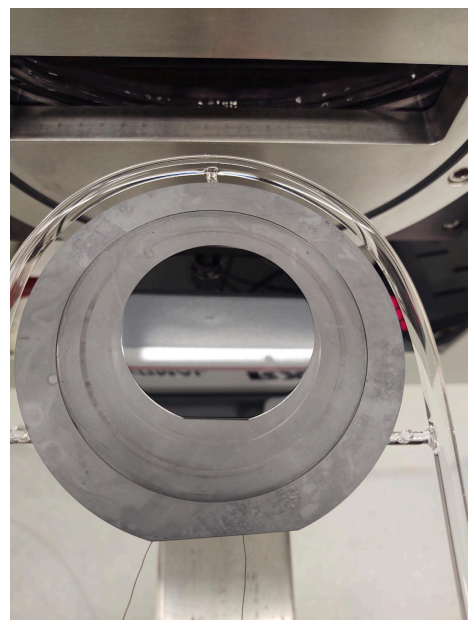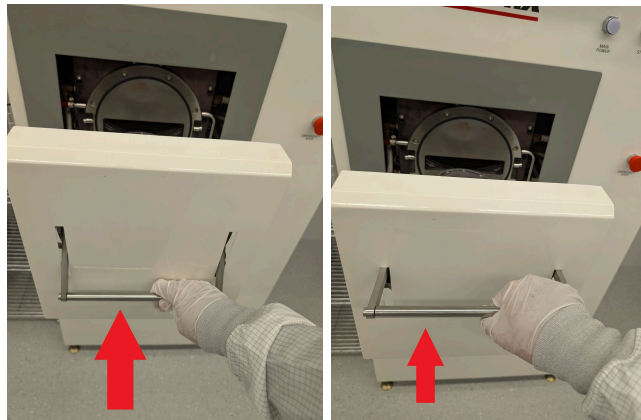|	
4. Load your sample/wafer. 4.1 - 4'' wafers must be placed directly on the sample stage.	
4.2 – Ensure the thermocouple is in contact with the back of the wafer.	
4.3 – Use the carrier wafer for smaller samples.	

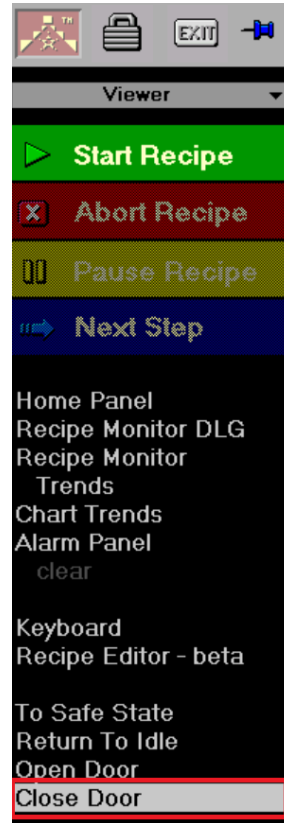|	
5. Close the door 5.1 Raise the door handle 5.2 Push the door. 5.3 Bring the door handle down.	

5.4 Run the "Close Door" recipe in the viewer menu.

Close Door

Viewer

▷ **Start Recipe**

☒ **Abort Recipe**

❚❚ **Pause Recipe**

⇥ **Next Step**

Home Panel
Recipe Monitor DLG
Recipe Monitor
  Trends
Chart Trends
Alarm Panel
  clear

Keyboard
Recipe Editor - beta

To Safe State
Return To Idle
Open Door
Close Door

Run Process

6. Select and run your recipe.

6.1 Click on the top left icon.

6.2 Click on Start Recipe.

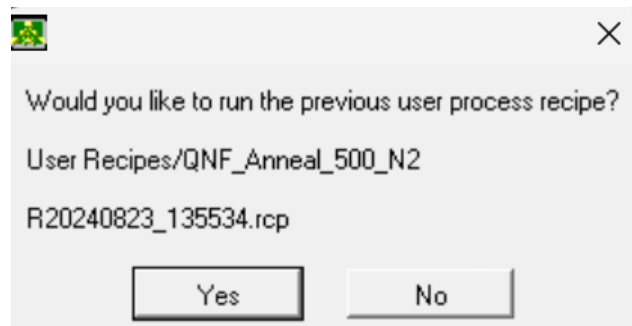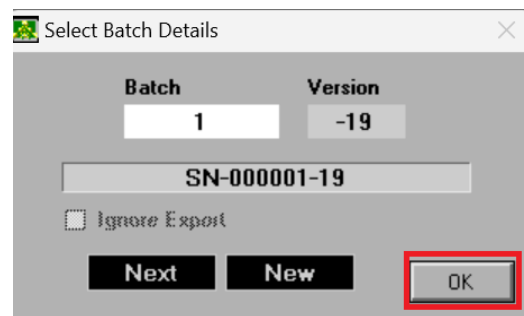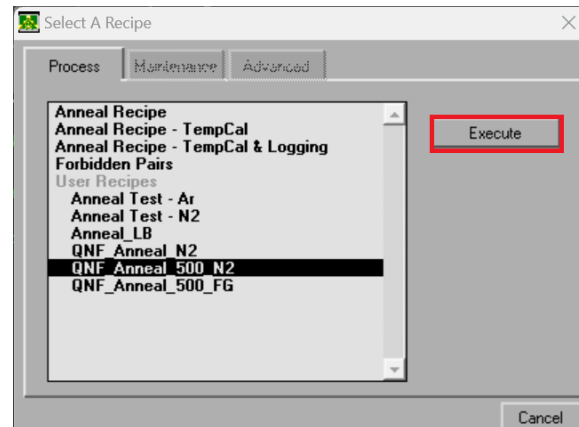6.3 Select your recipe and click on "Execute".

6.4 On the "**Select Batch Details**" window, click "**OK**."

6.5 The software will display a window with the following question:
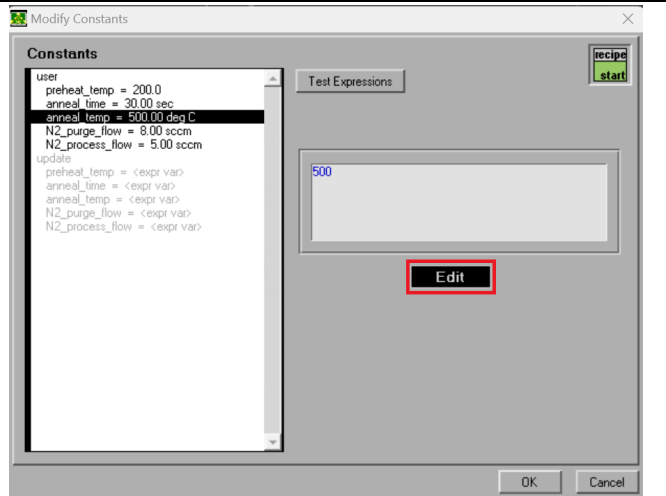
Would you like to run the previous user process recipe?

If you want to edit the process parameters, click "**No**."
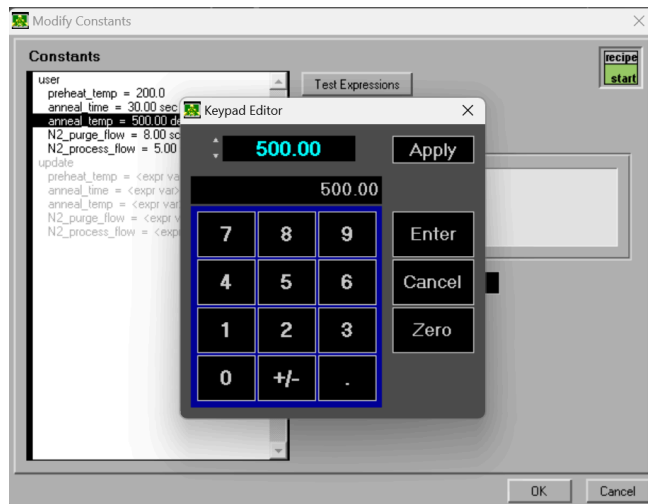
It is strongly recommended that you select "**No**."

6.6 On the "**Modify Constants**" window, select the parameter you want to modify and click on "**Edit.**"
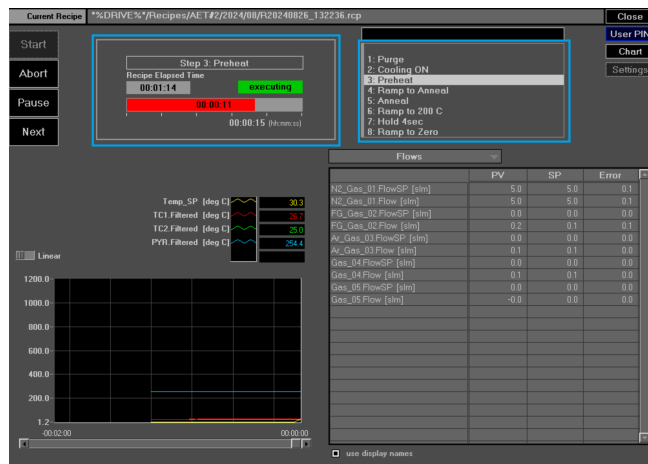

6.7 The software will display a Keypad Editor window. Type the parameter value, click "**Enter**," and then "**Apply**."

6.8 After finishing editing the parameters, click on "**OK**." The recipe will start.

6.9 Follow the progress of your process. The tool must not be unattended while the process is running.

Unload Sample	
7. Remove your sample(s). 7.1 Run the "Open Door" recipe in the viewer menu. **Open Door** 7.2 Open the door (see 3.3 and 3.4). 7.3 Unload the sample. 7.4 Close the door (see 5.1 - 5.3). 7.5 Run the "Close Door" recipe in the viewer menu. **Close Door** 7.6 Run the "Return to Idle recipe." **Return To Idle**	
Log out of the tool via NEMO.	

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

Last modified: 01/10/2025 by Lucas Barreto