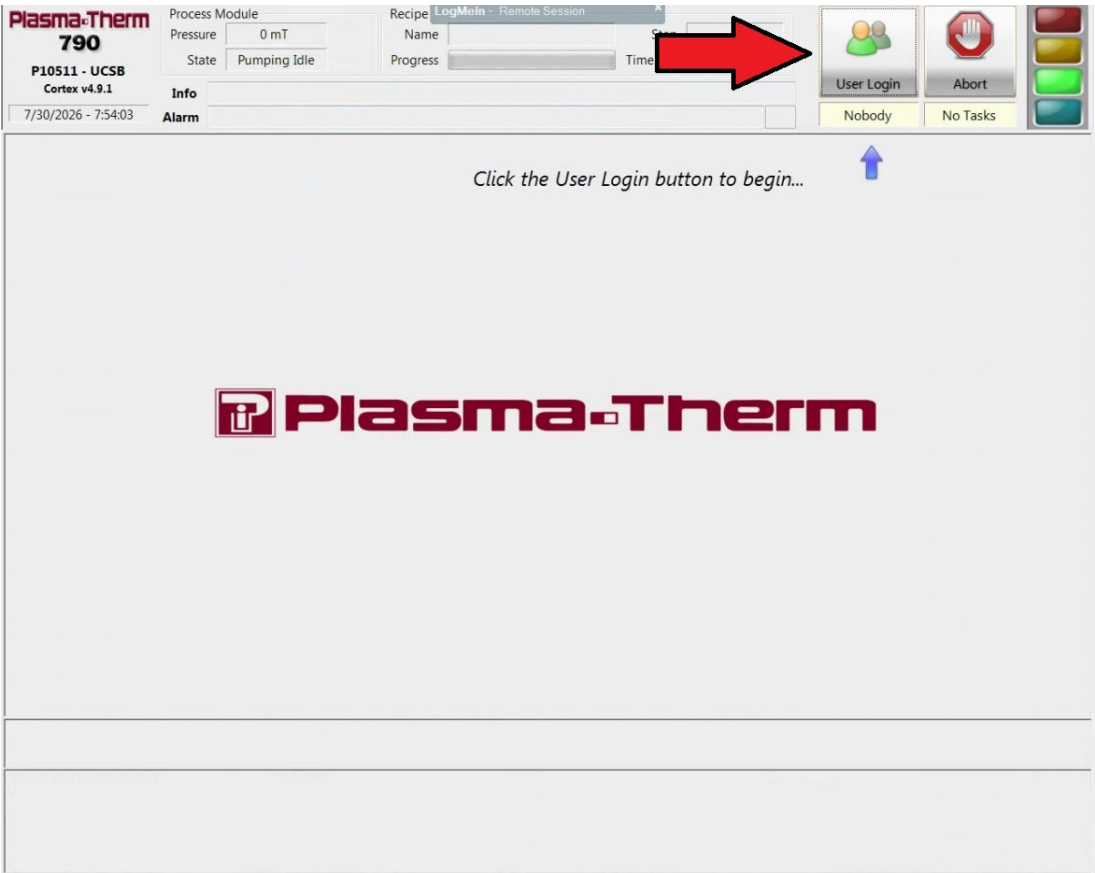


PECVD1

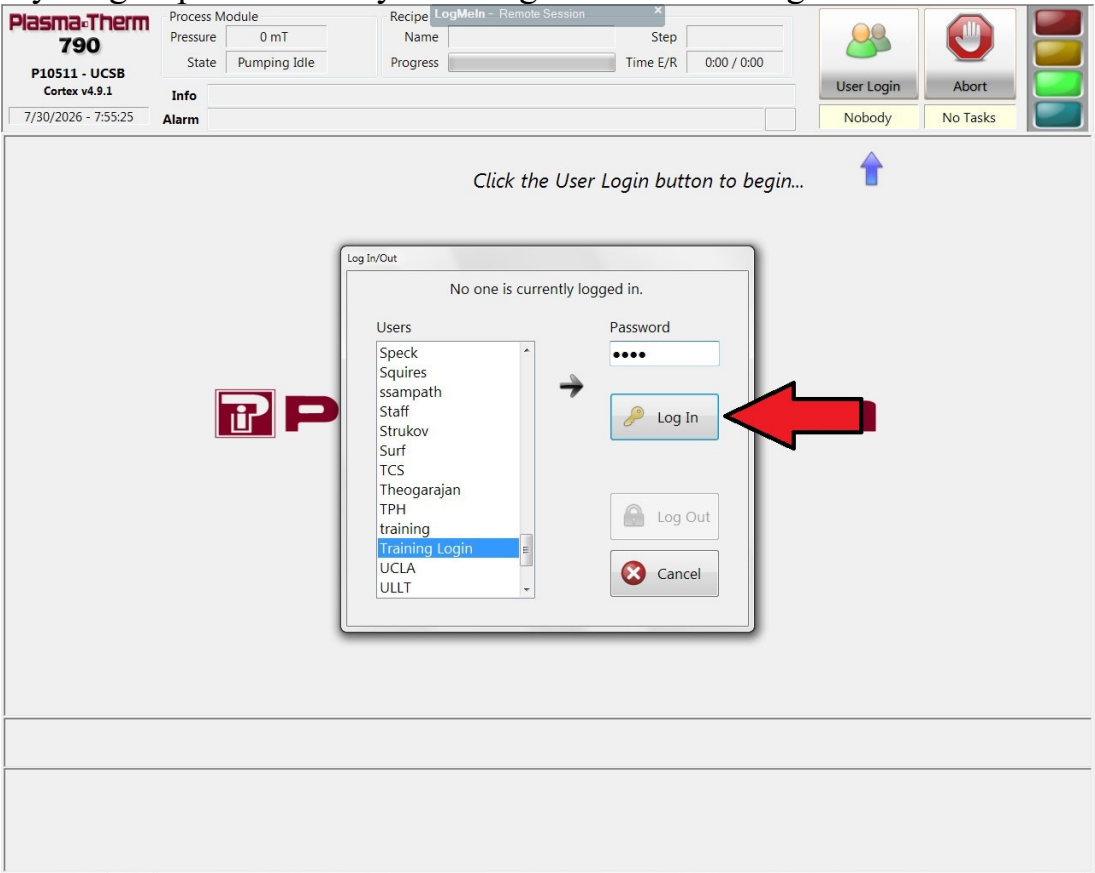
Standard Operating Procedure



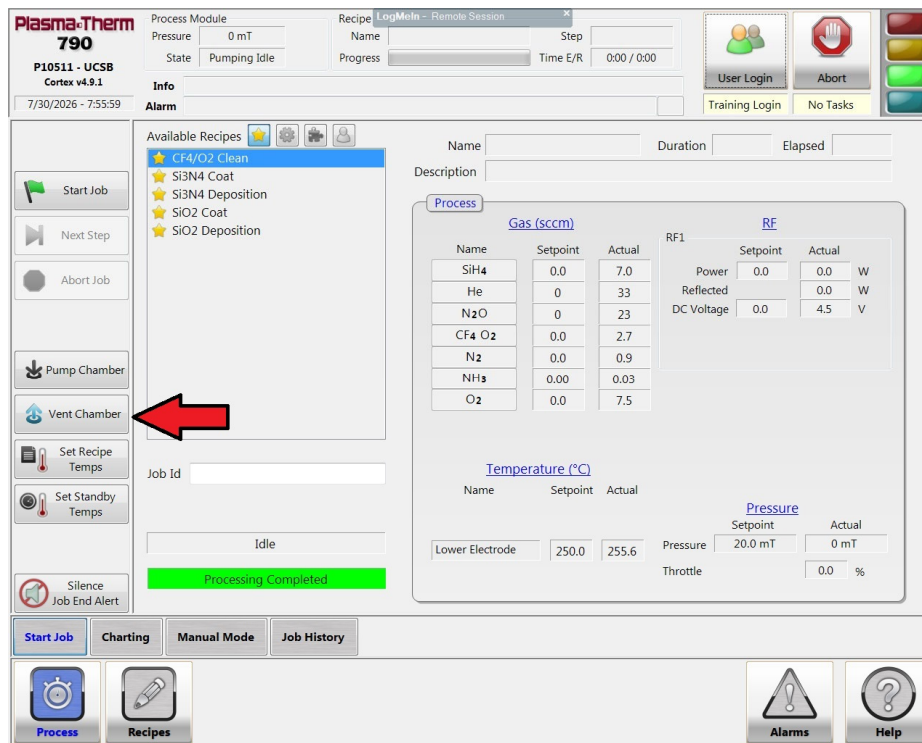
1. Section 1, Operation



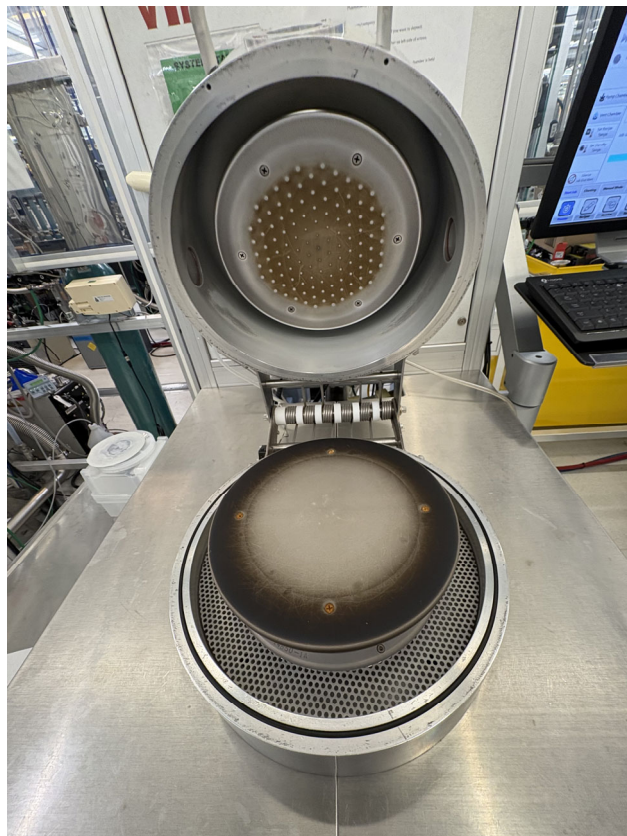
1.1. Log into your group’s account by selecting on the “User Login” button.



1.2. Select your group’s account, enter your group’s password, and select “Log In”.



- 1.3. Before starting any processing, vent and open the chamber to do a quick visual inspection for debris or contamination. Start by venting the chamber by selecting the “Vent” button.



- 1.4. Check for debris or contamination on the chuck or around the chamber sealing surface. If debris or contamination is found, use the N2 gun to clean the area, being careful not to touch the chuck.

Touching the chuck could result in serious burns/injury due to the high chuck temperature.

****The chuck temperature on PECVD1 is 250C and the temperature is not to be changed.**



1.5. Close the lid gently, **Do Not Allow the lid to Slam Closed.**

*Allowing the lid to slam closed can and will cause damage to internal components that would cause an extended down time for the tool.

Plasma-Therm 790
P10511 - UCSB
Cortex v4.9.1
7/30/2026 - 7:55:59

Process Module: 0 mT
State: Pumping Idle
Recipe: LogMeIn - Remote Session
Name: _____
Step: _____
Progress: _____
Time E/R: 0:00 / 0:00

Info: _____
Alarm: _____

Available Recipes:

- ★ CF4/O2 Clean
- ★ Si3N4 Coat
- ★ Si3N4 Deposition
- ★ SiO2 Coat
- ★ SiO2 Deposition

Start Job
Next Step
Abort Job
Pump Chamber
Vent Chamber
Set Recipe Temps
Set Standby Temps
Silence Job End Alert

Job Id: _____
Idle
Processing Completed

Name: _____ Duration: _____ Elapsed: _____
Description: _____

Process

Gas (sccm)

Name	Setpoint	Actual
SiH4	0.0	7.0
He	0	33
N2O	0	23
CF4 O2	0.0	2.7
N2	0.0	0.9
NH3	0.00	0.03
O2	0.0	7.5

RF

RF1	Setpoint	Actual	W
Power	0.0	0.0	W
Reflected	0.0	0.0	W
DC Voltage	0.0	4.5	V

Temperature (°C)

Name	Setpoint	Actual
Lower Electrode	250.0	255.6

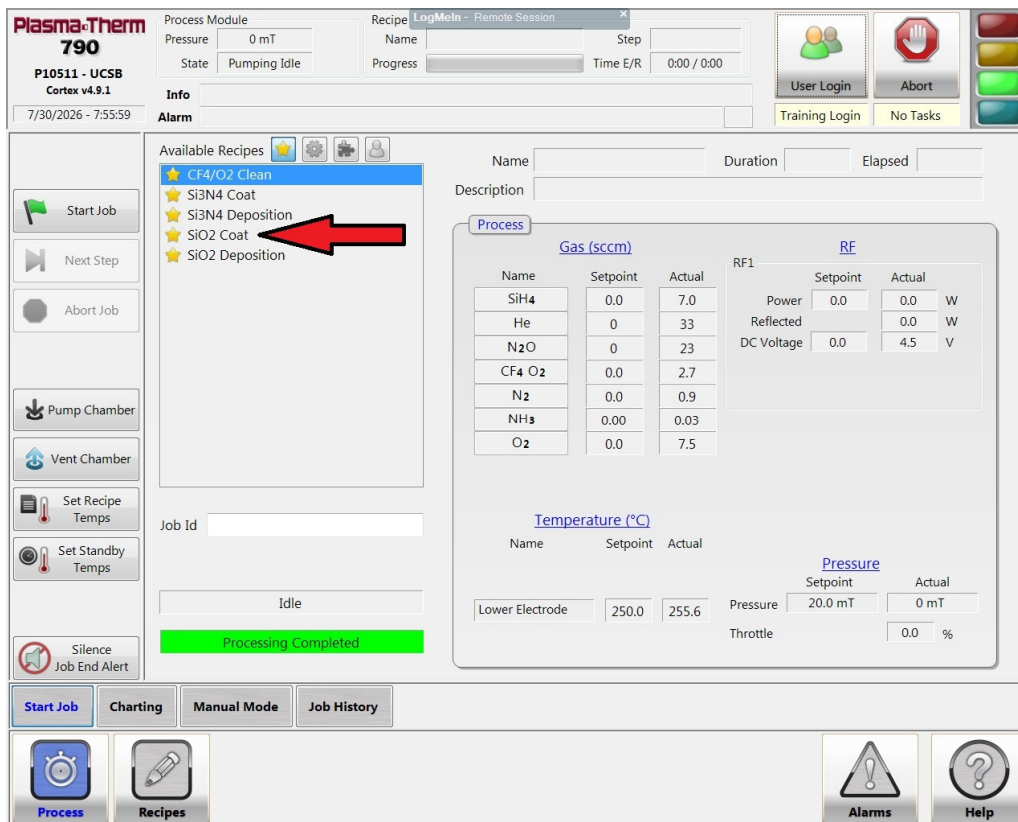
Pressure

Setpoint	Actual
Pressure	20.0 mT
Throttle	0.0 %

Start Job Charting Manual Mode Job History

Process Recipes Alarms Help

1.6. With the chamber lid closed, push down on the chamber lid handle and pump the chamber down by selecting the “Pump Down” button. Continue pushing down on the chamber lid handle for 3 seconds after selecting the “Pump Down” button.

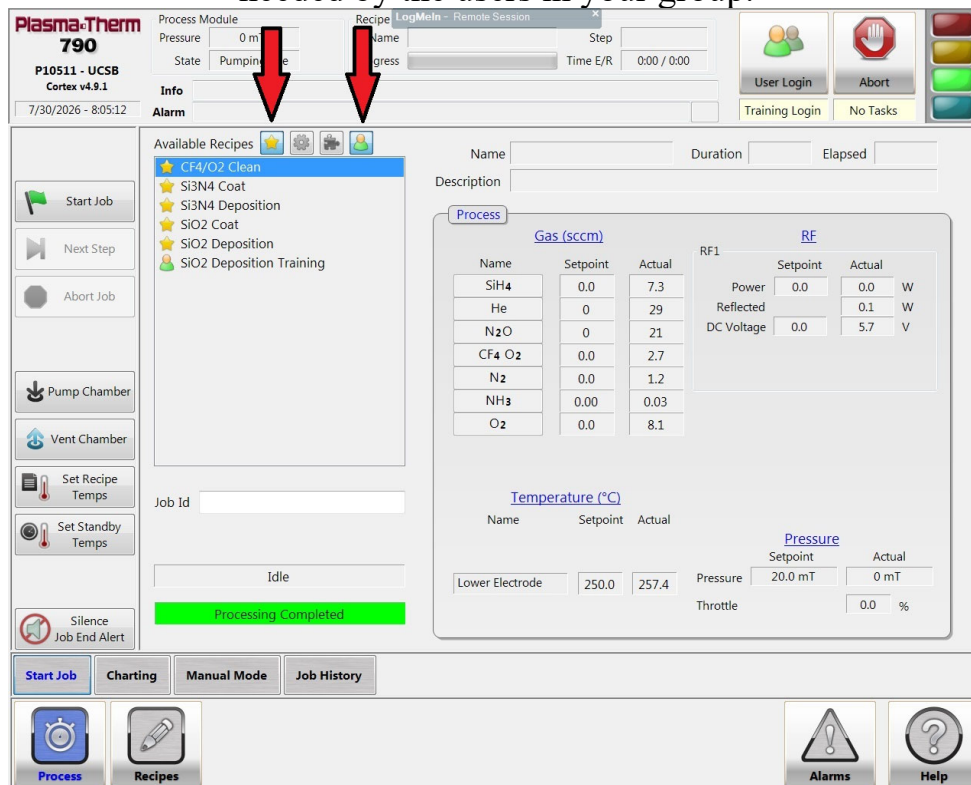


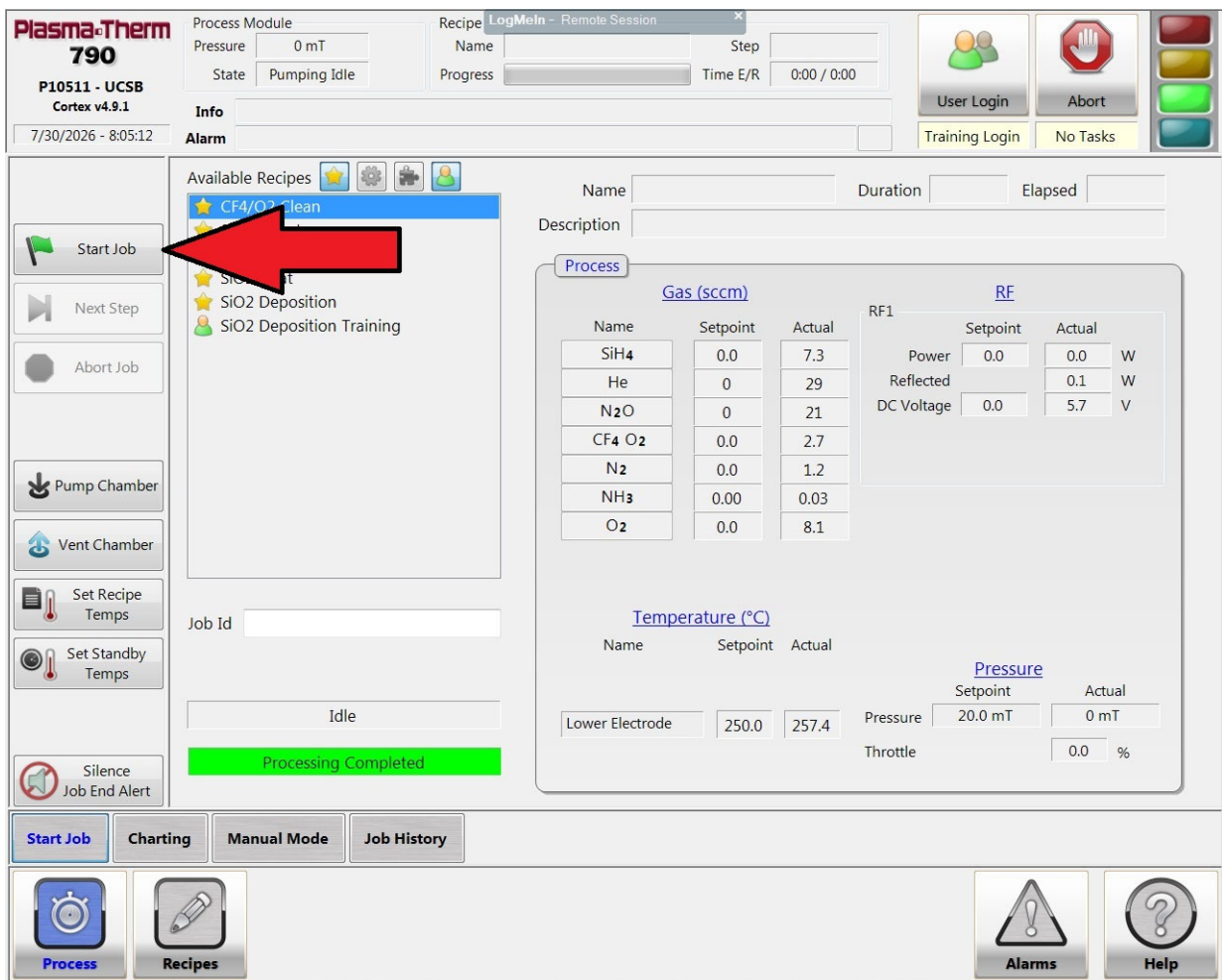
1.7. Select a standard coat recipe for the material you will be depositing. For an example, in the illustration you will see the recipe “SiO₂ Coat” from the “Production” recipe list.

The following illustration you will see that there are “Production” recipes and “Personal” recipes.

***Production** recipes are our standard recipes that users **are not allowed** to edit or modify with the exception of changing the time on variable time recipes.

***Personal** recipes are your group’s personal recipes and these recipes may be edited or modified as needed by the users in your group.





1.8. Select the “Start Job” button to start the chamber coating process.

1.9. Once the chamber coating process has completed, you will then Vent the chamber by selecting the “Vent” button, as seen in Step 1.3

1.10. Once the chamber has completed venting, you will then Open the chamber.

1.11. Once the chamber lid is open, you may place your wafer(s)/sample(s) on the chuck.

**** ONLY METAL TIPPED TWEEZERS ARE ALLOWED TO BE USED ****

You may use glass slides to prevent your wafer(s)/sample(s) from moving on the chuck.

**** BE VERY CAREFUL NOT TO TOUCH THE CHUCK AS IT IS VERY HOT ****

1.12. Once your wafer(s)/sample(s) have been loaded, you will then Close the chamber by following Step 1.5

1.13. Once the chamber lid has closed, you will pump down the chamber by following Step 1.6.

1.14. Once the chamber has pumped down to 20mtorr or better, select the recipe for the material that you will be depositing, and select the “Start Job” button to start the deposition recipe, as seen in Step 1.8

1.15. Once the deposition process has completed, you will then Vent the chamber by selecting the “Vent” button, as seen in Step 1.3

1.16. Once the chamber has completed venting, you will then Open the chamber.

1.17. Once the chamber lid is open, you will be able to retrieve your wafer(s)/sample(s).

*If you are depositing more than 1 run, go back to Step 1.11 and continue until you have completed your depositions.

*If you have completed your depositions, proceed to Section 2 Chamber Cleaning.

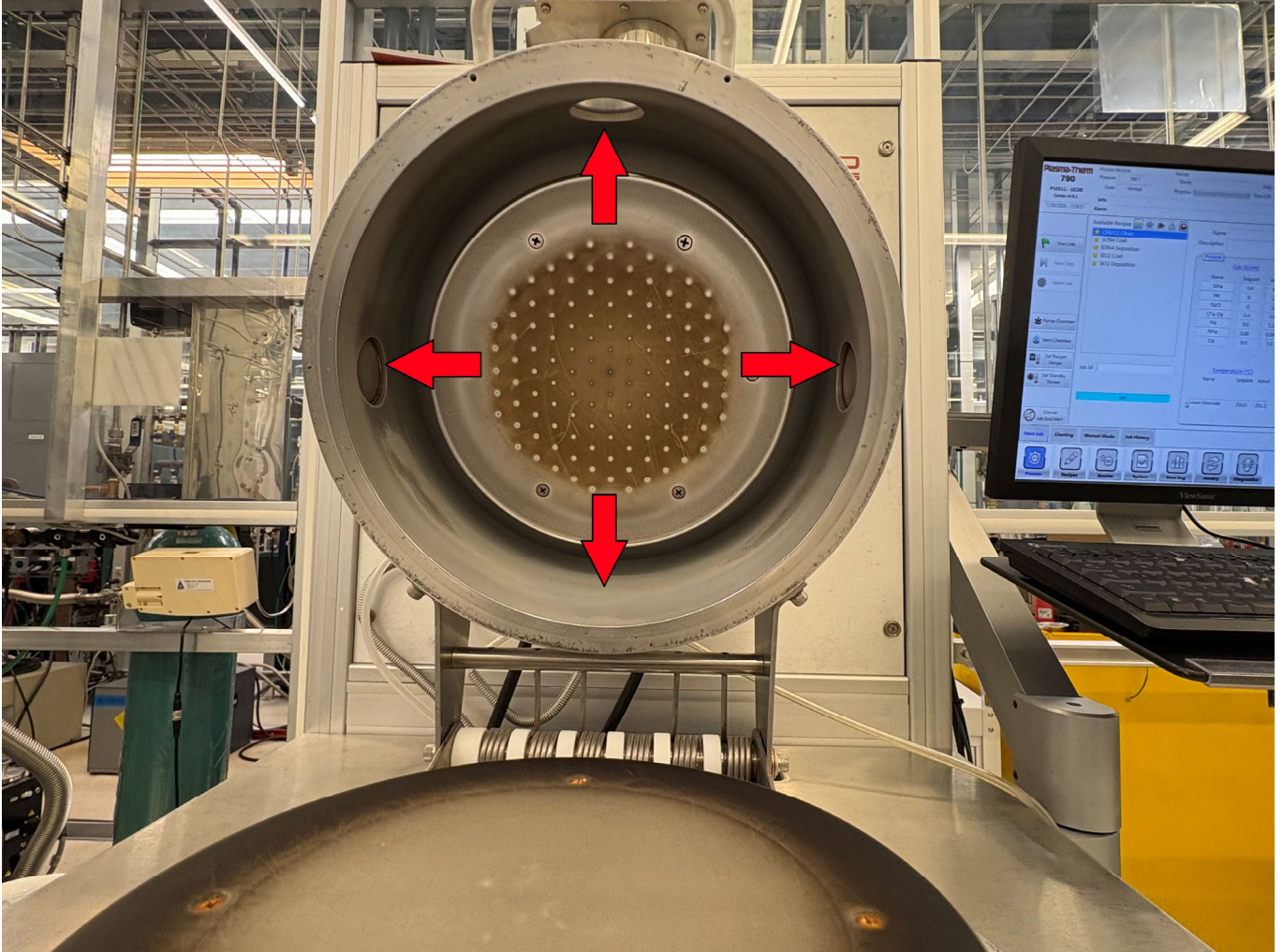
2. Section 2, Chamber Cleaning

The chamber **Must** be cleaned after 60min of deposition and upon completion of your depositions.

SiO₂ = 1 minute of clean for every 1 minute of deposition.

SiN = 1 minute of clean for every 7 minutes of deposition.

2.1. To clean the chamber, first you will vent, and then open the chamber as shown in steps 1.3.



- 2.2. Using clean room wipes, wet with DI water, wipe the circumference of the chamber, being careful not to touch the shower head.
- 2.3. Using clean room wipes, wet with IPA, wipe the circumference of the chamber, being careful not to touch the shower head.
- 2.4. Using the clean room wipes that are wet with IPA, wipe the chamber o-ring and the sealing surface.
- 2.5. Next you will close the chamber, and Pump down the chamber as seen in Steps 1.5 and 1.6.

Plasma-Therm 790
P10511 - UCSB
Cortex v4.9.1
7/30/2026 - 7:55:59

Process Module
Pressure: 0 mT
State: Pumping Idle

Recipe: LogMeIn - Remote Session
Name:
Step:
Progress:
Time E/R: 0:00 / 0:00

User Login
Training Login

Abort
No Tasks

Available Recipes
★ CF4/O2 Clean
★ Si3N4 Coat
★ Si3N4 Deposition
★ SiO2 Coat
★ SiO2 Deposition

Start Job
Next Step
Abort Job

Pump Chamber
Vent Chamber
Set Recipe Temps
Set Standby Temps
Silence Job End Alert

Job Id:
Idle
Processing Completed

Process

Gas (sccm)

Name	Setpoint	Actual
SiH4	0.0	7.0
He	0	33
N2O	0	23
CF4 O2	0.0	2.7
N2	0.0	0.9
NH3	0.00	0.03
O2	0.0	7.5

RF

RF1	Setpoint	Actual	
Power	0.0	0.0	W
Reflected		0.0	W
DC Voltage	0.0	4.5	V

Temperature (°C)

Name	Setpoint	Actual
Lower Electrode	250.0	255.6

Pressure

	Setpoint	Actual
Pressure	20.0 mT	0 mT
Throttle		0.0 %

Start Job Charting Manual Mode Job History

Process Recipes Alarms Help

You will then select the clean recipe, and enter the appropriate clean time in the pop up window.

The only clean recipe you are approved to use are is the Production CF4/O2 Clean Recipe.

Plan your time and reservations accordingly, and you must include the entire final chamber clean time in your reservation.

Add 10min to your deposition time for the “Coat” recipe that was ran.

SiO2 =1 minute of clean for every 1 minute of deposition.

SiN = 1 minute of clean for every 7 minutes of deposition.

3. Section 3, Recipe Setup/Editing

Editing A Recipe

Plasma-Therm
790
P10511 - UCSB
Cortex v4.9.1
7/30/2026 - 7:55:59

Process Module
Pressure 0 mT
State Pumping Idle

Recipe LogMeIn - Remote Session
Name
Step
Progress
Time E/R 0:00 / 0:00

User Login
Training Login
No Tasks

Abort

Available Recipes
★ CF4/O2 Clean
★ Si3N4 Coat
★ Si3N4 Deposition
★ SiO2 Coat
★ SiO2 Deposition

Start Job
Next Step
Abort Job
Pump Chamber
Vent Chamber
Set Recipe Temps
Set Standby Temps
Silence Job End Alert

Job Id
Idle
Processing Completed

Start Job
Charting
Manual Mode
Job History

Process

Recipes

Name
Description

Process

Gas (sccm)

Name	Setpoint	Actual
SiH4	0.0	7.0
He	0	33
N2O	0	23
CF4 O2	0.0	2.7
N2	0.0	0.9
NH3	0.00	0.03
O2	0.0	7.5

Temperature (°C)

Name	Setpoint	Actual
Lower Electrode	250.0	255.6

Pressure

Setpoint	Actual
20.0 mT	0 mT

Throttle

Setpoint	Actual
0.0	%

RF1

	Setpoint	Actual	
Power	0.0	0.0	W
Reflected		0.0	W
DC Voltage	0.0	4.5	V

3.1. To edit your recipes, first select the “Recipes” tab at the lower left of the screen.

PlasmaTherm 790
P10511 - UCSB
Cortex v4.9.1
7/30/2026 - 7:58:21

Process Module
Pressure: 0 mT
State: Pumping Idle

Recipe: LogMeIn - Remote Session
Name:
Step:
Progress:
Time E/R: 0:00 / 0:00

User Login, Abort, Training Login, No Tasks

Recipe Name: SiO2 Deposition Training
Category: Personal
Description: SiO2 Dep (Variable Time) - User Enters Time upon Running Recipe

Steps:
1) < Initial >
2) Purge
3) Evac Step
4) Loop 2 times
5) Gas Press Stab
6) SiO2 Dep
9)
10) < End >

Select Recipe To Load

Available Recipes:
★ CF4/O2 Clean
★ Si3N4 Coat
★ Si3N4 Deposition
★ SiO2 Coat
★ SiO2 Deposition
★ SiO2 Deposition Training

Filters:
★ Production
⚙ Engineering
⚙ Experimental
👤 Personal

Description:
SiO2 Dep (Variable Time) - User Enters Time upon Running Recipe

Created: 7/30/2026 by Training Login
Last Modified: Never

Edit Recipe

Process, Recipes, Alarms, Help

3.2. To edit a recipe, first you will select the “Load” button. On the pop up window, you will then select the “Personal” button to bring up your group’s personal recipes, and then you will select the recipe you would like to edit. Finally selecting “Load Recipe” button.

PlasmaTherm

790

P10511 - UCSB

Cortex v4.9.1

8/28/2026 - 6:45:57

Process Module

Pressure 0 mT

State Pumping Idle

Recipe LogMeIn - Remote Session

Name

Step

Progress

Time E/R 0:00 / 0:00

User Login

Abort

Training Login

No Tasks

Info

Alarm

Recipe Name SiO2 Deposition Training

Category Personal

Description SiO2 Dep (Variable Time) - User Enters Time upon Running Recipe

Steps

1) < Initial >

2) Purge

3) Evac Step

4) Loop 2 times

5) Gas Press Stab

6) SiO2 Dep

7) Purge

8) Evac Step

9) Loop 2 times

10) < End >

Load...

Save

New Recipe

Revert

Export PDF

Insert Step After

Delete Step

Initial Parameters

Details

Tabular View

Initial Step Parameters

Time

Hold Time 0 : 30.0 min : s

Pressure

Setpoint 20.0 mTorr

Temperature

Lower Electrode 250.0 °C

Export CSV

Template

Log To Disk On

Created 7/30/2026 by Training Login

Last Modified Never

Edit Recipe

Process

Recipes

Alarms

Help

3.3. The recipe parameters will then be available for editing. This illustration shows the “Initial Parameters” page.

In this illustration you will see that recipe steps 2-4 and 7-9 show Purge, Evac, and Loop 2 times. These steps are **MANDATORY** for all recipes *before and after* the gas pressure stabilization and deposit steps.

Plasma-Therm 790
P10511 - UCSB
Cortex v4.9.1
8/28/2026 - 6:46:47

Process Module
Pressure 0 mT
State Pumping Idle

Recipe LogMeIn - Remote Session
Name
Step
Progress
Time E/R 0:00 / 0:00

User Login

Abort

Training Login

No Tasks

Recipe Name SiO2 Deposition Training
Category Personal

Description SiO2 Dep (Variable Time) - User Enters Time upon Running Recipe

Steps

- < Initial >
- Purge
- Evac Step
- Loop 2 times
- Gas Press Stab
- SiO2 Dep**
- Purge
- Evac Step
- Loop 2 times
- < End >

Load...

New Recipe

Revert

Export PDF

Insert Step After

Delete Step

Process Parameters
Details
Tabular View

Step Name SiO2 Dep

Description User enters time upon running recipe

Restart Step

Step Termination

End By Variable Time

Time 7 : 5.0 min : s

Gas (sccm)

SiH4	100.0
He	0
N2O	300.0
CF4 O2	0.00
N2	0.0
NH3	0.000
O2	0.0

Pressure

Pressure 900.0 mTorr

RF

RF1

Control By Power

Setpoint 22 Watt

Created 7/30/2026 by Training Login

Last Modified Never

Edit Recipe

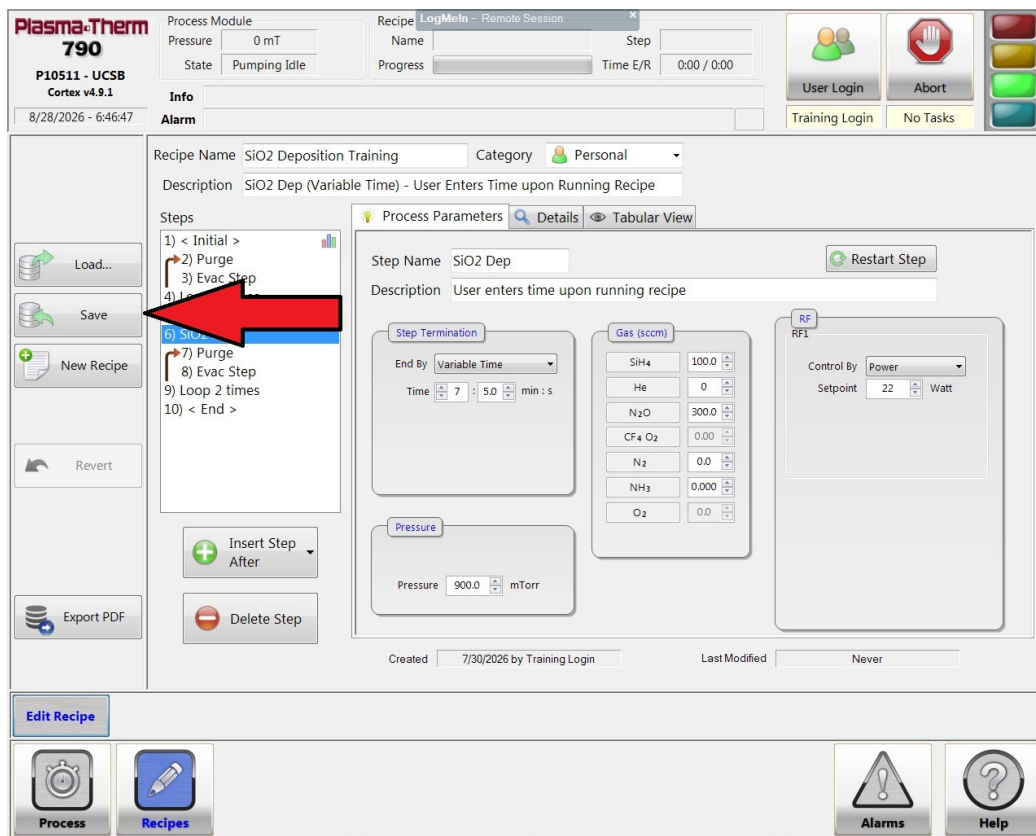
Process

Recipes

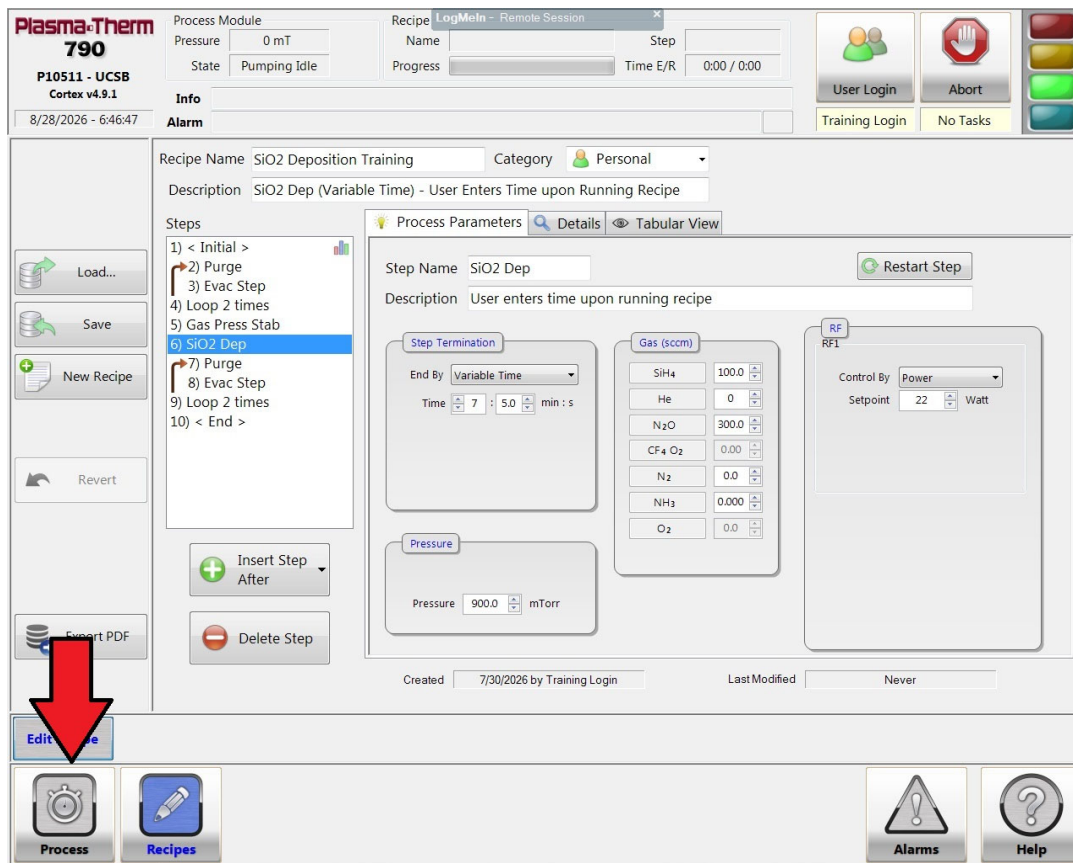
Alarms

Help

You can change the parameters for each step by selecting the step as seen in this illustration.



3.4. Once all edits have been made, select the “Save” button.



3.5. Select the “Process” button at the lower left of the screen to go back to the “Process” screen, so that you can start your run.

Creating A Recipe:

3.6. To create a recipe, you may use a production recipe as a template. To do this, you will first load a “Production” recipe, then save it as a “Personal” recipe **before making any edits or modifications**. On the “Recipes” page, Select the “Load” button.

The screenshot displays the Plasma-Therm 790 software interface. At the top, the process module is identified as P10511 - UCSB Cortex v4.9.1, with a timestamp of 8/28/2026 - 7:02:05. The process state is 'Pumping Idle' at 0 mT pressure. A 'Recipe' window is open, showing 'LogMeIn - Remote Session'. The main area is the 'Recipes' page, where a new recipe named 'Unnamed Recipe' is being created under the 'Engineering' category. A 'Select Recipe To Load' dialog box is overlaid, showing a list of available recipes: CF4/O2 Clean, Si3N4 Coat, Si3N4 Deposition, SiO2 Coat, and SiO2 Deposition. The 'SiO2 Deposition' recipe is selected. The 'Filters' section on the right of the dialog shows 'Production' selected. The 'Load Recipe' button is highlighted. Red arrows indicate the sequence: 1. Click 'Load...' button, 2. Click 'Production' filter, 3. Click 'SiO2 Deposition' recipe, 4. Click 'Load Recipe' button. The bottom of the interface shows 'Process' and 'Recipes' tabs, along with 'Alarms' and 'Help' buttons.

3.7. There will be a pop up window where you will first select “Production”, then select the recipe you wish to use as a template, and then “Load Recipe”.

Plasma-Therm 790
P10511 - UCSB
Cortex v4.9.1
8/28/2026 - 7:02:32

Process Module
Pressure: 0 mT
State: Pumping Idle

Recipe LogMeIn - Remote Session
Name:
Step:
Progress:
Time E/R: 0:00 / 0:00

User Login Abort
Training Login No Tasks

Recipe Name: SiO2 Deposition Training Category: Personal < Modified >
Description: SiO2 Dep (Variable Time) - User Enters Time upon Running Recipe

Steps
1) < Initial >
2) Purge
3) Evac Step
4) Loop 2 times
5) Gas Press Stab
6) SiO2 Dep
7) Purge
8) Evac Step
9) Loop 2 times
10) < End >

Initial Parameters
Time: Hold Time 0 : 30.0 min : s
Pressure: Setpoint 20.0 mTorr
Temperature: Lower Electrode 250.0 °C
Export CSV: Template
Log To Disk On

Created 9/28/2018 by Super User Last Modified 7/8/2024 by Staff

Edit Recipe
Process Recipes
Alarms Help

3.8. Before making any edits or modifications, Change the “Category” from “Production” to “Personal”.

Plasma-Therm 790
P10511 - UCSB
Cortex v4.9.1
8/28/2026 - 7:02:53

Process Module
Pressure: 0 mT
State: Pumping Idle

Recipe LogMeIn - Remote Session
Name:
Step:
Progress:
Time E/R: 0:00 / 0:00

User Login Abort
Training Login No Tasks

Recipe Name: SiO2 Deposition Training Category: Personal < Modified >
Description: SiO2 Dep (Variable Time) - User Enters Time upon Running Recipe

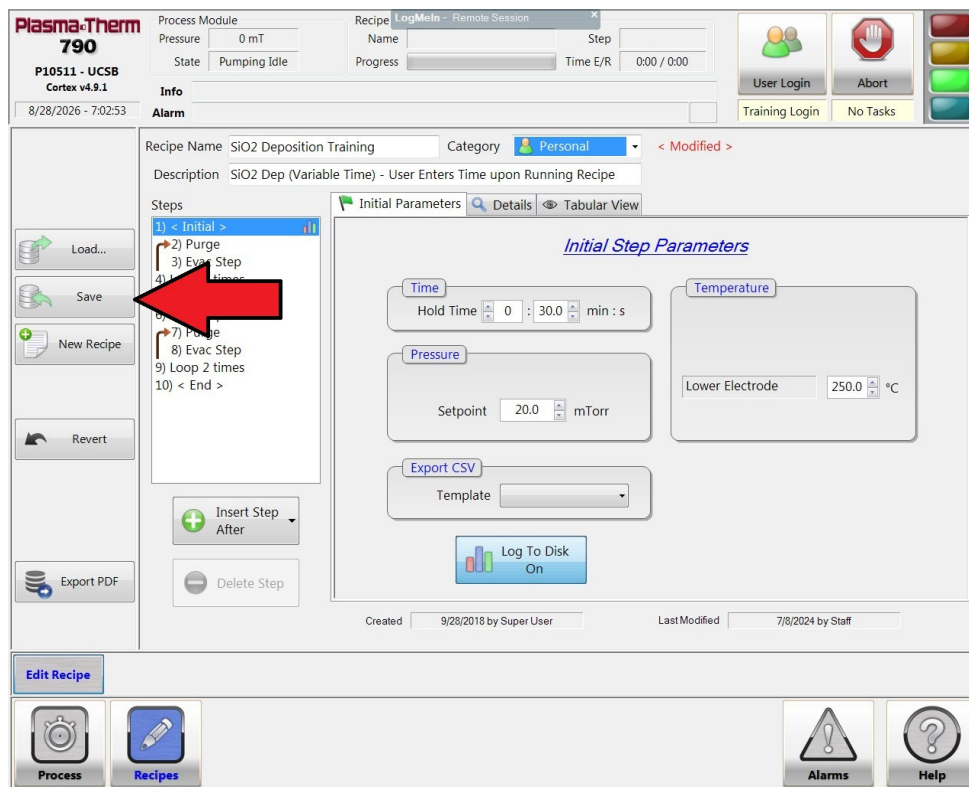
Steps
1) < Initial >
2) Purge
3) Evac Step
4) Loop 2 times
5) Gas Press Stab
6) SiO2 Dep
7) Purge
8) Evac Step
9) Loop 2 times
10) < End >

Initial Parameters
Time: Hold Time 0 : 30.0 min : s
Pressure: Setpoint 20.0 mTorr
Temperature: Lower Electrode 250.0 °C
Export CSV: Template
Log To Disk On

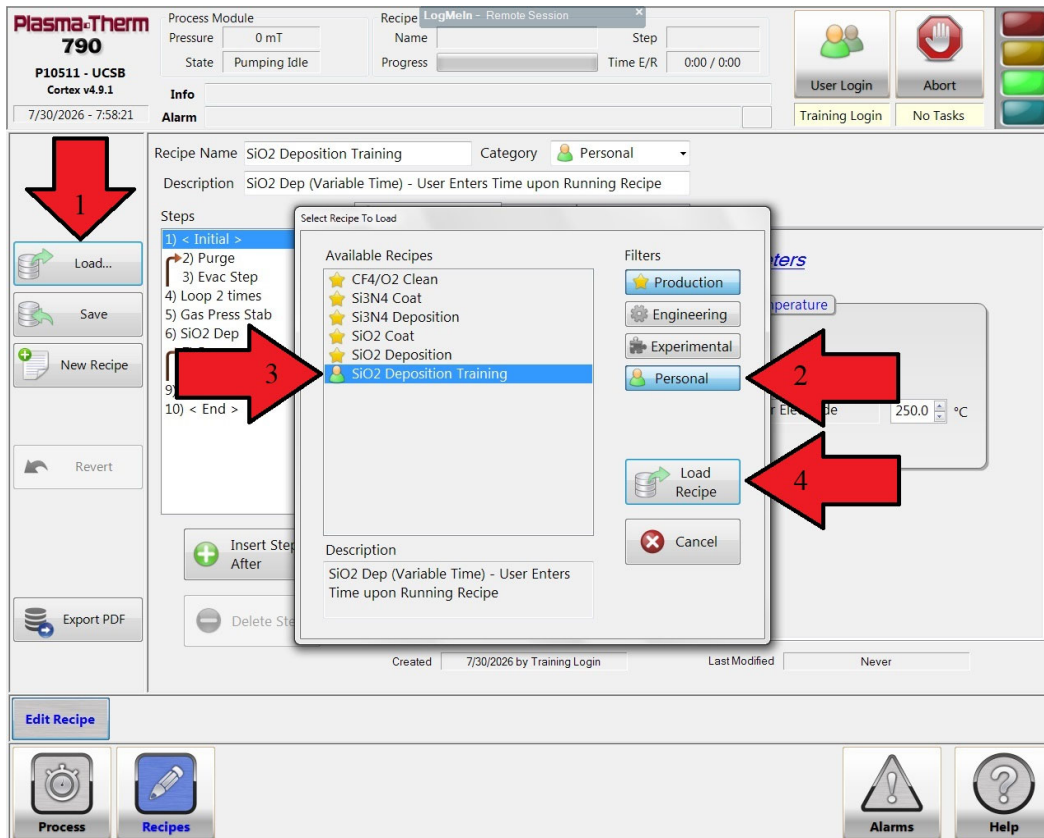
Created 9/28/2018 by Super User Last Modified 7/8/2024 by Staff

Edit Recipe
Process Recipes
Alarms Help

3.9. Change the “Recipe Name” to what you would like the recipe to be called.



3.10. Next select “Save”.



3.11. **Before making any edits or modifications,** you will now need to load the Personal recipe that you just created to prevent any edits or modifications from being applied to the Production recipe. First select “Load”, “Personal”, and then select the recipe you just created. Finally selecting the “Load Recipe” button. You may now make edits or modifications to your new recipe as seen in Steps 3.1 - 3.3.