

Solaris 100 Rapid Thermal Processing (RTP) system



University of Notre Dame
Department of Electrical Engineering

Rapid Thermal Process (RTP) - Solaris

General Precautions

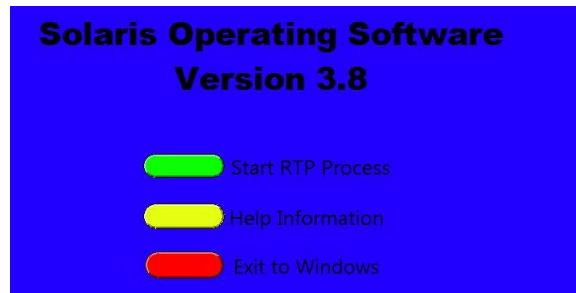
Contacts

For problems, clarifications of procedures, or general information pertaining to this machine, please contact lab staff at staff-ndnf-list@nd.edu.

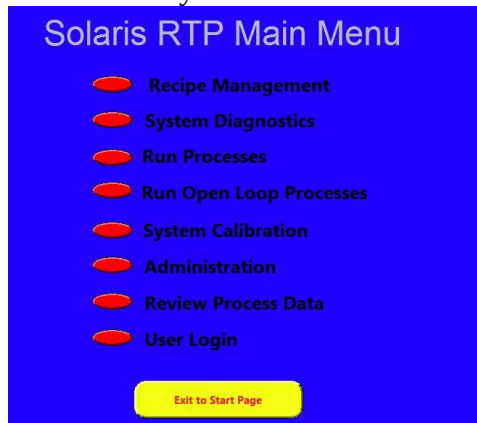
In Case of Emergency, Please Contact Notre Dame Security at
911

Operating instructions:

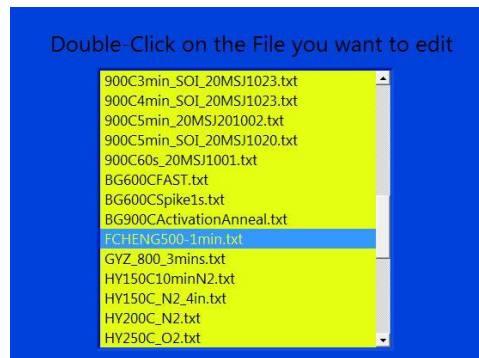
1. Enable the machine from iLab.
2. Press the green color button on the front panel.
3. GENTLY open the chamber door by SLOWLY pulling down the door handle first and then SLOWLY pull it out until the limit (load/unload) position.
4. Load samples on the carrier wafer.
 - a. Make sure your sample is clean, and use wafer tongs to handle samples.
 - b. Inspect the tray thermal couple wire / ceramic sheathing.
 - c. Be extremely **careful** when loading your samples because the quartz arms are very fragile. Remove the carrier wafer from the quartz arms, set it on a clean wipe on top of the SS table, load samples (pieces) at the center.
 - d. Gently set the carrier wafer on top of the three quartz arms.
5. Slowly and gently push the tray back into place. Gently lock the door handle.
 - a. Note that there is one screw left of tray may scratch the opening, so apply moderate force to the right when that happens.
6. Open the Solaris 3.8 shortcut from the desktop and you will see below:



7. Click on 'Start RTP Process' and you will see the main menu:



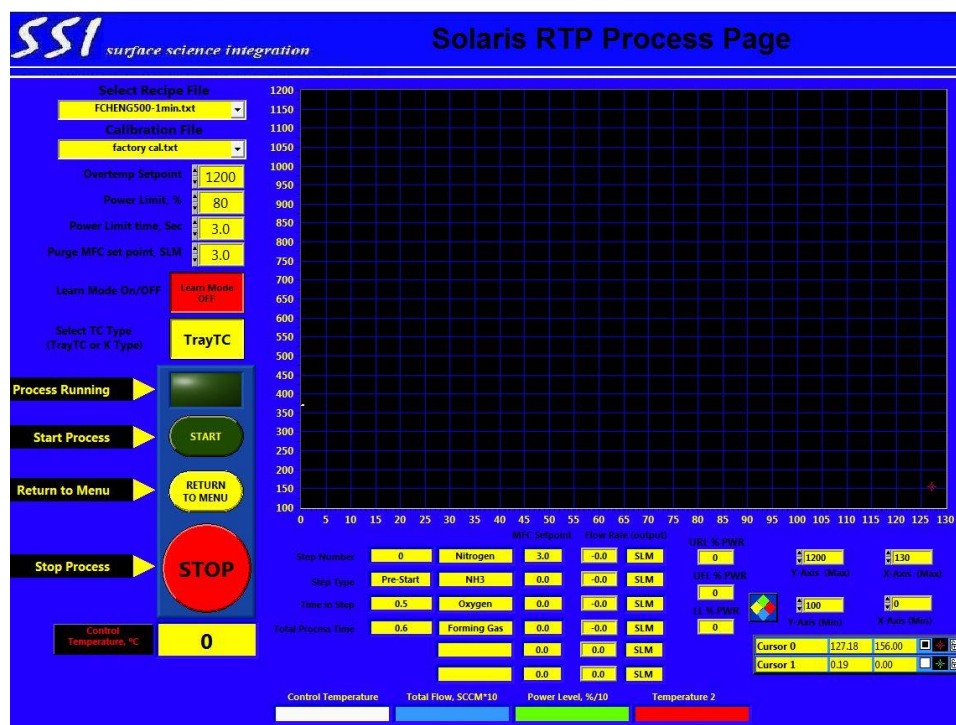
8. Click 'Recipe Management' and click **Yes** when asked **Recipe Edit?**
9. Click on **Edit existing file** when asked New or Existing file? You will see the list of pre-generated recipes:



10. Double click the desired one and click on OK w/o any password.
11. Make editing on the page of this recipe:

Step#	Operation	Control Temp	Ramp Rate	Time	Atm Pressure	Control Device	Nitrogen	Int2	Oxygen	Ramping Gas	P Value	I Value	D Value	SLP	LLP	LLP
1	Purge	0.0	20.0	60.00	Tray TC	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	Ramp Up	500.0	20.0	60.00	Tray TC	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	Heat	500.0	400.0	10.00	Tray TC	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	Ramp Down	400.0	200.0	10.00	Tray TC	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	Finish	400.0	200.0	10.00	Tray TC	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

- a. Before make any edits, **SAVE** the current one as a new recipe under your name if this is not yours or you don't want to overwrite it.
 - b. Check with staff how to adjust key parameters such as ramp rate, Ramp Exit Modifier (REM), PID values and others. Usually the default setting is the best start point.
 - c. Refer to chapter 6 of the factory user manual for the explanation of different parameters.
 - d. Three gases available: N₂, O₂ and Forming Gas 10%H₂ balanced in Ar.
 - e. Click on the oval shape **Save** button to save edits, and click on the **Exit** button to return to main manu.
12. From main manu, click on **Run Processes** and select the recipe you just edited. The following image will be seen:



- a. Verify the recipe name is correct;
 - b. Don't change anything left side of process window;
 - c. Click on **START** to start the process, monitor closely the control temp and power level.
13. The process control parameters may need adjustment due to overshoot or undershoot. Refer to the 6.8 of the factory manual or discuss with staff to optimize the recipe.
 14. Once process is done, wait for the control temp is lower than 100 C before unloading the sample.
 15. Refer to step 4-5 to unload your sample.
 16. Press the power button to turn off the machine. You can leave the software on.
 17. Collect your belongings, clean the SS table and log out from iLab.