

*****USE OF LASER GOGGLES WILL NOT BE NECESSARY AS THERE SHOULD BE NO ACCESS TO THE LASER BEAM. DO NOT OPEN THE FRONT PANEL ON THE BENCH*****

Operating Procedures

To power up the laser, turn on everything in the following order:

- 1) turn on the water
- 2) turn on the power switch for the bench
- 3) turn on the printer
- 4) turn on the monitor
- 5) turn on the computer power switch

IMPORTANT: After power up, you must wait at least 2 hours for the instrument temperature to stabilize before running a control or a sample!

After turning everything on, go ahead and double-click the LS-32 icon to open the program. Select **Control, Pump On**. The pressure should be set to 30 psi.

Load a Preferences file if other than **default.prf** file is needed.

After the 2 hour warm-up period is over, run a control before running any samples to verify instrument performance. To run a control or sample:

- 1) Select **Run, Run Cycle**
- 2) Select **New Sample** and check the following fields:

Auto Rinse: this rinses the fluid module which is where the sample is loaded

Measure Offsets: This turns the laser off and checks to see if there are any readings whatsoever. These numbers should stay within +/- 6 mV for all 133 detectors, except possibly detector #127. This should be done at least once an hour.

Align: This aligns the laser. The pattern should be similar to the one in the **df*.S** file in the calfile directory. This should be done at least once every 2 hours.

Measure Background: This turns the laser back on and measures the amount of background reading which gets subtracted off your sample's values. This should be done for each sample. It will be time to clean the lense when the background level gets to around 650,000.

Measure Loading: Now it's time to load the sample. When you see an

obscuration level of 0%, start adding your sample a little bit at a time. You want to shoot for 10% obscuration. In general, 8-12% obscuration is good.

Enter Sample Info: This is where you will put in the details of your sample.

Enter Run Info: This is the screen that allows you to change directories, pick an optical model, set the run length, set the wait length, adjust the # of runs you want, determine how you want the file saved, what will be exported and in what format, and the parameters of your report (if you're doing a report).

Start Runs: This runs the sample. ☺

Also on the **Run Cycle** screen, you'll be able to control the pump speed and sonication. The heavier your particle, the higher you'll want your pump speed to be. Keep in mind that the higher the pump speed, the more danger of bubbles which are measured just like any other particle. You'll want to set your run length to between 60-120 s.

A note about optical models and controls: We should always have one or both of the following controls on hand: 15 micron garnet powder or 500 micron glass beads. When you are choosing an optical model, you'll choose Glass.rfz for the glass beads, Garnet.rfz for the garnet powder, and Fraunhofer.rfz for your samples.

If the fluid module is in danger of overflowing, you can manually drain it using the switches on the fluid module casing. Otherwise, try to use the computer to control the amount of water in the fluid module. Doing it manually will strip the motor.

After running your last sample for the day, make sure to do one last auto rinse.

After rinsing the fluid module at the end of the day:

- 1) select **Control, Pump Off**
- 2) select **Run, Shutdown Optical Module**
- 3) exit the program
- 4) turn off the power to the optical module, monitor, printer, and computer
- 5) turn off the water