

Standard Operating Procedure for the 3900S CW Ti:sapphire Laser

- 1) Make sure you have the correct goggles on for the wavelength range you plan to work at.
- 2) Check all the free-space optics external to the laser. Make note of all the mirrors in the beam path, and make sure all the optics are clean.
- 3) Place the optical power meter head at the laser output (power meter model: Coherent-Fieldmaster) and turn the power meter on.
- 4) Turn on the chiller (Neslab), located in the equipment chase. The temperature should stabilize at 18°C. Check to see that the water flowing from the chiller to the Ti:sapphire laser is clear.
- 5) Make sure the power supply for the diode-pumped visible CW laser (Millennia V) is on.
- 6) Using the control to the Millennia V pump laser, set the optical power using the up and down buttons (~3.5 W recommended).
- 7) To turn on the Millennia V pump laser, hold down the “Laser Power” button until the red “Laser Emission” indicator stops flashing. The controller will then indicate that the diode laser is warming up – this process will take approximately 20 minutes.
- 8) Monitor the output power from the 3900S laser on the Coherent power meter; make sure the wavelength setting on the power meter is correct. Check the log for the previous user’s recorded optical power output.
- 9) Remove the detector head from the beam path.
- 10) Align the beams coupling into the two fiber paths (free-space coupled through the 50/50 cube beamsplitter and objectives).
- 11) Use the Burleigh wavemeter to measure the output wavelength. The output wavelength of the 3900S can be adjusted via the IMS microstepper motor (computer controlled), which is attached to the micrometer that tunes the 3900S wavelength output.

Shut down procedure:

- 1) Place the high-power photodetector head (Coherent-Fieldmaster) in the beam path of the laser.
- 2) Press the “Laser Power” button once to turn off the 3900S.
- 3) Turn off the chiller.
- 4) Turn off the Coherent-Fieldmaster detector.
- 5) Record the pump power, output power and wavelength of operation in the logbook.