

STANDARD OPERATING PROCEDURE
FOR
UV-365 CHAMBER

1. Basic Safety Precautions for operating the UV-365 chamber

- a) The UV source from Thorlabs used in this setup emits high intensity UV light. Wear UV protective glasses when handling this source under ON condition.
- b) The sample holder has heater inside it and it can become hot (depending on the set temperature), so it needs to be carefully handled.
- c) The chamber can be filled with Nitrogen or other gasses, and it is necessary to be careful while handling the gas cylinders as the gas is stored under high pressure.

2. Main Components of the Chamber

- a) Figure showing full setup
- b)

3. Powering up the UV light source

- a) Switch on the AC switches on wall socket. Two separate connections are present – one for the chamber heater unit and the other for the UV source.
- b) The UV source controller (DC20) has a red knob that needs to be pressed down to switch on/off the UV source, while it can be rotated to set the UV light intensity.
- c) The UV light source should be positioned below the SS chamber such that the UV light falls totally within the quartz window of the chamber.

4. Placing samples in the chamber

- a) The samples are to be placed on the heating chuck and screws can be used to hold them tightly to the back plate. Since the samples will be facing the UV source placed below, it is important to tightly screw the samples to the back plate.
- b) Electrical connection can be provided to the samples using the screws provided along the rim of the heating plate.
- c) The heating plate is mounted up-side down in the chamber, and needs to be screwed properly at the circumference.

5. Filling gas in the chamber

- a) The chamber is equipped with 4 port-holes, two of which are fitted with additional valves – a vacuum release valve, and a gas filling line stop valve.
- b) The gas filling line can be used to create vacuum (using the vacuum pump) or fill the chamber with any gas. When the stop valve handle is parallel to the line, the valve is open and gas flow is possible, while when it is perpendicular, the valve is closed.
- d) Remember to tighten the screws of the chamber before filling any gas, otherwise the gas will leak out (and can cause the top section of the chamber to lift up when pressurized).

6. Programming the Heater Controller

- a) The heater is controlled using a PID controller (TAIE FU400) which can be programmed to cycle through 8 different steps (temperature set points).

- b) On the controller, PV indicates the “Performance Value” while SV is the “Set Value”.
- c) To program the controller, press the “Set” key. First, “At will be displayed and then again on pressing “Set” key, the following parameters will come serially. The parameter values can be changed by using the arrow keys (“←” key to move the cursor to the digit to be edited, and UP and DOWN arrow keys to increase or decrease the digit and finally press SET again to save the change).
- “AL1” is the alarm set point (it should be set below 200 °C, the maximum limit of the chamber).
 - “Ptn” should be set to 1.
 - “Seg” indicates the segment number presently running.
 - “t.on” indicates the elapsed time for current program. The digits before the decimal point indicate the hours while digits after the decimal point indicate the minutes.
 - “SV_1” indicates the temperature set value for segment 1. Usually the first segment is the “ramp up” segment in the program.
 - “t_1” indicates the time for the segment.
 - “OUT 1” has to be set to 100.
 - Similar to above, the other 7 segments of the cycle can be programmed (or set to 0 if not used).