

# University of Minnesota, MN Nano Center

## Standard Operating Procedure

**Equipment Name:** UV Ozone Cleaner      **Revision Number:** 1  
**Badger Name:** K1 Etcher UV Ozone      **Revisionist:** L. von Dissen  
**Model:** Jelight Model 42      **Date:** 4/9/2020  
**Location:** Keller Hall, Bay 1

### 1 Description

The UV Ozone Cleaner is a safe and effective method of removing organic contaminants from a variety of substrates, including: Si, GaAs, quartz, sapphire, glass, mica, ceramics, metals, and many other materials. This kind of substrate cleaning is most often used prior to thin film deposition. The system consists of a small chamber containing a 6.5" x 6.5" sample tray, and a UV light source positioned several centimeters above the tray. When activated, the UV lamps induce the generation of ozone and atomic oxygen, due to the particular UV wavelengths used. Ozone is generated with 184.9nm wavelengths and it is destroyed at 253.7nm, and molecular oxygen is generated during both processes.

### 2 Safety

- a. Although there is an interlock in place, please do not try to pull out the sample tray unless the UV lights have been turned off.

### 3 Required Facilities

- a. Electrical: 120 VAC
- b. House Exhaust

### 4 Operating Instructions

- a. You do not need to enable the "**K1 Etcher UV Ozone**" in Badger (the tool can be used free of charge). However, if you feel more comfortable enabling the tool, so that other users know who is using the tool, feel free to enable it in Badger at this time.
- b. Turn the unit on by flipping up the orange-colored rocker power switch.
- c. Open the chamber by pulling on the handle, which will pull out the sample tray/drawer.
- d. Load the substrate on the sample tray.

If you'd like to position the sample at a different distance from the UV lamps (to change the intensity of the process), you can adjust the four thumbscrews on the tray/drawer to change the height of the tray. Note: keeping the tray at the highest possible height is ideal for optimum results.

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- e. Close the chamber by pushing the sample tray/drawer in.
- f. To set the cleaning time, press the proper **Timer Adjustment** buttons to increase or decrease the time until the desired time is shown on the **Timer Indicator** display (see image below for the location/description of any control buttons).  
  
If you want to change the unit of time that you adjust, press the **Mode** button to toggle between seconds, minutes, and hours. The unit of time is indicated by a red LED located to the left of the **Mode** button.
- g. When you are ready to start the process, press the **Start/Resume** button. While the process is running, you should see the timer counting down.
- h. When the process is completed, wait an additional 5 minutes for any residual ozone gas to be pumped out through the chamber exhaust.
- i. Open the chamber by pulling on the handle, which will pull out the sample tray/drawer.
- j. Remove your sample. Repeat steps 'd' through 'j' for more sample runs.
- k. Turn off the unit on by flipping down the orange-colored rocker power switch.
- l. If you enabled the "K1 Etcher UV Ozone" in Badger, please disable it now.

