

STANDARD OPERATING PROCEDURE

CORAL

Name: *asher*

Model

Number: EML AutoGlow Asher

Location: EML

What it does: photoresist removal

Introduction: The Auto is a single chamber 4" barrel asher, with a 300W RF maximum power supply, generating an air or oxygen plasma. Plasma causes chemical and kinetic energy to either modify the top levels of a substrate surface, if Using lower energy air plasma, or to removal organic materials, such as photoresist, if Using higher energy O₂ plasma, on substrates no larger than 4". Lower pressures equate to higher energies due to fewer inter gas collisions.

Typical usages of low power are PDMS to glass bonding, often done for .2 min. (12 sec) at 100 W in air at 1 torr, and high power is typified by resist ashing done at 200 W and .5 torr, with time depending on resist thickness. RF Power of up to 250 or even 300 W can be used for short periods, but causes exhaust overheating after about 5 minutes.

- Safety:
- Never stare at UV plasma
 - Quartz and Substrates get hot – use caution when unloading
 - Always wear plastic safety glasses and vinyl gloves in the lab.
 - See a simple video on operations at <http://www.youtube.com/watch?v=tE8pfiYQxr4>

Procedure: Standby Condition at Beginning and End of the Run:

Buttons: "AC", "Vacuum", are "ON" and "Tune" is "Auto", door latched, coral disengaged.

1. Engage in CORAL, which will turn the system ON.
2. Spin "Selector" dial to "RF Set Point" and dial in desired power. Use 0 power for the dummy run.
3. Set timer to desired time, in minutes.
4. Open the correct toggle valve; #1 for O₂ or #2 for air.
5. Vent the chamber by pressing the "Vacuum" to "OFF", which takes ~30 sec.
6. Unlatch the perforated metal door, remove Quartz chamber door, and clean the chamber carefully with a lightly wetted fabwipe, taking care not to break the gas feed tube along the top of the chamber, then return quartz door and re-latch interlocked metal door, and press vacuum "ON".
7. Dummy Run: Used to verify the pressure is set correctly: Set Time and RF Setpoint, then leave selector knob at "Pressure". Turn ON either O₂ or Air toggle switch, and turn the Vacuum ON:
 1. Press "Process Start". When the pressure drops below ~.5 T, the Opened gas will start flowing, and you should then adjust the flow rate with the knob under the toggle selected, to yield the desired chamber pressure.
 2. Spin the selector knob to verify RF Reflected Power is ≤ 1 and power level is correct, then press "Process Abort" and then "Vacuum OFF".
8. Actual Run:
 1. Load samples into chamber, and press Vacuum "ON". Small or messy samples like PDMS may not touch the side of the chamber wall, but instead must be mounted on glass slides. Surfaces to be treated should be clearly exposed to the plasma in the center of the chamber.
 2. Pump down the chamber to the desired base pressure, e.g. 0.2 T for an O₂ plasma process but not being critical for an air plasma process, and after setting the actual RF Setpoint, press "Process Start" button, taking the process through to completion.
 3. When done, press the "Vacuum OFF" and unload after venting, but if running for more than 30 minutes, allow your sample to cool for 5 additional minutes.
9. Return machine is in "standby" condition, per above