Oxford Deep Reactive Ion Etch - PlasmaLab System 100

The Oxford Deep Reactive Ion Etching system is used for highly anisotropic etch processes that create deep penetration and steep-sided trenches in wafers/substrates with high aspect ratios. NCF’s system is restricted to ***Silicon wafers only when etching***, with the most common etching process being the Bosch process. Other processes can also be carried out in the system if they don’t involve the etching of substrate. The Bosch process produces 90° sidewalls, but often the walls are slightly tapered, e.g. 88° ("reentrant sidewall") or 92° ("retrograde sidewalls"). Depending on user’s recipe, Si etch rates can vary from < 1um per minute to > 3um per minute. After passing the NCF safety exam, users can request training on this machine by sending an email to ncftech@uic.edu. Those not trained can request an NCF work service order by contacting the lab manager.

Location: cleanroom, deposition bay

Training: 3 sessions (2 trainings and a checkout session)

Technical Specifications

- Wafer sizes: 3 up to 6-inch wafers
- Max ICP Power: 2000 Watts
- Max DC Bias: 500 Volts
- Min Chamber Pressure: 0 mTorr
- Gases: SF_6, C_4F_8, CF_4, Ar, O_2, H_2, CH_4

- Sample Helium Backing
- Sample cooling
- Etching Masks: Photoresist or deposited metal films

Please note that only one wafer size is installed at any given time in NCF's systems. As a result, wafer tool changes are often needed if the next user requires a size different from the one currently installed. Please contact the NCF's lab manager, Dr. Se-Young An (syan11@uic.edu), 1 day in advance if you need a tool change.

References

https://snf.stanford.edu/SNF/equipment/dry-etching/sts-deep-rie-etcher-stsetch/sts-deep-rie-etcher

Matthew Wasilik, Ning Chen. *Deep Reactive Ion Etch Conditioning Recipe*. Berkeley Sensor & Actuator Center