STS ASE Process Information

- The STS ASE is a deep silicon etcher with an electrostatic chuck and helium backside cooling. It is set up as a load locked tool for 150mm wafers.
- Wafers with metals are not allowed in the tool. Wafers must be flat with no backside contamination. Any particles, resist or developer residue must be removed prior to processing to prevent damage to the chuck and helium leakage into the process.
- Wafers smaller than 150mm or wafer pieces may not be etched unless attached to a 150mm oxide wafer. Through wafer etching also requires attachment to an oxide wafer due to the backside helium cooling.
- Process results are dependent on chamber cleanliness and conditioning. For consistent results it is recommended to run a chamber clean process followed by a seasoning process before any device wafers.
- Etch rate and uniformity will depend on the percentage of exposed silicon as well as the aspect ratio of the structures. Typically the rate will be about 3um per minute or 1um per cycle. Best results are obtained when the exposed silicon is less than 15%. The edges of the wafer will etch faster than the center. Etch rate may decrease if there are an excessive number of plasma "blinks."
- Suitable masking materials are resist or oxide.
- Recipes start with a passivation cycle to prevent a deep top notch from forming. If a recipe is started with an etch cycle, the etch rate of that first cycle is higher than the other etch cycles because it does not have the remnants of the passivation gas mixed in.

Recipes
Clean
Season
Deep Etch