UNIVERSITY OF CALIFORNIA
Santa Barbara
Electrical and Computer Engineering Department

Semiconductor Device Processing

Wafer scribing and cleaving

1. Place the <100>Silicon wafer face down on a clean wipe so that the dull side faces up.
2. Using the diamond tipped scribe, make a **small** scratch at the edge on the back side of the wafer.
3. Turn the wafer over and push down with the scribe over the scratch. This procedure can be repeated till you get down to the desired size of about 30 mm square. The important things to remember are :

* Use gloves while handling the wafer.
* Avoid scratching the front surface of the wafer - always place the wafer on a clean wipe. Avoid placing the wafer on the silicon dust created by cleaving.
* All scribes should be either parallel or perpendicular to the flat edge of the wafer so that the wafer cleaves along the natural cleavage planes.

Wafer Cleaning

1. Place the wafers to be cleaned in a wafer holder and then immerse in a beaker containing Acetone (ACE) . Keep the beaker in the ultrasonic cleaner for 3 minutes.
2. Repeat for 3 minutes in beaker of Isopropyl alcohol (ISO) in the ultrasonic cleaner.
3. If removing native oxide, place in di water and go to HF bench.
4. Proceed as directed for oxide removal and rinsing then proceed to #5.
5. Blow dry with N_2 .
6. Dehydrate in 120 deg C oven if going directly to lithography.

The cleaning solutions can be reused several times. All the groups will share the same set of cleaning solvents, so be careful not to contaminate the solutions. In case the existing cleaning solvents need to be replaced, dispose them in the appropriate container-

Do not pour solvents down the drain. All beakers in the lab must be labeled correctly. Beakers are color coded to prevent cross-contamination, please do not use for other purposes.