

# Wet Etching and Cleaning

## Processes performed at Wet Etching and Cleaning

### Techniques:

- Metal and dielectric wet (isotropic) etching.
- Surface cleaning.
- Photoresist stripping: oxygen plasma and wet stripping

### Equipment:

*Metal and dielectric wet etching*



- 9 baths and 6 DI water overflow rinse tanks for CMOS compatible wafers up to 150 mm.
- 7 baths and 2 DI water overflow rinse tanks for wafers with contaminant metals up to 150 mm.
- 2 Rinse and Dryer (R&D) devoted to CMOS compatible wafers of 100 mm and 1 R&D for 150 mm wafers.
- 1 R&D for wafers with contaminant metals of 100 mm and 1 R&D for 150mm.
- 2 ovens for drying and photoresist bakes for CMOS compatible wafers and 1 oven for drying and photoresist bakes for contaminant metal wafers.

## *Surface cleaning*



- 5 baths and 3 DI water overflow rinse tanks for CMOS compatible wafers up to 150 mm.
- 2 baths and 1 DI water overflow rinse tanks for wafers with contaminant metals up to 150 mm.
- 2 R&D (one for CMOS compatible wafers and another for wafers with contaminant metals) for 100 mm wafers.
- 2 R&D (one for CMOS compatible wafers and another for wafers with contaminant metals) for 150 mm wafers.

## *Wet and oxygen plasma photoresist stripping*



- 1 double ultrasonic bath for solvents and 1 DI water overflow rinse tank for CMOS compatible wafers.
- 1 bath for wet photoresist stripping in acid and 1 DI water overflow rinse tank for CMOS compatible wafers.
- 2 baths for wet photoresist stripping for wafers with contaminant metals and 1 DI water overflow rinse tank for wafers with contaminant metals up to 150 mm.
- PVA Tepla 300SA plasma asher for photoresist stripping with oxygen plasma for CMOS compatible wafers.

- Tepla GIGABatch 360M plasma asher for photoresist stripping with oxygen plasma for wafers with contaminant metals up to 150mm.

## **Processes:**

### **Etching and stripping of dielectrics**

- Etching and stripping of  $\text{SiO}_2$  in HF mixtures of different concentrations.
- Isotropic etching of silicon and polysilicon based on mixtures of  $\text{HNO}_3$  y HF.
- Etching of  $\text{Si}_3\text{N}_4$  in  $\text{H}_3\text{PO}_4$ .
- Thin film etching of  $\text{TiO}_2$  and  $\text{HfO}_2$  in HF mixtures.
- Thin film etching of  $\text{Al}_2\text{O}_3$  based on mixtures of  $\text{HNO}_3$  and  $\text{H}_3\text{PO}_4$ .

### **Etching of metals**

- Al etching based on mixtures of  $\text{HNO}_3$  and  $\text{H}_3\text{PO}_4$ .
- Au etching based on mixtures of  $\text{I}_2$ .
- Ni etching in  $\text{HNO}_3$ .
- Ti etching based on mixtures of propilenglycol and HF

### **Surface cleanings**

Cleaning of organics, particles and remaining traces of metallic (ionic) contaminants in:

- Piranha mixture, oxide stripping and RCA cleaning.
- Cleanings with solvents (acetone and isopropanol).
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Wet and oxygen plasma photoresist stripping:

- Photoresist stripping in acetone.
- Photoresist stripping in acid.
- Photoresist stripping in stripper (basic mixture).
- Photoresist stripping in oxygen plasma.

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