Wet Bench Training

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Rev. 1.0

Wet Bench Training

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Safety Equipment

Required Apparel...
- Safety Glasses
- Long Pants
- Full Shoes, Leather Recommended
  (No Sandals!)

To Be Used Whenever Processing Chemicals...
- Vinyl Apron
- Face Shield
- Trionic Gloves

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Lab Supplies

In Cabinets #1 and #30 by Gowning Area...
- Hazardous Waste Jugs
- Cleanroom Wipes
- Vinyl Aprons
- Face Shields
- Trionic Gloves
- Many Other Supplies

These items are usually stocked on the wire racks near the wet benches — but can be replenished from those cabinets at any time.

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Hazardous Waste Disposal

Hazardous Waste Jugs...
- Name, Date, Contents, Ratios
- Leave cap slightly loose with H₂O₂

In-Sink Acid Disposal...
- See "Acid Draining Procedure" posted at benches with permanent acid tanks.
- See "Flushing Acids in Bay 1 & Bay 3" at benches for list of acceptable acids. In general, all clear acids except HCL.

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Hazardous Waste Carts

- Located by gowning area
- Top of Cart — Hazardous Waste Jugs
- Bottom of Cart — Empty Chemical Containers; rinse 3X with water and mark with an "X" on bottle and cap before placing on cart.
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Waste Receptacles

- Receptacles labeled "Trash Only — No Hazardous Materials" are regular trash. It is acceptable to put acid and base wipes in them, but wipes must be rinsed with DI water prior to disposal.
- Solvent Wipes — collected as hazardous waste. For solvent wipes only.
- Photoresist Wipes — collected as hazardous waste. For wipes with photoresist on them.
- Broken Wafer and Glass — regular trash. Any 'sharp' that is chemically inert may be placed here.

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Chemical Bath Storage

- Oxidizer Cabinet
- Base Cabinet
- Acid Cabinet
- wb-etch" Cupboards
- wb-kohl" Drawers
- wb-maskmaking" Cupboards
- wb-solvents" Tray

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Bay Designations

- Bay 1 — No metal processing in the wet benches or with the water handling equipment. No PECVD films, Pyrex glass, or KOH contaminated waters.
- Bay 2 — No acids whatsoever. Processing in this bay is limited to solvents, polymers, and mild bases in the form of developers.
- Bay 3 — Primarily acid etching of metals. Metal, PECVD, Pyrex, and KOH processing okay here.
- Bay 4 — Primarily KOH etching of silicon, electro-plating of Pb, and staff-only mask processing.
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**Wet Bench Designations**

**BAY 1:**
- wb-hf
- wb-ca
- wb-gen-1
- src-2

**BAY 2:**
- wb-etch
- undefined arcl

**BAY 3:**
- wb-etch
- undefined arcl

**BAY 4:**
- wb-mask
- undefined arcl

**CHASE 1:**
- src-1

Note 1: These are the Codal names. They have been used to save space and to keep bench users with their proper names.

Note 2: "src-" = Wet Bench

Note 3: At this time there is no charge associated with any of the tables or ovens in the lab. They do not need to be in line to be used. All users who have received Wet Bench training are qualified under the category "wb-hf".

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**RCA Clean Process**

(see attached for more specific instructions)

**STEP 1:**
- removal of residual organic contaminants
  - 13°C, 15 min followed by DI rinse
  - H₂O : NH₄OH : H₂O₂
    - 8 : 1 : 1
    - (3200 ml : 640 ml : 640 ml)

**STEP 2:**
- removal of hydrous oxide formed during step 1 — room temp, 15 sec. followed by DI rinse
  - H₂O : HF
    - 10 : 1
    - (550 ml : 550 ml)

**STEP 3:**
- desorption of remaining ionic contaminants
  - 80°C, 15 min followed by DI rinse
  - H₂O : HCl : H₂O₂
    - 6 : 1 : 1
    - (3200 ml : 560 ml : 560 ml)

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**Piranha' Clean Process**

- Piranha' clean consists of 10 parts H₂SO₄ to 1 part H₂O₂. When the bath is re-used, the 1 part H₂O₂ is added again to the bath.
  - This is referred to as 'spiking' the bath. Spike the bath with about 500 ml H₂O₂.
  - The set point of the bath is 120°C. A new mixture won't require any heating.
  - Typical clean time is 10 min.

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**Aqua Regia Process**

- Aqua Regia (HCl and Nitric Acid mixtures) should only be performed in Bay 3's Etch Wet Bench in a Pyrex beaker on top of a hot plate. Place the beaker on the right-hand side of the wet bench and close the two right-most sashes to contain the fumes.
  - Aqua regia emits chlorine gas. It is important to keep this contained within the wet bench to avoid harmful exposure to the gas, and to prevent avoidable lab evacuations.