Fabricating SIN junction

1. Loading the sample

-Unscrew the bottom ("base") of the chamber, where the sample will be loaded.

-Loosen the contacts with a 3 mm hex wrench

-Load the Al boat on the side of the shield labeled "Al" and the Pb(Bi) boat on the other side.

-Tighten the contacts so the boats are secure.

-Check that the boats are aligned so the holes of the shield is above the boat.

-Place 2 Al pellets and ~2 pellets Pb(Bi) to their respective boats.

2. Placing the junction plate

-Place the "target" in the mask then screw it tight.

-Insert the "Tommy" into the chamber.

-Set mask to Al setting, 4mm, clamping it down until it no longer shifts

-Pull off top and ensure that the target is aligned vertically and that the shield is covering both

of the slots of the plate.

3. Pumpdown to desired pressure

-Important: Make sure water is on!

-Make sure coarse and fine knob on right side of chamber are closed

-Pump down using turbo pump until ~10^(-3) Torr\* look this up

4. Al Evaporation

-Attach the current leads to the Al and ground post.

-Apply current to Aluminum

-Wait until Aluminum boils & evaporates

-Turn the shield knob clockwise to open slot and expose target to Aluminum vapor

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-Turn the current source off!!

-Remove current leads onto Pb.

-Adjust the slide to 46 mm (Pb pads)

-Turn current source on

-Turn the shield knob to expose target to vapor

-Evaporate until the contact pads reach the desired thickness

-Turn the knob back to line up with the black mark

-Turn the current source off

5. Oxidation

-Change mask to Oxidation setting, at 18 mm.

-Close blue knobs of the tank

-Open the gray tank valve

-Verify that green valve is closed

-Open the knob between flask and the chambers to "bleed" / evacuate line

-Open tall bleu knob slowly to desired pressure [20 psi]

-Slowly open short blue knob to bleed line

-Close short blue knob

-Open green valve

-Slowly repressurize chamber using short blue knob until desired pressure []?

-Close blue knob

-Wait 5 minutes for sample to oxidize

-Close the knob between flask and the chambers.

-Close green valve

-Turn on the coarse pump

-Pump back until some pressure [10^(-7) Pa]??? [1+ hour]

-Verify coarse and fine knob are closed

6. Pb evaportaion

-Set mask to 32 mm, the opposite swastika.

-Turn current source back on.

-Turn shield knob counterclockwise to expose target to Pb vapor

-Evaporate Pb until desired thickness is reached on the thickness monitor

-Close shield; align with the black line

-Turn off current source

7. Repressurize

-Turn fine yellow knob on right side of chamber counterclockwise