GTS task list

8/21/14 (Poelker)

Beam by January 2015, from 350kV inverted gun and using CsK2Sb photocathode grown on a puck? The GTS program is more important than ever, now that we need to support DarkLight at 10mA, 864C/day, 24/7, for 6 months. Given the very nice measurements we made at the test cave with Russell Mammei and CsK2Sb photocathode, we would be crazy not to migrate to this photocathode for the FEL. If we can convince ourselves in the coming months we know how to make this photocathode, and use it inside our new inverted gun, there’s a chance we can move the gun into the FEL vault. That’s what I want us to work toward.

Gun:

1. Reinstall the R28 black insulator with dummy ball
2. Attach the anode feedthrough, so we can measure FE on anode
3. Add extractor guage, so we learn Pultimate, after bake. Are strips good enough to achieve our desired < 10-11 Pressure?
4. Put gun in a good spot, pointed the right way, replace wheels with pads, adjust pad height to put beam at 42” above floor (or whatever height John imagined using 80/20 supports)

Dismantle the residual beamline

Start storing stuff upstairs on racks and in cabinets we provide

Get two good cabinets for upstairs, duplicate Hansknecht order. I want one cabinet for all our HV stuff, since this stuff is very expensive

Build 12’ long 80-20 support structure

Purchase support fixtures for 6”, 4.625”, 4.5”, 2.75” flanges

Build the beamline I show below

Gather components shown on beamline below. We have plenty of 4.5” manual gatevalves, 2.75” manual gatevalves, ion pumps, solenoids, haimsons. WE have a spare dif pump can, should we open up flanges to 4.5”? high power dump, take it from test cave?

Now that we have clean SF6, remove the flow meter?

Configure the HV power supply and SF6 tank for R28 receptacle, our next test?

Put the turbo pump and rough pump on a cart that is easy to move around. How about the SLAC pump cart design? I like it.

Need a better way to secure the aluminum SF6 tank to dilo

Shukui: please start building the 532 nm gain switched diode+ fiber amp system. I envision a small laser table near gun, with Verdi laser, 404nm diode and the gain switched fiber system. i.e., like we used to have at Test Cave. Use one of our extra breadboards. Have Bubba help you with a sheet metal enclosure. Update LSOP for these lasers.

Other dummy ball HV tests are required:

1. New black R30 insulators
2. R30 insulator with SCT coating
3. Shed that Yan designs
4. TiN coated Al and Cu balls, if we can find a vendor to do the coating

Beyond “dummy” electrode, we need an electrode that can hold a puck.

1. Suggest barrel polished 316L stainless steel.
2. I have the 316L ball with three holes. Shop just made front and back faces for us.
3. Someone should test the fitup on an insulator
4. We need a collar, which is basically the top portion of the cup. John to modify cup drawing. Shop to fabricate three of these.
5. Big anode plate with 5 holes in it…..must be polished too
6. Give all stuff to Fay for barrel polishing

Waiting for black R30 insulators, waiting for R30 coated insulator, waiting for a new shed, anode, collar adapter, what else?

Waiting for CsK2Sb chamber

Order the window flange, with 4.5” beamline flange, long enough to support a haimson magnet

CsK2Sb chamber:

1. Repair effusion sources. I have the valves, waiting for rotatable miniflanges, then I can had stuff to machine shop
2. Load effusion source with Cs and K
3. Need another hot air controller
4. Gather up manipulators or order them, one long with translation and rotation, one short to hold spare pucks, one short with translation and rotation
5. Make another slotted puck
6. Heater, which kind? Resistive or light bulb?
7. Something to cool puck?
8. Sb crucible
9. Mechanical linear translation stages with 2” motion: Sb, Cs/K, heater?, chiller?
10. How to install negs? Where to hang an ion pump?
11. Windows, where?
12. NF3 valve and ¼ tube on double sided knife edge
13. Anode ring
14. Bottom flange with window, for green laser (which I have in my office). What else goes on bottom flange?
15. Top flange: heater, window, anode ring, shutter to keep Sb from going everywhere, ?



