Checklist UHV 300mK STM
Version 1.7 – modified june 12, 2007

Date:.....

Operator(s):.....

Starting position: *Insert with scanner and 1K-shield attached is suspended in cryostat. Top flange is closed.*

I. Scanner, Insert and Cryostat

- O Check STM wirings (bias, signal, piezo's, CERNOX thermometer)
- O Check HELIOX wirings (thermometers, heater, see manual)
- O Connect 1K capillary Swagelok. Don't forget capillary fixing screw ("borgschroefje").
- O Move insert (retract in highest position and extend fully down and retract back). Check for jamming.
- O Mount N2 shield such that it does not touch the capillary and the sides. Check again for insert motion and that the insert won't jam the N2-shield doors.
- O Pump OVC.

Remarks: .....

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II. UHV Chamber

- O Raise cryostat to its highest position on air-pillars and PUT wooden SAFETY BLOCKS in place.
- O Mount water cooling ring and make sure you mount a loop for manual opening of N2 shield doors.
- O Put new CF gasket and move chamber under cryostat. Check for wires being sqeezed.
- O Remove safety blocks. Lower air-pillars, close chamber and mount suspension blocks.
- O Raise again cryostat (air-pillars risen till middle). Remove car.
- O Check pre-pump rotation direction and water cooling for turbo.
- O Start pumping.

Remarks: .....

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III. Bakeout

- O Test vertical motion of insert.
- O Leak-test flanges that have been changed. Leak-test 1K capillary by flushing helium.
- O When pressure is less then 10-4 mbar, open ion pump and all metal valves on sputtering line.
- O *Remove Pfeiffer P-gauge and QMS-200.* Cover windows with foil.
- O Mount bakeout panels. Connect heaters and thermometers.
- O Degas filaments (RGA, Bayard-Alpert, annealing filament), sublimate Ti and burst ion pump.
- O Cool down slowly, regularly degasing filaments. Remove bakeout panels.

Remarks: .....

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IV. Cool-down to 4K

- O Flush needle-valves (both 1K and sock) with He-gas.
- O Close needle-valves and apply some He pressure (via return line) on 1K and sock pumping lines.
- O Stop pumping on OVC before cooling.
- O Fill both N2 and He-tanks with liquid N2. Use restrictor while magnet is above 77 K.
- O Blow out N2 from He-bath using N2 gas and pump bath to remove the remanent liquid.
- O Flush bath with He-gas and check the flow in the capillaries through the needle-valves. Leave 1K needle-valve open while filling.
- O Fill liquid He. Bath should be at overpressure before inserting transfer tube.
- O When magnet is cold (~4 kOhm) and liquid He level increases, raise transfer tube a bit and increase pressure on He vessel to 400 mbar.

Remarks: .....

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V. Cool-down to 300 mK

- O Start flow through 1K capillary and sock. Adjust needle valves to match prescribed flow rates.
- O When 1K-pot is cold, open 'V1' on he3-dump.
- O When pressure in dump does not drop anymore, close 'V1' and set sorb heater above 50K.
- O When he3-pot temp. matches 1K-pot, turn off the sorb heater. Re-open 'V1' to condense last He3. NOTE: between measurements, turn on sorb heater and keep 'V1' closed.

Remarks: .....

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