



QPR and sample polishing update

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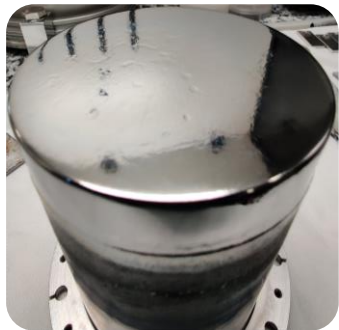
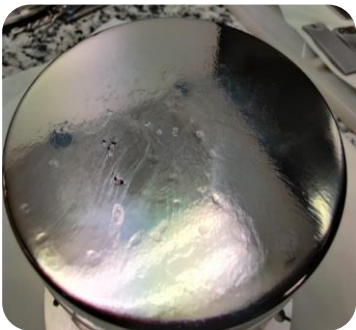
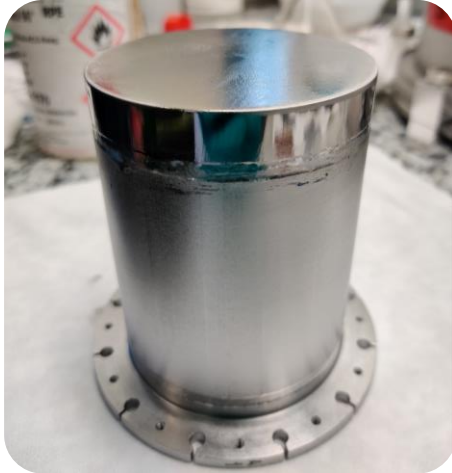
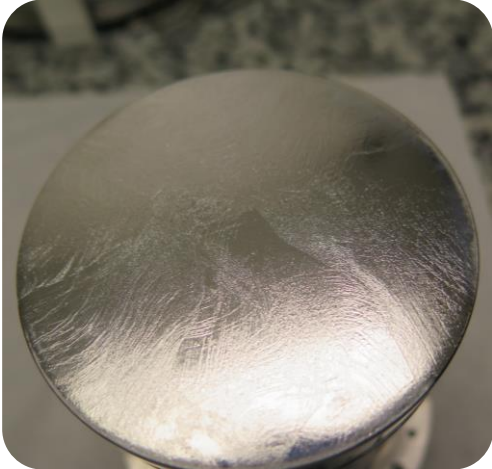
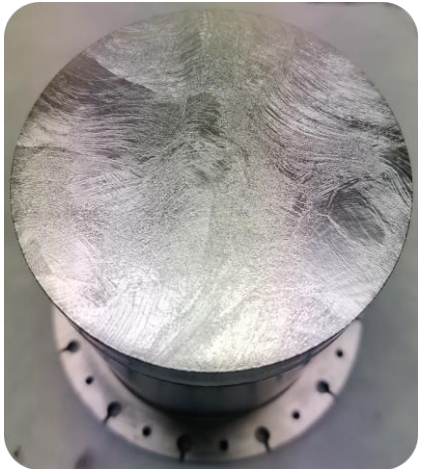
Giovanni Marconato

Content

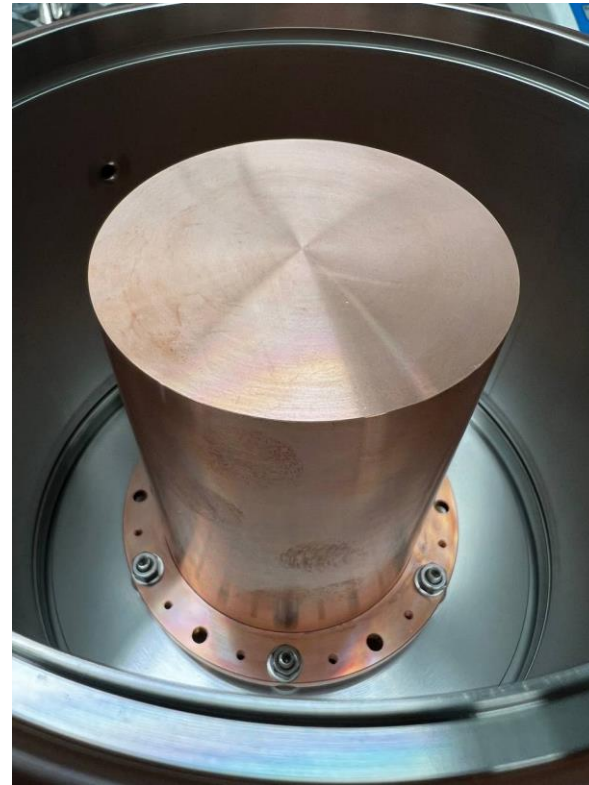
- QPR (A1 Nb, C1 Cu)
- PEP
- Choke, Split, RADES substrates
- Cavities 6 GHz, 1.3 GHz
- Other activity

QPR

A1 Nb

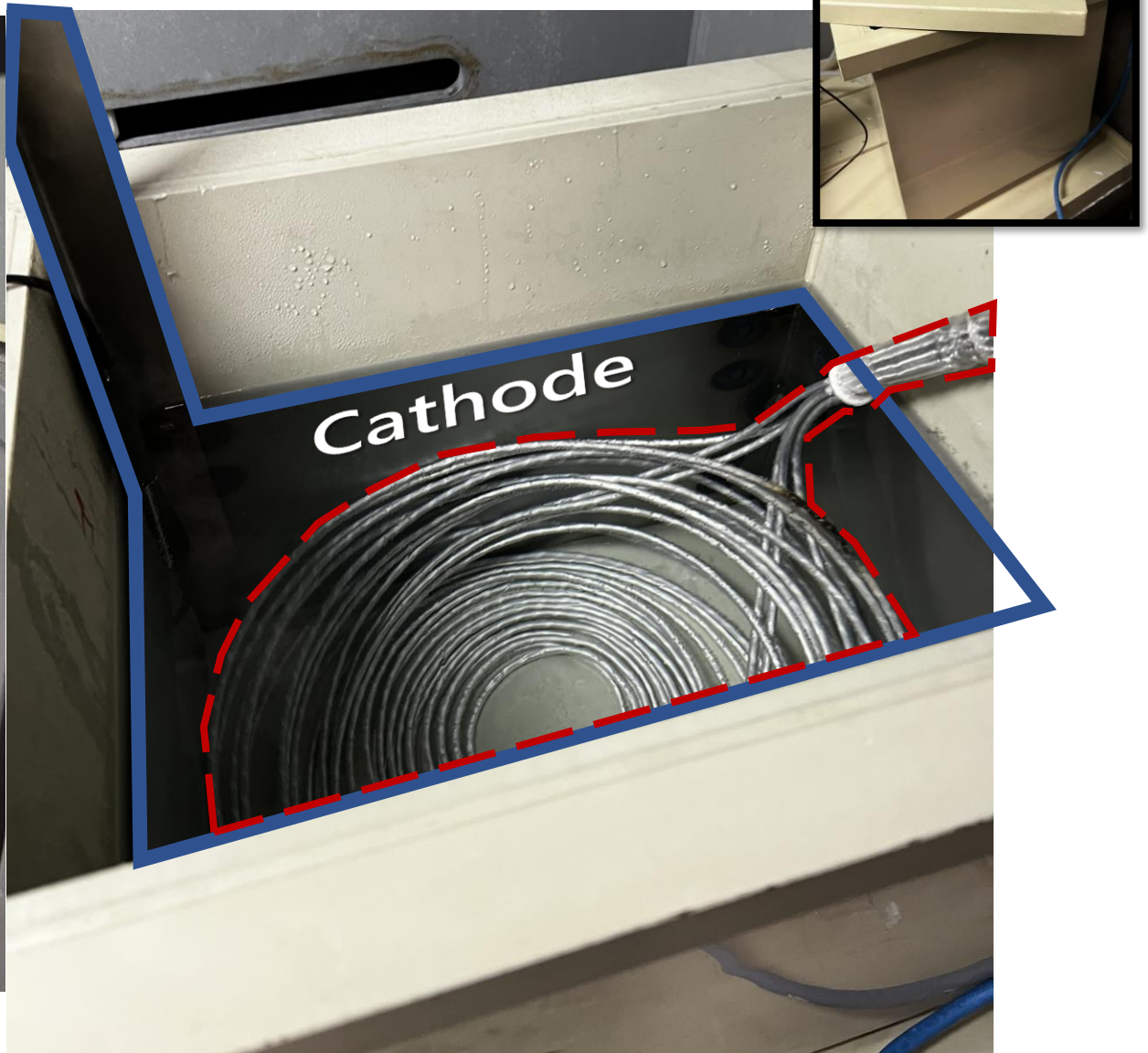


C1 Cu



Cleaning

1. PEP disk + 3 cm
2. Bulk QPR SUBU



Nb PEP

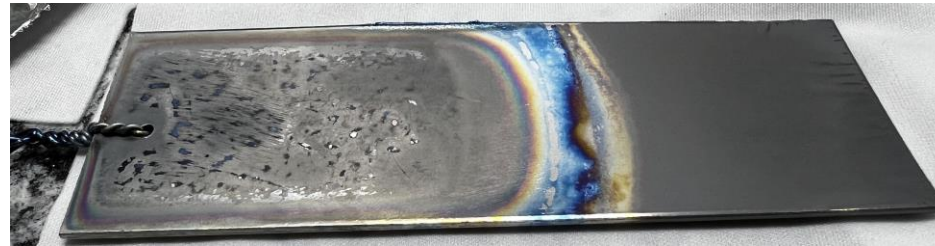
Temperature



<u>Initial</u>	70 °C	75 °C	85 °C
<u>Average</u>	80 °C	85 °C	88 °C

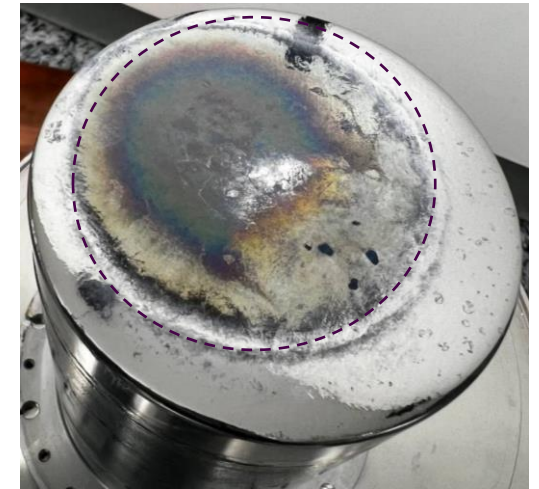
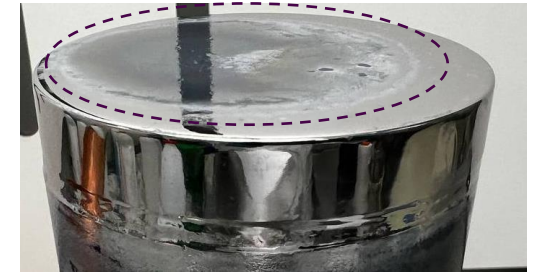


Position of the sample inside the bath



First 10 min

After 30 min

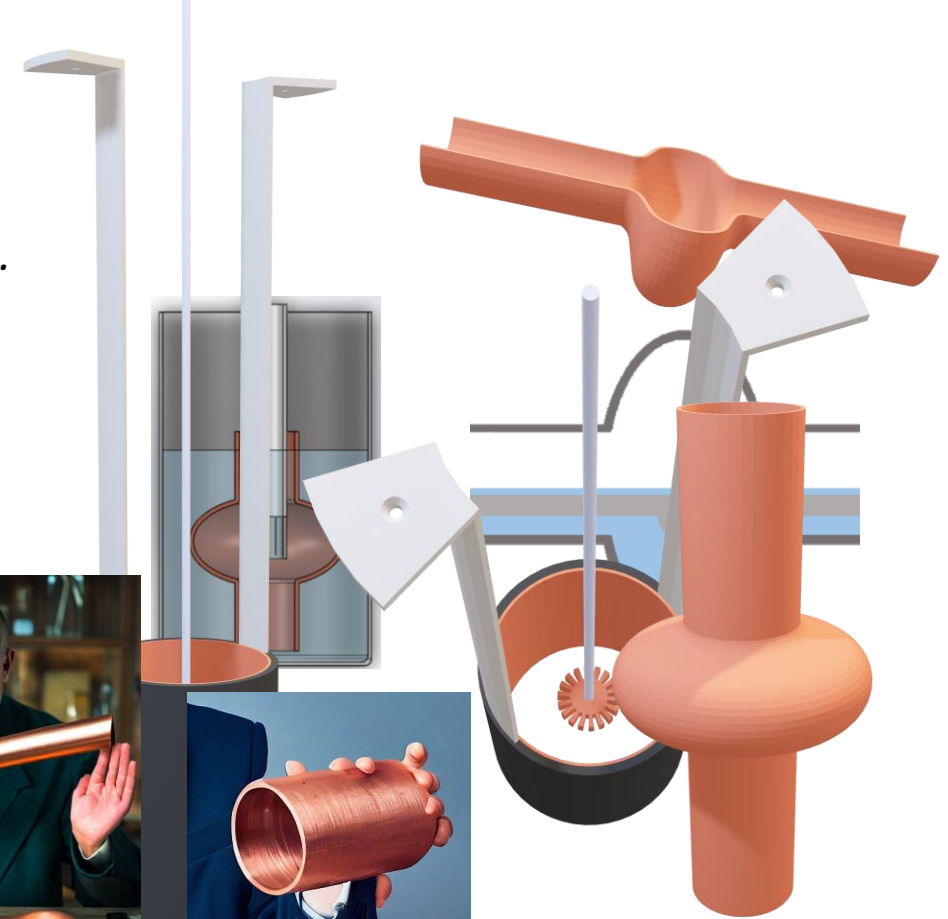
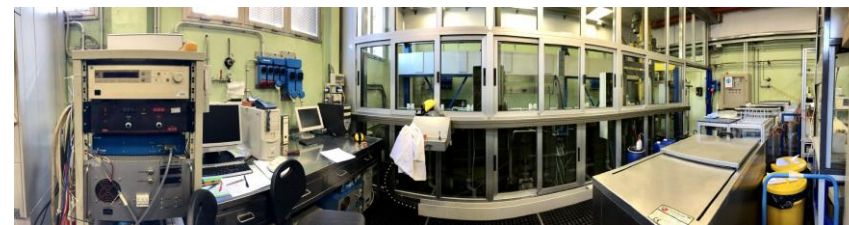
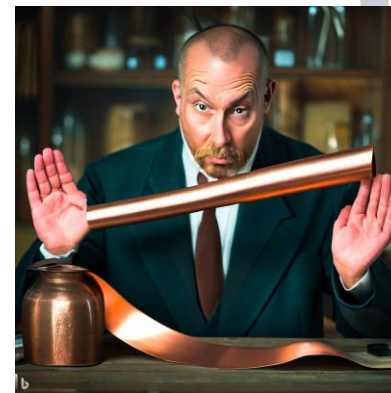
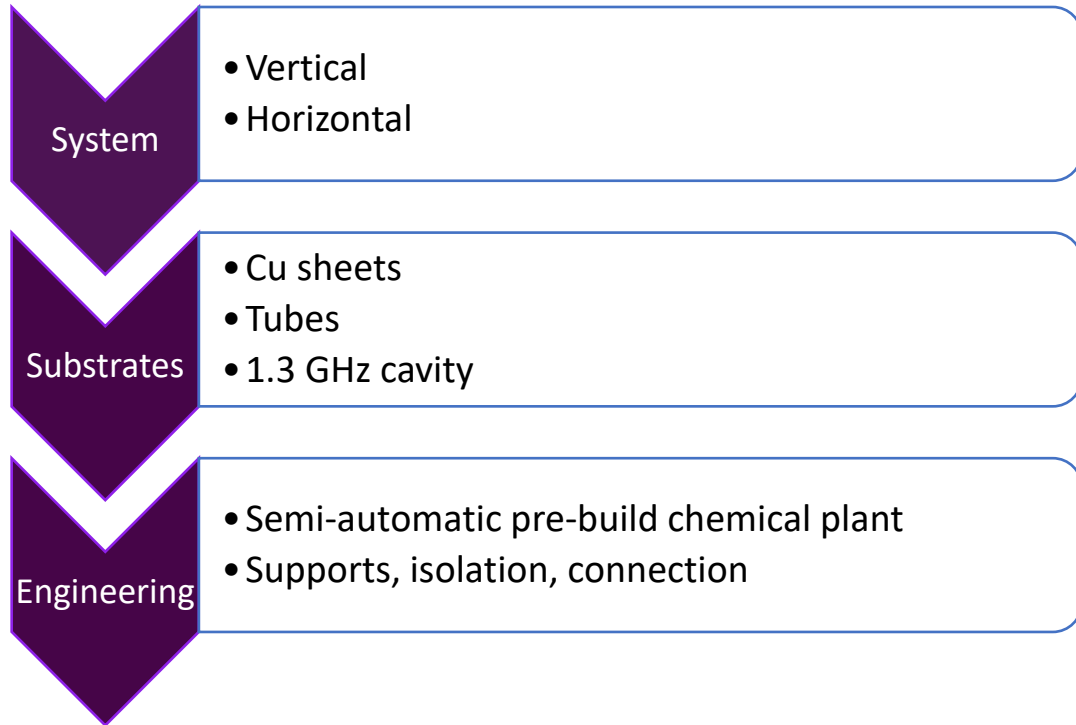


Nb thin oxides

TFSRF'22 Chyhyrynets et.al.

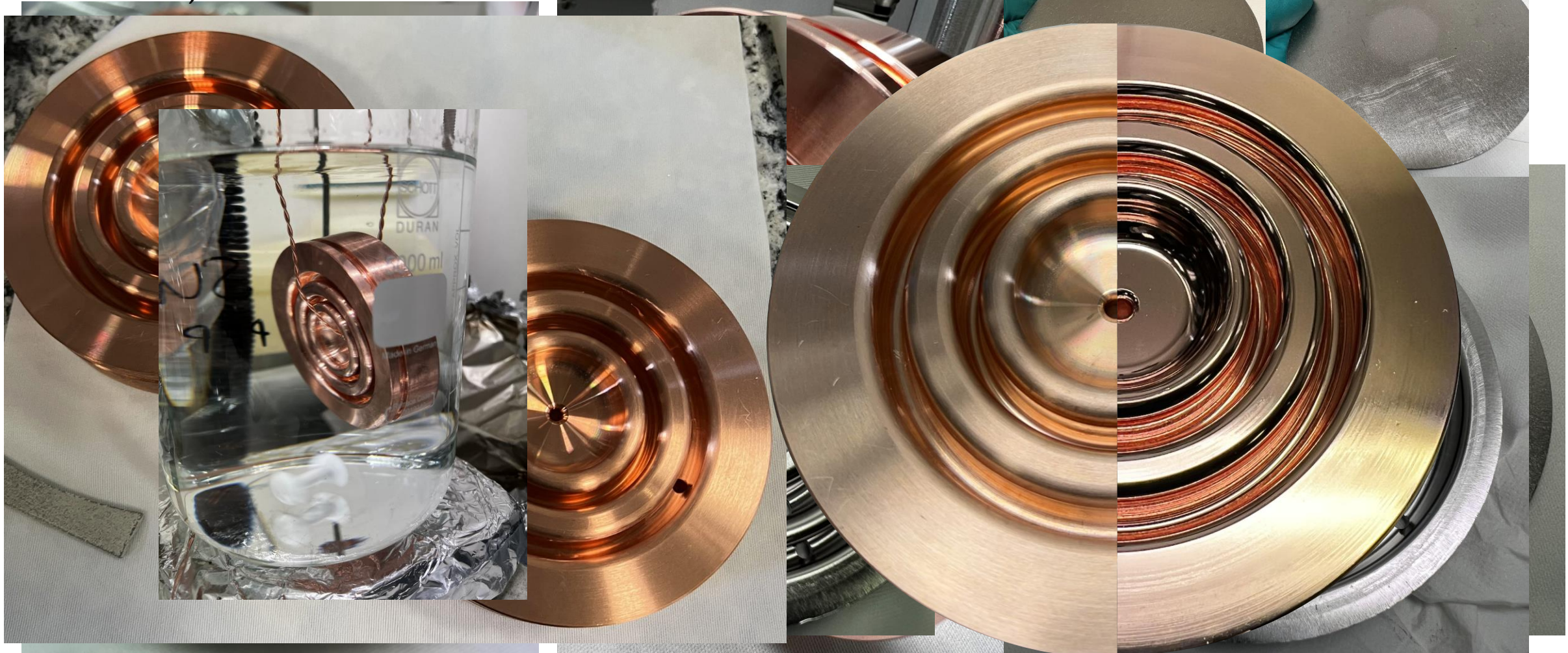
PEP Cu 1.3 GHz

Workflow in the framework of a master degree student Roberta Caforio.



Choke

Daniel Seal, STFC



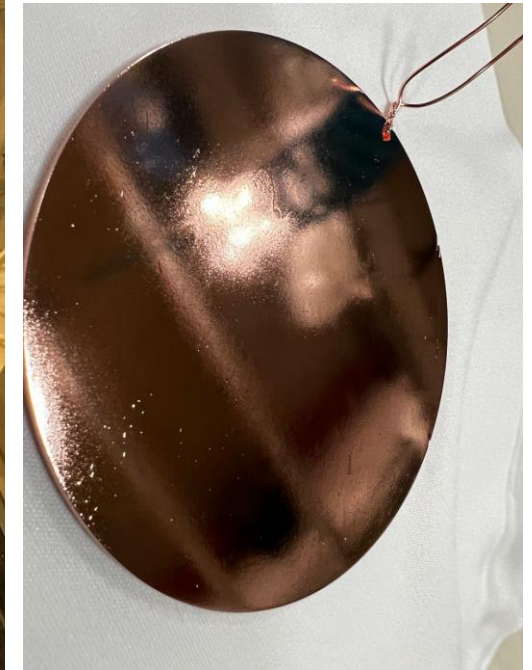
Light SUBU

Light BCP

Disks

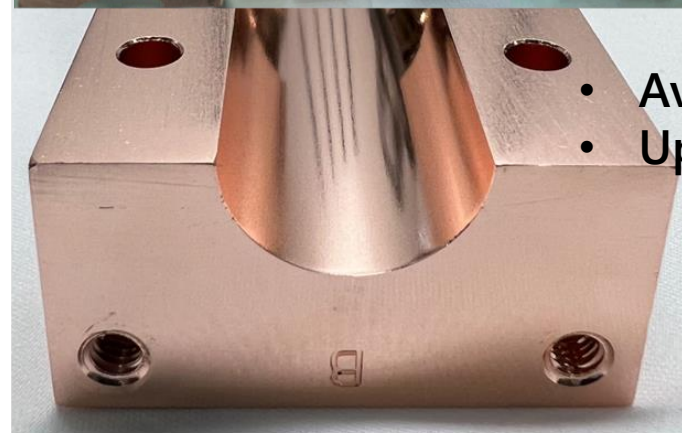
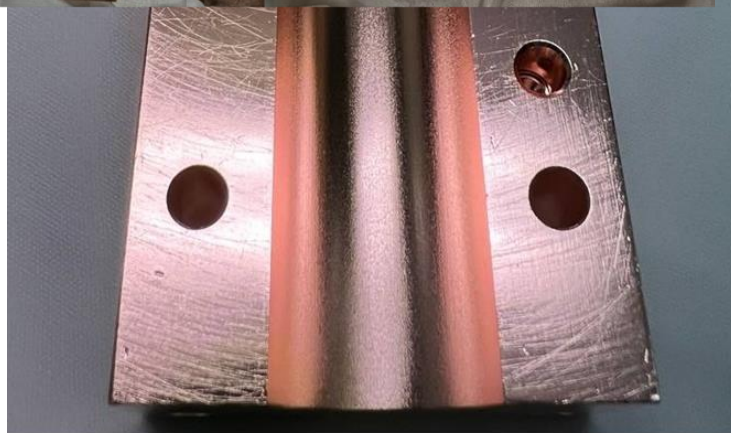
Daniel Seal, STFC

Sample	Time	Thickness	Solution
1 Nb	30+30 min	60-100 μm	HF:HNO ₃ :H ₃ PO ₄ =1:1:2
2 Cu	10 min	5-8 μm	SUBU5
3 Cu	40 min	30-40 μm	EP (H ₃ PO ₄ :Butanol) = 3:2
4 Cu	40 min + 3min	40-43 μm	EP + SUBU5
1 Cu	10 min + 3 min	7-12 μm	SUBU5
6 Cu	(2 + 20 + 5) min	54 μm	PEP + EP + SUBU



Split cavities

Taj Sian, STFC.

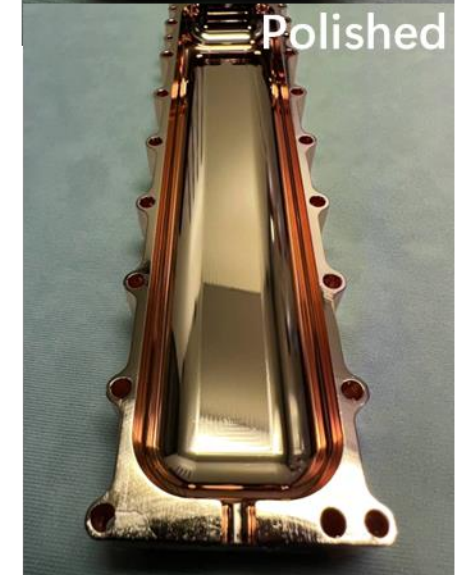
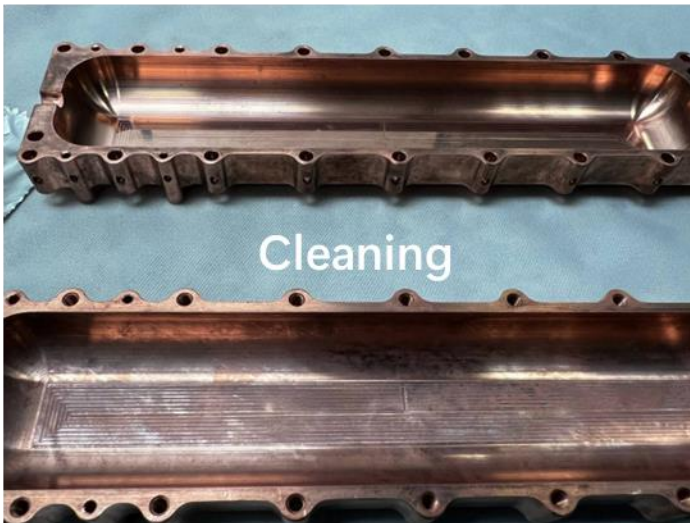
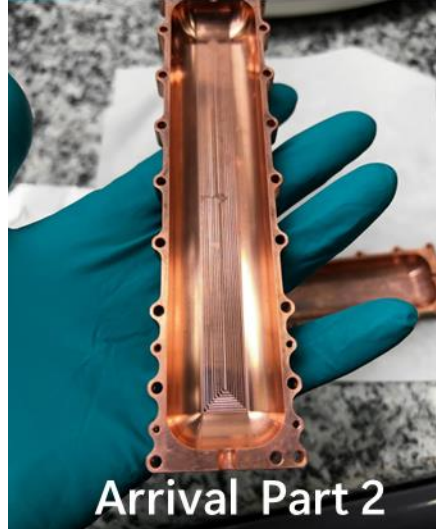
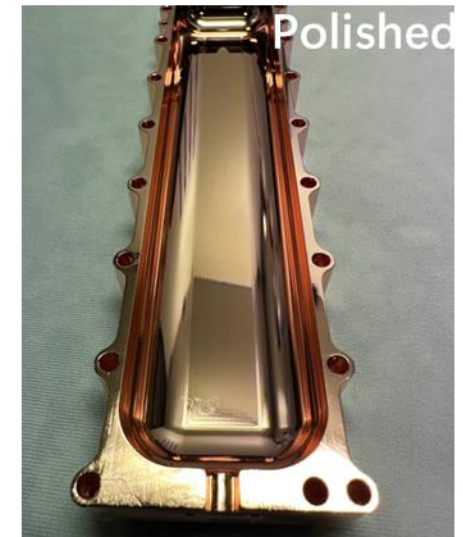
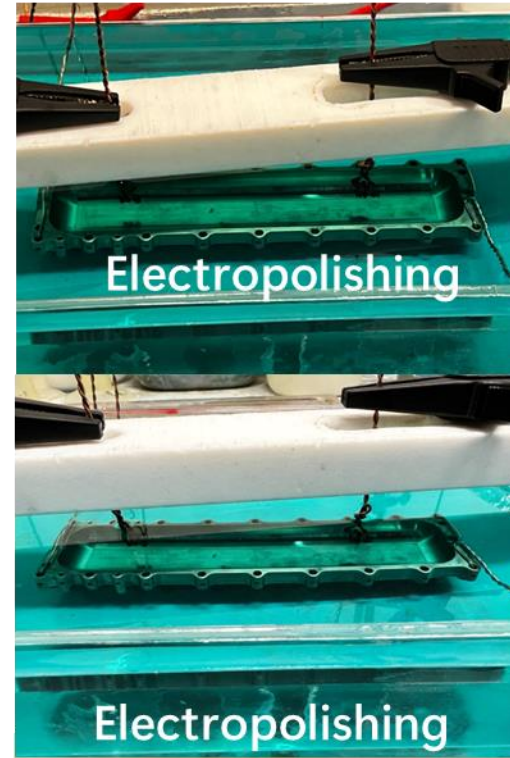


- Average 40 min of treatment of each pcs.
- Up to 20 μm removal



RADES

Kristof Schmieden, CERN; Jiang Xin, University of Siegen.

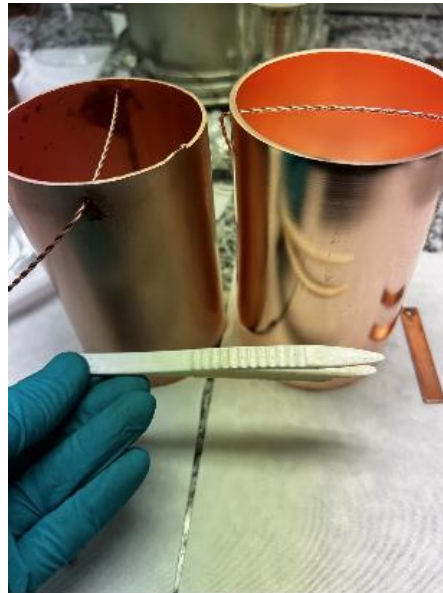
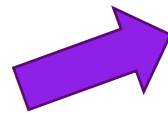


Other activity

Reza Valizadeh, STFC
Arturs Medvids, RTU.



1.3 GHz cavity «tubes»
For deposition and Laser Annealing



- 2 cylinders**, each had an individual treatment
- 1] Ultrasound cleaning + Industrial soap
 - 2] Ammonium persulfate (20 g/L) etching for 30 min.
 - 3] SUBU5 polishing 3 min
 - 4] Passivation
 - 5] Vacuum bag package

6 GHz cavity production

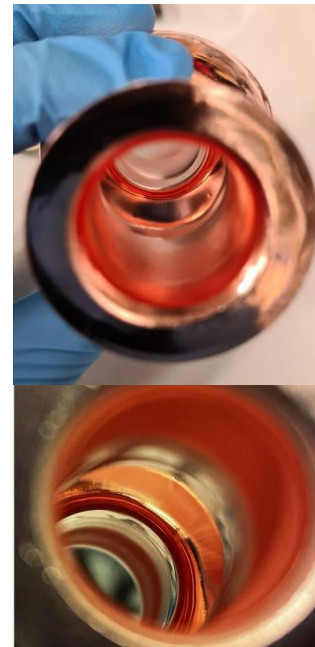


Cu040 Cavity

- 1] Vibrotumbling
[3x times = 50 um removed total]
 - 2] Vibrotumbling coconut
[less than 1 micron, fine finishing]
 - 3] EP 1 (79 um) 68 min
 - 4] EP 2 (76 um) 66 min
 - 5] EP 3 (82 um) 72 min
 - 6] SUBU5, 3 min
- Total = 290 um**
removed.

Cu046 Cavity

- 1] Vibrotumbling
[5x times = 80 um removed total]
 - 2] Vibrotumbling coconut
[less than 1 micron, fine finishing]
 - 3] EP 1 (78 um) 65 min
 - 4] EP 2 (85 um) 74 min
 - 5] EP 3 (78 um) 62 min
 - 6] EP 4 (88 um) 75 min
 - 7] SUBU5, 3 min.
- Total = 332 um**
removed.



Other activity

*Reza Valizadeh, STFC,
Arturs Medvids, RTU.*



1 Semi cavity
2 tubes of 11 cm length



Cleaning, and Chemical polishing via SUBU