

QPR, PEP and sample polishing update

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Content

- QPR (C1 Cu, C3 Cu)
- PEP
- Disks, Split substrates
- Cavities 6 GHz, 1.3 GHz
- Other activity



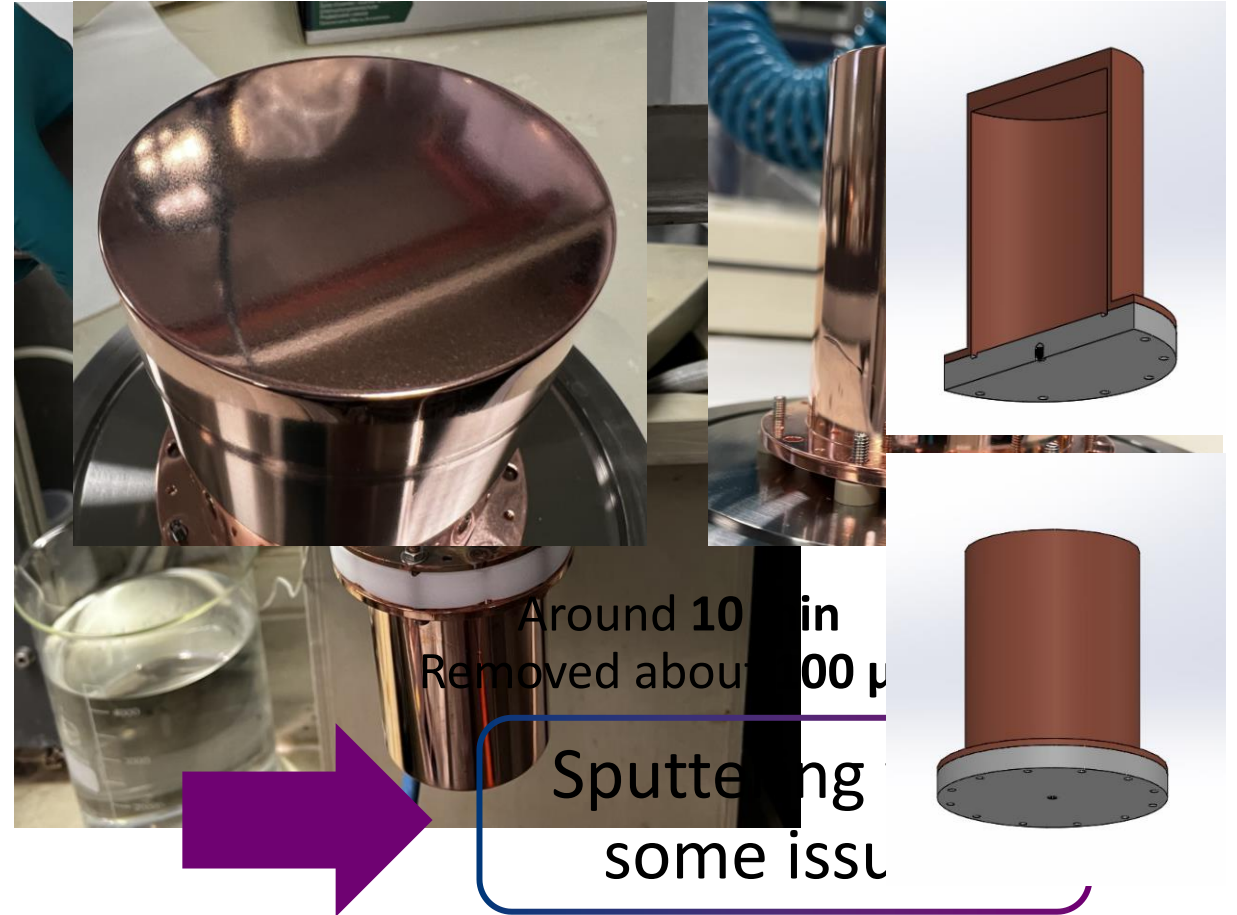
QPR

C1(Cu)

Initial



Results



QPR C1(Cu)

After stripping



**Next
step**

**Removing of the upper
(thicker) Nb layer with
turning machining**

QPR

C3(Cu)



Programmed treatment

PEP with PVDF cover
set-up

HPR

Sputtering
Nb + Nb₃Sn

PEP updates

On Cu

1. Photocathode DESY

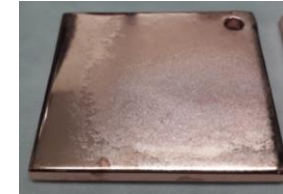


$$R_a = 8nm$$

2. Exhaustion study



Treatment to solution depletion point



1° sample

Solution adjustments



2° sample

Treatment to solution depletion point

Solution adjustments



3° sample

Treatment to solution depletion point

Exhsaution point
= 0,4 g/L

PEP updates

On other metals

Stainless steel (printed)

Before PEP



After PEP



Ag and alloys

Before PEP



After PEP



Split substrates

STFC

As arrived



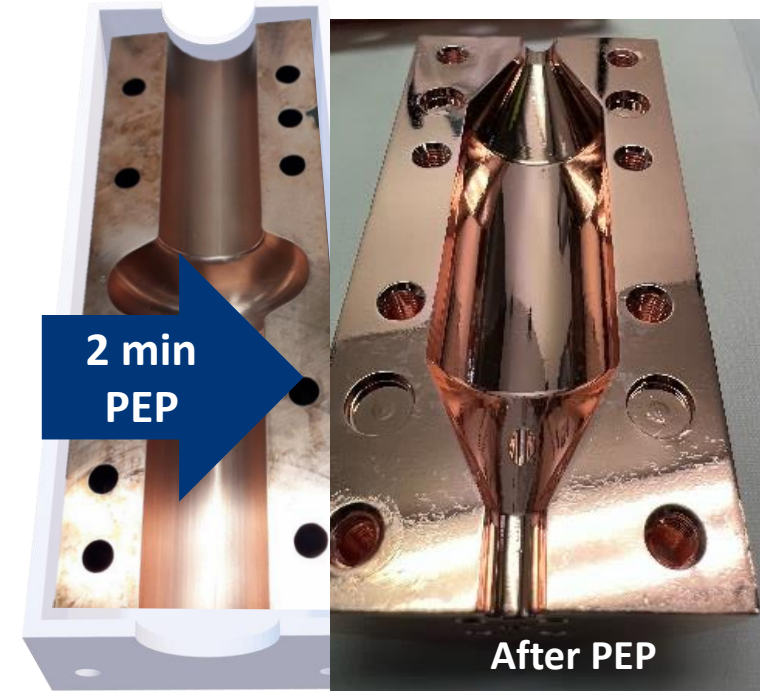
PEP treatment

25 L bath

Case study: haloscopes
PVDF cover

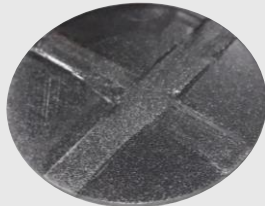

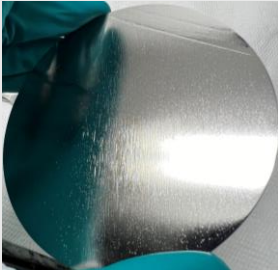


2 min
PEP



Nb disks substrates

Daniel Seal, STFC

Diameter (cm)	#	Treatment (removing 100µm)	Surface after treatment	Annealing
5	1	BCP		x
	2	BCP		x
10	1	BCP		x
	2	BCP		x
	3	EP		x
	4	EP		x

Waiting for the system to be ready

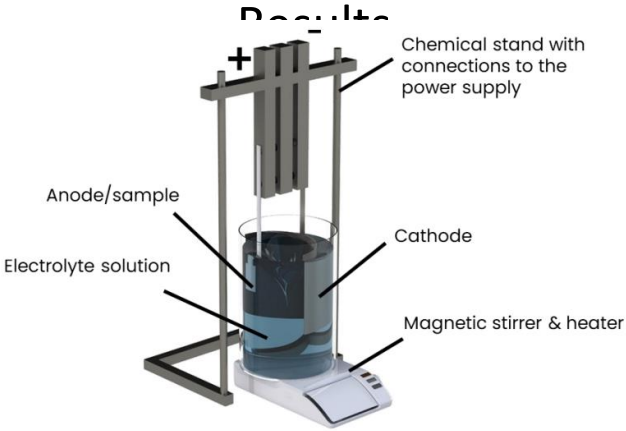
6 and 1.3 GHz cavities

6 GHz cavities

1.



2.



Results



6 and 1.3 GHz cavities

6 GHz cavities

3. Cavity 047

300 V
10 min

Initial 10 min PEP

Set-up

- Cu wires
- Black shield to disable external polishing
- PVC bath
- Nb

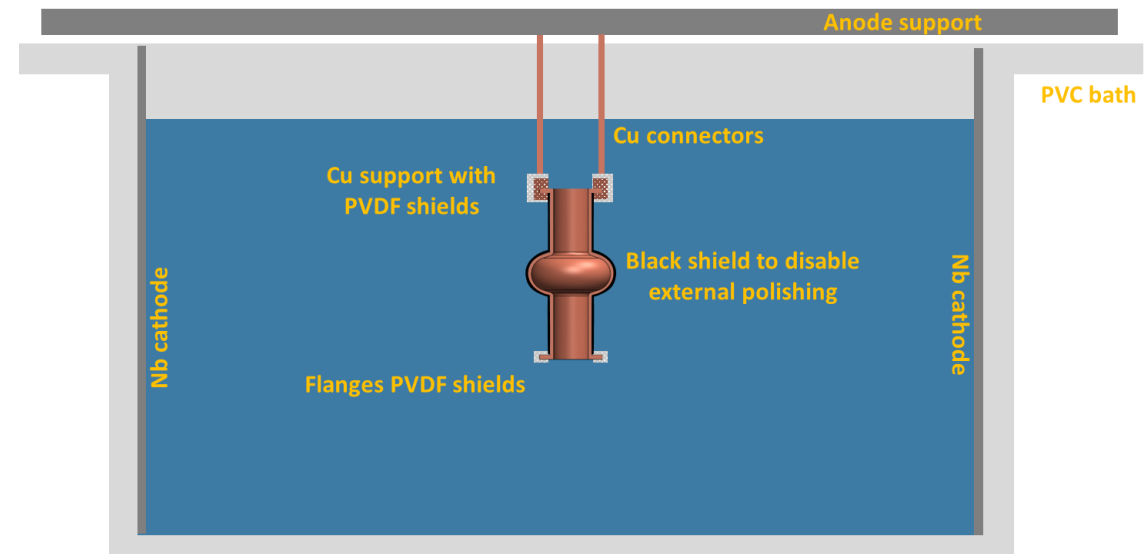
Results

- Internal polishing ✓
- Etching ✗

6 and 1.3 GHz cavities

6 GHz cavities

4. New set-up



6 and 1.3 GHz cavities

1.3 GHz set-up

Issues

1. Passing current (200A)
2. Power supply
3. Solution heating
4. Scale-up of anode-cathode ratio
5. Bath isolation



Other activities

Reza Valizadeh, STFC
Arturs Medvids, RTU.



1 Semi cavity
1 tube of 11 cm length

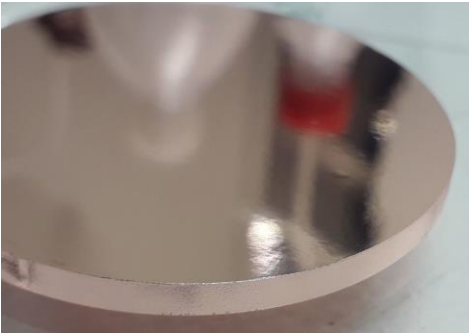
Cleaning and Chemical
polishing via SUBU

+



6GHz cavity EP polished

James Conlon, STFC



Via PEP
49,5 mm x6
60 mm x1

6GHz cavities
production
via EP and PEP

Thank you for your attention!

