9th IFAST WP9 meeting

(i.FAST 2nd Annual meeting)

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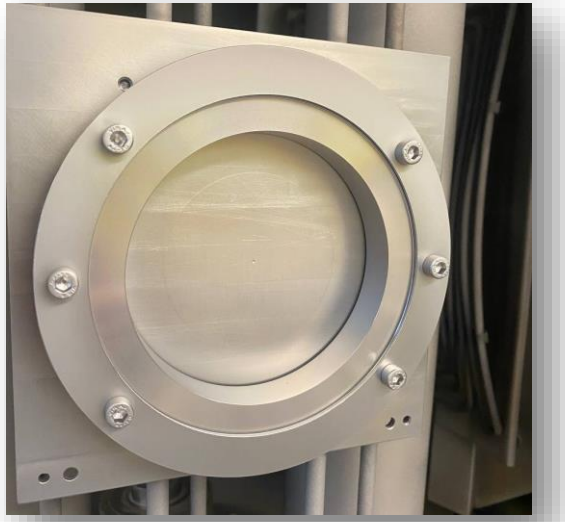
(Novel accelerator technology for efficient light sources NOVALIS)

17–21 Apr 2023, Trieste, Italy

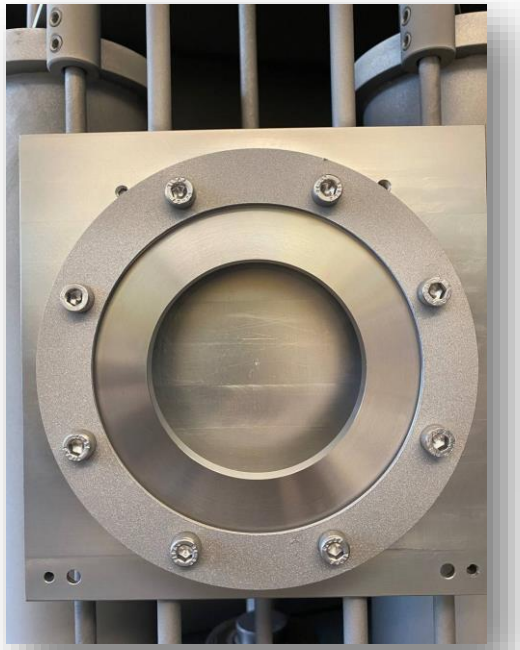
Coating of RaSTA parts

Pre-treatment with ultrasonic bath (ammonia-based)
1st Proc. ID: 20210729 4µm Nb (with MF etching)
2nd Proc. ID: 20210801 12 µm Nb

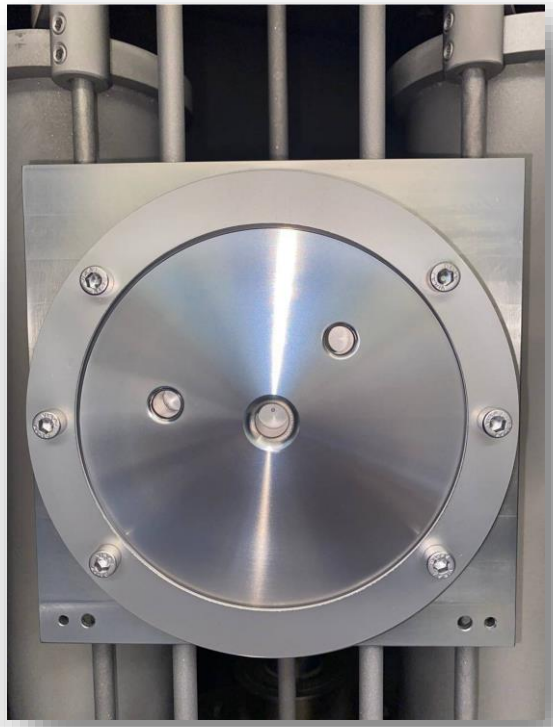
CF125 Cavity flange



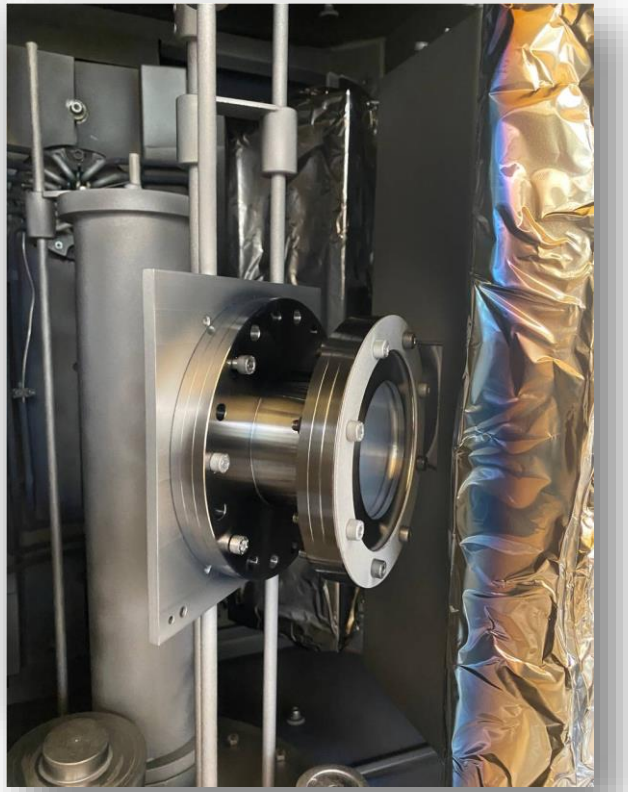
QPR sample adapter



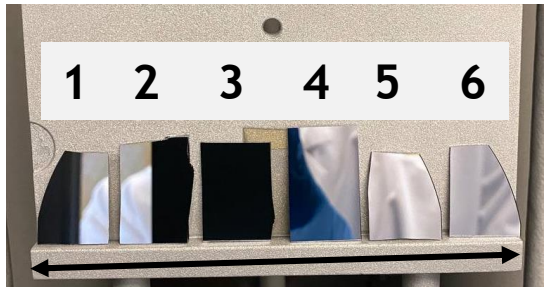
CF125 Top flange



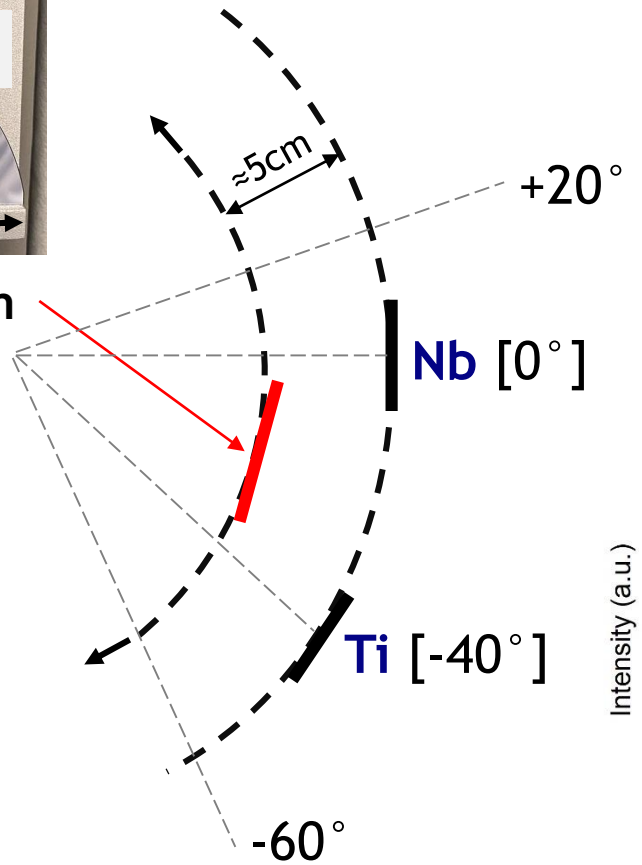
Adapter CF125 to CF100



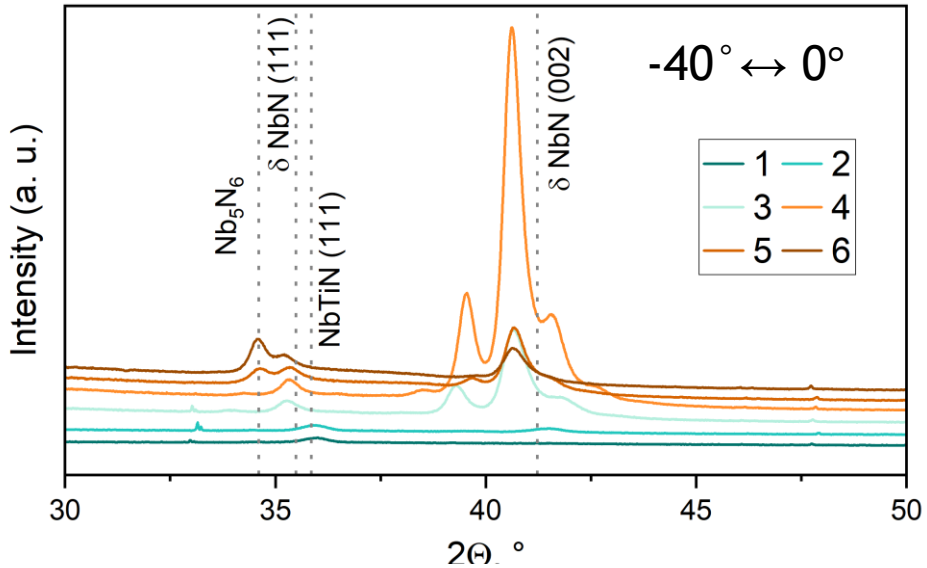
Co-sputtering of NbTiN: rocking angle

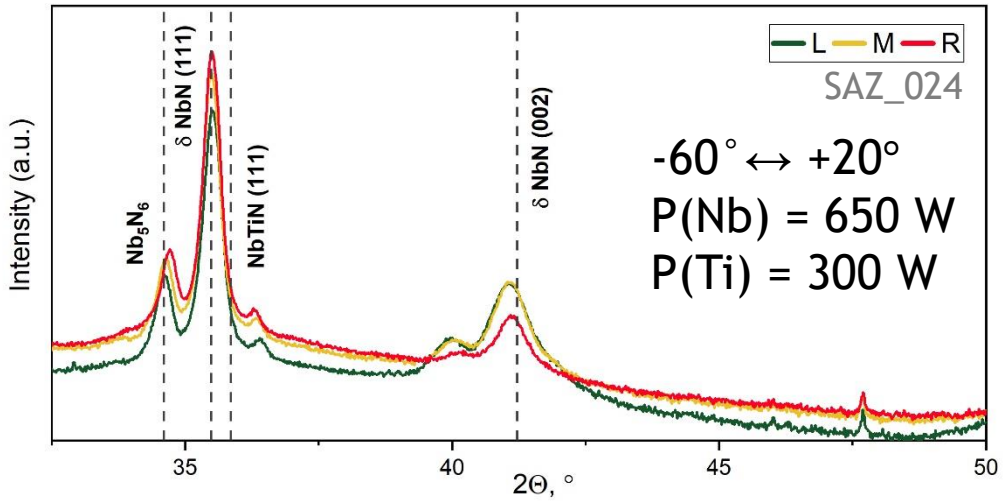


Sample stage 120mm



Rocking angle	
-40	0
-45	+5
-55	+15
-60	+20
-65	+25
-70	+30

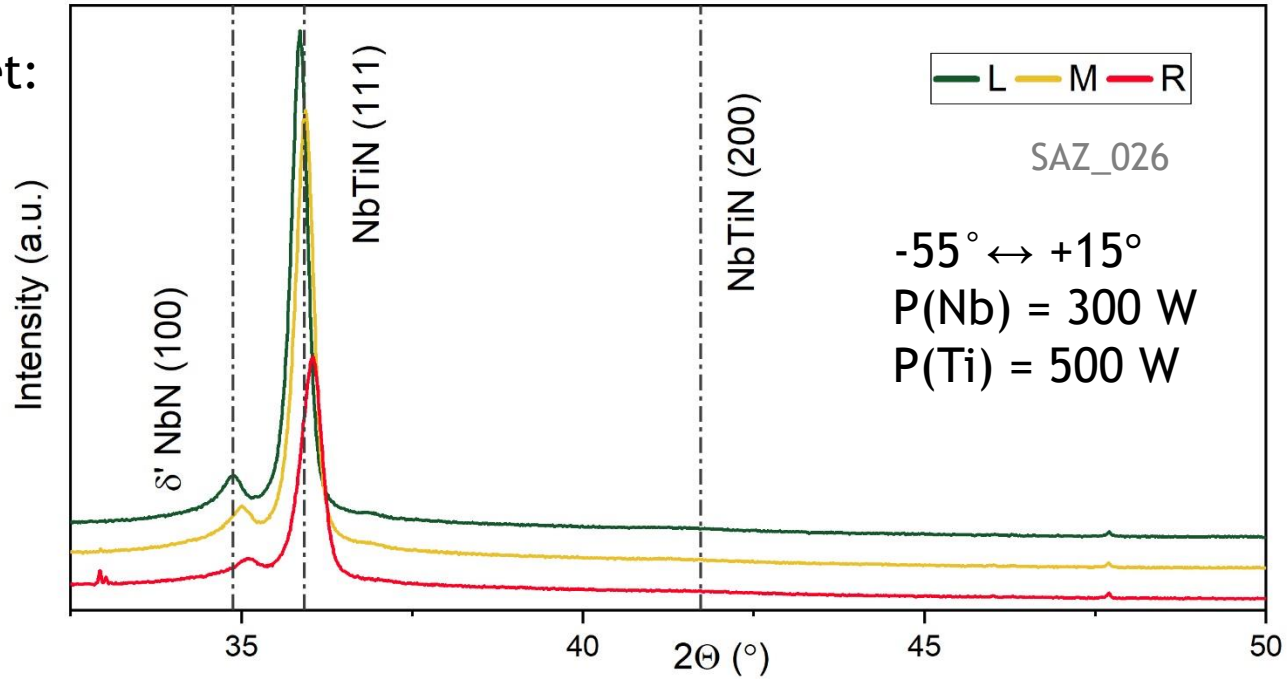




Co-sputtering of NbTiN: phase mixing

Too much power on Nb target:

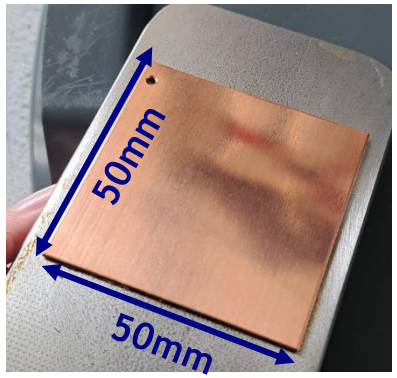
- Delamination of films
- Unstable work of HiPIMS
- Growth of NbN phases



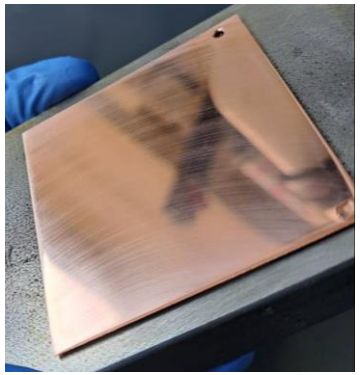
Change the Ti/Nb power ratio:

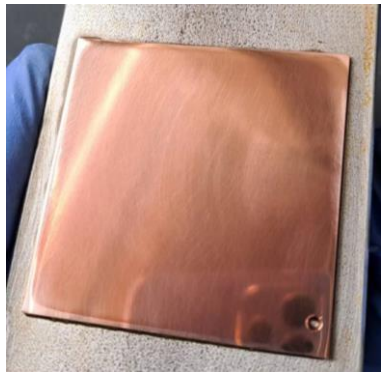
- Optimum around 500W/300W
- Rocking angle [-60° ↔ +20°]
- Needs to vary other parameters: p, Ar/N_2, bias…

Sample preparation



untreated


2000 grit


4000 grit


Diamond polishing paste (3 µm)

@ Yvonne

- Development of the surface pre-treatment (mechanical polishing) for large **Cu substrates**
- Electropolishing of **Cu substrates**: standard procedure?
- **Nb substrates**: still waiting for permission from the safety-at-work department for EP

THANK YOU FOR YOUR ATTENTION!

In addition

HiPIMS-NbN multi-layer (SS and SIS) structures: what were the latest samples and which of them is of interest?

SEM of NbTiN: