

Results from test 23

15th WP15 Meeting

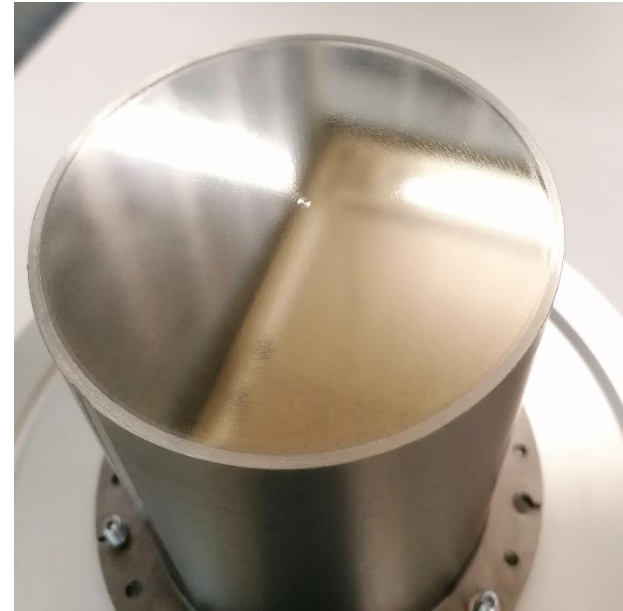
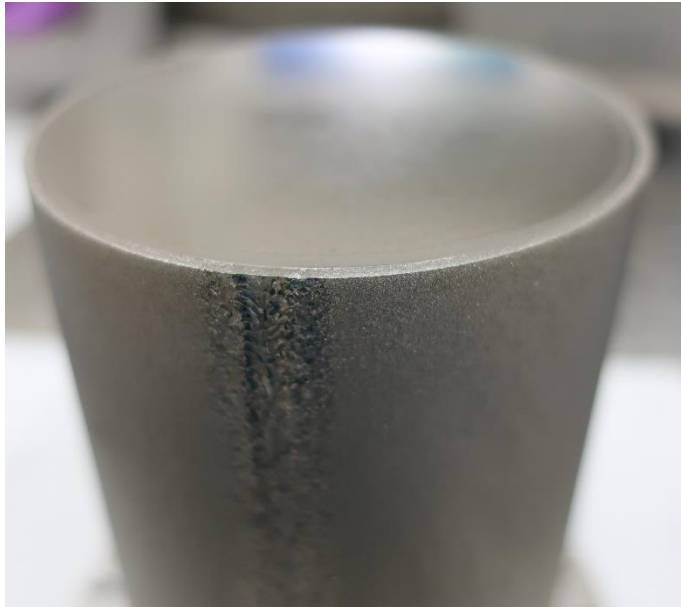
Presenter

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EASITrain – European Advanced Superconductivity Innovation and Training. This Marie Skłodowska-Curie Action (MSCA) Innovative Training Networks (ITN) has received funding from the European Union's H2020 Framework Programme under Grant Agreement no. 764879



B-4.9

Full HiPMS

Chemical 'polishing' before coating

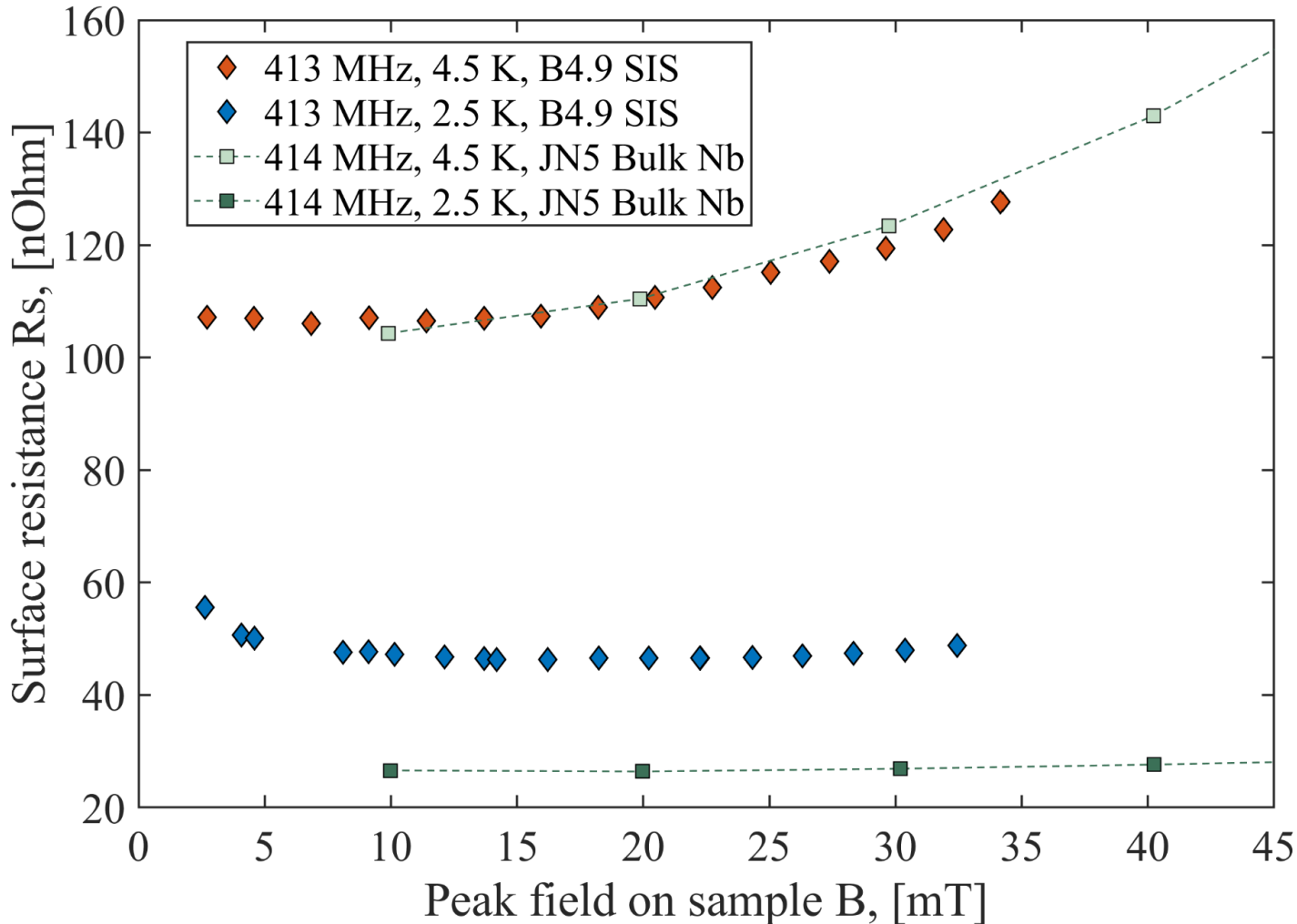
Nb-AlN-NbN
4um-**8nm**-180nm

B-3.7

DCMS

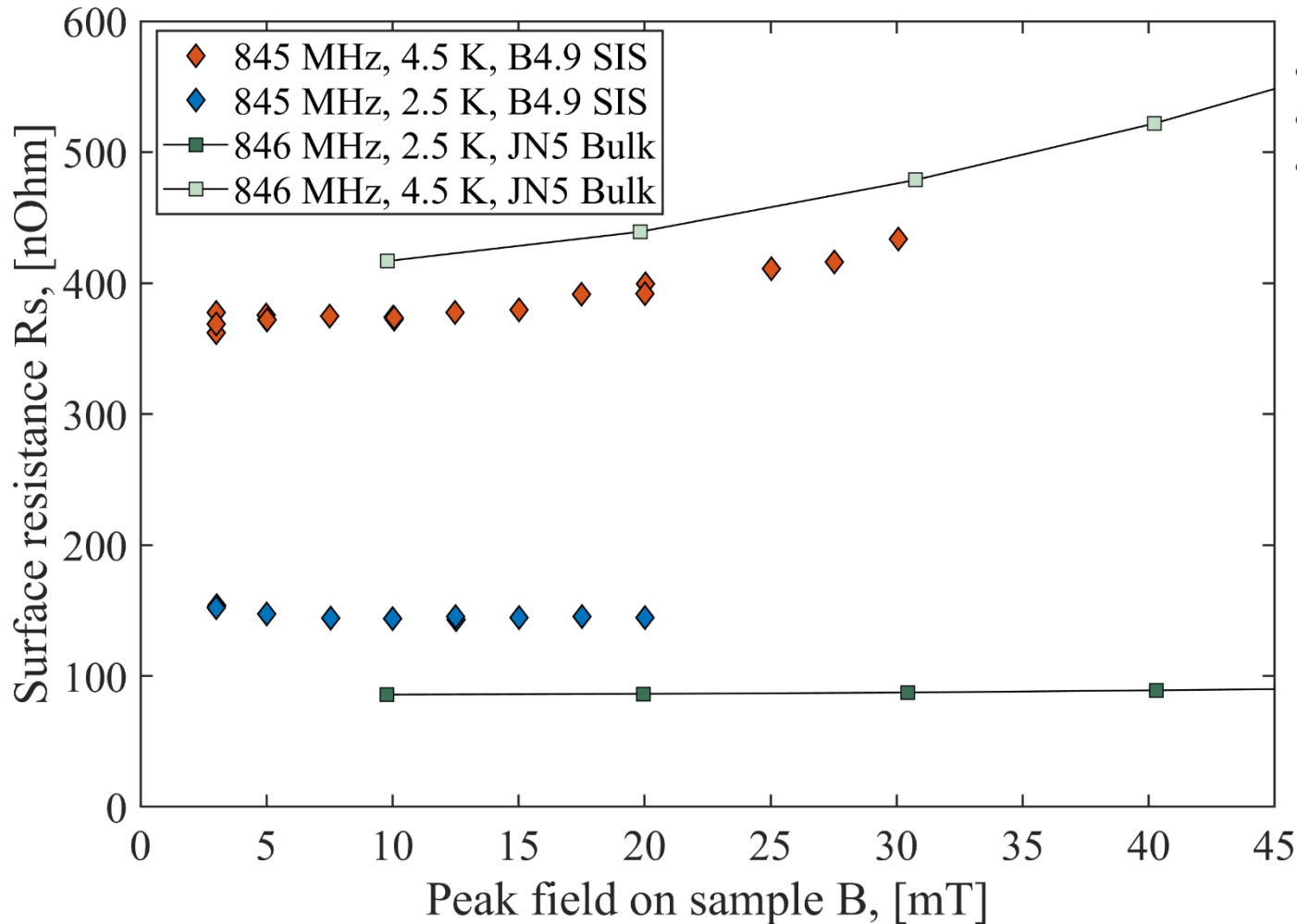
(BCP), exposed to air before SIS

Nb-AlN-NbN
4um-**35nm**-200nm



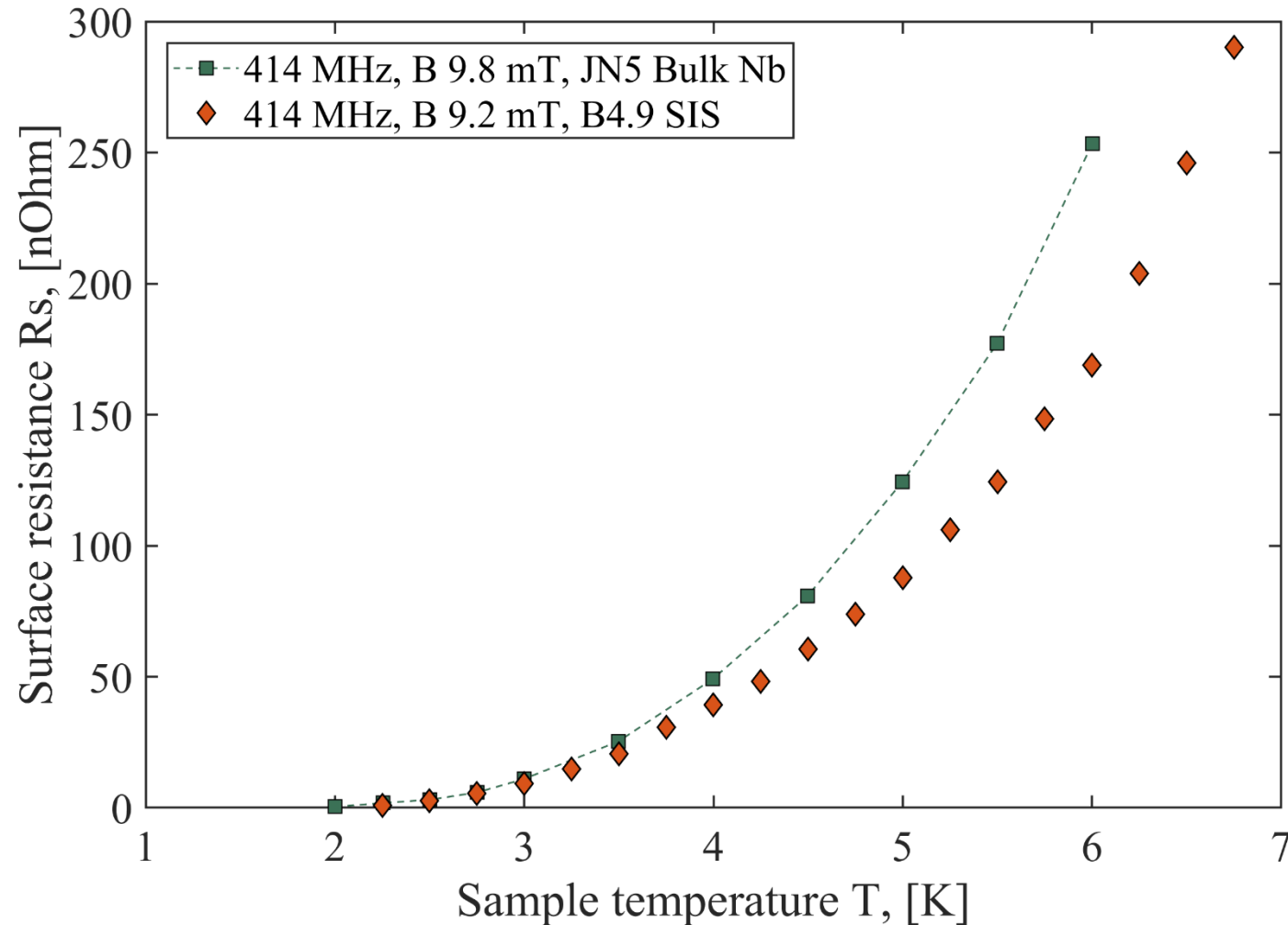
- Low R_{res} ~40 nOhm
- No non-monotonic
- Good R_s vs B quality



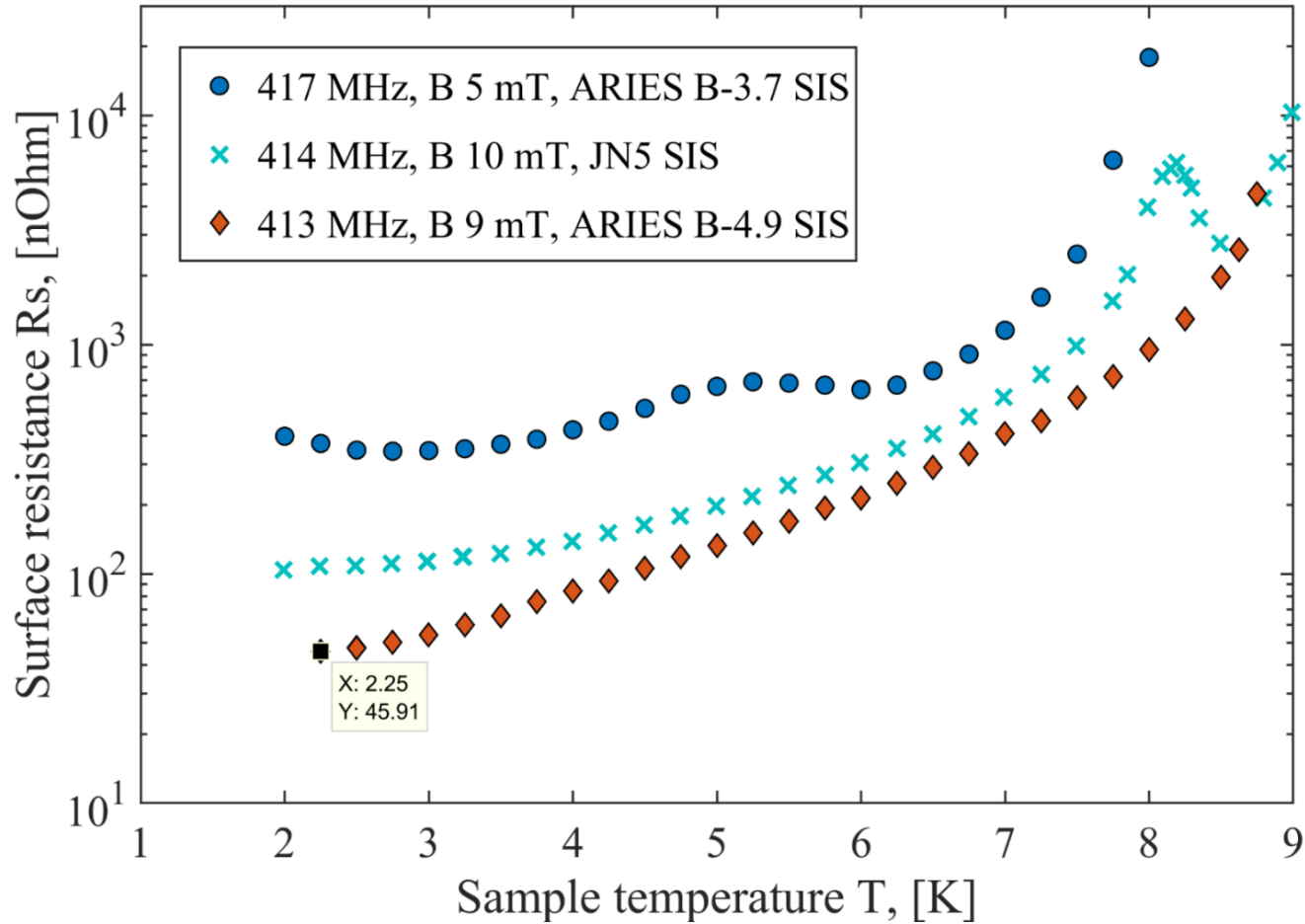


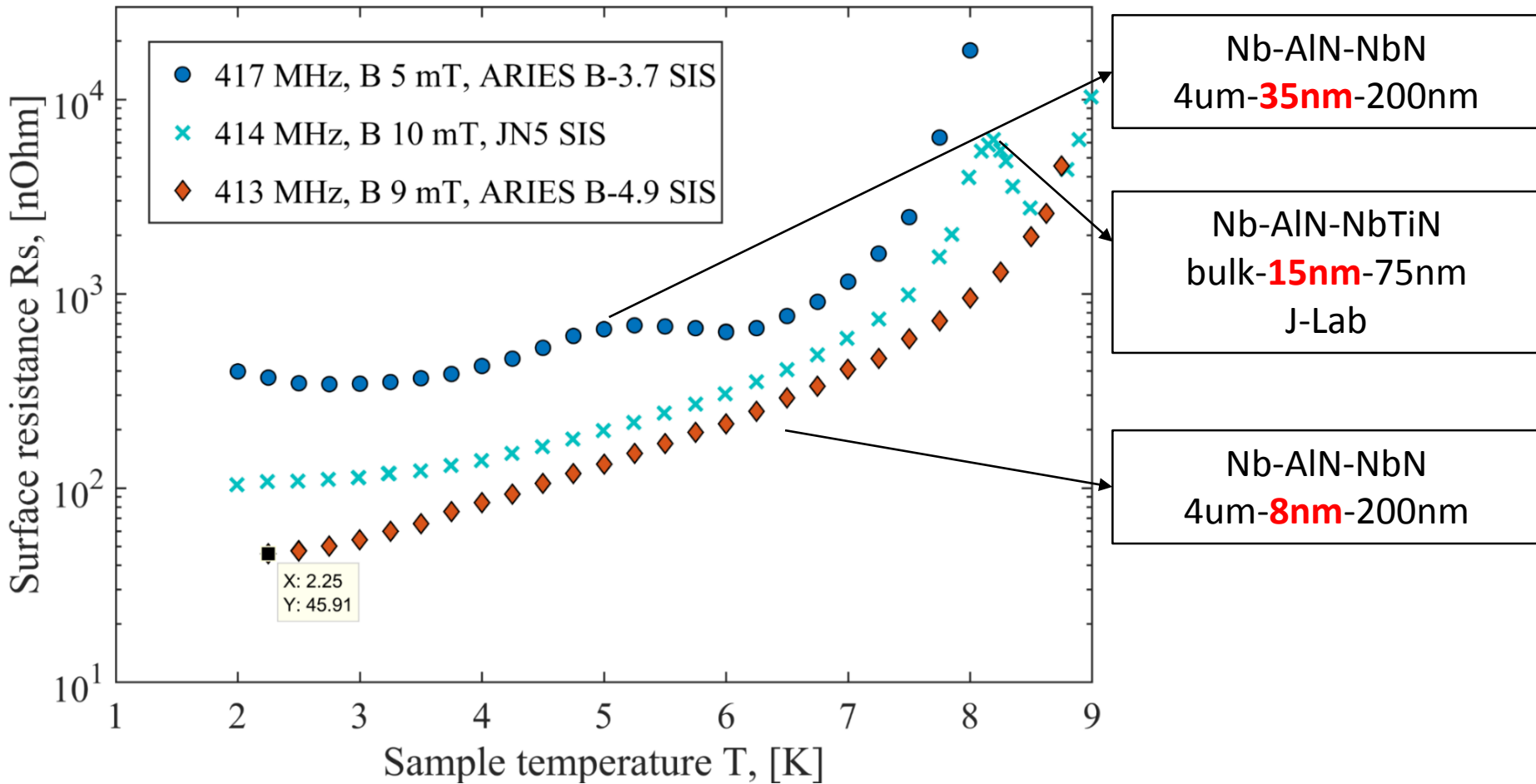
- Low Rres ~40 nOhm
- No non-monotonic
- Good R_s vs B quality

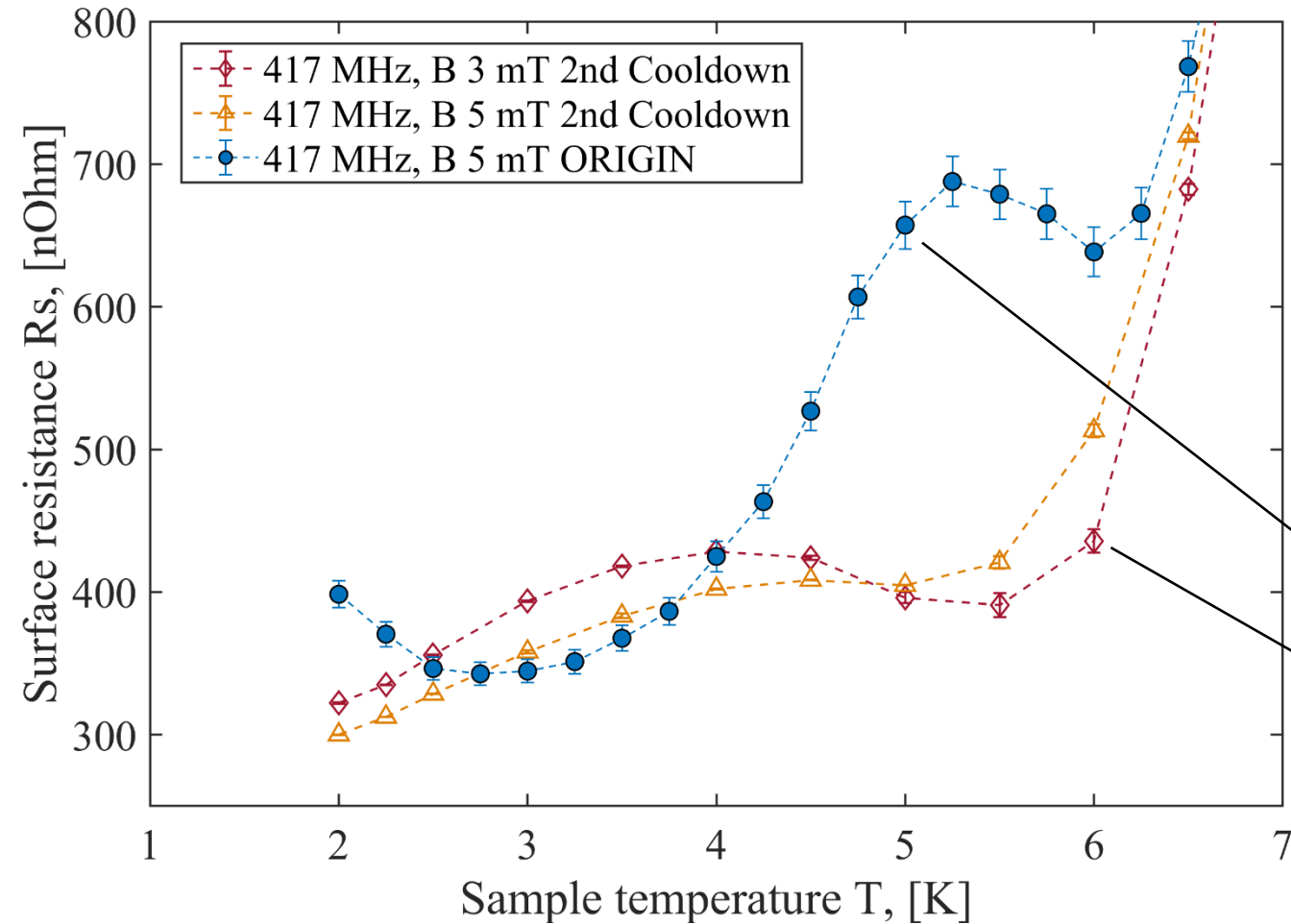




- Low Rres ~40 nOhm
- No non-monotonic
- Good Rs vs B quality
- BCS is lower







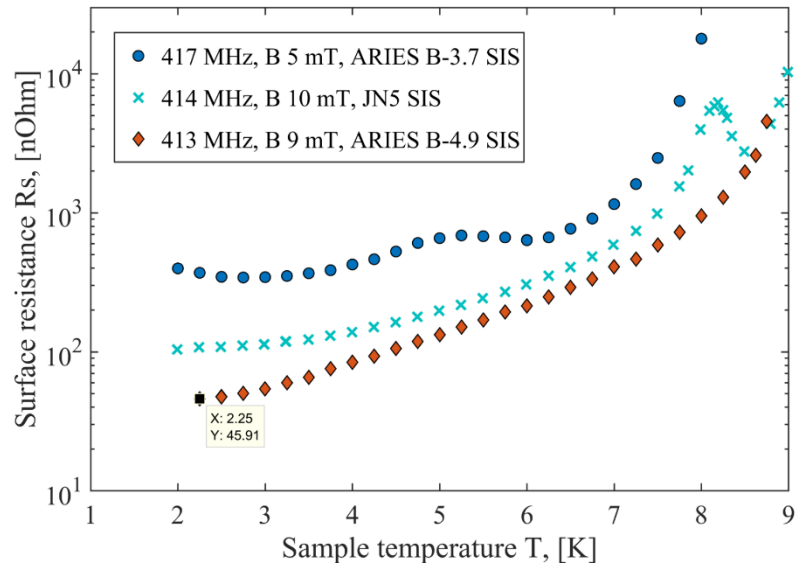
Second test of B-3.7:

- Peaks appear but changed
- Reheating cavity up to 20 K and sample did not help

1st cooldown

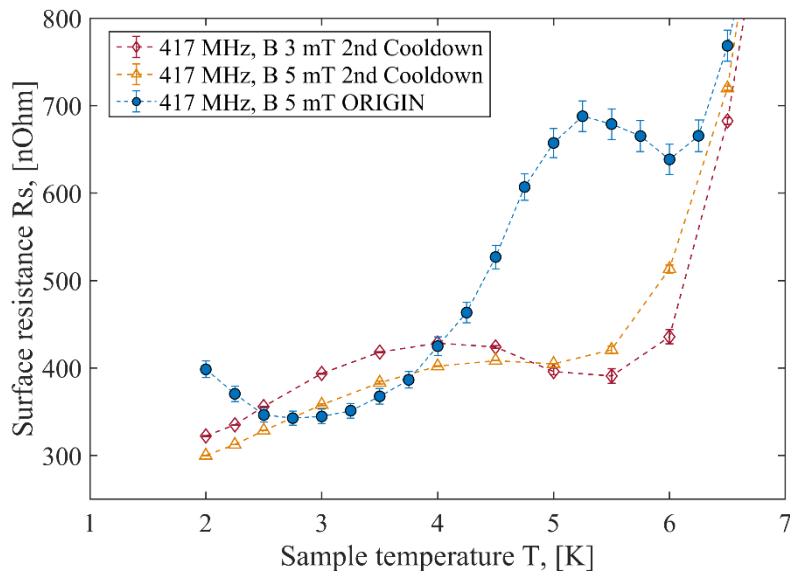
2nd cooldown



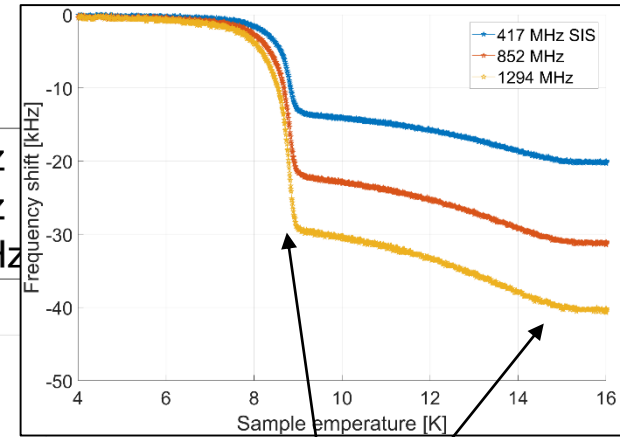
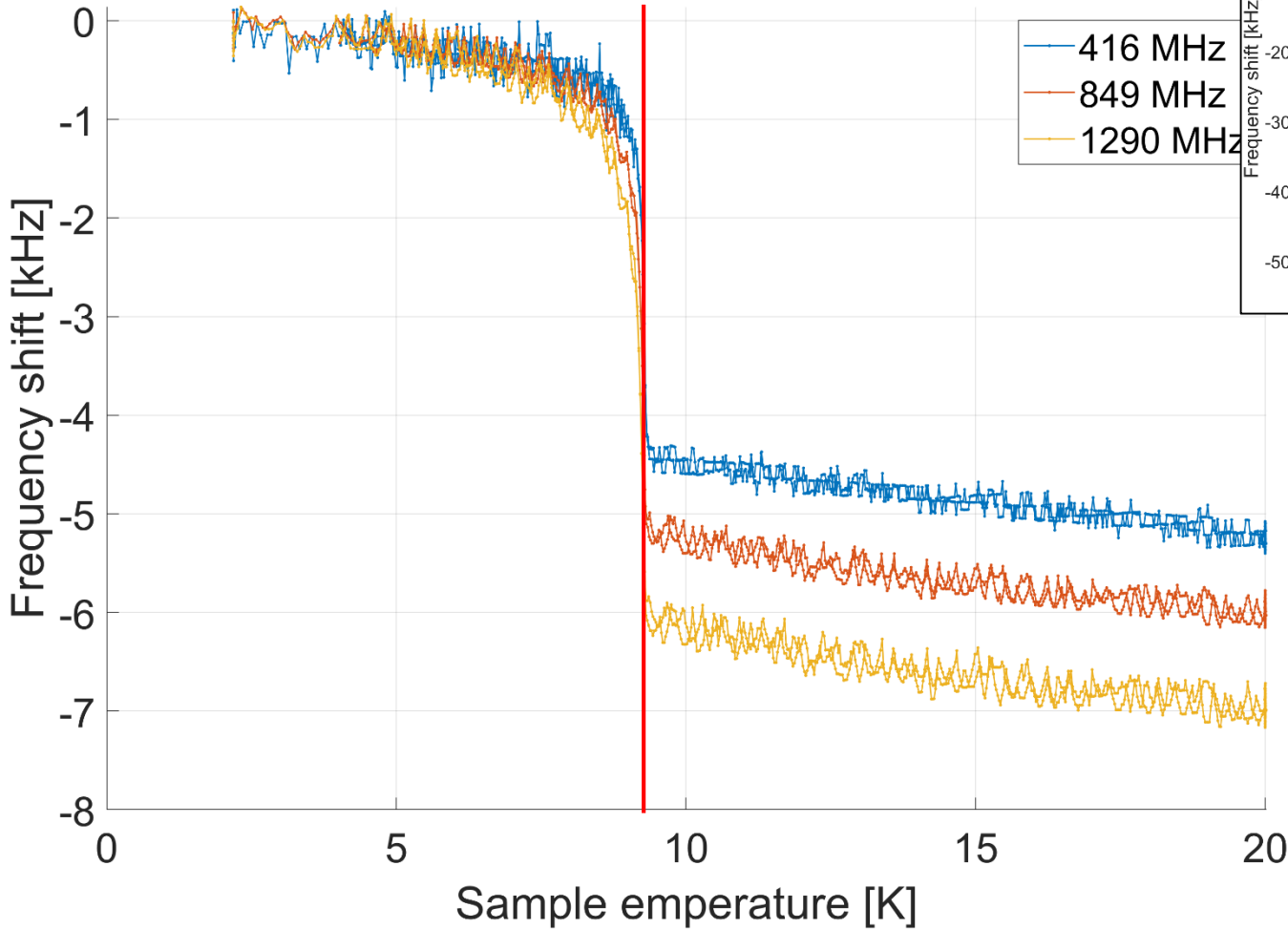


Ideas:

- Peaks appear due to thermal properties of the insulator layer
- Flux trapping effects?
- *Effects bc. exposed to air?*
- *Effects of the sample edges quality?*



Nb ~ 9.3 K



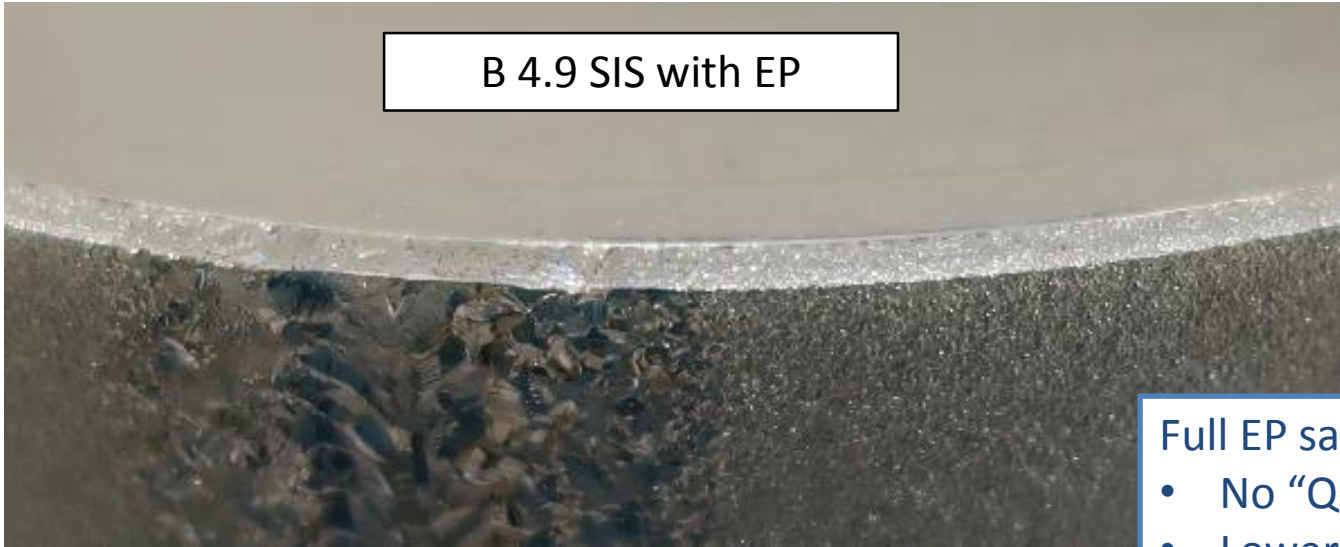
Reference

NbN >20K???

Tc NbN <17.2



B 4.9 SIS with EP

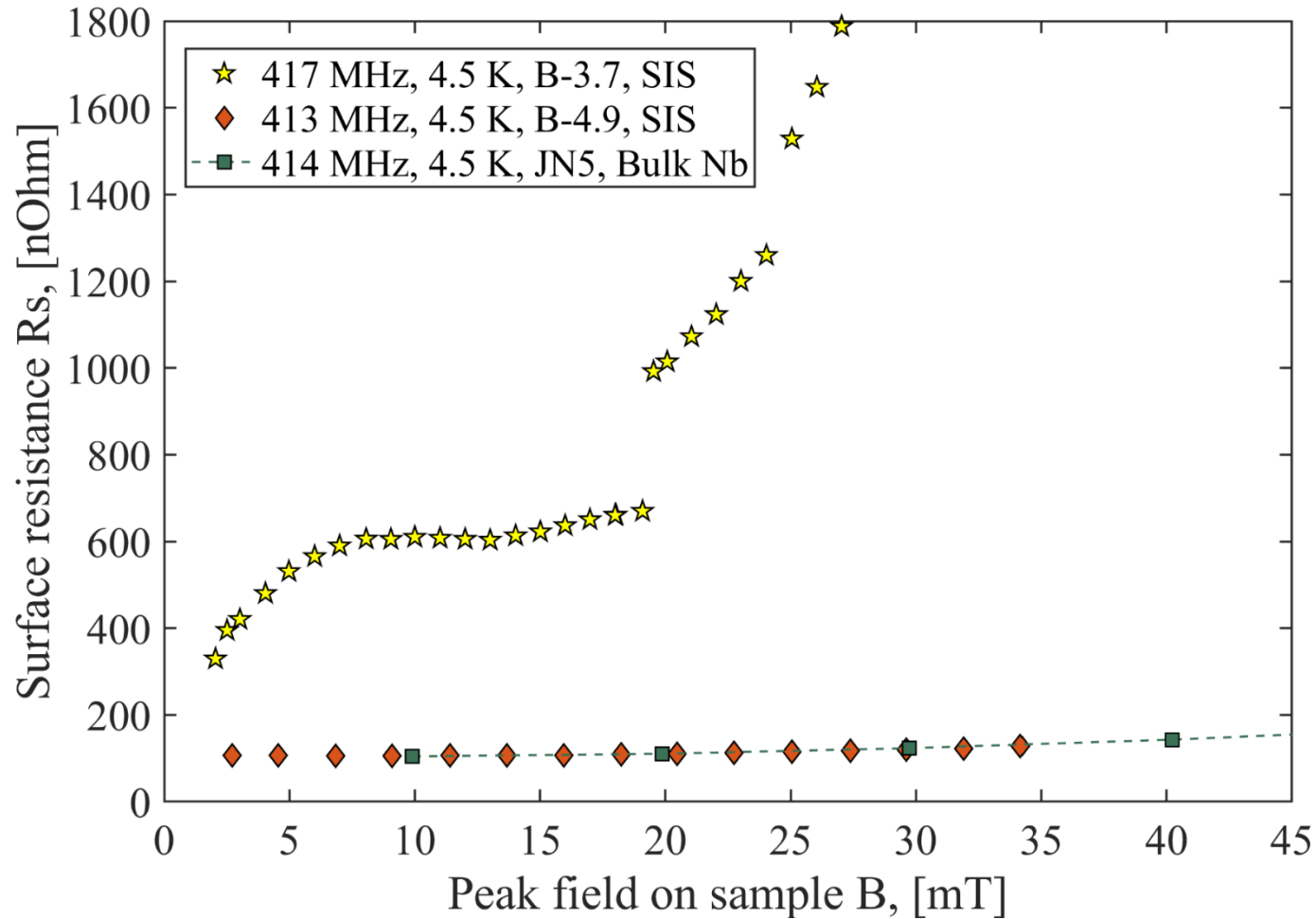


Full EP sample:

- No “Q-switches”
- Lower Rres
- Better performance at 1.3 GHz

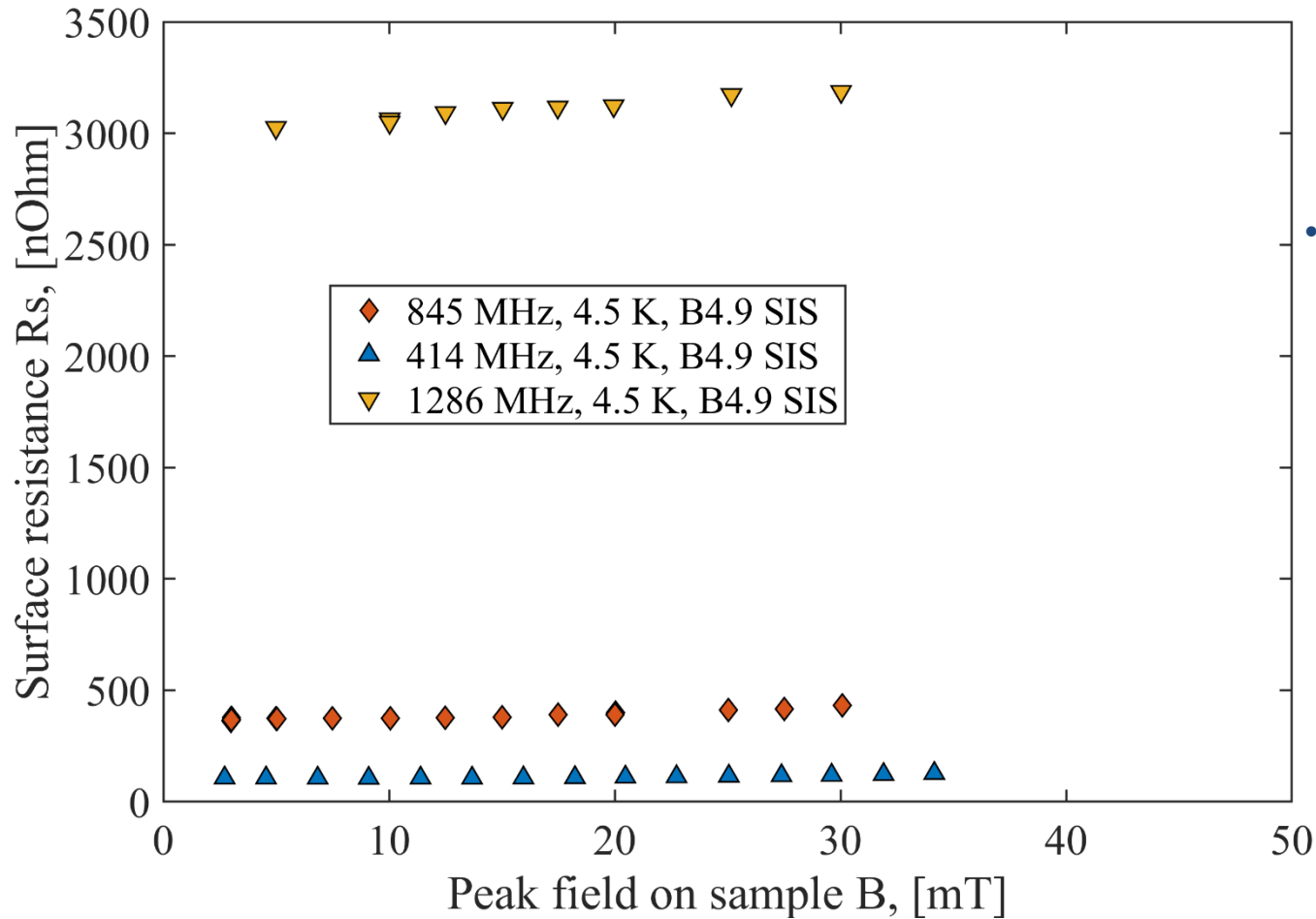
“Other samples”





- Low R_{res} ~40 nOhm
- No non-monotonic
- Good R_s vs B quality





- Still high losses at Q3



CONCLUSIONS?

1. Non-monotonic effect

- Effect of thickness, make the thickness 20-25 nm?
- No exposure to air after each layer is the reason?
- Flux trapping?

2. Chemical ‘polishing’ of the whole sample should be implemented in the procedure

	Rres	Mx field	Tc
400 MHz	~40 nOhm	~35 mT	??
800 MHz	~140 nOhm	~35 mT	??

CONCLUSIONS?

	Location, film
B-2	CERN, Nb thick film
B-3	HZB, SIS (siegen 35 nm)
B-4	HZB, SIS (Siegen)
B-5	RTU, Nb

