



The 8th WP15 meeting

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Progress report

Authors

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WP15

ARIES QPR Samples production

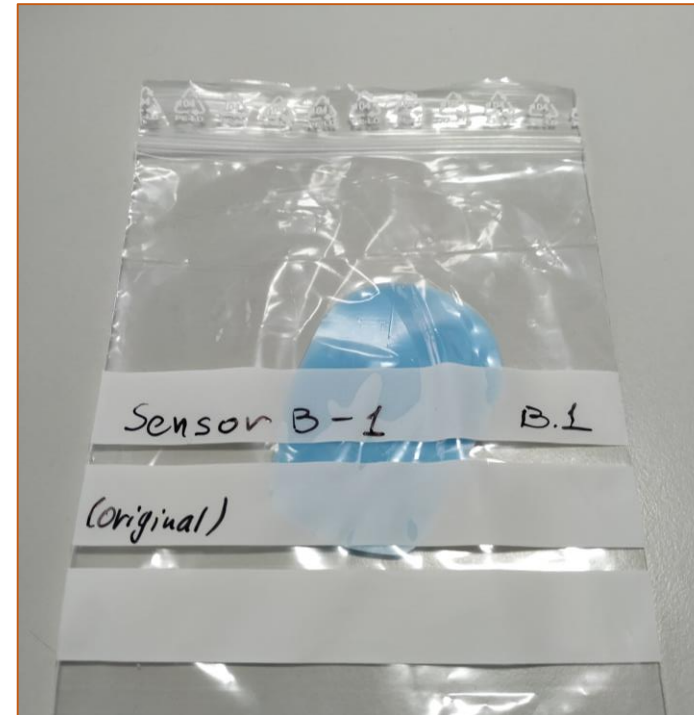
- 10 ARIES Samples have been produced by RI last year and shipped to HZB
- Cu-Nb samples entered polishing stage
- 2 Cu-Nb samples have been sent to INFN for polishing (planned in **February**)
- Nb samples are being mechanically polished at HZB and will be sent back to RI in **February** for following $\sim 100 \mu\text{m}$ BCP and baking.



**Cu-Nb samples at HZB after production coalition*

Cu-Nb samples surface analysis

- After production coalition (by milling) surface was investigated for defects and roughness
- Presently, only one sample (B-1) was scanned for surface roughness.
- The surface quality is considered to be the same for all samples judging from first inspection.
- Surface analysis method - Replica (up to 100 nm precision) scan with 3D Laser Scanning Microscope vk-x200

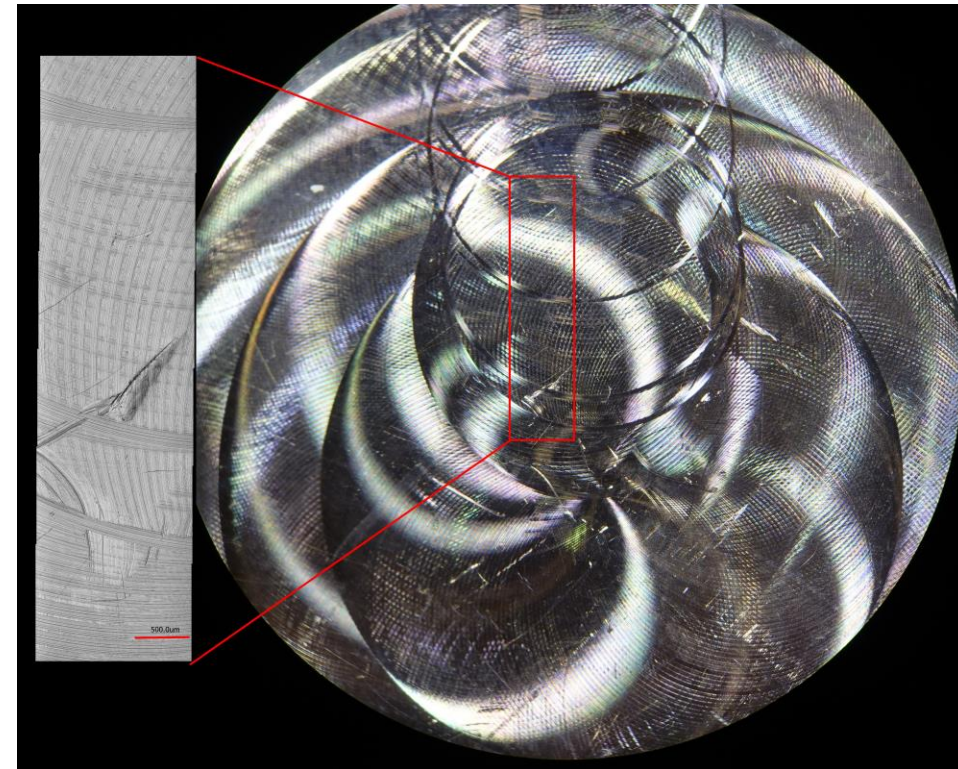


**Surface replica with up to 100 nm replication precision*

Cu-Nb samples surface analysis

- Measurement showed average Rz up to 11.2 μm
- Some defects on the surface were observed with up to 30.0 μm deepness
- Mechanical polishing is suggested first

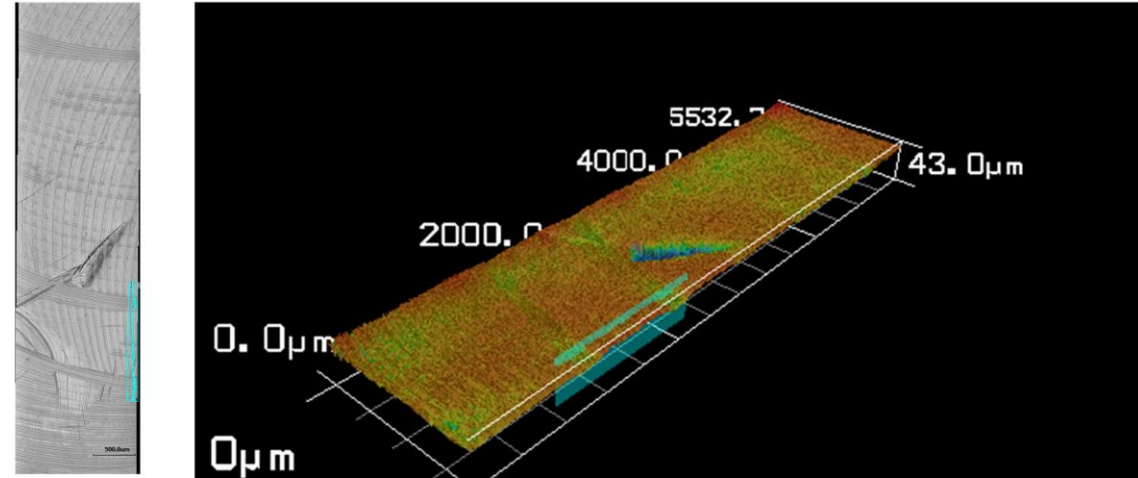
Surface Roughness measurements (HZB)	
Rz (no defect, worse area)	11.2 μm
Ra (no defect, worse area)	1.6 μm
Defects height difference	23.0 μm
Max defect height difference	30.0 μm



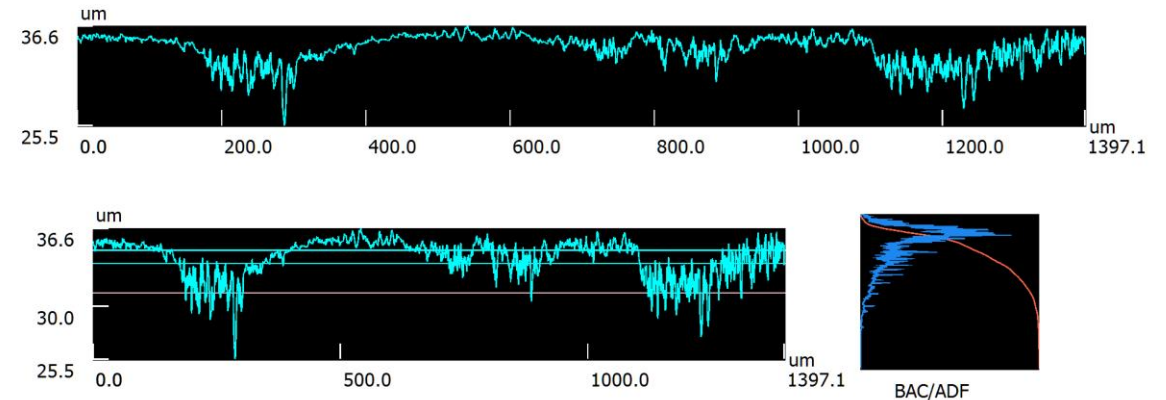
Surface scan

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Roughness measurements

ARIES Nb Samples production

- 5 Nb samples are being mechanically polished at HZB and will be sent back to RI **in February** for following $\sim 100 \mu\text{m}$ BCP and backing.
- By mechanical polishing (done by hands) was possible to achieve surface suitable for following $\sim 100 \mu\text{m}$ BCP.
- After 1 – 1.5 h of polishing with P400 and P800 grinding paper less than $50 \mu\text{m}$ of material was removed
- Although edges are polished slightly more than center, the shape is acceptable for QPR (considering surface was not more flat at the beginning)



Sample polishing process



“Before and after”

ARIES Nb Samples production



Next steps & conclusions

- Polishing of first 2 Cu samples at INFN - **February**
- BCP an Baking Nb samples at RI - **February**
- Production of the flange (holder) for Nb an Cu sample – **After polishing** is done and the exact size is known.
- Coating of first Cu samples (Siegen, Daresbury with Nb and others) – **March – April.**

