



Contribution ID: 2237 Contribution code: WEPA194

Type: **Poster Presentation**

Surface characterization of mid-T heat treated Nb samples to investigate the origin of residual resistance

Wednesday, 10 May 2023 16:30 (2 hours)

Annealing of niobium (Nb) cavities in UHV is crucial for the performance in the later cryogenic tests and operation. Recently, a so-called “mid-T bake” treatment has exhibited very high-quality factors for Nb cavities. In this way, the first set of mid-T treated samples were produced with cavities at Zanon Research & Innovation Srl. The cavity performances have been improved with lower BCS and residual resistances, however the residual resistances were varied very different between 3-12 nΩ and didn't achieve the low values as we expected. Thus, the characterization of these samples is discussed, and the source of residual resistance mitigation has been studied here in detail. We present our investigation on potential origins. For this, we used XPS, MOKE and Auger measurements to study the surface magnetic domains and stoichiometry of structures.

Funding Agency

This work was supported by the BMBF under the research grants 05K19GUB, 05H2021 and 05K22GUD.

Footnotes

I have read and accept the Privacy Policy Statement

Yes

Primary author: GHANBARI, Rezvan (University of Hamburg)

Co-authors: WENSKAT, Marc (University of Hamburg); DEYU, Getnet (University of Hamburg); HILLERT, Wolfgang (University of Hamburg); STEDER, Lea (Deutsches Elektronen-Synchrotron); RESCHKE, Detlef (Deutsches Elektronen-Synchrotron); WEISE, Hans (Deutsches Elektronen-Synchrotron)

Presenter: GHANBARI, Rezvan (University of Hamburg)

Session Classification: Wednesday Poster Session

Track Classification: MC7: Accelerator Technology and Sustainability: MC7.T07: Superconducting RF