Contribution ID: **67** Type: **not specified**

Investigations Towards Nanoscale Precise Polishing of Nb3Sn Thin Films for SRF Applications

Tuesday 17 September 2024 11:55 (23 minutes)

Copper-based Nb3Sn cavity is a promising candidate for next generation accelerator applications in the field of superconducting radio frequency (SRF). It combines the excellent thermal conductivity of copper and the superior superconducting properties of Nb3Sn, and has the potential to greatly improve the performance of the SRF cavity. The electrochemical and thermal synthesis (ETS) bronze route is one of the proven methods to achieve Nb3Sn coating on copper. Its advantages are low cost, simple operation, suitable for complex cavity types and mass production. In this paper, we have prepared a copper-based Nb3Sn sample specifically for Quadrupole Resonator (QPR) testing. We provide a complete set of QPR sample preparation processes from copper electropolishing, Nb suttering, electrodeposition and heat treatment to synthesize Nb3Sn. By optimizing the entire preparation process and key parameters, a new Cu-based Nb3Sn QPR sample was successfully prepared, and its RF properties will be characterized by QPR testing system at HZB soon.

Presenter: YANG, Ziqin (IMP CAS)

Session Classification: Beyond Nb: Alternate materials and mulilayer structures

Track Classification: Beyond Nb: Alternate materials and multilayer structures