



Contribution ID: 126

Type: **Poster without speed talk**

Study on the Preparation of Nb₃Sn Coatings on Cu Substrates by bronze Method

Nb₃Sn thin films are mainly used on superconducting radio frequency (SRF) cavities, single-photon detectors and RF logic circuits. Copper-based Nb₃Sn thin-film SRF (TFSRF) cavities are promising for particle accelerators because they may combine the advantages of high thermal conductivity and high gradient. In this poster, a bronze method, including multi-layer deposition and heat treatment, was used to synthesize Nb₃Sn thin film on copper substrates. We first made a precursor by sputtering a niobium layer on the copper substrate and then electroplating a thicker bronze layer. Then we annealed the precursor in a vacuum tube furnace to synthesize Nb₃Sn film. Considering the morphology and superconductivity of the Nb₃Sn films, we compared the effects of various annealing temperatures and optimized the preparing conditions. The samples characterization of the morphology and superconductivity showed that high-quality Nb₃Sn thin films had been successfully deposited on copper substrates. The superconducting transition temperature T_c can reach higher than 17.0 K. This synthesis route provides a new approach towards high-stability Nb₃Sn TFSRF copper cavities

Speed Talks

Normal

Primary author: LU, Ming (HZB)

Presenter: LU, Ming (HZB)

Session Classification: Poster session

Track Classification: Accelerator Research and Development