



Contribution ID: 54

Type: **Poster presentation (105min)**

Properties of Nb₃Al wires processed by Double Rapid Heating and Quenching

Tuesday, 8 July 2014 14:15 (1h 45m)

We have been developing Nb₃Al wires processed by a rapid heating and quenching for a number of years as a promising candidate for use in future high-field accelerator magnets. These wires have better strain and stress tolerance than Nb₃Sn wires. However, to meet the demands for future accelerator magnet designs, it is necessary to enhance the performance of Nb₃Al wires, particularly their non-copper critical current density in the field range of 12-20 T. To pursue this goal, we introduced double rapid heating quenching (DRHQ) treatment into the fabrication process of Nb₃Al wires and studied the various properties (mechanical and/or superconducting properties) of the resulting DRHQ-processed wires. This paper briefly reports the results of the study.

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Session Classification: Tue-Af-Posters Sessions 1.5