

Fabrication of RRR Measurement System and Characterization of Nb-Ti Composite Superconductors

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A Nb-Ti composite superconductor consists of Nb-Ti multifilaments and Cu matrix. The Cu matrix works an electric shunt and a heat conductor to the surrounding coolant when the superconductor is quenched. When a Nb-Ti composite superconducting wire is quenched, it is important how fast the Cu matrix works with shunting the current flowed within Nb-Ti multifilaments into the Cu matrix to prevent superconducting system. For fast shunting the current the resistance of Cu matrix is as possible as low.

A residual resistance ratio(RRR) is a quantity to define a ratio of resistance at room temperature to resistance just above the superconducting transition. In 2001, International Electrotechnical Comission(IEC) published the IEC 61788-4, which describes definition, apparatus, measurement procedure, test report for test of RRR of Nb-Ti composite superconductor.

In order to disseminate the IEC 61788-4, we have fabricated a RRR measurement system and tested some Nb-Ti specimens. In this report, we report the description of the RRR measurement system and result of the test of the Nb-Ti specimens.

keywords : residual resistance ratio, Nb-Ti composite superconductor, Cu matrix,