

Influence of Critical Current on Over-current Characteristics of HTS Tapes

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Over-current characteristics of HTS tapes with variation of critical current were investigated. To acquire HTS tapes having different critical current, external magnetic field was introduced to the HTS tape. HTS tape we examined has critical current of 57 A [$1\mu\text{V}/\text{cm}$ criterion] under 0T. Several samples with various critical current corresponding to 10, 20, 30, 40, 50 % of raw one were made and tested. After the current beyond critical current was applied during 9 cycles to each HTS tape, the resistance occurrence with magnitude of the applied current was measured through V - I curve. In the case of HTS tape that its critical current is not over 40A, although the applied current was amount to $500A_p$, the temperature due to joule heat was not beyond its critical temperature until 9 cycles. As a result, we found out that HTS tapes with lower critical current could make the resistance increase lower, when the over-current was applied.

keywords : HTS tape, critical current, over-current, resistance increase