

Improvement of Critical Current in Bi-2223/Ag HTS Tapes by the Bubbling Control

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To increase the critical current of Bi-2223/Ag HTS tapes, researchers have carried out many efforts. One of the most important factors to solve the problems is bubbling that restricts the current path. In general, the bubbling, generated during the fabrication of the tapes, breaks the superconducting filament. Therefore, critical current of the tapes will be decreased. We have modified heat-treatment schemes of Bi-2223/Ag HTS tapes, such as pre-annealing of multi-stacked billet, 2-step main sintering and ramp rate etc. The generation of Bubbling was drastically decreased from 20 bubbles/m to 0~1 bubble/m by the modified heat-treatment. Furthermore, the critical current of the tapes removed the number of bubbling was obtained up to almost twice higher than that of already existing tapes. We have achieved the 42 A of critical current in 40 m length Bi-2223/Ag tapes and 54 A in short tapes at 77K, self-field, $1\mu\text{V}/\text{cm}$ criterion. We could confirm that elimination of bubbling is effective to maintain the superconducting property along the tape length.

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