

Recent Progress of 2G superconducting wire in SuNAM

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SuNAM has been producing long-length $\text{GdBa}_2\text{Cu}_3\text{O}_{7-\delta}$ (GdBCO) coated conductors (CCs) with high critical current (I_C) by a new high throughput method of the RCE-DR (Reactive Co-Evaporation Deposition & Reaction) process. In comparison to other deposition methods developed for CCs, the RCE-DR process has a great potential of the highest throughput which enabled us to meet the current and future needs of industry in terms of price and production speed. GdBCO CCs fabricated by RCE-DR exhibit outstanding transport properties such as a critical current of 794 A/12 mm-width at 77 K in self-field.

Earlier this year, we combined two buffer-layer deposition systems, one for Al_2O_3 barrier & Y_2O_3 seed layer, the other for IBAD, homo-epi & buffer layers into one. The integration of two systems enabled the buffer and seed layers to be grown stably and to have an excellent texture without any contamination from exposure to air. As the result, the occurrence of delamination in buffer layers became less frequent and the GdBCO CCs with high critical current could be obtained consistently. Eventually, SuNAM's efforts on technical development led to high performance wire with $I_C \times L$ value of 566,214 A·m (579 A \times 978 m). We also tried diverse attempts to enhance the magnetic property of 2 G wire. Details will be presented in the conference.

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