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Evaluation for Critical Current of REBCO coated conductor under various tensile strains and magnetic field angles.

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REBCO coated conductors have a high critical current density in a high magnetic field at low temperature. Therefore, the research and development of REBCO coated conductors have proceeded for high magnetic field applications. A critical current of REBCO coated conductor shows field angular dependence and strain dependence. Especially, the mechanism of the strain effect for REBCO coated conductor is not clear. In our laboratory, the relationship between the strain and other environment for REBCO is studied to understand the strain effect of REBCO. In this study, the angular dependences of critical current for REBCO coated conductors under various tensile strains were investigated. A small tensile test apparatus for large transport current measurement was developed. The field angular dependence of the critical current of REBCO coated conductors was measured at 77 K, 0.4 T and several tensile strain. As a result, we found that the difference of the critical current at field B // c-axis and B // ab-plane is increased with increasing tensile strain.

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