

Effects of Annealing Condition on Development of Cube-texture in Ni-W Tapes for YBCO Coated Conductor

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A Ni tape is widely used as a substrate for YBCO coated conductors. Small addition of alloying elements is needed to improve to mechanical properties and to increase the second recrystallization temperature. In this study, we fabricated Ni-1at%W, Ni-3at%W, Ni-5at%W alloy tapes by cold working and texture annealing of Ni-W powder compacts. The Ni and W powders were mixed by ball milling with ZrO₂ balls and the powder mixture was dried. The dried powder was put in a rubber mold and isostatically pressed in a water chamber into a rod-like shape. The CIP-processed Ni-W rods were sintered at 1100°C in a 4%H₂-96%Ar atmosphere. We carried out a tensile test to understand the alloying effect and found with increasing W content, but the elongation decreased. The sintered rods were cold-rolled with 5% reduction at each path into tapes with a thickness of 100 microns. The Ni-W tapes were heat-treated at various temperatures for the development of cube texture. We reports the effects of processing condition on the texture formation of the Ni-W alloy tapes.

keywords : Ni-W alloy, cold-rolling, texture annealing, FWHM

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