

## Fabrication of Textured Ni Substrates for Coated Conductor Prepared by Powder Metallurgy or Plasma arc Melting Method

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We fabricated cube textured Ni substrate for YBCO coated conductor and evaluated the effects of annealing temperature on microstructural evolution and texture formation. Ni-rods as an initial specimen was prepared by two different methods, i.e., powder metallurgy(P/M) or plasma arc melting(PAM). Subsequently, the rods were cold rolled to 100  $\mu\text{m}$  thick tape and annealed at temperatures of 400~1200 . The texture of the substrate was characterized by pole-figure and surface morphology was investigated by atomic force microscopy(AFM) and scanning electron microscopy(SEM).

It was observed that the texture of substrate made by P/M did not significantly varied with annealing temperature of 600~1100 and the full-width at half-maximums (FWHM) of both in-plane and out-of-plane were 8°~10°. On the other hand, the texture of substrate made by PAM was more dependent on the annealing temperature and the corresponding values were 8°~9° at annealing temperature of 700 . In addition, recrystallization twin texture, (122)<212>, was formed as the temperature increased further. SEM and AFM profiles showed that the grain size and root-mean-square(RMS) roughness were in the range of 50 75  $\mu\text{m}$  and 5 6 nm, respectively, for both the substrates. The correlation of the degree of texture with grain size will be discussed in detail.

keywords : coated conductor, substrate, PAM, PM, texture