Deposition of CeO_2 on Biaxially Textured Ni Substrates by a Metalorganic Chemical vapor Deposition Method

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CeO_2 buffer layer for YBCO coated conductors was deposited on biaxially textured Ni substrates by a MOCVD technique. The variables were deposition temperature, time and oxygen partial pressure (P_{O2}). The complete (200) texture of CeO_2 was formed at T=500℃-520℃, P_{O2}= 2.30 torr. The in-plane and out of plane values of the (200) texture were obtained at T=530℃, with ω-and φ-scan FWHM of 8.5 and 12 , respectively, which are the best values in this study. The AFM surface roughness increased with increasing deposition temperature. The growth rate of the MOCVD CeO_2 films at T=520℃ and P_{O2}=2.30 torr was 200 nm/min, which is appeared much faster than those prepared by other physical deposition methods.

keywords : CeO_2 buffer layer, metal-organic chemical vapor deposition (MOCVD) method, (200) texture

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