

Properties of YBCO Step-edge Junction Fabricated on Different Crystal Orientation of Sapphire Substrate

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We have studied properties of step-edge junction prepared with crystal orientation of sapphire substrate. The Step on sapphire substrates fabricated by conventional photolithography method and Ar ion milling method. CeO₂ buffer layer and in-situ YBCO thin film were deposited on the stepped sapphire substrates by a pulsed laser deposition method with the predetermined optimized condition. The step angle was controlled low angle of about 25°. The YBCO film thickness was varied to obtain various thickness ratios of the film to the step height in a range from 0.7 to 1.2. I-V curves of junction were showed RSJ-behavior, double junction structure, and hysteresis due to the crystal orientation of substrate.

keywords : step-edge junction, YBCO, sapphire substrates.