

30-38 Y-BA-CU-O THICK-FILM PREPARATION USING MULTISTEP KRF EXCIMER-LASER DEPOSITION

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Thick films of high-temperature superconductors (HTSC) have attracted much attention to a number of current-carrying applications such as current leads, interconnects, current limiters and cryotron-type switches. As the film thickness of HTSC film and the surface layer, both with thicknesses of about 1 μ m. It is shown that surface morphology and vertical growth are significantly dominated by the initial layer structure and the following deposition conditions. The thick films with high T_c (zero) 89K were obtained when the surface layer was prepared at a lower repetition rate under lower process temperature. The three step procedure preph a plasma background show a more rapid development in the breakdown initiation compared to measurements in vacuum with no plasma. With a magnetic shielding technique using permanent magnets, the duration of an applied voltage pulse can be increased by a factor of 2-3 without causing flashover. UV illumination on the electrodes decreases the flashover voltage (for the dc case) or the voltage pulse duration without breakdown (for the pulsed case), whereas UV illumination on the dielectric surface increases the flashover potential.

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