# Deposition of YBCO Films on Moving Substrate by Spray Pyrolysis Process, using Metal-Nitrate Precursors

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YBCO films were deposited on a moving substrate by a spray pyrolysis method using nitrate aqueous solution as precursors. Deposition was made on $LaAlO_3$ (100) single crystal substrate by spraying precursor droplets generated by a concentric nozzle. The cation ratio of precursor solution was Y: Ba: Cu = 1:2.65:1.35. The distance between nozzle and substrate was 15 cm. Substrate was transported with a speed ranging from 2.4 mm/min to 0.5 mm/min. Films were deposited at 10 Torr and deposition temperature was ranged from 760℃ to 800℃. Oxygen partial pressure was varied from 1 Torr to 5 Torr. The microstructure, phase formation, film thickness, texture development and superconducting properties of deposited films were varied with oxygen partial pressure. Superconducting YBCO films were obtained at 780℃ with an oxygen partial pressure of 3 Torr. Scanning electron microscope (SEM) and X-ray diffraction (XRD) observation revealed that films are smooth and highly texture with (001) plans parallel to substrate plane.

Keywords : moving substrate, spray pyrolysis, nitrate precursor, YBCO, $J_c$

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