

Optimization of Annealing Conditions in Oxide-precursor-based MOD Process for YBCO Thin Films

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A low cost YBCO oxide powder was employed as a starting precursor for MOD process. YBCO oxide is advantageous over metal acetates or TFA salts which are popular starting precursors for conventional MOD-TFA process. YBCO thin films were prepared by this oxide-precursor-based MOD process and annealing condition was optimized. The YBCO thin film annealed at below 780°C shows no transport I_c and poor microstructure. Raman spectroscopic study of YBCO thin film indicates that YBCO thin film prepared at below 780°C contains a number of imperfections such as non-superconducting BaCuO₂ phase, cation disorder, etc. However, the YBCO thin film treated at above 800°C shows improvement in microstructure and current transport properties. Also discussed are effect of humidity on crystallization and microstructures of YBCO

keywords : YBCO, MOD-TFA, BaCuO₂, humidity, annealing

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