Deposition of YBCO Film by Single Solution Source MOCVD for Coated Conductor Application

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YBCO coated conductor films were deposited on MgO single crystal substrates by a metal organic chemical vapor deposition (MOCVD) method using single solution source. $Y(tmhd)_3$, $Ba(tmhd)_2$ and $Cu(tmhd)_2$ were selected as raw material sources and tetrahydrofuran (THF) was used as a solvent. The working pressure was 10 Torr and the deposition variables such as deposition temperature, chemical composition and oxygen flow rate were changed. The deposition temperature and oxygen flow rate were varied at the ranges of 770~830 and 50~300sccm, respectively. The crystallization and surface morphology of the fabricated YBCO films were analyzed by X-ray diffraction and scanning electron microscope, respectively. The critical temperature (T_c) of the epitaxial film with c-axis orientation was measured by a four point probe method and the value showed 80K.

keywords : YBCO coated conductor, single solution source, metal organic chemical vapor deposition (MOCVD)

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