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
Compositional Dependence of Properties of rf-Sputtered Bi-Sr-Ca-Cu-O thin Films

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Abstract: Compositional dependence of superconducting transition temperature (T_c) of $\text{Bi}_2\text{Sr}_{3-x}\text{Ca}_x\text{Cu}_2\text{O}_{8+x}$ thin films grown by rf sputtering on single crystal MgO substrates has been investigated. Films have been assessed by considering their initial composition in terms of (Ca+Sr)/Bi ratio with their atomic concentration normalized to Cu:2. It was found that $T_{c\text{-zero}}$ of around 80K is achievable for (Ca+Sr)/Bi ratio between 1.4 and 1.65, while $T_{c\text{-onset}}$ remains above 90K. Quenching from high temperature increased $T_{c\text{-zero}}$, but it may result in a deterioration in resistivity due to micro cracks induced by the thermal stress.

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