# PREPARATION OF SUPERCONDUCTING THIN FILMS BY ION BEAM SPPUTTERING

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Polycrystalline $YBa_2Cu_3O_{7-x}$ target for ion beam sputtering was prepared by sintering a stoichiometric mixture of $Y_2O_3$, $BaCO_3$ and CuO at 950°C in Oxygen. Films were deposited from the target by sputtering with 5 KeV argon ions in a vacuum ($10^{-4}$ Torr) onto a single crystal MgO substrate. Scanning electron microscopy and X-ray diffraction study revealed that the as deposited films were amorphous. Different heat treatments were given in Oxygen, to study the crystallization of these films from the amorphous state. The extent of crystal growth was determined by performing electron microscopy at various stages. The films with complete crystallization showed the superconducting transition near 90 K.