

Abstract

Superconductor thin films are increasingly required in power application specially for cables for Magnets and power transportation, fault current limiters and etc. It also has extensive use being essential for IR sensors, microwave devices, magnetic sensors, and etc. The chemical solution processes including Metal Organic Deposition (MOD) have attracted much attention since they are a low-cost approach and require no high vacuum complex apparatus. The MOD process greatly reduces the production cost and could obtain high critical currents J_c , over 1 MA cm^{-2} at 77 K , and zero applied field. Here we present the results of fabrication and characterization of the high- T_c superconductor YBCO thin films using MOD fluorine-free chemical route. The YBCO film was spin-coated on LaAlO_3 substrate. The structure of the films was characterized by XRD and SEM and the superconducting properties were determined by R-T measurements. The thickness of the film was measured using α -step method with 5nm accuracy. For the first time, the application of the resulting film as an infrared sensor will be reported. The optical response in the range of near infrared and noise characteristics of the patterned bolometer are measured and analyzed. As it will be presented, the results are comparable to the devices that are patterned on the high quality PLD fabricated YBCO films.

