

Millimeter Wave Property of High T_C Josephson Junction on MgO Bicrystal and Al_2O_3 (Sapphire) Bicrystal Substrates.

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$YBa_2Cu_3O_7$ Josephson junctions on MgO bicrystal and Al_2O_3 (Sapphire) bicrystal substrate with a CeO_2 buffer layer for millimeter wave property have been fabricated. The $YBa_2Cu_3O_7$ thin film was deposited by pulsed laser deposition (PLD) and patterned by photolithography and ion milling etching. To investigate the millimeter wave property of the Josephson junctions, Shapiro steps were measured in the temperature range from 15 K to 70 K by 60 GHz gunn-diode generator. From the Shapiro steps, the maximum upper frequency and the received power was estimated.

Keywords: millimeter wave, Josephson junction, Shapiro steps