Abstracts

Comparison of power dependence of microwave surface resistance of unpatterned and patterned YBCO thin film

Hao Xin, D.E. Oates, A.C. Anderson, A.R.L. Slattery, G. Dresselhaus and M.S. Dresselhaus. "Comparison of power dependence of microwave surface resistance of unpatterned and patterned YBCO thin film." 2000 Transactions on Microwave Theory and Techniques 48.7 (Jul. 2000, Part II [T-MTT] (Special Issue on Microwave and Communication Applications at Low Temperature)): 1221-1226.

The effect of the patterning process on the nonlinearity of the microwave surface resistance R/sub s/ of YBCO thin films is investigated in this paper. With the use of a sapphire dielectric resonator and a stripline resonator, the microwave R/sub s/ of YBCO thin films was measured before and after the patterning process, as a function of temperature and the RF peak magnetic field in the film. The microwave loss was also modeled, assuming a J/sub rf//sup 2/ dependence of Z/sub s/(J/sub rf/) on current density J/sub rf/. Experimental and modeled results show that the patterning has no observable effect on the microwave residual R/sub s/ or on the power dependence of R/sub s/.

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