Abstracts

Microwave measurements of surface impedance of high-T/sub c/ superconductors using two modes in a dielectric rod resonator

Y. Kobayashi and H. Yoshikawa. "Microwave measurements of surface impedance of high-T/sub c/ superconductors using two modes in a dielectric rod resonator." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part II [T-MTT] (1998 Symposium Issue)): 2524-2530.

A novel technique using two resonant modes in a dielectric rod resonator, the TE/sub 021/ and TE/sub 012/ modes, is proposed to measure the surface impedance Z/sub s/=R/sub s/+jX/sub s/, where R/sub s/ is the surface resistance and X/sub s/ is the surface reactance of high-T/sub c/ superconductors at microwave frequency. The temperature dependence of Z/sub s/ can be obtained from only one time measurement as a function of temperature, although the conventional two-resonator method needs to repeat the measurement for temperature twice. The high precision in the R/sub s/ measurement is comparable to the conventional two-resonator method using two ceramic rod resonators, The excellent repeatability in the X/sub s/ measurement is superior to that of the two-resonator method.

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