Abstracts

Voltage Induction Method for Microwave Susceptibility Measurements

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A voltage induction method of microwave susceptibility measurement has been proposed. A signal from a one-turn coil wrapped directly on a magnetic sample is phase sensitively detected, and the real and imaginary parts of susceptibility as a function of magnetic field are directly indicated on an oscilloscope. Analysis shows this method to have a much higher sensitivity for small samples than the conventional cavity perturbation method. Also, this method is characterized by a higher stability, since the measurement is not for the perturbation of the resonant curve of high Q cavity, but for RF magnetic flux in a sample which is relatively stable for a frequency fluctuation of the signal source, independent of the sample volume. This method has been checked with good agreement against a perturbation method for a sample where both methods could be used. A YIG film, which is too small (4 mm by 4 mm by 0.3μ) to obtain any detectable perturbation of cavity parameters, was successfully measured by this method. The new method allows very rapid measurement combined with a very simple procedure for the relative measurement of susceptibility.

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