Abstracts

Design of Ferrite-Impregnated Plastics (PVC) as Microwave Absorbers

V.K. Varadan, V.V. Varadan, Y. Ma and W.F. Hall. "Design of Ferrite-Impregnated Plastics (PVC) as Microwave Absorbers." 1986 Transactions on Microwave Theory and Techniques 34.2 (Feb. 1986 [T-MTT]): 251-258.

This paper is concerned with the modeling of absorption of microwaves in a composite containing a random distribution of Fe/sub 3/O/sub 4/ particles embedded in PVC. The theoretical model based on a self-consistent multiple scattering formalism, including the effect of statistical correlations in the positions of the particles. A T-matrix is used to characterize the response of individual ferrite particles to any incident excitation. An analytical expression is obtained for the complex propagation constant in the composite in the long wavelength limit. In addition to presenting results for a variety of materials including Ni ferrite compounds, it is shown that a particular set of assumed values of the complex magnetic permeabllity and dielectric function leads to very good agreement with the experimental data of Ueno et al.

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