

An optimisation approach to determine the electromagnetic properties of lanthanum iron garnet filled PVDF-polymer composite at microwave frequencies

ABSTRACT

In this study, an optimization approach is shown to improve the accuracy of the Nicholson and Ross Weir (NRW) method to determine both the complex permittivity and permeability of the lanthanum iron garnet-filled PVDF-polymer nanocomposite loaded in a rectangular waveguide. The complex permittivity and permeability values were in turn used in Finite Element Method to calculate the S-parameter and were found to be in good agreement with the measured values.

Keyword: FEM; LIG; Microwave measurements; NRW; Optimization technique; PVDF; RW-90 waveguide