New developed formula to calculate the permittivity of ferrite-polymer composite

ABSTRACT

A new developed formula named the Habashi-Zul formula, based on the Maxwell-Garnett (MG) formula was fabricated and used to calculate the complex permittivity of the Sm-YIG in PVDF composite samples in the frequency range of 10 MHz to 1 GHz. The calculated permittivities results were compared with the measured values of each sample of Sm-YIG in PVDF composite samples and, with calculated results from various theoretical models including the MG, Looyenga, Bruggeman and, Sen Scala and Cohen. The Habashi-Zule formula presented higher accuracy as compared to other models.

Keyword: Ferrite-polymer composite; Maxwell Garnett; Permittivity; Sm-YIG-PVDF