

Study on Effect of Barium Titanate Concentration in Epoxy Based Composite Towards Dielectric Material

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Abstract

The properties of dielectric material can be controlled by introducing new composite material from filler (barium titanate) and matrix (epoxy resin). This paper focuses on the development of epoxy–barium titanate composites at different filler concentrations. To develop new composite material, mixing, degassing, and curing are common procedures to be implemented. However, the preparation of composite materials is difficult when the filler concentration is higher than 20% due to the viscosity of the composite mixture. In this work, the complex permittivity of composite materials of epoxy resin and filler barium titanate is measured between 4 and 6 GHz using the waveguide technique. As a results, the permittivity of epoxy–barium titanate grows continuously as the filler volume increases.

Keywords: Barium titanate; Epoxy resin; Composite material; Filler concentration; Complex permittivity.