

Electrical properties of Ferroelectric/Ferromagnetic ceramics for microwave applications

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Abstract

There has been a growing interest in the tunable devices applications such as phase shifters, filters, and resonators. Paraelectric and magnetic materials have strong advantages in low loss and high quality factor. Therefore, many reports have been published by using ferrite materials and paraelectric materials for high frequency applications, separately. To obtain tunable properties, the characteristic impedance changes due to variable dielectric permittivity. Therefore waves can be reflected by different phase velocity. To overcome this drawback of devices, ferroelectric/ferrite composite ceramics should be researched for high frequency devices applications. In this experiment composite ceramics were successfully fabricated without any cracking or shrinkage. Fabricated ferroelectric/ferrite composite ceramic showed ferroelectric properties of P - E hysteresis and magnetic properties of B - H hysteresis loops.

We confirmed that ferroelectric/ferrite composite ceramics can be employed for tunable devices applications.