Thermal Analysis of Metamaterial for High Energy Microwave (HEM) Devices

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Abstract

Metamaterial [1, 2] is an artificially structured material where it's electrical (ϵ), magnetic (μ) and its refraction properties (n) are simultaneously negative in narrow frequency band. Currently, metamaterials are being widely used in microwave and radio frequencies as devices [3, 4] like filter, coupler, antenna etc. However, the applicability of metamaterial as High Energy Microwave (HEM) [5, 6, 7] devices is still ambiguous and a research speculation. The objective of this paper is to give an overview of metamaterial as a HEM device as to check its material properties and to explore where it exhibits negative (ϵ, μ, n) properties. The work is carried out using COMSOL Multiphysics®.

Reference

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