

# Preface

Rapid growth in technology demands application-specific materials. Accurate EM characterization of a material is a requisite for the categorization of the materials. Material parameters such as permittivity, permeability, reflection coefficient, and transmission coefficient are the key features in typifying a material. Innovations are happening in the field of material science to be in par with the fast advancing technological developments. One of the noble progress in this field is evolution of metamaterial which is an artificially fabricated material. The unique attributes of metamaterial are its negative intrinsic properties (permittivity and permeability) which are obtained from the different orientation of the inclusions on the substrate. At higher frequencies, the incorporation of metamaterials helps in device size reduction with increased efficiency.

Metamaterials need to be characterized for deploying in various applications. The different characterization techniques for metamaterials are explained in this brief and are organized as follows: Section 1 deals with the introduction to material parameters as well as metamaterial and its importance. Section 2 explains the basics of material characterization and a brief explanation on resonant and non-resonant methods of material characterization. Section 3 details the various techniques of EM material characterization of metamaterials. Finally, Section 4 summarizes the entire brief.

Bengaluru, India

Raveendranath U. Nair  
Maumita Dutta  
Mohammed Yazeen P.S.  
K.S. Venu

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Nair, R.U.; Dutta, M.; P.S., M.Y.; Venu, K.S.

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