Abstract
In this paper, the determination of electric permittivity and magnetic permeability of a dielectric metamaterial composed of an infinite number of conductors (split ring resonators) using the quasi-static Lorentz theory is investigated. The induced currents on the conductors are calculated with the method of moments. Negative values of the real parts of the permittivity and permeability are obtained within a given frequency band. Various modifications to the original configuration are made and their effects on the behavior of both permittivity and permeability are discussed. The obtained results are in good satisfactory with the theory predicting the possibility to have negative values of the considered parameters as well as the numerous reported works