**Abstract**

 Interesting properties of perovskite materials such as very stable in structure, ferroelecticity and high dielectric constant have attracted to study for microwave antenna applications. In this work, we have synthesized Strontium Titanium Oxide (SrTiO3) and Neodymium Strontium Titanium oxide (Nd0.5 Sr0.5TiO3) perovskite materials to analyze their magnetic and dielectric properties for Micro Strip Patch Antenna Applications. In the present study, SriO3 and Nd0.5 Sr0.5TiO3 are synthesized through the different starting precursors of Sr(NO3)3, TiO2, Sr(NO3)2 , Nd2O3, HNO3, TiO2 and C6H8O7.H2O using facile combustion method. Then the homogeneity and phase purity of the synthesized compounds are confirmed through X-ray diffraction (XRD). From the XRD analysis, it is found that SrMnTiO3 and the Nd0.5 Sr0.5TiO3 have the Cubic Crystal Structure. In addition, we have calculated the crystallinity, crystallite size, lattice constants and cell volume to confirm the structural information of the as-prepared perovskites. Surface morphology of the sample clearly depicts the uniform formation of clusters of nano particles. FTIR analysis shows the presence of the various metal oxygen (M – O) bonds through the corresponding functional frequencies. The microwave measurements up to 10 GHz shows the variation in the dielectric properties for these compounds and it clearly explains the possibility of exploring these perovskites for micro-strip patch antenna applications.