

There has been renewed scientific and technological interest in the synthesis of nanoparticles. This is due to the potential use of these particles in a variety of applications ranging from magnetic to solar cell, photocatalyst, and soon [1-5]. Soft ferromagnetic materials, with high resistivity value, low eddy current loss, high Curie temperature, and chemistry stability [6-9], are one of the most versatile magnetic materials in high and low frequencies. Ferrites, i.e., ferrimagnetic cubic spinels possess the combined properties of magnetic materials and insulators. They have been extensively investigated and being the subject of great interest because of their importance of in many technological applications. The important structural, electrical and magnetic properties of these spinels, are responsible for their applications in various fields. The magnetic properties of ferrites such as the permeability, magnetization and coercive field are affected by the type of the substitution, microstructure [10]. It is known that the magnetic behavior of the ferrimagnetic oxides is largely governed by the Fe^{3+} - Fe^{3+} interaction (the spin coupling of the 3 d electrons). Spinel-type ferrites with the general formula MFe_2O_4 (M is a divalent metal cation) are very important materials because of their dielectric and magnetic properties [11, 12]. The electric and magnetic properties, such as resistivity, initial permeability, and saturation magnetization, can be controlled by substitution of trivalent ions (RE) in the host spinel lattice [13]. Some researchers have investigated that the addition of low-melting nonmagnetic oxides [14] reduces sintering temperature and improves microstructure. Other researchers have studied about doping La, Gd [15-17], Y, Eu [18, 19], and Ce [20] to analyze the effect of rare earth elements on the magnetic properties of ferrites. It is well known that rare-earth oxides are good electrical insulators and have high resistivity. Many scientific researchers have paid much attention on investigating the regularity about their influence on ferrite magnetic properties.