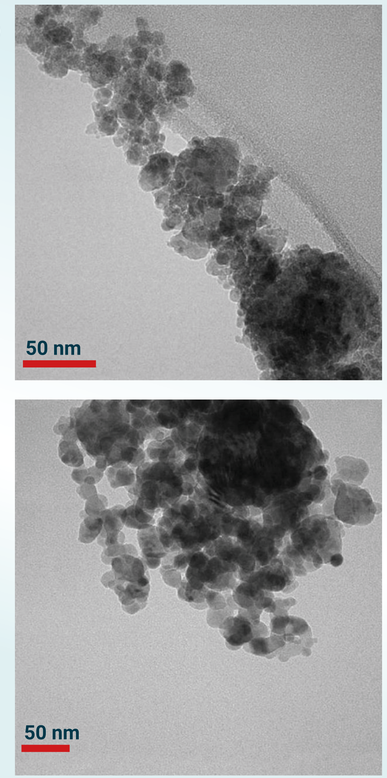
TEMPERATURE INDUCED EVOLUTION OF STRUCTURE/MICROSTRUCTURE PARAMETERS AND THEIR CORRELATIONS WITH ELECTRIC/MAGNETIC PROPERTIES OF NANOCRYSTALLINE NICKEL FERRITE

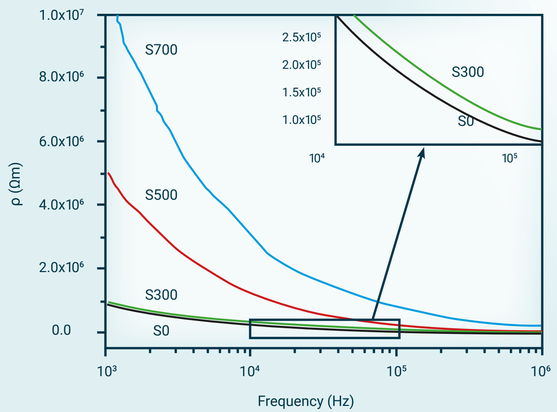
The objective of this work was to determine microstructure of nickel ferrite nanoparticles by combining X-ray diffraction line broadening analysis and transmission electron microscopy method, and afterwards to find relations between microstructure and, structural, electric and magnetic properties.

Transmission electron microscopy was used in order to determine particle size and their distribution and morphology. Two samples were selected for these examinations: as-prepared sample and the one annealed at 700 °C. Particles are spherical in shape and agglomerated due to magnetic interactions among them.

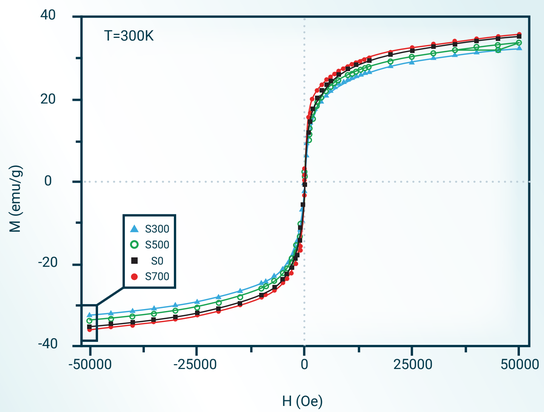
TEM images of (a) as-prepared and (b) annealed at 700 °C Nickel ferrite.



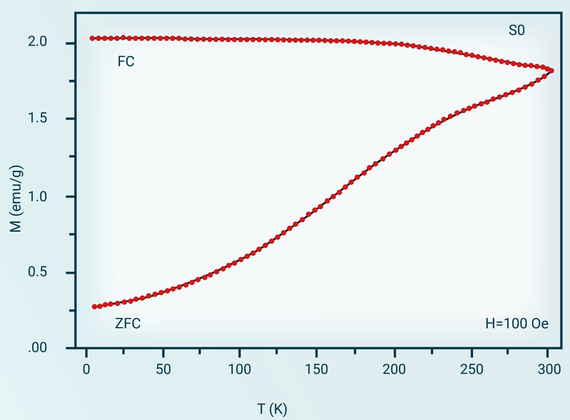
Frequency dependence of electrical resistivity for Nickel ferrite nanoparticles.



Hysteresis loops of the samples S0, S300, S500 and S700 at 300K.



ZFC–FC magnetization versus temperature for as-prepared Nickel ferrite (S0).



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