A series of polycrystalline spinel type ferrites with composition LixMg0.5Ni0.5−2xFe2+xO4, where x=0.00 to 0.25 in steps of 0.05, have been prepared by the conventional solid state reaction route. In this research, investigations have been carried out by the measurements of X-ray diffraction (XRD), Curie temperature, permeability, loss tangent, Q-factor, dielectric constant and ac electrical resistivity of the samples. Some measurements have been done at room temperature while other measurements have been done as a function of temperature and as a function of frequency in the range from 1 kHz to 500 kHz. Curie temperature, the real part of initial permeability (µi′), the loss tangent (tanδ), and the Q-factor have been found to be increase with the increase of Li-content of LixMg0.5Ni0.5−2xFe2+xO4 ferrites. The frequency characteristic of dielectric constant and AC resistivity decreases with the increase in frequency and Li-content.

**Keywords:** Ferrites, Magnetization, Dielectric Constant.