

A comparative study of nickel–zinc ferrites by sol–gel route and solid-state reaction

Abstract

The properties of ferrites are affected by the microstructural problems which have become the most serious obstacles in obtaining high quality reproducible ferrites. In this study, the nickel–zinc ferrites were prepared via two different methods: the conventional classical ceramic method known as the solid-state reaction, and the newer sol–gel method. The electromagnetic and microstructural properties of both different samples were also discussed. A higher electrical resistivity and controlled initial permeability with a smaller loss were found in the sol–gel samples. Consequently, the homogenous microstructure and the advantages in terms of powder and sample preparations have been discovered by means of sol–gel technique.

Keyword: Sol–gel growth; Magnetic materials; Sintering; Microstructure