A study on waste-derived NiZn soft ferrites As EMI suppressor.

Abstract

Nickel-zinc soft ferrites with spinel structure are important electronic components popularly used as EMI suppressor, electromagnet core and transformer core. It contains nickel, zinc or manganese, and the raw material is mainly hematite. The most commonly use soft ferrites are NiZn ferrites and MnZn ferrites. NiZn ferrites exhibit higher resistivity than MnZn ferrites and are therefore more suitable for frequencies above 1 MHz. In this work, iron oxide waste generated from a local cold-rolling steel mill was purified and converted into hematite. The waste-derived hematite was used as the raw material in the synthesis of NiZn ferrites. The magnetic properties such as permeability, saturation magnetization and coercivity of the waste-derived NiZn ferrites was analyzed and compared to the industrial grade NiZn ferrites. Our results show that the waste-derived ferrite possesses excellent magnetic properties. The microstructure of the waste-derived NiZn ferrite is also discussed.

Keyword: Soft ferrite; Hematite (Fe2O3); Cold-roll steel industry.