

Dependence of Magnetic Properties of Barium Ferrite on Additives and Microstructure

Amighian, J. and Mozaffari, M.

physics Department, Isfahan University.

Abstract: In this work the effect of nonmagnetic oxide additives on microstructure and magnetic properties of barium ferrite is studied. Two groups of samples were prepared, one with limonite and the other with hematite, both having similar barium carbonate. The conventional wet ceramic technique was used for the preparation of the samples and the percentage of different impurities in the raw materials was determined by XRF and atomic absorption techniques. The magnetic results obtained for the first group are superior and their grain sizes are smaller as compared to the second group. By adjusting only two of the additives (Al_2O_3 and SiO_2) in the second group the magnetic parameters were improved and the grain sizes were reduced. The inhibiting effect of SiO_2 on grain growth mechanism during sintering is also discussed.

Key Words: *Additives, Microstructure, Barium Ferrite, Sintering*