

ON THE MAGNETIC GLASS-CERAMIC CONTAINING Li AND Ba FERRITE CRYSTALS

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In this paper we present some results for the oxide composites containing Li or Ba-M ferrite fine particles randomly dispersed in a glassy matrix. The samples were obtained by glass crystallisation method which permits a gradual control of particle size. It was investigated the evolution of the microstructure and the magnetic properties in terms of heat treatment temperature of the glass ceramics containing LiFe_5O_8 and $\text{BaFe}_{12}\text{O}_{19}$ fine magnetic crystals. The average crystal block size, D_m , was determined by X-ray diffraction using Scherrer's formula. Crystals of ferrite with sizes ranging from 3.5 to 50 nm for Li ferrite and from 50 to 320 nm for Ba-M ferrite, depending on the annealing temperature, were observed. Correspondingly, it was obtained that the crystalline fraction in the glassy mass increases with increasing annealing temperature. The magnetic behaviour (specific magnetization σ and coercivity H_c) is discussed in terms of the evolution with thermal annealing of the size of LiFe_5O_8 and $\text{BaFe}_{12}\text{O}_{19}$ crystals, dispersed in the glassy matrix.

Section 3: Transition Metals, Alloys and Compounds

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