FINE HEXAFERRITE PARTICLE POWDERS AS MAGNETIC RECORDING MEDIA, PREPARED BY COPRECIPITATION-SELFCOMBUSTION

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In order to obtain Sr and Ba hexaferrite powders with submicron crystallites, we used a new method, self combustion, and heat treatments. By combustion it was obtained magnetic powders having a nanometer granular structure and characterized by the followings: M = 44.7 emu/g and H_c= 520 Oe for $SrFe_{12}O_{19}$ and M = 31 emu/g and H_c= 350 Oe for $BaFe_{12}O_{19}$ and nanosized crystallites (about 50 nm). It was investigated the effect of the annealing time on the grain size and several magnetic properties (magnetization and coercivity). After a short annealing time (5 – 10 minutes) at 1000^0C the coercivity achieved an important increase, to about 5000 Oe for Ba hexaferrite and to about 3400 Oe for Sr hexaferrite, whereas the grain size does not exceed 300 nm. By doping with 1 mol CaO, it was obtained a spectacular increase of coercivity of $SrFe_{12}O_{19}$, to about 6000 Oe by annealing at 800^0C for 5 – 10 minutes. Smaller magnetization for Ca-doped samples than that of the undoped samples can be explained by rearranging Fe ions in the distorsioned structure.

Section 3: Transition Metals, Alloys and Compounds
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