

LETTERS TO THE EDITOR

ON THE TEMPERATURE DEPENDENCE OF THE SATURATION
MAGNETIZATION OF HARDENED LITHIUM FERRITES-CHROMITES

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The paper presents results of a research on the effect of hardening on the temperature dependence of the saturation magnetization of lithium ferrites-chromites of the general chemical formula $\text{Li}_2\text{O}(5-2a)\text{Fe}_2\text{O}_3 \cdot 2a\text{Cr}_2\text{O}_3$ for $a = 0.95, 1.00, 1.15, 1.25, 1.35, 1.55, 1.60, 1.70$ and 1.75 . In the initial state this dependence is characterized by the existence of a compensation point which vanishes after hardening in water. The Curie point shifts towards lower temperatures, whereas the saturation magnetization, measured at the temperature of liquid nitrogen, rises relative to the value of the size of sample in the initial state.

Ferrites with a compensation point are very interesting because of the anomalous character of their temperature dependence of the magnetization.

In the previous paper [1], the autor obtained results different from those of Belov *et al.* [2], investigating a narrower range of compositions, only with $a = 1.15, 1.25, 1.35, 1.50, 1.60$. The authors of the present paper have enlarged the range of the studied compositions as compared with previous papers [1, 2] in order to determine for what values of the parameter a the compensation point begins to appear and for what a it vanishes. It is also interesting to study the character of the temperature dependence of magnetization and the influence of hardening for these new compositions.

In the announcement these dependences for $\text{Li}_2\text{O}(5-2a)\text{Fe}_2\text{O}_3 \cdot 2a\text{Cr}_2\text{O}_3$ for $a = 0.95, 1.00, 1.15, 1.25, 1.35, 1.55, 1.60, 1.70$ and 1.75 are presented in the range from the temperature of liquid nitrogen to the Curie point for respective samples both in the initial states (Fig. 1) and after hardening (Fig. 2). The samples were heated for more than one hour at 1000°C and then thrown into water. The measurements were carried out by means of a magnetic

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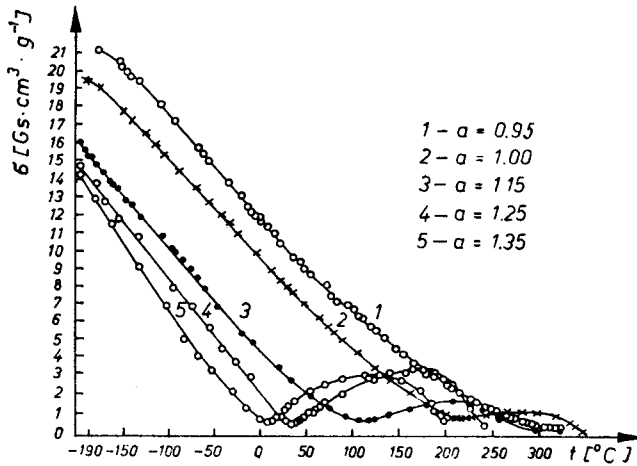


Fig. 1. The curves of the temperature dependence of the saturation magnetization for samples in their initial states

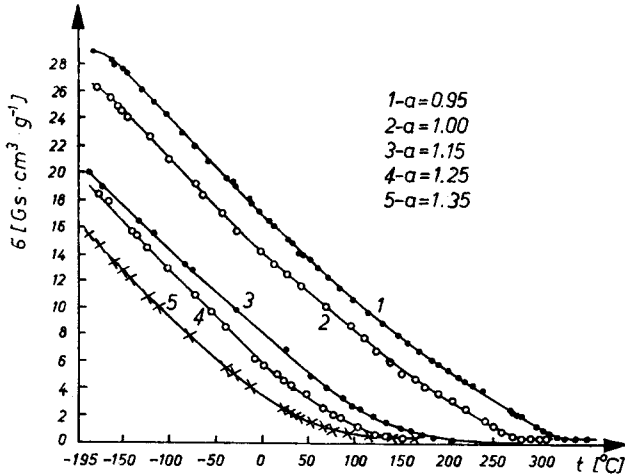


Fig. 2. The curves of the temperature dependence of the saturation magnetization for samples after hardening

balance [3], for the samples had a spherical shape with diameters about 2 mm, in a magnetic field of 17800 Oe.

Details of the influence of heat treatment on some magnetic and electric properties of these ferrites will be further published.

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