

P. Żukowski, T. Koltunowicz, J. Partyka, Yu.A. Fedotova, A.Fedotov, A.V. Larkin. Hopping conductivity of metal-dielectric nanocomposites produced by means of magnetron sputtering with the application of oxygen and argon ions // Vacuum.- 2009 (принята в печать).

Testing of electrical properties of nanocomposites  $(\text{Co}_{0.45}\text{Fe}_{0.45}\text{Zr}_{0.1})_x+(\text{Al}_2\text{O}_3)_{1+x}$  within the concentration range of  $0.30 < x < 0.65$ , produced by means of magnetron sputtering of a target composed of stripes of metallic alloy and dielectric, has been carried out. It has been found that the studied materials contain metallic nanoparticles of a diameter ranging from 6 to 10 nm. Alternating current conduction at  $x < 0.50$  is realized by hopping mechanism while at  $x > 0.50$  metallic conductivity is observed. The obtained results have been analyzed using a model of hopping conductivity in the regime developed earlier. This analysis allowed to extract dependences of activation energy  $\Delta E\tau$ , and times  $\tau$  in a hopping regime after isochronous (15 min) thermal annealings within the range from 293 K to 673 K.

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