

Study of biphase microwires magnetic properties in temperature range from 295 to 1200 K

I. Iglesias,¹ R. El Kammouni,² K. Chichay,¹ N. Perov,³ V. Rodionova,¹ and M. Vazquez²

¹*Immanuel Kant Baltic Federal University, 236041 Kaliningrad, Russia*

²*Materials Science Institute of Madrid, CSIC, 28049 Madrid, Spain*

³*Faculty of Physics, Lomonosov Moscow State University, 119991 Moscow, Russia*

To operate with objects of micro and nanosizes it is necessary to have small “instruments”. For this purpose we can use a microactuator, made of a partially covered magnetically biphase microwire, which can be controlled by means of a magnetic field. In this work we have studied, analyzed and compared the magnetic properties of two series of fully covered magnetically biphase microwires with different thickness of the hard or soft shell, in order to understand the magnetostatic interaction between the shell (*CoNi*- or *FeNi*- based) and the core (*Fe*- or *FeCo*-based glass-coated microwires). The magnetic properties were analyzed as a function of temperature in the range from 295 K to 1200 K using a Vibrating Sample Magnetometer (Lake Shore). The magnetic properties of samples varied with the thickness of the shell. Analysis of the magnetization process of each phases with measuring temperature has been performed.