**PS12**

# USING OF THE MEAM MODEL FOR ADJUSTING THE TECHNOLOGICAL PARAMETERS OF MAGNETRON DEPOSITION OF NB/CO NANOLAYERS

Vladimir Boian, Eugen Boian
Technical University of Moldova, Institute of Electronic Engineering and Nanotechnologies, Academiei str., 3/3, Chisinau, Moldova

Superconductivity and ferromagnetism being two antagonistic orders, we can meet them only in artificial formations, usually in the form of nanolayers deposited by certain technological methods. A common and highly effective method is the deposition of nanolayers by the magnetron method. Deposition by the magnetron sputtering method proposes nanofilms of well- controlled thicknesses, deposition in a single vacuum cycle and reproduction of layered structures with high precision. All these possibilities strongly highlight the deposition of nanofilms by the magnetron sputtering method.

In this way, a problem that appears at the interface between two adjacent layers is the appearance of a metamort layer that prevents the expressiveness of the quantum phenomena that occur at the contact between two nanometric layers, that is, the interface becomes diffuse. In this sense, in order to create nanoscale structures with atomically smooth interfaces, a series of physically performed experiments is needed in order to adjust the technological parameters of coating by the magnetron method! This parameter adjustment requires a lot of time and human resources, but we propose mathematical modeling in order to adjust these technological parameters through the computer. Molecular dynamics modeling is a very efficient and feasible alternative. For this purpose we used the model – MEAM (Modified Embedded Atom Method) of the immersed atom, which allows once the modeling is completed the values of the technological parameters of magnetron deposition. A verification of the technological parameters was the realization of an XRD experiment which in the experimental field shows that computer modeling is an effective and beneficial alternative to use.

Acknowledgments. This work was supported financially by the MEC, subprogram title: Nanostructures and advanced materials for applications in spintronics, thermoelectricity and optoelectronics, code 020201.

**Corresponding author:** PhD student Boian VLADIMIR.
UTM, Institute of Electronic Engineering and Nanotechnologies " D. GHITU ".
Academiei 3/3, Chisinau MD – 2028 Moldova
e-mail: boianvladimir@gmail.com , eugen303pm@gmail.com
**ORCID: 0000-0002-8326-8912**