

CPPP 24 P VISUALIZATION OF THE SURFACE TOPOGRAPHY OF Nb, CuNi ALLOY AND CoO FILMS BY THE ATOMIC FORCE MICROSCOPE

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The Atomic Force Microscope allows to obtain images of the surface topography of samples in nanometer range without preliminary treatments [1]. Today it is the easiest and cheapest way to visualize the surface practically every solid or amorphous specimen; and it does not depend of its composition, homogeneity, conductivity, elasticity, viscosity and the environment scanned area [2]. Due to all these opportunities, the AFM is a convenient tool for analyzing the surfaces of thin films for its roughness.

The one of main objectives of our work was the necessity for elaboration the magnetron deposition process of ultra-thin films of Nb, CuNi alloy and CoO with surface roughness 1-3 nm [3]; for it there were the need for continuous quality-control of samples, i. e. here the AFM was as a feedback for the deposition process [4].

AFM was used of Park Scientific Instruments Company, model SFM-BD2, it refers to the microscopes of Scanned-Sample type. This type of microscope has a higher accuracy in all three coordinates (absolute error of the order of pikometers in Z-direction) [2]

In this work describes the process of scanning surface of Nb, CuNi alloy and CoO films using AFM, the main regimes of operation are presented and the three-dimensional topography of scanned surfaces are discussed.

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[3] Zdravkov V., Morari R. and Sidorenko A., In book: Smart Materials for Energy, Communications and Security. "Springer" © 2008, Springer Science + Business Media, Dordrecht, The Netherlands. p.13-20;

[4] Morari R. Awawdeh A. AFM as a means of controlling the deposition process of F/S/F heterostructures based on ultrathin film of superconducting niobium and ferromagnetic alloy Copper-Nickel. NANO-2011, Kisinev, Moldova, 6-9 July 2011, p. 25