

# THE INFLUENCE OF STRUCTURE INTERFACES ON MAGNETIC AND MAGNETODYNAMICAL PROPERTIES

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The development of modern technologies results in the extensive investigation of magnetic and magnetodynamical properties of materials of submicron or nanometer size. Catalysis and sorption, data processing and storage, ultra high frequency generators and filters, permanent magnets production, biotechnologies and medicine are the areas where magnetic nano and heterogeneous materials are widely used. Confinement effects and high surface/volume relation result in dramatic changes of the magnetic parameters of such systems.

This presentation is an attempt to show some aspects of the influence of interfaces (surfaces, phase boundaries, etc.) on magnetic and magnetodynamical properties of nanoelements and their ensembles, thin films and multilayers, nanocomposite materials, which is based on the author investigations during the last 15 years.

The influence of the surface effect on magnetic ordering and anisotropy will be shown for metal oxide and ferromagnetic metal of nanoparticles. The methods of magnetic phase control for composite nanoparticles will be discussed.

A modification of magnetic parameters in exchange coupled nanocomposite materials will be demonstrated for magnetic multilayers and nanotwined materials. An unusual example of the possibility to magnetic field control of chirality in magnetic multilayers will be presented.

The presentation will be also focused on the resonance properties modification of confined systems. The appearance of so called "drum" spin wave modes due to the spin pinning on the elements boundaries, spin wave localization and configuration magnetic anisotropy formation due to magnetostatic and exchange interaction will be discussed.