Institute of Electronic Engineering and Nanotechnologies "D.GHITU" ASM
Moldavian Physical Society
University of Moldavian Academy of Sciences
University of European Political and Economic Studies "Constantin Stere"
Humboldt Club Moldova

Unterstützt von / Supported by
Alexander von Humboldt Stiftung/Foundation

Humboldt Kolleg
&
Symposium "NANO-2016"

Devoted to the 55th anniversary of Moldavian Academy of Sciences and 70th anniversary of the first research institutes in Moldova

NANO-2016
Ethical, Ecological and Social Problems of Nanoscience and Nanotechnologies

11-14 Mai 2016, Chişinău, Moldova

Program

&

abstracts

Kishinev, 2016

Proximity Effect in Multilayer Structures with Alternating Ferromagnetic and Normal Layers

Bakurskiy S. V.[1,2,3], Kupriyanov M. Yu.[1,2,3], Baranov A. A.[3], Golubov A. A.[3,4], Klenov N.V.[1,2,3] and Soloviev I. I.[1,3]

[1]*Skobeltsyn Research Institute of Nuclear Physics, Moscow State University, Moscow, 119991 Russia*
[2]*Faculty of Physics, Moscow State University, Moscow, 119991 Russia*
[3]*Moscow Institute of Physics and Technology (State University), Dolgoprudnyi, Moscow region, 141700 Russia*
[4]*Faculty of Science and Technology and MESA+ Institute of Nanotechnology, University of Twente, 7500 AE Enschede, Netherlands*
[5]*Kazan Federal University, ul. Kremlevskaya 18, Kazan, 420008 Russia*

The character of the penetration of superconducting correlations into multilayer FF…F, FNFN…FN, and NFNF…NF structures being in contact with a superconductor with the singlet pairing potential has been studied theoretically. Analytical expressions for the effective superconductivity penetration depth in such structures have been obtained in the limit of small layer thicknesses. Numerical calculations taking into account self-consistently the suppression of the superconductivity in the superconductor owing to the proximity effect have been performed at arbitrary thicknesses. A simple analytical dependence approximating the spatial variation of the Green's function in a multilayer has been proposed. It has been shown that superconductivity is induced by the generation of two channels existing in parallel, one of which is characterized by the smooth (as in SN sandwiches) decay of the superconductivity, while damped oscillations (as in SF structures) take place in the second one.

Modification of the biomass content and biosynthetic capacity of Saccharomyces cerevisiae CNMN-Y-18 yeast strain under the action of ZnO/MgO and TiO_2 nanoparticles

Bejenaru L., Tofan E.

Institute of Microbiology and Biotechnology, Academy of Sciences of Moldova

The use of microorganisms as producers of nanoparticles involves safe processes from the environmental the point of view and is becoming more and more important in microbial biotechnology. For this purpose, more frequently bacteria, yeasts, fungi, actinomycetes, etc. are used. Therefore, the biologically-made nanostructures offer substantially different properties, such as good adhesion, low toxicity, biocompatibility, making them more valuable for biological applications.

The aim of the work was to assess the action of inorganic nanoparticles on the accumulation of biomass and biosynthetic capacity of the Saccharomyces cerevisiae CNMN-Y-18 yeast strain. For the evaluation of the TiO_2 and ZnO/MgO nanoparticles action, the given compounds were added to the culture medium of YPD, in a concentration of 0.5...15 mg/L.

The experiments have shown that the ZnO/MgO nanoparticles, in a concentration of 10...15 mg/L increases the production of biomass with 20-25% (Fig. 1, a).

The analysis of the results of mannoprotein content in Saccharomyces cerevisiae CNMN-Y-18 biomass culture, at the cultivation of YPD medium supplemented with