**OR-1**

# APPLICATION OF NANOPARTICLES WITH THE STRUCTURE OF THE METAL NUCLEUS - CARBON ENCLOSURE IN BIOLOGY AND MEDICINE

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**Abstract.** Metal-carbon (Me @ C) nanoparticles with a metal core-carbon shell structure are synthesized by gas-phase synthesis from a metal melted by a high-frequency magnetic field and blown with an inert carrier gas with hydrocarbon admixture, as described in.[1]

If iron and other ferromagnetic metals are taken as the metal precursor, the resulting nanoparticles have a high saturation magnetization (of the order of 100 emu / g or more), they are chemically stable, the carbon shell is relatively easily modified.

Using an H1 NMR relaxometry-devices developed in the laboratory of applied magnetism and a biological detection system we developed solid-phase immunological diagnosis methods for detection of various substances, such as antibodies or proteins.[2]

The high saturation magnetization, together with the ease of surface modification, made it possible to create biocompatible membranes based on metal-carbon nanoparticles (Figure 1) that allow magnetically controlled cultivation of living cells, which is important in the field of biology and drug testing.

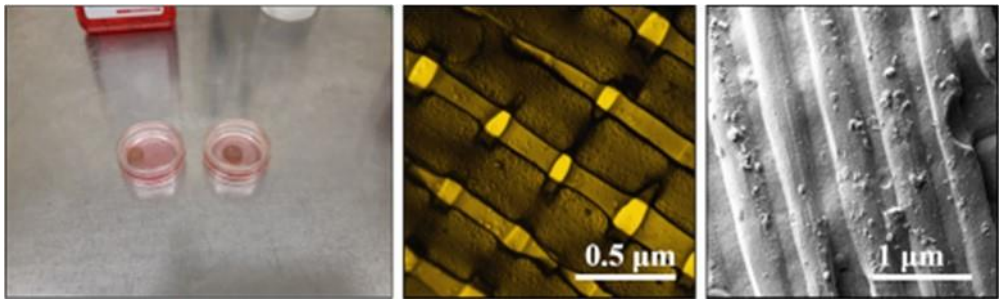


**Figure. 1**. On the left is an image of the magnetically controlled membranes in cultural medium, in the center is optical microscopy of the membrane with HeLa cells on it, and on the right is a SEM image of the membrane surface.

**References**

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