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The International Symposium and International School for Young Scientists on «Physics, Engineering and Technologies for BioMedicine» is held annuallyby the Institute PhysBio at MEPhI in Moscow (Russia). The Symposium and School aims at bringing together leading scientists, experts, young scientists and students to present their achievements in the format of the invited lectures and poster reports in nuclear medicine, biophysics, bio-photonics, and etc.

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4th International Symposium and International School for Young Scientists on "Physics, Engineering and Technologies for Biomedicine"

The 4th International Symposium and International School for Young Scientists on «Physics, Engineering and Technologies for Bio-Medicine» will be held in Moscow, Russia, October 26-30, 2019 under the auspices of the Russian Ministry of Science and Higher Education, the Russian Ministry of Health and the State Atomic Energy Corporation ROSATOM. The Symposium is organized by the Institute of Engineering Physics for Biomedicine (PhysBio) of the National Research Nuclear University MEPhI (Moscow Engineering Physics Institute) in close collaboration with National Medical Research Radiological Center of the Ministry of Health of the Russian Federation and non-profit partnership «Kaluga pharmaceutical cluster».
The 4th International School is supported by the Russian Science Foundation (Grant # 19-72-30012).

Conference topics

The Symposium aims at bringing together leading scientists and experts in nuclear medicine, biophysics, bio-photonics, and emerging fields to present their achievements in the format of the invited lectures on the following topics:

- Advanced materials and methods for MRI and PET
- Bioimaging technologies and materials
- Bio-photonics for diagnosis and therapy
- Bioprinting
- Brachy-, Proton and Ion therapy methods
- Diagnosis methods, today and in the future
- Immuno-therapy
- Isotopes for medical applications
- Medical-biological aspects of radiation effects
- Nanomaterials for biomedical applications
- Plasma and laser technologies for biomedicine
- Translational medicine

The Symposium provides a unique opportunity for fruitful scientific discussions and for establishing contacts with scientists all over the world.

Official Language

The official language of the conference is English.

The format of the Symposium – invited lectures and poster sessions.

ANALYSIS OF NANOPARTICLE UPTAKE IN LIVER BY MAGNETIC METHODS

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Targeted drug delivery by nanoparticles is the development of a theranostic paradigm in modern nanomedicine [1] and a step to high-tech and safe medicine of the future [2]. Understanding the pharmacokinetic of nanoparticles is a milestone in these studies, as it determines not only the effectiveness, but also the safety of such therapy. The liver is known to be the main organ eliminating the nanoparticles bigger than 5 nm diameter from the blood stream. However, due to the complex organization of a living organism and many mutually affecting factors, it is impossible to study only interaction of particles with liver *in vivo*.

Here we offer a simple and convenient method based on perfusion model for studying pharmacokinetic of magnetic nanoparticles in the liver of laboratory animals (Fig.1). To detect magnetic particle concentration in the perfusate we used previously invented Magnetic Particle Quantification technique (MPQ) [3], which can measure nanoparticles concentration in wide range, non-invasively and in real-time [4,5].

We show that this model correctly describes the qualitative behavior of commercial and synthesized nanoparticles with various colloidal-chemical properties in the mice liver and can be used for further quantitative studies of pharmacokinetic nanoparticle properties.

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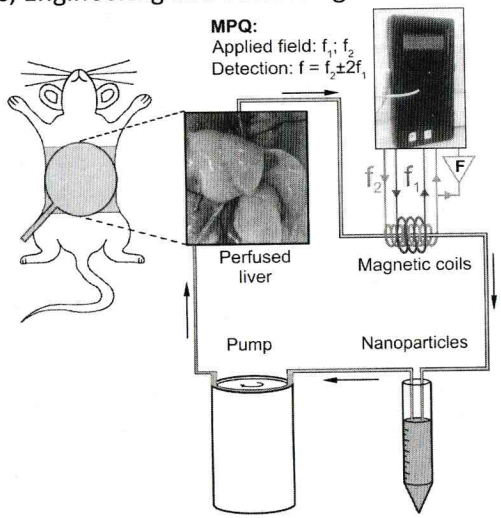

Fig.1. Experimental scheme of liver perfusion model for magnetic particle pharmacokinetics investigation (adapted from [4]).

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