

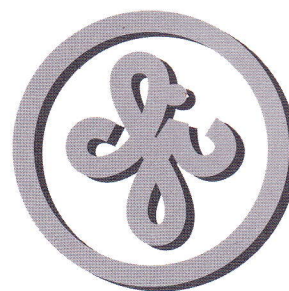
Conference program

Book of abstracts

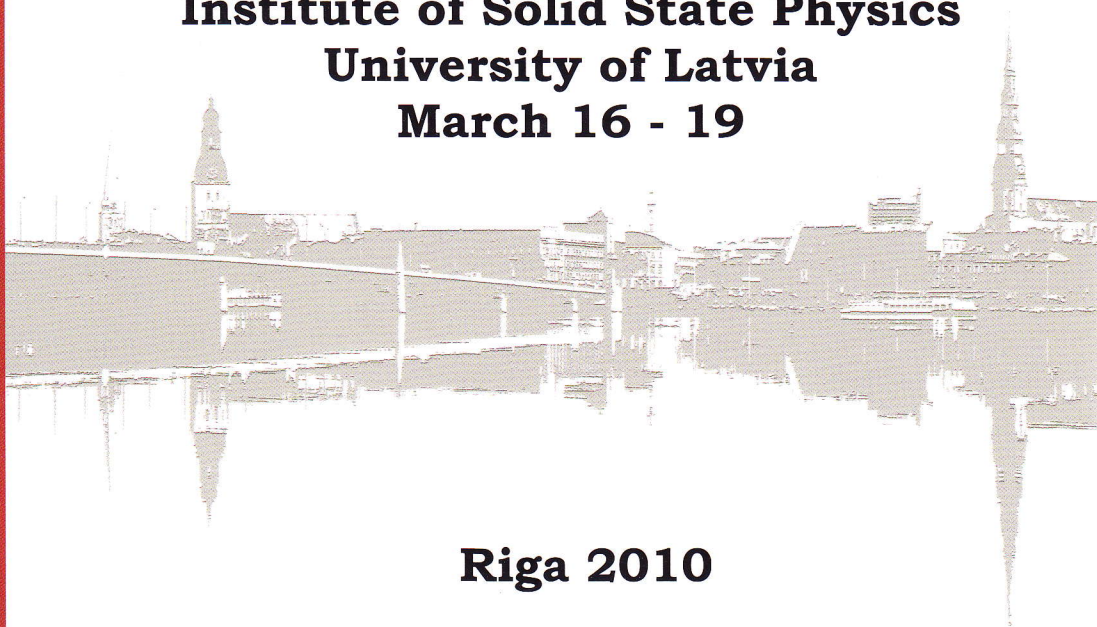
International conference



**Functional
materials and
nanotechnologies
2010**



**Institute of Solid State Physics
University of Latvia
March 16 - 19**



Riga 2010

WELCOME

The Organizing Committee kindly welcomes you to the International Baltic Sea Region conference "Functional materials and nanotechnologies" **FM&NT-2010**. The conference is organized in co-operation with projects **ERANET "MATERA"** and **National Research programme in Materials Science of Latvia**.

The purpose of the conference is to bring together scientists, research staff, engineers, and students from universities, research institutes and related industrial companies aware in the field of advanced material science and materials technologies trends and future activities.

Scientific Themes are following:

- **Advanced inorganic materials for photonics, energetics and microelectronics**
- **Organic materials for photonics and nanoelectronics**
- **Advanced methods for investigation of nanostructures**
- **Perspective biomaterials and medicine technologies**
- **Development of technologies for design of nanostructured materials, nanoparticles, and thin films**
- **Design of functional materials and nanocomposites and development of their technologies**

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The Organizing Committee sincerely hopes that the Conference will give all the participants new insights into the wide spread development of functional materials and nanotechnologies and will enhance the circulation of information released at the meeting.

On behalf of FM&NT-2010 organizers thank you all for coming and we wish you most successful and enjoyable Conference.

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SILICON BASED NANOPARTICLES USAGE AS ADJUVANTS FOR TREATMENT OF VIRAL INFECTIONS

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Immunomodulation is a new kind of viral infection treatment where molecular agents that are injected inside patient organism stimulate immune system to respond effectively to a viral infection. It is important to deliver immune response-modulating (IM) agents exactly to target cells thus reducing their overall concentration in organism of the patient, which could otherwise lead to side effects. It is possible to use nanocarriers (adjuvants) that are able to pack many IM agents for this purpose. Possible use of Si-n, Si-p and SiO₂ nanoparticles as adjuvants was studied in this work. Four different types of virus-like particles (VLP) were used as IM agents. The systems Si based nanoparticle – VLP were created. The systems were studied by means of spectrophotometry as well as by electron and fluorescent microscopy. The study showed that Si-n, Si-p and SiO₂ nanoparticles can be used as nanocarriers for corresponding VLP. VLP packing properties depend on the surface charge of both VLP and nanoparticle. Vaccination of animals with the SiO₂ nanoparticle – Hepatitis B virus VLP system resulted in twelve-time increase in antibody synthesis.

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