SEMINARIUM Z MAGNETYZMU I NADPRZEWODNICTWA

Uprzejmie zawiadamiamy, że w **ŚRODĘ**

28 maja 2014 r., o godz. 10:00

w sali 203 (bud. 1) odbędzie się seminarium, na którym

Mgr Pavlo Demchenko

Instytut Fizyki PAN, Warszawa

wygłosi referat na temat:

Magnetic properties of biocompatible iron oxide nanoparticle systems

Magnetic nanoparticles represent a particularly interesting class of materials from scientific, technological and biological point of view. Due to their unique properties such systems are considered as very promising materials for biotechnology and medical applications such as: magnetic separation, enzyme immobilization, biosensors, drug and gene delivery, hyperthermia and contrast enhancement in magnetic resonance imaging (MRI).

In this talk I will present the results of structural and magnetic investigations of two different series of magnetic nanoparticle systems:

1. Nanoparticles composed of magnetic γ-Fe_2O_3 core and a functional organic shell synthesized using surface active oligoperoxides and further surface initiated grafting by functional polymers, forming shell suitable for biomedical applications. Three samples with the same core sizes (~10 nm) and different shell thicknesses have been studied. It will be shown that the magnetic behavior of the particles is mostly affected by dipole-dipole interactions which strength decreases with increasing shell thickness.
2. Core/shell two-phase γ-Fe_2O_3/$CoFe_2O_4$ nanoparticles covered by an oleic acid synthesized by precipitation from non-aqueous solutions in an argon atmosphere. As a reference samples single phase γ-Fe_2O_3 and $CoFe_2O_4$ nanoparticles and their mixture have also been studied. The magnetic behavior of these materials will be explained in terms of inter- and intraparticle interactions and different anisotropy of the constituent magnetic phases. The magnetic results will be related to the heating efficiency of nanoparticle systems studied, associated with their possible hyperthermia applications in anticancer treatment.

Serdecznie zapraszamy

Roman Puźniak
Henryk Szymczak
Andrzej Wiśniewski