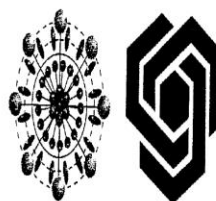


# 15<sup>th</sup> INTERNATIONAL WORKSHOP ON NANOSCIENCE & NANOTECHNOLOGY

## ORGANIZERS:

The National Coordination Council on Nanotechnology  
Bulgarian Academy of Sciences

Technical University – Sofia  
Sofia Tech Park  
Bruker  
AQUACHIM JSCo



November 21-23, 2013  
BAS & Technical University-Sofia

Sofia, Bulgaria

Topic	B – Clusters, nanoparticles, composites. B1 – B27
B1	Maya Shopka, Daniela Paneva, Zara Cherkezova-Zheleva, Georgi Kadinov, Ivan Mitov, Veneta Groudeva BIOGENIC IRON COMPOUNDS OBTAINED IN LIESKE MEDIUM FOR CULTIVATION OF LABORATORY ISOLATED BACTERIA FROM THE GENUS LEPTOTHRIX shopska@ic.bas.bg
B2	Katerina Zaharieva, Zara Cherkezova-Zheleva, Boris Kunev, Maya Shopka, Vilma Petkova, Jugoslav Krstić, Ivan Mitov PREPARATION AND PROPERTIES OF NANOSIZED $Zn_{x}Fe_{3-x}O_4$ SPINEL MATERIALS shopska@ic.bas.bg
B3	I. Genova, Radostina Ivanova, D. Paneva, B. Tsintsarski, M. Dimitrov, T. Budinova, Z. Cherkezova-Zheleva, N. Petrov, T. Tsoncheva, I. Mitov Cobalt and iron modified activated carbon from peach shells: Preparation, characterization and application as catalysts in methanol decomposition radostinaiv@abv.bg
B4	Gloria Issa, Radostina Ivanova, Momtchil Dimitrov, Tanya Tsoncheva Preparation of nanosized ceria and application as catalyst in ethylacetate combustion Issa@abv.bg
B5	Valentina Milanova, Ivania Markova SYNTHESIS AND STUDY OF Ni-Sn NANOPARTICLES AND THEIR CARBON-BASED COMPOSITES vipetrova_mil@abv.bg
B6	Tihomir Petrov, Ivania Markova Nanocomposite materials based on intermetallic Cu-Sn nanoparticles and carbon matrix for Li-ion batteries tishenceto@yahoo.com
B7	Kremena Vassileva, Nikolay Velinov, T. Tsoncheva, Ivan Mitov Synthesis and catalytic properties of nanocrystalline $Cu_0.82Ni_{0.2}Fe_2O_4$ ferrite kremena_vassileva@abv.bg
B8	Mariana Konstantinova Carbon Particles Synthesized by Pyrolysis in a Sealed Container koprin@phys.bas.bg
B9	Dilyana Georgieva, Bistra Kostova, Sijka Ivanova, Konstantin Balashev, Dimitar Rachev, Darinka Christova PH-RESPONSIVE DRUG DELIVERY NANOSYSTEMS BASED ON STAR-SHAPED COPOLYELECTROLYTES dijana1977@abv.bg
B10	Antonia Stoyanova, E. Lefterova, H. Kolev, G. Tyuliev, D. Paneva, G. Borisov, I. Dragieva Physical and electrochemical properties of Fe- and Fe/Pt- nanoparticles synthesized by BH method with and without d.c. magnetic field antonia.stoyanova@gmail.com
B11	Silvia Dimova, Katerina Zaharieva COMPARATIVE STUDY OF NANODIMENSIONAL COBALT AND NICKEL FERRITE-TYPE CATALYSTS FOR PREPARATION OF SUBSTITUTED POLYACETYLENES VIA ALKYNE CARBONYL METATHESIS

	dimova@polymer.bas.bg
B12	Daniela Paneva, Hristo Kolev, Ivan Mitov, Georgi Tyuliev, Iovka Dragieva XRD, Moessbauer and XPS investigations of ferromagnetic nanoparticles produced by borohydride reduction hgkolev@ic.bas.bg
B13	Hristo Kolev, D. Paneva, E. Lefterova, G. Ivanova, Iovka Dragieva, A. Pramanik, A. Sinha XPS INVESTIGATION OF PRODUCED, INDUCED AND SELF-ORGANIZED FERROMAGNETIC NANOPARTICLES hgkolev@ic.bas.bg
B14	Elena Drakalska, Denitsa Momekova, Stanislav Rangelov, Nikolai Lambov DESIGN OF STERICALLY STABILIZED LIPOSOMES edrakalska@yahoo.com
B15	Kalina Georgieva, G. Visokov, V. Aleksiev, Tzv. Tzvetov, D. Garlanov, V. Aleksiev, D. Garlanov, Tzv. Tzvetov INVESTIGATION OF EVAPORIZATION AND CONDENSATION FOR SYNTHESIS OF NANO PARTICLES IN LOW TEMPERATURE PLASMA INSTALATIONS dimovabas@gmail.com
B16	Galia Ivanova, D. Kovacheva, S. Terzieva, A. Stoyanova-Ivanova Modification of nanocomposite zinc electrode mass for alkaline batteries galia_ivanova2000@yahoo.co.uk
B17	N. Stamenov, B. Cherkezov, P. Vasileva Silver-modified $ZnO$ nanocatalysts: synthesis, characterization and photocatalytic properties pvasileva@chem.uni-sofia.bg
B18	L. Djerahov, P. Vasileva, I. Karadjova Raffinose-stabilized silver nanoparticles for chromium speciation in surface waters pvasileva@chem.uni-sofia.bg
B19	Petar Angelov Application of ultrasound treatment and magnetic technologies as energy effective nanotechnology approach for synthesis, modification and activation of advanced nanomaterials for various applications magnetics.ultrasonics@gmail.com
B20	Iliyan Popov, Boris Velez, Simeon Stankov, Hristo Rusev, Toma Stankulov Improving Efficiency of Li-Air Battery Cells by using Various Nanoparticles as Catalysts ip1997alp@yahoo.com
B21	Svetlana Veleva, R. Angelova, L. Stoyanov, V. Grudeva, D. Kovacheva, M. Mladenov, R. Raicheff Biogenic iron oxide-based nanocomposite electrodes for hybrid battery-supercapacitor systems svetlana_veleva@abv.bg
B22	R. Angelova, L. Stoyanov, V. Grudeva, D. Kovacheva, M. Mladenov, R. Raicheff, Svetlana Veleva Biogenic iron oxide-based nanocomposite electrodes for hybrid battery-supercapacitor systems svetlana_veleva@abv.bg
B23	Lyubomira Mindzova, M. Popova, V. Mavrodinova, A. Ristić, N. Novak Tušar Total toluene oxidation on the novel cobalt functionalized KIL-2

## DESIGN OF STERICALLY STABILIZED LIPOSOMES

Elena Drakalska<sup>1</sup>, Denitsa Momekova<sup>1</sup>, Stanislav Rangelov<sup>2</sup>, Nikolai Lambov<sup>1</sup>

<sup>1</sup> Medical University of Sofia, Faculty of pharmacy

<sup>2</sup> Institut of Polymers – BAS

Liposomes have been considered as almost universal carriers for drugs and diagnostic agents, as they being biodegradable non toxic and are able to accommodate both hydrophilic and hydrophobic agents. A major hurdle towards in vivo utilization of liposomes is their prompt sequestration by the cells of the RES. Typically, prolonged circulation of the liposomes is achieved using poly(ethylene glycol) (PEG) covalently connected to a lipid residue which is incorporated into the liposome bilayer. The polymer chains create a repulsive barrier around liposomes, which reduces the interactions with blood components and consequently increases the blood circulation time. At a certain critical content, which depends on lipid composition and PEG-molecular weight, the PEG-lipids induce a transition from bilayers to a micellar phase. In this study we investigate the effects of the novel copolymers on the morphological properties and membrane integrity of lipid bilayers based on dipalmitoylphosphatidylcholine:cholesterol and pH-sensitive liposomes based on dioleoylphosphatidylethanol amine liposomes. The copolymers were selected to differ in the structure and number of a hydrophobic anchors and the type and length of the hydrophilic chains. The utilized block copolymers can be considered as promising sterically stabilizing agents for the development of long circulating liposomes. An important advantage of the copolymers is that incorporation in the DOPE:CHEMs membrane does not deteriorate the pH-sensitivity of the formulation and even more the acid-triggered calcein leakage was optimized. In addition, this polymer can induce pH-dependant release from non pH-sensitive DPPC liposomes which make this polymer a promising candidate for preparation of second generation pH-sensitive liposomes.