

**International Conference Functional Materials and Nanotechnologies
'FMNT – 2010'**

PROGRAM

Tuesday, March 16

16:00 – 17:00 **REGISTRATION**

17:00 – 19:00 **WELCOME PARTY**

Wednesday, March 17

08:00 – 09:00 **REGISTRATION**

HALL 1 **OPENING**

Chairman of the conference: A. Sternbergs

09:00 - 09:10	J. Ekmanis	The president of the Latvian Academy of Sciences	
09:10 - 09:20	M. Auzinsh	The rector of the University of Latvia	
09:20 - 10:00	M. Van de Voorde	Research, development and technology (R&D&T) roadmaps 2020 for nanomaterials	PL - 1
10:00 - 10:30	R. Tomellini	European research and development of novel materials for the knowledge society	INV - 1
10:30 - 10:50	M. Bundule	European research area initiatives – support instruments for material sciences	INV - 2

10:50 – 11:00 **Technical Information**

11:00 – 11:20 **Coffee**

11:20 - 11:50	R. Evarestov	Symmetry and models of BN and TiO ₂ nanotubes	INV - 3
11:50 - 12:20	E. Kotomin	Oxygen incorporation reaction into mixed conducting ABO ₃ - type perovskites for fuel cell applications	INV - 4
12:20 - 12:50	V. Trepakov	Amazing dielectric properties and structure of manganese-doped SrTiO ₃ crystals	INV - 5

12:50 – 13:40 **Lunch**

13:40 – 13:50 **CONFERENCE PHOTO**

HALL 1 **THEORY AND MODELING**

Chairperson: E. Kotomin

14:00 - 14:30	Y. Shunin	Resistance simulations for junctions of SW and MW carbon nanotubes with various metal substrates	OR - 1
14:30 - 14:50	M. Brik	<i>Ab-initio</i> modeling of optical and electronic properties of pure and rare-earth ions doped wide-gap crystals under varying hydrostatic pressure	OR - 2
14:50 - 15:10	G. Zvejnieks	Modeling of Au-Ni surface alloy instability	OR - 3
15:10 - 15:30	A. Bandura	LCAO calculations of (001) surface oxygen vacancy structure in Y-doped BaZrO ₃	OR - 4
15:30 - 15:50	D. Bocharov	First principles calculations on oxygen impurities incorporated in the vacancies of UN(001) substrate	OR - 5

15:50 - 16:10 **Coffee**

Wednesday, March 17

HALL 1 THEORY AND MODELING

Chairperson: M. Kirm

16:20 - 16:40	S. Piskunov	First-principles modeling of oxygen interaction with ABO ₃ -type perovskite surfaces	OR - 6
16:40 - 17:00	D. Gryaznov	Electronic, phonon and magnetic structure of pure and Sr-doped LaCoO ₃	OR - 7
17:00 - 17:20	R. Eglitis	<i>Ab initio</i> calculations of SrTiO ₃ , BaTiO ₃ , PbTiO ₃ , and CaTiO ₃ (001) and (011) surfaces	OR - 8
17:20 - 17:40	D. Engers	Temperature development of chemically ordered nanoregions in relaxor ferroelectric Pb(Mg _{1/3} Nb _{2/3})O ₃ (PMN)	OR - 9
17:50 - 18:00	I. Muzikante	POSTER OVERVIEW	

HALL 2 TECHNOLOGIES AND DEVICES

Chairperson: L. Maksimov

14:00 - 14:30	C.-G. Grankqvist	Progress in chromogenic materials and devices: new data on thermochromic VO ₂ -based materials and electrochromic nickel-tungsten-oxide films	INV - 6
14:30 - 14:50	F. Davin	Advanced mechanical surface testing for thin coatings by nanoindentation, scratch and tribology investigation	OR - 10
14:50 - 15:10	R. de Leeuw	Nanopipette applications in bionanoscience	OR - 11
15:10 - 15:30	V. Sammelseg	Nanoscopy and – technology using scanning dual beam techniques	OR - 12
15:30 - 15:50	I. Ayala	Atomic layer deposition (ALD), enhanced thin films	OR - 13

15:50 - 16:10 Coffee

Chairperson: C.-G. Granqvist

16:10 - 16:40	L. Maksimov	Combined light scattering and acoustic methods for the study of glass macro- and nanostructure	INV - 7
16:40 - 17:00	M. Chiesa	Application of frequency domain thermoreflectance	OR - 14
17:00 - 17:20	J. Butikova	Aspects of SEM analysis of ablated tiles in ASDEX upgrade tokamak	OR - 15
17:20 - 17:40	A. Voitkans	Reflection high energy electron diffraction as a tool for nanoparticle deposition studies	OR - 16

HALL 1

Chairperson: I. Muzikante

17:50 - 18:00 POSTER OVERVIEW

18:00 - 19:45 POSTER SESSION & Coffee

DURING THE CONFERENCE THE EXHIBITION OF COMPANIES – SAINT-TECH, FANEX, CSM INSTRUMENTS, ARMGATE, THORLABS – WILL BE HELD

Thursday, March 18

08:00 – 08:20

REGISTRATION

HALL 1

FERROELECTRICS AND RELATED MATERIALS

Chairperson: A. Wisniewski

08: 20 -08:30	Technical Information		
08:30 – 09:00	T. Ogawa	Domain switching and rotation in alkali bismuth titanate lead-free piezoelectric ceramics	INV - 8
09:00 - 09:20	M. Tyunina	Enhanced relaxor behaviour in epitaxial films of lead magnesium niobate	OR - 17
09:20 - 09:40	I. Shnidshtein	First application of the thermal noise method for studying ferroelectrics thin films	OR - 18
09:40 – 10:00	O. Malyshkina	Influence of natural aging on the polarization profile in PZT - based ceramics	OR - 19
10:00 - 10:20	J. Banys	Broadband dielectric spectroscopy of ferroelectric (1-x)Al _{0.9} Li _{0.1} NbO ₃ - xBi _{0.5} K _{0.5} TiO ₃ ceramics	OR - 20
10:20 – 10:40	M. Duce	Description of relaxor state in Na _{1/2} Bi _{1/2} TiO ₃ -SrTiO ₃ -PbTiO ₃ system of solid solutions	OR - 21
10:40 – 11:00	M. Rutkis	Computer modeling of chromophore/polymer composite polarization: para- , antiferro- and ferroelectric behavior	OR - 22
11:00 – 11:20	H.-J. Fitting	Fast electron switching in dielectrics	OR - 23

11:20 – 11:40

Coffee

HALL 1

BIONANOTECHNOLOGIES

Chairperson: L. Berzina-Cimdina

11:40 – 12:00	M. Romanova	Silicon based nanoparticles usage as adjuvants for treatment of viral infections	OR - 24
12:00 – 12:20	S. Tyutyunnikov	Experiments on application of high power microwave radiation to biomedicine using micro- and nanoparticles	OR - 25
12:20 – 12:40	M. Barczak	Synthesis, structure and adsorption properties of ordered mesoporous organo-silicas functionalized with different groups	OR - 26
12:40 – 13:00	Z. Irbe	Modification of setting properties of α -tricalcium phosphate cements	OR - 27
13:00 – 13:20	K. Salma	Preparation and sintering behaviour of β -tricalcium phosphate	OR - 28
13:20 - 13:40	A. Stunda	Structure of phosphate based bioactive glasses	OR - 29

13:40 – 14:40

Lunch

HALL 1

PERSPECTIVE MATERIALS I

Chairperson: V. Trepakov

14:40 – 15:10	A. Gavriluk	Multifunctional hydrogen nanosized materials:WO ₃ , MoO ₃ , V ₂ O ₅	INV - 10
15:10 – 15:30	Y. Fujioka	Structural study of nanocrystalline tungsten trioxide	OR - 48
15:30 – 15:50	G. Bajars	Study of structure and electrochemical characteristics of LiFePO ₄ /C as cathode material for lithium batteries	OR - 49
15:50 – 16:10	J. Kleperis	Oriented nanostructures for solar-hydrogen technologies	OR - 50
16:10 – 16:30	M. Tomut	Carbon materials for high-power heavy ions accelerators	OR - 51
16:30 – 16:50	M. Prabhu	Synthesis and characterization of pure titania nanocrystallites by sol-gel method	OR - 52

16:50 – 17:10

Coffee

Thursday, March 18

HALL 2 NANOSTRUCTURING AND COMPOSITES

Chairperson: E. Nommiste

08:30 – 09:00	V. Skuratov	The formation and modification of nanostructures in dielectric matrices using swift heavy ions	INV - 9
09:00 - 09:20	J. Piqueras	Defects and nanochannels in doped zinc oxide nanorods grown by thermal methods	OR - 30
09:20 - 09:40	J. Maniks	Nanostructuring and hardening of LiF crystals irradiated with 3-15 MeV Au ions	OR - 31
09:40 – 10:00	W. Lojkowski	Investigation of luminescence of zirconia nanopowders during change of oxygen content in the gas over the sample	OR - 32
10:00 - 10:20	A. Salak	Anion exchange in Zn-Al layered double hydroxides: in situ XRD study	OR - 33
10:20 – 10:40	M. Waegner	Top-down fabrication of ordered PZT nanodot arrays by nanosphere lithography	OR - 34
10:40 – 11:00	G. Chikvaidze	The influence of nonstoichiometric silicon carbide nanopowder on the reducing efficiency of silicon for solar cells	OR - 35
11:00 – 11:20	M. Krause	Experimental investigation of swift heavy ion-induced damage in highly ordered graphite	OR - 36

11:20 – 11:40 Coffee

Chairperson: J. Piqueras

11:40 – 12:00	M. Reinfelde	Surface hologram recording in amorphous As-S-Se films by 0.6328 μ m laser	OR - 37
12:00 – 12:20	J. Teteris	Photoinduced mass transfer in disordered materials	OR - 38
12:20 – 12:40	A. Ozols	Effect of light polarization on holographic recording in glassy azocompounds and chalcogenides	OR - 39
12:40 – 13:00	J. Zavickis	The polyisoprene – nanostructured carbon composite as flexible pressure sensor material – properties and practical applications	OR - 40
13:00 – 13:20	G. Sakale	The investigation of organic solvent vapour sensing mechanism on polymer-nanostructured carbon composite	OR - 41
13:20 - 13:40	G. Doke	Synthesis and up-conversion luminescence in erbium doped NaLaF ₄	OR - 42

13:40 – 14:40 Lunch

HALL 2 SPECTROSCOPY AND OPTICAL PROPERTIES

Chairperson: A. Kuzmin

14:40 – 15:10	A. Trukhin	Luminescence of dense, octahedral structured crystalline silicon dioxide (stishovite)	INV - 11
15:10 – 15:30	V. Bogdanov	Observation of α - relaxation in glasses at vicinity of T_g by ultrasonic and Mandel'shtam-Brillouin methods	OR - 43
15:30 – 15:50	S. Omelkov	The properties of luminescence of nominally pure LiBaAlF ₆ single crystals	OR - 44
15:50 – 16:10	J. Grube	Up-conversion luminescence in erbium and ytterbium doped silicate glass ceramics	OR - 45
16:10 – 16:30	A. Fedotovs	Paramagnetic probes for studies of crystallization in the oxyfluoride glass ceramics	OR - 46
16:30 – 16:50	M. Gokula Krishna	Synthesis and characterization of pure and Sm doped TiO ₂ nanocrystals by solid state reaction method	OR - 47

16:50 – 17:10 Coffee

17:15 – 22:30 EXCURSION AND CONFERENCE DINNER

Friday, March 19

HALL 1		PERSPECTIVE MATERIALS II	
Chairperson: W. Lojkowski			
09:20 – 9:30		Technical Information	
09:30 – 10:00	L. Skuja	Defects in the bulk and on the surfaces of amorphous silicon dioxide	INV - 12
10:00 - 10:20	A. Kulkarni	Adding functionality to cotton by stimuli sensitive microparticles	OR - 53
10:20 - 10:40	A. Wisniewski	Effect of particle size and pressure on magnetic properties of manganite and cobaltite nanoparticles	OR - 54
10:40 - 11:00	D. Zablotsky	Formation of microconvection in periodic concentration grating of magnetic nanoparticles	OR - 55
11:00 - 11:20	G. Marcins	Structure and characteristics of laser crystallized thin amorphous Si films	OR - 56
11:20 – 11:40	M. Chubarov	Thermoactivated spectroscopy of defects levels in GaN thin films	OR - 57
11:40 -12:00		Coffee	
Chairman of the conference: A. Sternbergs			
12:00 - 12:40	Y. Zhukovskii	Growth mechanism for CNT bundle upon both flat and nano-structured Ni catalyst: <i>ab initio</i> simulations	PL - 2
12:40 – 13:00		CLOSING	
13:00 – 14:00		GOODBYE REFRESHMENTS	