

APSTIPRINU  
LU CFI direktors

/A.Šternbergs/  
Rīgā, 2008.g. 29.maijā

**LU Cietvielu fizikas institūta  
(LU aģentūras)  
2007.gada publiskais pārskats**

## SATURS

1.	LU Cietvielu fizikas institūta darbības ilgtermiņa un vidēja termiņa mērķi.....	3.lpp
2.	Juridiskais statuss un struktūra.....	3.lpp
3.	Galvenās funkcijas un uzdevumi.....	5.lpp
4.	LU CFI darbinieku publikācijas un tēzes 2007.g.....	6.lpp
5.	Pētniecības projekti.....	32.lpp
6.	Organizētās konferences.....	35.lpp
7.	Starptautiskā sadarbība.....	35.lpp
8.	Institūta personāls, kam piešķirti goda nosaukumi.....	35.lpp
9.	Institūtam piesaistītie studenti un doktoranti un aizstāvētie kvalifikācijas darbi.....	36.lpp
10.	Krājumi un žurnāli, kurus izdevis LU CFI.....	39.lpp
11.	Cita Institūtam nozīmīga informācija.....	40.lpp
	<i>Pielikums Nr.1.Starptautiskās Padomdevēju Komisijas Novērtējuma ziņojums (2007.g. 3.aprīlī).....</i>	41.lpp

# 1. LU CIETVIELU FIZIKAS INSTITŪTA DARBĪBAS ILGTERMIŅA UN VIDĒJA TERMIŅA MĒRĶI

Izveidot LU CFI par vadošo pētniecības centru funkcionālu materiālu un nanotehnoloģiju jomā Latvijā un atzītu pētniecisko iestādi Eiropas Zinātniskajā telpā, kur augsta līmeņa zinātniskā darbība (gan fundamentālie pētījumi, gan praktiskās ievirzes pētniecība) ir organiski apvienota ar augstas kvalitātes akadēmiskajām un profesionālajām studijām.

Mērķi analizēti „LU CFI vidējā termiņa darbības stratēģijā” – dokumentā, kas ir apstiprināts LU Senātā.

## 2. JURIDISKAIS STATUSS UN STRUKTŪRA

Latvijas Universitātes Cietvielu fizikas institūts ir dibināts 1978.gadā uz divu LU laboratoriju bāzes. No 1986.gada Institūts ir juridiski patstāvīga iestāde (bezpeļņas organizācija) pie LU.

No 2006.gada 12.aprīļa LU Cietvielu fizikas institūts tika pārveidots par Latvijas Universitātes aģentūru „LU Cietvielu fizikas institūts”. LU Cietvielu fizikas institūts atrodas LU pārraudzībā un darbojas saskaņā ar Zinātnes likumu un Publisko aģentūru likumu.

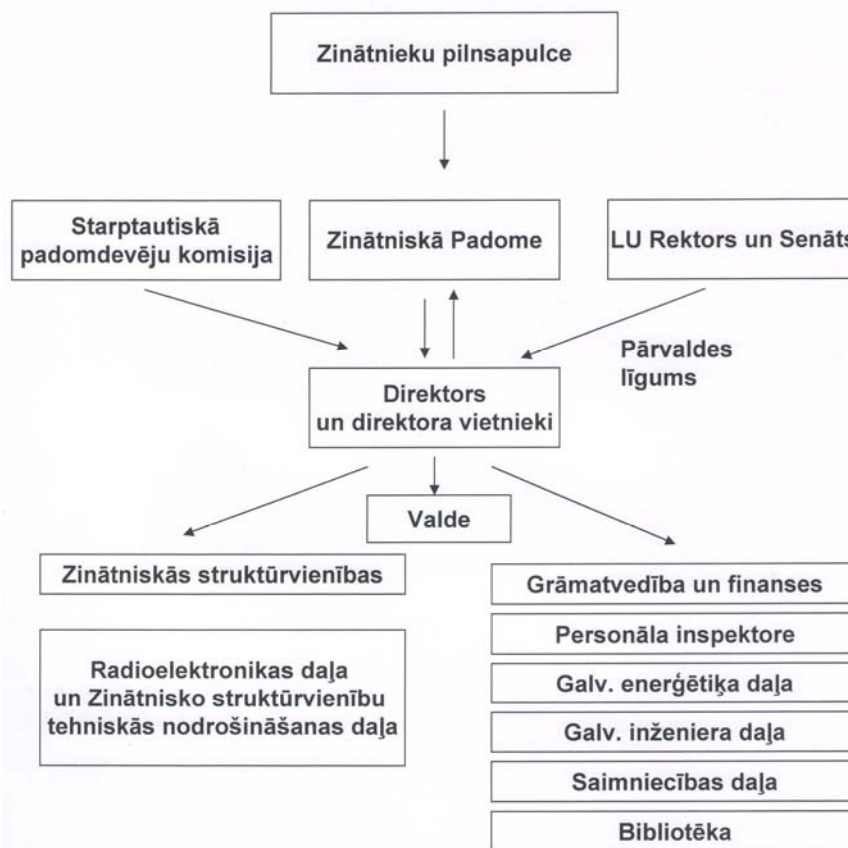
LU aģentūra „Latvijas Universitātes Cietvielu fizikas institūts” ir reģistrēta LR IZM Zinātnisko institūciju reģistrā (apliecības Nr. 351016, 08.06.2006.).

Padotībā esošo iestāžu – nav.

Institūta strukturālā shēma ir pievienota 1.tabulā

1.tabula

### LU CIETVIELU FIZIKAS INSTITŪTA VADĪBAS STRUKTŪRA



## ZINĀTNISKĀS STRUKTŪRVIENTĪBAS:

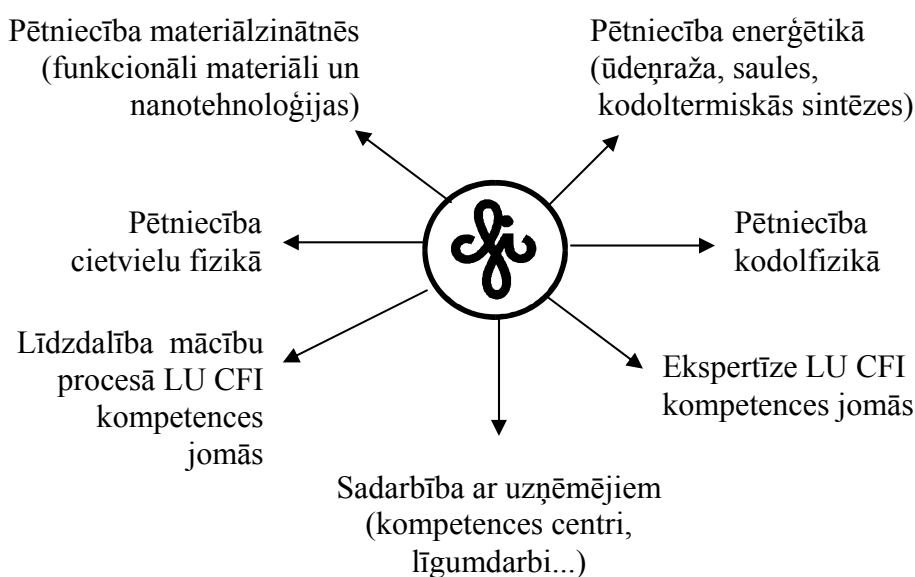
- 2.1 Kristālu fizikas nodaļa (P.Kūlis)
  - 2.1.1 Magnētiskās rezonanses spektroskopijas laboratorija ( U.Rogulis)
  - 2.1.2 Optiskās spektroskopijas laboratorija (M.Spriņģis)
  - 2.1.3 Materiālu sintēzes laboratorija (L.Dimitročenko)
  - 2.1.4. Nanostruktūru pētījumu laboratorija (B.Poļakovs)
- 2.2 Nesakārtotu materiālu fizikas nodaļa (D.Millers)
  - 2.2.1 Cietvielu radiācijas fizikas laboratorija (L.Grigorjeva)
  - 2.2.2 Cietvielu optikas laboratorija (A.Truhins)
  - 2.2.3 Amorfo materiālu spektroskopijas laboratorija (L.Skuja)
- 2.3 Segnetoelektriķu nodaļa (V.Zauls)
  - 2.3.1 Sintēzes un tehnoloģiju laboratorija (M.Dambekalne)
  - 2.3.2 Funkcionālo materiālu fizikas un pielietojumu laboratorija (V.Zauls)
  - 2.3.3 Kondensētā stāvokļa teorijas laboratorija (Ē.Klotiņš)
- 2.4 Pusvadītāju materiālu nodaļa (A.Lūsis)
  - 2.4.1 Cietās vielas jonikas laboratorija (A.Lūsis)
  - 2.4.2 EXAFS spektroskopijas laboratorija (J.Purāns)
  - 2.4.3 Ūdeņraža un gāzu sensoru laboratorija (J.Kleperis)
- 2.5 Radiācijas fizikas nodaļa (J.Bērziņš)
  - 2.5.1 Kodolreakciju laboratorija (J.Bērziņš)
  - 2.5.2 Pielietojamās kodolfizikas laboratorija (D.Riekstiņa)
  - 2.5.3 Pārejas metālu savienojumu fizikas laboratorija (Ņ.Mironova-Ulmane)
  - 2.5.4 Augsttemperatūras supravadītāju fizikas laboratorija (A.Petrovs)
- 2.6 Teorētiskās fizikas un datormodelēšanas laboratorija (J.Kotomins)
- 2.7 Redzes uztveres laboratorija (I.Lācis)
- 2.8 Optiskā ieraksta laboratorija (J.Teteris)
- 2.9 Platzonu materiālu laboratorija (B.Bērziņa)
- 2.10 Virsmas fizikas laboratorija (F.Muktepāvela)
- 2.11 Didaktisko sistēmu laboratorija (J.Kuzmins)
- 2.12 Organisko materiālu laboratorija (I.Muzikante)
- 2.13 Radioelektronikas laboratorija (A.Kristiņš)

### 3. GALVENĀS FUNKCIJAS UN UZDEVUMI

LU CFI veic Institūta Nolikumā, LU CFI vidējā termiņa darbības un attīstības stratēģijā un pārvaldes līgumā noteiktās funkcijas un uzdevumus.

Institūtā darbības pamatmērķis ir zinātniskā darbība un ar to saistīta līdzdalība studiju programmas īstenošanā, kā arī publiskie pakalpojumi fizikā, materiālzinātnē un enerģētikā.

LU CFI veic starptautiski atzītus fundamentālus pētījumus cietvielu fizikā un saistītās nozarēs, kā arī Latvijai nepieciešamus stratēģiska rakstura pētījumus materiālzinātnē un enerģētikā. Pētnieciskais darbs tiek orientēts uz to izmantošanu praksē. Uzkrāto kompetenci LU CFI izmanto studiju programmu realizācijā un praktiskās ievirzes pētniecība (1.attēls).



1.attēls. Galvenie pētniecības virzieni LU CFI

Ar 2006.gada 6.jūniju MK rīkojumu Nr. 412 Latvijā ir noteikti 9 prioritārie zinātnes virzieni. No minētajiem virzieniem Institūta tematika ir pārstāvēta divos:

- **materiālzinātnes** (LU CFI ir vadošā institūcija Valsts pētījumu programmas materiālzinātnē izpildē);
- **enerģētikā** (ūdeņraža, saules un kodoltermiskās sintēzes enerģija)

2008.gadam tika izvirzīti sekojoši stratēģiski uzdevumi:

- paaugstināt LU CFI zinātnisko darbinieku prestižu sabiedrībā, veidojot karjeras un zinātniskās izaugsmes sistēmu (akadēmiskā personāla vēlēšanas, sociālais nodrošinājums, algu palielināšana);
- intensificēt pētniecību un jaunu projektu apgūšanu ar līdzfinansējuma piesaisti;
- turpināt zinātniskās infrastruktūras atjaunošanu un uzlabošanu (jauna zinātniskā aparatūra, Tehniskā korpusa un ventilācijas sistēmas remonts);
- praktiskās ievirzes pētījumu aktivizēšana;
- līdzdalība studiju procesā un paaudžu nomaīņas sekmēšana vadošajiem pētniekiem;
- sekmēt starptautiskos pētījumus un iekļaušanos Eiropas Zinātniskajā Telpā.

#### 4. LU CIETVIELU FIZIKAS INSTITŪTA DARBINIEKU PUBLIKĀCIJAS UN TĒZES 2007.g.

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2. J. Banys, R. Grigalaitis, J. Macutkevicius, A. Krotkus, G. Valusis, R. Adomavicius, K. Bormanis, and A. Sternberg. Broadband Dielectric Spectroscopy of Ferroelectric Phase Transition in PSN Ceramics. Programme and Book of Abstracts, p. 49.
3. K. Bormanis, A.I. Burkhanov, Yu.V. Kochergin, V.N. Nesterov, A. Kalvane, M. Antonova, and A. Sternberg. Low Frequency Dielectric Response of BaBi<sub>2</sub>Nb<sub>2</sub>O<sub>9</sub> Ceramics. Programme and Book of Abstracts, p. 57.
4. D. Kiselev, K. Bormanis, A. Sternberg, M. Kosec, and A.L. Kholkin. Domain Evolution in Lead-Based Relaxor via Scanning Force Microscopy. Programme and Book of Abstracts, p. 125.
5. M. Ozolinsh, A. Kozachenko, J.M. Bueno, and S. Fomins. Cataract Eye Model on Light Scattering PDLC. Programme and Book of Abstracts, p. 166.
6. M. Palatnikov, N. Sidorov, P.G.R. Smith, and K. Bormanis. Perspective Materials on the Basis of Gd-Doped LiNbO<sub>3</sub> Single Crystals. Programme and Book of Abstracts, p. 166.
7. N.V. Sidorov, M.N. Palatnikov, and K. Bormanis. Raman Studies of Cation Ordering in Li<sub>x</sub>Na<sub>1-x</sub>Ta<sub>y</sub>Nb<sub>1-y</sub>O<sub>3</sub> Crystals and Ceramics. Programme and Book of Abstracts, p. 197.

8. I. Aulika, V. Zauls, K. Kundzins, A. Deyneka, and A. Fuith. Temperature Dependence of Band Gap Energy of  $\text{NaNbO}_3$  Thin Films. Programme and Book of Abstracts, p. 46.
9. D.V. Perlegov, V.Ya. Shur, G.G. Lomakin, O.V. Yakutova, E.V. Nikolaeva, I.S. Baturin, M.S. Nebogatikov, V.A. Shikhova, D.M. Korotin, T. Granzow, and A. Sternberg. Evolution of Nanoscale Domains in Relaxor Ferroelectrics: Comparative Study of PLZT Ceramics and SBN Crystals. Programme and Book of Abstracts, p. 170.
10. E. Klotins, A. Kuznetsov, and A. Bely. Stochastic Dynamics of Ferroelectric Polarization. Programme and Book of Abstracts, p. 127.

**Международная конференция «Фазовые переходы, критические и нелинейные явления в конденсированных средах» Махачкала, Россия, 12-15 сентября 2007 г.**

1. Ю.В. Кочергин, А.И. Бурханов, В.Н. Нестеров, К. Борманис, А. Калване, М. Дамбекалне. Диэлектрическая нелинейность в области размытого фазового перехода в слоистой керамике  $\text{BaBi}_2\text{Nb}_2\text{O}_9$ . Программа, Б2-6. Сборник трудов «Фазовые переходы, критические и нелинейные явления в конденсированных средах», Махачкала, 2007, с. 131-134.
2. П.В. Бондаренко, А.И. Бурханов, К. Борманис, А. Калване, М. Дамбекалне, М. Антонова. Исследование диэлектрического отклика керамики  $(\text{Pb}_{0.97}\text{La}_{0.02})(\text{Zr}_{0.53}\text{Ti}_{0.12}\text{Sn}_{0.35})\text{O}_3$  при приложении постоянного смещающего поля в широкой температурной области. Программа, Б2-19. Сборник трудов «Фазовые переходы, критические и нелинейные явления в конденсированных средах», Махачкала, 2007, с. 183-186.
3. М.Н. Палатников, Н.В. Сидоров, В.В. Ефремов, К.Я. Борманис. Исследование структурных фазовых переходов в сегнетоэлектрических твердых растворах со структурой перовскита на основе ниобата натрия методами спектроскопии КРС. Программа, Б2-21. Сборник трудов «Фазовые переходы, критические и нелинейные явления в конденсированных средах», Махачкала, 2007, с. 191-195.
4. З.М. Омаров, А.Р. Билалов, С.Н. Каллаев, Р.М. Ферзилаев, С.А. Садыков, К. Борманис. Особенности теплового расширения и диэлектрической проницаемости керамики ПКР-7М и ЦТСЛ в области размытого фазового перехода. Программа, Б2-27. Сборник трудов «Фазовые переходы, критические и нелинейные явления в конденсированных средах», Махачкала, 2007, с. 215-217.
5. А.В. Сопит, А.И. Бурханов, Т.П. Сопит, А. Штернберг. Пироэлектрический отклик сегнетокерамики PSN в области фазового перехода при различных внешних воздействиях. Программа, Б3-59. Сборник трудов «Фазовые переходы, критические и нелинейные явления в конденсированных средах», Махачкала, 2007, с. 520-523.

**III Международная научная конференция «Актуальные проблемы физики твердого тела», Минск, Белоруссия, 23-26 октября 2007 г.**

1. К. Борманис, Ю.В. Кочергин, А.И. Бурханов, В.Н. Нестеров, А. Калване, М. Дамбекалне. Нелинейность в сегнетокерамике  $\text{BaBi}_2\text{Nb}_2\text{O}_9$ . Программа Б-2-3. Сборник докладов «Актуальные проблемы физики твердого тела», Минск, Издательский центр БГУ, 2007, том 2, с. 232-234.

2. Н.В. Сидоров, М.Н. Палатников, К.Я. Борманис. Исследование влияния упорядочения структурных единиц катионной подрешетки и дефектов на физические характеристики монокристаллов ниобата лития разного состава. Программа Г-С-9. Сборник докладов «Актуальные проблемы физики твердого тела», Минск, Издательский центр БГУ, 2007, том 3, с. 221-223.

### **3. International conference Eco-Balt 2007 May 11-12, Riga:**

- 1) J. Kleperis, Air quality in Riga: monitoring results 2006, indicated problems. Abstracts, p.105-106.
- 2) M. Vanags, J. Kleperis, Position of hydrogen energy in Latvian economics; Abstracts, p.109.
- 3) L. Grinberga, M. Vanags, J. Kleperis. Vision on ecological and self-sufficient house based on hydrogen energy; Abstracts, p.110.
- 4) G.Bajārs, A.Lūsis, Ē.Pentjušs, J.Smilga. „Implementation of RoHS directive in electrical and electronics sector of Latvia” – poster.
- 5) G.Bajārs, A.Lūsis, Ē.Pentjušs „An ecodesign study course at the University of Latvia” - oral

### **8th International Symposium on Systems with Fast Ionic Transport, (8 ISSFIT), May 25-29, 2007, Vilnius (Lithuania):**

J. Kleperis, L. Grinberga, G. Bajars, G. Vaivars, A. Lūsis. Estimation of hydrogen transfer mechanisms in composite materials. Abstracts, p.48.

### **International Symposium on Olfaction and Electronic Nose ISOEN`07, May 3-5, 2007. St.Petersburg (Russia):**

V.Ogorodnik, J.Kleperis, I. Taivans, N. Jurka, M. Bukovskis. Identification of the lung diseases by an electronic nose..

### **Scientific seminar of Deutsche Bundesstiftung Umwelt July 9-13, 2007, Osnabrück, Germany:**

J. Hodakovska. Basics of hydrogen energy: materials and devices for hydrogen production, storage and usage;

### **Scientific Seminar of GKSS Forschungszentrum GmbH, Hamburg, Germany:**

J. Hodakovska, „SPEEK and Polyaniline Composite membranes for Fuel Cells”

### **2nd International Hydrogen Energy Congress and Exhibition IHEC 2007; Istanbul, Turkey, 13-15 July 2007:**

M. Vanags, P. Shipkovs, J. Kleperis, G. Bajars and A. Lūsis. Water electrolysis: unconventional aspects.

### **RTU Annual Scientific Conference, Section “Power and Electrical Engineering”, October 12-13, 2007, Riga (Latvia):**

L Grinberga, J. Kleperis. The role of different binders in the formation of cathode for metal hydride batteries.

### **10. International conference on nanomaterials NANOVED`2007, November 11–14, 2007, Bratislava (Slovakia):**

G. Chikvaidze, Hongze Luo, G. Vaivars, J. Kleperis. Characterization of sulfonated poly(ether ether ketone) polymer electrolyte for fuel cells by FTIR spectroscopy..

### **Invited talk at Kurchatov Center for Synchrotron Radiation and Nanotechnology, July, 2007, Moscow, Russia**

A.Kuzmin (oral presentation).

### **E-MRS Fall Meeting, September 17-21, 2007, Warsaw, Poland**



A.Kuzmin, R.Kalendarev, J.Purans (oral presentation).

**Invited talk at the COE international symposium “Atomistic Fabrication Technology”, Icho-Kaikan, Osaka University, Suita, Osaka, Japan, October 15-17, 2007:**

J.Purans (oral presentation)

**Invited talk at post-graduate school „Giornate di studio: metodi di caratterizzazione dei materiali”, Politecnico di Milano, December 4, 2007 :**

A.Kuzmin (oral presentation).

**XVIII International School-Seminar ‘Spectroscopy of molecules and crystals’, 20.09.-27.09.2007, Beregove.Crimea, Ukraine:**

J. Gabrusenoks, Symmetry Properties of Lattice Dynamics of W-O Network, Abstracts, p.113.

**21st IAEA Fusion Energy Conference, held in Chengdu, 16-21 October 2006,China:**

G. Kizane, J. Tiliks, A. Vitins, E. Kolodinska. Influence of high magnetic field on fusion reactor blanket processes. – The Proceedings available online at: [http://www-naweb.iaea.org/naweb/physics/FEC/FEC2006/papers/ft\\_p5-17.pdf](http://www-naweb.iaea.org/naweb/physics/FEC/FEC2006/papers/ft_p5-17.pdf)

**8th International Symposium on Fusion Nuclear Technology (ISFNT-8), Heidelberg, Sept. 30 – Oct. 5, 2007,Germany:**

J. Tiliks, G. Kizane, A. Vitins, E. Kolodinska, V. Tilika, B. Lescinskis. Tritium release from beryllium materials under the real operation conditions. The book of abstracts is available online at <http://iwrwww1.fzk.de/isfnt/boa-isfnt-8.pdf>.

**8th IEA International Workshop on Beryllium Technology (BeWS-8), Lisbon, December 5-7, 2007, Portugal:**

G. Kizane, J. Tiliks, A. Vitins, E. Kolodinska, A. Supe, B. Lescinskis. Detritiation of Be materials under action of temperature, radiation and magnetic field. –The book of abstracts is available online at <http://iwrwww1.fzk.de/bews-8/BoA-BeWS8.pdf>

**Quality of informatics and physics teachers training. International Conference. Russia. Ekaterinburg. 2007.april**

J.Kuzmins, A.Gazeikina, M.Lapionok, „Distance Education technologies in informatics students training”.

**“Quantum pumping” workshop (Haifa, Israel, January, 2007).**

V. Kashcheyevs, B. Kästner, and M. Buitelaar, "Pumping versus bias: elements of adiabatic transport theory for recent experiments on double quantum dots".

**1<sup>st</sup> International Workshop on Dynamics of Molecules and Materials (Grenoble, France, January-February, 2007).**

S. Bellucci, C. Balasubramanian, A. Ivanov, A.I. Popov, V. Savchyn, H. Schober, and Yu.F. Zhukovskii, "Aluminium nitride nanotubes: synthesis, characterizations, properties". Abstracts: p. 30.

**International Workshop "Fundamental Physics of Ferroelectrics", (Williamsburg, VA, USA, February, 2007).**

R.I. Eglitis, A. Gopejenko, S. Piskunov, Yu.F. Zhukovskii, and J. Lee, "Electronic structure of perfect and defective PbZrO<sub>3</sub>(001): *ab initio* simulations. Abstracts: p. 37.

**International Workshop: "First Principles Calculations of Nuclear Fuels" (Karlsruhe, Germany, March, 2007).**

1. E.A. Kotomin, "Atomistic modelling of defects in UN using VASP".
2. Yu.F. Zhukovskii, "VASP calculations on perfect and defective UN(001) surfaces including oxygen chemisorption".
3. D. Gryaznov, "VASP modelling of He in nuclear fuels".

**Biennial Workshop "Stochasticity in Fusion Plasmas" (Jülich, Germany, March, 2007).**

1. O. Dumbrajs, V. Igochine, H. Zohm, and ASDEX Upgrade Team, "Diffusion in a stochastic magnetic field in ASDEX Upgrade".
2. D. Constantinescu, O. Dumbrajs, V. Igochine, and B. Weysow, "On the accuracy of some mapping techniques used to study the magnetic field dynamics in tokamaks".
3. V. Igochine, O. Dumbrajs, H. Zohm, A. Flaws, and ASDEX Upgrade Team, "Stochastic sawtooth reconnection in ASDEX Upgrade".

**The 5<sup>th</sup> International Conference "Information Technologies and Management", IT&M'2007 (Riga, Latvia, April, 2007).**

1. V.N. Kuzovkov and O. Dumbrajs, "Bounded Tokamak: A Hamiltonian map for magnetic field lines in a Tokamak". Abstracts: p. 7-8.
2. Yu.F. Zhukovskii, D. Bocharov, and E.A. Kotomin, "Oxygen chemisorption on the UN(001) surface: periodic DFT simulation". Abstracts: p. 9-10.
3. A. Gopeyenko, S. Piskunov, R.I. Eglitis, and Yu.N. Shunin, "Ab initio calculations of perfect and defective PbZrO<sub>3</sub>(001) surfaces". Abstracts: p. 13-14.

**Korean Ceramics Society Meeting, (Seoul, South Korea, April, 2007).**

R.I. Eglitis and J. Lee, "Ab initio modeling of SrTiO<sub>3</sub>, BaTiO<sub>3</sub> and PbTiO<sub>3</sub> perovskite surfaces". Abstracts: p. 29.

**International Conference on Radiation Effects in Insulators REI-14 (Caen, France, August-September, 2007).**

1. D. Fuks, Yu.F. Zhukovskii, and E.A. Kotomin, "A role of surface defects in thin metallic film growth mode on oxide surfaces". Abstracts: C49.
2. E.A. Kotomin, R.W. Grimes, D. Parfitt, D. Gryaznov, Yu.F. Zhukovskii, Yu. Mastrikov, P. van Uffelen, V.V. Rondinella, and R.J.M. Konings, "First principles modelling of radiation defects in advanced nuclear fuels". Abstracts: O3.

**The Joint 32<sup>nd</sup> International Conference on Infrared and Millimetre Waves and 15<sup>th</sup> International Conference on Terahertz Electronics (Cardiff, UK, September, 2007).**

1. O. Dumbrajs, K.A. Avramides, and B. Piosczyk, "Mode competition in the 170 GHz Coaxial Gyrotron Cavity for ITER". Abstracts: p. 48-49.
2. B. Piosczyk, T. Rzesnicki, G. Dammertz, O. Dumbrajs, J. Flamm, G. Gantenbein, S. Illy, J. Jin, O. Prinz, and M. Thumm, "Investigation on an experimental 170 GHz coaxial cavity gyrotron". Abstracts: p. 96-97.
3. O. Dumbrajs, Z.C. Ioannidis, and I.G. Tigelis, "Wide band continuous frequency tunable coaxial gyrotron oscillators". Abstracts: p. 583-584.

**11<sup>th</sup> European Conference on Solid State Chemistry, ECSSC-XI (Caen, France, September, 2007).**

Yu.F. Zhukovskii, E.A. Kotomin, P. Balaya, and J. Maier, "Enhanced interfacial lithium storage in nanocomposites of transition metals with LiF or Li<sub>2</sub>O: experimental studies and theoretical simulations". Abstracts: p. 58.

**8<sup>th</sup> International Workshop on Nanoscience & Nanotechnology (Frascati, Italy, October, 2007).**

1. Yu.F. Zhukovskii, S. Piskunov, B. Berzina, L. Trinkler, and S. Bellucci, "*Ab initio* simulations on the atomic and electronic structure of single-walled BN nanotubes and nanoarches". Abstracts: p. 38-39.
2. I. Bolesta, I. Karbovnyk, R. Grytskiv, G. Fafilek, A.I. Popov, and S. Bellucci, "Microstructure of Ag<sub>2</sub>BI<sub>4</sub> (B = Ag,Cd) superionics studied by SEM, impedance spectroscopy and fractal dimension analysis". Abstracts: p. 43.
3. I. Bolesta, A.I. Popov, I. Karbovnyk, S. Bellucci, M. Cestelli-Guidi, and M. Piccicini, "FIR reflectivity of microcrystalline Ag<sub>2</sub>CdI<sub>4</sub> between 10 and 420 K". Abstracts:p48.
4. P. Savchyn, A. Voloshynovskii, S. Myagkota, I. Karbovnyk, A.I. Popov, S. Bellucci, and M. Cestelli Guidi, "CsPbCl<sub>3</sub> nanocrystals dispersed in the Rb<sub>0.8</sub>Cs<sub>0.2</sub>Cl matrix: vibrational studies". Abstracts: p. 52.

**Workshop of FP6 ALISTORE Network on Nanomaterials for Negative Electrodes in Lithium Batteries (Paris, France, October, 2007).**

E.A. Kotomin, Yu.F. Zhukovskii, and J.Maier, "Enhanced interfacial Li storage in nanocomposites - ab initio modeling".

**6<sup>th</sup> Russian Conference on Application of X-Ray and Synchrotron Radiations as well as Neutrons and Electrons for Material Researches (Moscow, Russia, November, 2007).**

N.A. Zaporina, O. Doynikova, A. Krumina, D. Bocharov, and J. Grabis, Methods of electron microdiffraction and X-Ray analysis in structure study of nanodisperse partially stabilized ZrO<sub>2</sub> powders. Abstracts: p. 272.

**Workshop on Ceramic Membranes (Jülich, Germany, December 2007).**

E.A. Kotomin "First principles calculations of manganite surfaces and reactivity".

**Theoretical workshop "Towards Reality in Nanoscale Materials", TRNM (Levi, Finland, December 2007).**

Yu.F. Zhukovskii, S. Piskunov, B. Berzina, L. Trinkler, and S. Bellucci, "Influence of N vacancies on structural and electronic properties of AlN and BN nanotubes". Abstracts: p. 31.

**3rd International Conference on Amorphous and Nanostructured Chalcogenide (ANC-3), Brasov, Romania, July 2-6, 2007.**

1. V.Gerbreders, J.Teteris, E.Sledevskis and A.Bulanovs, *Photoinduced changes of optical reflectivity in As<sub>2</sub>S<sub>3</sub>-Al system*. Abstracts, p.16.
2. A.Gerbreders and J.Teteris, *Recording of surface-relief gratings on amorphous As-S-Se films*. Abstracts, p.35.
3. O.Balcers and J.Teteris, *Waveguiding properties of As<sub>2</sub>S<sub>3</sub> films*. Abstracts, p. 35.
4. M.Reinfelde, J.Teteris and J.Aleksejeva, *Holographic self-enhancement in amorphous arsenic films*. Abstracts, p. 35.
5. U.Gertners and J.Teteris, *Direct holographic recording of surface-relief gratings on amorphous chalcogenide films*. Abstracts, p.36.

6. J.Teteris. *Immersion holography based on amorphous chalcogenide films*. Abstracts, p. 38.

7. V.Gerbreders, E.Sledevskis, G.Liberts, J.Teteris and V.Pashkevich, *Optical recording on the surface and inside As<sub>2</sub>S<sub>3</sub> thin films*. Abstracts, p 42.

**Int. Conf. on Optical, Optoelectronic and Photonic Materials and Applications – ICOOPMA2007, London, United Kingdom, July 30- August 3, 2007.**

J.Teteris. *Immersion holography based on amorphous chalcogenide films*. Abstracts, p. 47.

**22nd International Conference on Amorphous and Nanocrystalline Semiconductors –ICANS22, Colorado, USA, August 19-24, 2007.**

1. J.Teteris. *Immersion interference lithography based on chalcogenide photoresists*. Abstracts, ThO5.3.

2. U.Gertners and J.Teteris, *Direct holographic recording of surface-relief gratings on amorphous chalcogenide films*. Abstracts, ThP13.7.

**15th International Conference on Solid State Dosimetry (SSD15), July 8-13, 2007, The Netherlands**

L.Trinkler, B.Berzina, D.Kasjan, L-C Chen. *Luminescence processes induced in AlN nanotips and nanorods*. Delft University of Technology, Netherlands, Book of Abstracts, p.89.

**III International Indentation Workshop, Cambridge, UK, July 15-20, 2007.**

1. I.Manika, J.Maniks, K.Schwartz. *Swift-ion-induced hardening and reduction of dislocation mobility in LiF crystals*. Abstracts, p.9 (oral presentation).

2. J.Maniks, I.Manika. *Effect of substrate hardness and film structure on indentation depth criteria for film hardness testing*. Abstracts, p.12 (oral presentation).

**14th International Conference on Radiation Defects in Insulators, Caen, France, August 28-September 1, 2007.**

I.Manika, J.Maniks, K.Schwartz. *Investigation of heavy ion tracks in LiF crystals by dislocation mobility method*. Abstracts, p. O20 (oral presentation).

**XVII Peterburg Readings on problems of durability. Sankt-Petersburg, Russia, April 10-12, 2007**

F.Muktepavela, V.Sursaeva, G.Bakradze. *Microhardness of grain boundaries and triple junctions in Z* (oral presentation).

**XII International Conf. “Intergranular and Interphase Boundaries in Materials” (iib 2007). Barselona, Portugal, July 10-13, 2007.**

F.Muktepavela, G.Bakradze, V.Sursaeva. *Micromechanical properties of grain boundaries and triple junctions in polycrystalline metals exhibiting grain boundary sliding at 293K*. Abstracts , p.83 (poster)

**9th International Workshop of Radiation Imaging Detectors, Erlangen, Germany, 22-26 July, 2007.**

M.Shorohov, F.Muktepavela, J.Maniks, L.Grigorjeva, D.Millers, V.Gostillo. *Microstructures, microhardness and spectrometrical performance of TlBr detector crystals*. Abstracts, p.43 (poster)

**III Междунар.Школа-конференция «Физическое материаловедение: Наноматериалы технического и медицинского назначения», Россия, Тольятти, 24-28 сентября, 2007 г.**

Ф.Муктепавела, Г.Бакрадзе, Л.Григорьева, Э.Таманис. *Наноструктурные Me-O покрытия, полученные методом механоактивированного окисления*. Тезисы, стр.217-218 (oral presentation)

**5th International Conference Metals, Welding & Powder Metallurgy (MET-2007), Riga, Latvia, September 13-14, 2007**

F.Muktepavela, G.Bakradze, E.Tamanis, L.Grigorjeva. *Properties of ZnO nanostructured coatings obtained by mechanoactivated oxidation* (oral presentation).

**Cyclotron Networking Meeting, Ispra, Italy, 3-6 December 2007.**

J. Berzins „Multipurpose cyclotron center in Latvia”

**3rd Internat Conf. Metals in Environment, Vilnius, 2007**

D.Riekstina, O. Veveris, J. Berzins, J. Alksnis, A. Skujina, „Evaluation of Radionuclides accumulation in soil around the shutdown nuclear reactor and radioactive waste repository of Latvia”, p.66-69.

65th Scientific Conference of the Latvian University, section of the History of Sciences and Museum Science, Riga, 29.01.2007

**1. J.Tamberg. History of theoretical nuclear physics in Latvia: 1936-2006.**

**2. J.Tamberg. „Nonlocality as a Reality”.**

**3. J.Tamberg. „Cosmological constant and vacuum”.**

**International Conference „NUCLEUS-2007” (25-26 June, 2007, Voronezh, Russia), 27.06.2007**

J.Proskurins. „Study of Quantum Chaos in the Framework of Triaxial Rotator Model”, 11.

**21. Seminar Akvierungsanalyse und Gammaskopie (SAAGAS 21), Mainz, Deutschland, 21-23 Marz 2007**

D. Riekstina, O. Veveris, J. Berzins „Quality assurance in gamma spectrometric measurements”, S.43.

**EcoBalt'2007, Riga, May 10-11, 2007**

D.Riekstina, O. Veveris, Smilskalne „Quality assurance in radioactivity measurements”, International Conference “p. 61.

**Developments in Optics and Communications, Riga, 27-29 April 2007**

M. Polakovs “The optical absorption of  $Fe^{2+}$  and  $Fe^{3+}$  ions in the blood”.

**International scientific workshop “Oxide materials for electronic engineering fabrication properties and application OMME-2007, May 28-31, Lviv, Ukraine.**

N. Mironova-Ulmane A. Kuzmin, U. Ulmanis, I. Sildos, M.Pärs E. Cazzanelli, G. Mariotto. “Study magnetic excitations in  $Ni_cMg_{1-c}O$  solid solutions”.

**XIII-th Feofilov symposium on spectroscopy of crystals activated by rare earth and transition metal ions.**

N. Mironova-Ulmane, U. Ulmanis, A. Kuzmin, I. Sildos, M. Pärs, M. Cestelli Guidi, M. Piccinini, A. Marcelli. “Magnetic ordering in  $Co_cMg_{1-c}O$  solid solutions”.

**12<sup>th</sup> European Conference on the Spectroscopy of Biological Molecules ECSBM'2007 Bobigny, Paris region (France) 1-6 September 2007.**

N.Mironova-Ulmane, M.Polakovs, A.Pavlenko and E. Reinholds “The EPR and optical spectra of blood”.

**14<sup>th</sup> International conference “Radiation Effects in Insulators REI-2007”, Caen (France), 27 august- 1 September 2007.**

M.Polakovs, N. Mironova-Ulmane, M. Grube and E.Reinholds. Micro-raman and infrared spectra of blood.

**International Conference “Medical Physics 2007” 5 - 6 October 2007, Kaunas, Lithuania.**

1. V. Skvortsova, N. Mironova- Ulmane, L. Grigojeva, D. Millers, K. Smits, Transient and stable color centers in neutron irradiated MgO.

2. N. Mironova-Ulmane, M.Polakovs, A. Pavlenko, D. Riekstina, T.Zvagule, E. Churbakova, Kurjane, N. Gabrusheva, M. Eglite, T.Kärner Estimation of internal and external exposition in retrospective dosimetry of Chernobyl clean-up workers.

**Int. Conf. Actual Problem of Solid State Physics –2007. October 23-26, 2007, Minsk, Belarus.**

1.M.Polakovs, N. Mironova-Ulmane, M. Grube and E.Reinholds. Micro-raman and infrared spectra of blood,

2.N. Mironova-Ulmane, A. Kuzmin, I. Sildos, M. Pärs , I. Steins, J. Grabis Magnetic ordering in  $\text{Ni}_x\text{Mg}_{1-x}\text{O}$  solid solution.

3.N. V. Skvortsova, L. Trinkler, L. Grigorjeva, Spectroscopy of defect centers in magnesium oxides crystals irradiated by fast neutron,

**International Conference Abstracts, Kaluga, Russia, May 22-25, 2007**

A.E.Petrov, I.V.Kudrenickis.”Gadolinium Containing Ferrites and Superconductors after Thermal Neutron Irradiation (Comparing Consideration)”.

**“New trends in nanoparticle Magnetism”, Rome, October 9-12, 2007**

A.Petrov, I.Kudrenickis, Exchange Anisotropy in cobalt fine particles, theses submitted to 6<sup>th</sup> International Conference on Fine Particles Magnetism (ICFPM).

**Photonics West Symposium OPTO 2007, San Jose, USA, January 21-24, 2007**

I.Muzikante, M.Rutkis, E.Fonavs, B.Stiller, D.Neher, V.Kampars, P.Pastors, Light induced processes in thin films of indandione type organic molecules, Abstracts, CD (oral)

**Nanotech Northern Europe 2007, Helsinki, Finland, March 27-29, 2007**

A.Sternberg, I.Muzikante, Nanomaterials and nanotechnologies in Latvia, Abstract, (poster)

**The European Materials Research Society (E-MRS) 2007 Spring Meeting, Strasbourg, France, May, 2007:**

I.Kaulach, I.Muzikante, L.Gerca, M.Plotniece, M.Roze, J.Kalnachs, G.Shlihta, P.Shipkovs, V.Kampars, V.Parra, PV effect in multilayer cells of GaOH phthalocyanine and fullerene doped poly(3-Hexylthiophene), Abstract ID: 9R0W7, report D-1653. (poster)

**12<sup>th</sup> International Conference on Organized Molecular Films (LB-12), July 1-5, 2007, Kraków, Poland:**

M.Bouvet, V.Parra, R.Dobulans, E.Fonavs, J.Latvels, I.Muzikante, Phthalocyanine-Based Gas Sensors: From Classical Thin Film Resistors to Organic Heterojunctions, Abstracts, (oral)

**IX International Conference on Frontiers of Polymers and Advanced Materials ICFPAM, Kraków, Poland, July 8-12, 2007**

1. I.Muzikante, J.Latvels, E.Fonavs, M.Bouvet, V.Parra, G.Juska, K.Genevicius, Electrical properties of heterojunction-based device of phthalocyanine and indandione derivatives, Book of Abstracts, pp. 166

2. M.Rutkis, A.Vembris, A.Tokmakovs, V.Kampars, V.Kokars, A.Jurgis, Optimizing the second order NLO performance of the host-guest polymer systems by tailoring the chromophores structure, Book of Abstracts, pp.188. (oral)
3. A.Vembris, M.Rutkis, E.Laizane, Influence of corona poling on host – guest polymer system NLO properties, Book of Abstracts, pp.394. (poster)
4. I.Muzikante, E.Fonavs, E.Laizane, A.Vembris, Photoelectrical properties of polymer films consisting of indandione derivatives with photoinduced intramolecular electron transfer, Book of Abstracts, pp. 391 (poster)
5. A.Tokmakovs, A.Vembris, M.Rutkis, V.Kampars, V.Kokars, A.Maleckis, Linear and nonlinear optical properties of novel polymers containing indan-1,3-dione derivatives as side chain chromophores, Book of Abstracts, pp. 415 (poster)
6. E.Jecs, J.Kreicberga, V.Kampars, A.Jurgis, M.Rutkis, A.Vembris, Novel azobenzene precursors for electro optical active polyurethanes: synthesis, quantum chemical and NLO characterization, Book of Abstracts, pp. 356 (poster)

**The 9-th International Conference-School Advanced Materials and Technologies, Palanga, Lithuania, August 27-31, 2007:**

A.Petruhin, J.Grube, J.Sipols, B.Polyakov, I.Muzikante, I.Tale, Semoconducting nanocrystals for solar cell applications produced by laser ablation, Abstracts, pp. 46. (poster)

**22nd European Photovoltaic Solar Energy Conference and Exhibition, Fiera Milano, Italy, September 3-7, 2007:**

I.Kaulach, I.Muzikante, L.Gerca, G.Shlihta, M.Plotniece, M.Roze, J.Kalnachs, A.Murashov, P.Shipkovs, G.Kashkarova, V.Kampars, V.Parra, PV Effect of Fullerene/Poly(3-Hexylthiophene) Blend Sensitized by GaOH Phthalocyanine, Proceedings, report, 1DV.1.29, pp.617-620

**International Conference on Renewables in a changing climate. Innovation in built environment, Lausanne, Switzerland, September 4-5, 2007:**

I.Kaulach, I.Muzikante, G.Shlihta, L.Gerca, M.Plotniece, M.Roze, J.Kalnachs, P.Shipkovs, A.Murashov, V.Parra, V.Kampars, PV Effect in Multilayer Cells and Blends of Fullerene/Poly(3-Hexylthiophene) and GaOH Phthalocyanine having NIR Charge Transfer Absorption Band, , Book of Abstracts, p.44. Proceedings on CD.

**Solar World Congress 2007 (SWC2007), , Beijing, China, September 18 - 21, 2007:**

I.Kaulachs, I.Muzikante, L.Gerca, G.Shlihta, M.Plotniece, M.Roze, J.Kalnachs, A.Murashov, P.Shipkovs, G.Kashkarova, V.Kampars, V.Parra, PV effect of fullerene/poly(3-hexylthiophene) blend sensitized by phthalocyanine having infrared absorption CT band, Proceedings of ISES World Solar Congress 2007, CD, Tsinghua University Press, Beijing and Springer-Verlag GmbH Berlin Heidelberg, pp. 1083-1042, 2007

**4th European Conference on Organic Electronics and Related Phenomena - ECOER'07, Varenna, Italy, October 1-4, 2007:**

1. I.Muzikante, J.Sipols, E.Fonavs, E.Laizane, A.Jurgis, P.Pastors, V.Kampars, Photoelectrical properties of polymer films consisting of indandione derivatives, Book of Abstracts, p. J3.
2. J.Latvels, I.Muzikante, E.Fonavs, A.Jurgis, P.Pastors, V.Kampars, Electrical properties of heterojunction based device of indandione derivatives, Book of Abstracts, p. P4.

## 5. PĒTNIECĪBAS PROJEKTI, KUROS PIEDALĀS INSTITŪTA PERSONĀLS (izņemot LZP granti)

### 5.1. LĪGUMDARBI, VALSTS PASŪTĪTIE PĒTĪJUMI, TIRGUS ORIENTĒTIE PĒTĪJUMI, LĪDZFINANSĒJUMS

Instītūts	Projekta nosaukums	Vadītājs/ koordinators vai līgumslēdzējs	Projekta izpildes termiņš (dd.mm.gg. - dd.mm.gg.)	Finansējuma apjoms (LVL/EUR/USD u.c.) <u>KOPĀ</u>	Finansējuma apjoms (LVL/EUR/USD u.c.) <u>2007. gadā</u>	Finansējuma avots (projekta pasūtītājs)	Zin.nozares kods (pēc LR izgl.klasifik.)
CFI	COST P8 Materiāli un sistēmas optisko datu glabāšanai un apstrādei.	J.Teteris	01.02.04.- 31.05.06.	3625 LVL	312.50 LVL	LR IZM	Fizika
CFI	Organisko fluoroforu luminiscences pētījumi un optimālās optiskās mērījumu shēmas un signāla apstrādes algoritma noteikšana fluorimetra izstrādei.	B.Bērziņa	01.04.06- 01.02.07	9800 LVL	7 350 LVL	LR IZM	Fizika
CFI	Ekoloģiskas graudu kaltes mikroklimate monitoringa un kaltēšanas procesa distances vadības iekārta	J.Kleperis	15.07.06- 15.05.07	4500 LVL	1 250 LVL	LR IZM - Latv.Lauksaimniecības Universitātes lauksaimniecības tehnikas zinātniskais institūts	Fizika
CFI	Elektriskā tīkla trokšņu izpēte un mēriekārtas izstrāde.	A.Kristiņš	15.04.06- 12.12.06	9700 LVL	1 350 LVL	LR IZM	Fizika
CFI	Mazdimensionālu molekulāro sistēmu strukturālā organizācija un to optiskā nelinearitāte.	M.Rutkis	08.08.07- 31.07.08	3 900 LVL 12 500 USD	3 000 LVL 12 500 USD	LR IZM Taivānas Nacionālās zinātnes padome	Fizika
CFI	Siltuma apmaiņas procesu izpēte zeme - ūdens siltuma sūkņi un tā izgatavošanas tehnoloģijas izstrāde	J.Zvirgzds	10.12.07- 10.06.09	93 380 LVL	32 900 LVL	LR IZM	Fizika
CFI	ES 6. Ietvara programmas projekta "MIND" realizācijas atbalsta nodrošināšana - līdzfinansējums.	V.Zauls	18.08.06- 31.12.08	145 479 LVL		LR IZM	Fizika
CFI	ES 6.Ietvara programmas projekta "EURATOM"ar EK kontrakta numuru FU06-CT-2004-00078 un TW4-TTBB-005-D06 realizācijas atbalsta nodrošināšana - līdzfinansējums.	A.Šternbergs	05.09.06- 20.12.06	101 906 LVL	50 953 LVL	LR IZM	Fizika



CFI	ES 6.Ietvara programmas projekta "EURATOM" ar EK kontrakta numuru FU06-CT-2004-00078 un TW5-TPDC-IRR CER realizācijas atbalsta modrošināšana - līdzfinansējums.	A.Šternbergs	05.09.07-31.12.07	100 929 LVL	75 696 LVL	LR IZM	Fizika
CFI	Valsts pētījumu programma "Modernu funkcionālu materiālu mikroelektronikai, nanoelektronikai, fotonikai, biomedicīnai un konstruktīvo kompozītu, kā arī atbilstošo tehnoloģiju izstrāde" 4.etaps	A.Šternbergs	01.01.07-31.12.07	320 987 LVL	320 987 LVL	LR IZM	Fizika
CFI	Valsts pētījuma programma "Modernu metožu un tehnoloģiju izpēte un izstrāde enerģētikā: videi draudzīgiem atjaunojamās enerģijas veidiem, enerģijas piegādes drošībai un enerģijas efektīvai izmantošanai" 2.etaps	J.Kleperis	01.01.07-31.12.07	100 000 LVL	100 000 LVL	LR IZM	Fizika
CFI	Nanotehnoloģijas saules enerģijas izmantošanai. (kompetences centra projekts)	J.Teteris	03.09.07-15.12.07	15 000 LVL	15 000 LVL	Latvijas Investīciju un attīstības aģentūra	Fizika

### 5.2.ERAF UN STARPTAUTISKI FINANSĒTI PROJEKTI

CFI	VPD1/ERAF/CFLA//APK/2.5.1./000067/034 "Platzonas materiālu MOCVD tehnoloģijas izstrāde un izpēte ultravioletiem gaismas emiteriem"	I.Tāle	01.07.06-30.06.08	200 000 LVL	119 138 LVL	LR IZM	Fizika
CFI	VPD1/ERAF/CFLA//APK/2.5.1./000065/032 "Kontroliera vadība gaisa kompresoru stacijai"	J.Zvirgzds	01.07.06-30.06.08	194 936.46 LVL	101 660 LVL	LR IZM	Fizika
CFI	VPD1/ERAF/CFLA//APK/2.5.1./000057/029 "Hologrāfisko materiālu un tehnoloģiju izstrāde un ieviešana"	J.Teteris	01.07.06-30.06.08	199 480 LVL	124 700 LVL	LR IZM	Fizika
CFI	VPD1/ERAF/CFLA//APK/2.5.1./000064/031 "Jauni materiāli radiācijas detektoriem"	B.Bērziņa	01.07.06-30.06.08	200 000 LVL	107 080 LVL	LR IZM	Fizika
CFI	VPD1/ERAF/CFLA//APK/2.5.1./000066/033 "Jaunu materiālu un elektrotehnoloģiju datorvadības programmatūras izstrāde ūdeņraža enerģētikas sistēmām"	J.Kleperis	31.07.06-31.07.08	151 647.76 LVL	70 767 LVL	LR IZM	Fizika

CFI	VPD1/ERAF/CFLA/07/NP/2.5.2./0001/000002/024 "Tehnoloģiskās un pētnieciskās aparatūras modernizācija Valsts pētījumu programmas materiālzinātnēs izpildei"	A.Šternbergs	20.08.07- 31.08.08	1 010 000 LVL	678 000 LVL	LR IZM	Fizika
CFI	Daudzfunkcionālas un integrētas pjezoelektriskas iekārtas (MIND).	V.Zauls	01.03.05- 28.02.09	414 298 EUR	36 000 EUR	EK 6.Ietvara programma	Fizika
CFI	Perspektīvu materiālu un sistēmu udeņraža uzkrāšanai integrēšana nākotnes sabiedrībā.	J.Kleperis	01.09.03.- 01.06.06	337 500 NOK	69 185 NOK	NERP	Fizika
CFI	Nanoskalas ķīmiskā skenēšana un virsmas strukturālā modifikācija, vienlaicīgi izmantojot Rtg-staru mikrokūļus un lokālo detektēšanu ar adatas palīdzību ( X-TIP).	J.Purāns	01.03.04.- 28.02.07.	170 050 EUR	23 527 EUR	EK 6.Ietvara programma	Fizika
CFI	Eiropas komisijas (EURATOM) pārejas grants "Magnētisko lauku un magnētisko savienojumu stohastizācija.	O.Dumbrājs	01.04.05.- 30.03.07	169 855 EUR	24 908 EUR	EK 6.Ietvara programma	Fizika
CFI	Virsmas īpašību aprēķini no pirmajiem principiem līdzsvarotām kodolu degvielām.	J.Kotomins	24.07.06- 31.08.07	48 500 EUR	30 000 EUR	EK kontrakts	Fizika
CFI	Plazmas spektroskopija. Plazmas malu dinamiskā nodalīšana. Kapacitatīvā bolometra prototipa izstrāde. <b>EURATOM</b>	I.Tāle V.Kuzovkovs A.Šternbergs	2007.g.	79 110 EUR	0 EUR	EK 6.Ietvara programma	Fizika
CFI	Bīstamu vielu izņemšana no elektronikas: Procesi un paņēmieni MVU'iem (GreenRoSE)	A.Lūsis	01.06.04.- 31.05.07	85 000 EUR	0 EUR	EK 6.Ietvara programma	Fizika

## 6. ORGANIZĒTĀS KONFERENCES 2007.GADĀ

1. 23. LU CFI zinātniskā konference, Rīgā, 13. – 15.februāris, 2007  
Publicēta konferences programma latviešu valodā un tēzes latviešu un angļu valodās.
2. International Baltic Sea Region conference „Functional materials and nanotechnologies”, Rīga, 2. – 4.aprīlis, 2007.  
Publicētas tēzes angļu valodā un daļa no referātiem žurnālā (50) „Journal of physics, conference series”
3. NORSTORE workshop on Hydrogen Storage, Sigulda, May 3 - June 2, 2007.  
tēzes un referāti publicēti Norstore mājas lapā.

## 7. STARPTAUTISKĀ SADARBĪBA

2007.gadā LU CFI Ekselences centra zinātniskā seminārā ir uzstājušies ar priekšlasījumiem sekojoši ārzemju zinātnieki:

1. Dr.phys. Sin Wai Chan no Honkongas (12.martā)
2. Dr.phys. Guntars Vaivars no Dienvidāfrikas Savienības (16.aprīlī)
3. Laila Chakare – Samardzija no Slovēnijas (30.maijā)
4. Marks Valdmanis no ASV (30.maijā)
5. Prof. R.T.Williams no ASV (14.septembrī)
6. Dr.R.Evarestov no Krievijas (30.novembrī)

Institūta personāla ārzemju vizītes ir bijušas vairāk kā 80. Galvenais vizīšu nolūks ir bijis Starptautisko konferenču apmeklējums

## 8. INSTITŪTA PERSONĀLS, KAM PIEŠĶIRTI GODA NOSAUKUMI, APBALVOJUMI, PRĒMIJAS

Dr.habil.fiz. L.Skuja

- RD Elektronikas gadskārtējā balva fizikā un inženierzinātnēs;
- balva par izcilu pētniecību no Tokio Tehnoloģiju institūta Materiālu un Struktūras laboratorijas (Japāna).

Dr.habil.fiz. J.Purāns – Edgara Siliņa memoriālā balva fizikā

Mg.fiz. L.Grīnberga – L’Oreal balva zinātniecei – sievietei

Dr.habil.fiz. I.Muzikante – Izglītības un Zinātnes ministrijas prēmija

Mg.fiz. A.Vembris – jaunā zinātnieka balva fizikā

### 9.1. LU CIETVIELU FIZIKAS INSTITŪTAM PIESAISTĪTIE STUDENTI UN DOKTORANTI (ALGOTS DARBS)

N.p.k			Studējošā / doktoranta			Sadarbības mērķis	Darba vadītājs	Nodaļa	
	Uzvārds	Vārds	Fakultāte	Studiju programma	Studiju gads (kurss)		( Uzvārds Vārds)		
1	Aleksejeva	Jeļena	LU Fiz.-mat.fak.	bakalaura	3 kurss	algots darbs+ bakalaura darba izstrāde	Teteris Jānis	2.8.	
3	Balcers	Ojārs	LU fiz.-mat. fak.	doktorantūra	pretendents	algots darbs + disertācijas izstrāde	Teteris Jānis	2.8.	
4	Belijs	Andrejs	LU Fiz.-mat.fak.	bakalaura	4 kurss	algots darbs+ bakalaura darba izstrāde	Klotiņš Ēriks	2.3.	
5	Bērziņš	Dzintars	LU Fiz. -mat.fak.	bakalaura	4 kurss	algots darbs+ bakalaura darba izstrāde	Rogulis Uldis	2.1.	
6	Bočarovs	Dmitrijs	LU fiz.-mat. fak.	doktorants	2 gads	algots darbs + disertācijas izstrāde	Kuzmins Aleksejs	2.6.	
7	Čubarovs	Mihails	LU fiz.-mat.fak.	bakalaura	4 kurss	algots darbs+ bakalaura darba izstrāde	Tāle Ivars	2.1.	
8	Dimitročenko	Lauris	LU Fiz. -mat.fak.	doktorantūra	4 gads	algots darbs + disertācijas izstrāde	Rogulis Uldis	2.1.	Disertācija aizstāvēta 2007
9	Dunce	Marija	LU Fiz. -mat.fak.	bakalaura	4 kurss	algots darbs+ bakalaura darba izstrāde	Zauls Vismants	2.3.	
10	Gertners	Uģis	LU Fiz.-mat.fak.	bakalaura	4 kurss	algots darbs+ bakalaura darba izstrāde	Teteris Jānis	2.8.	
11	Guļāns	Andris	LU Fiz.-mat.fak.	doktorantūra	3gads	Somijā		2.1.	
12	Grīnberga	Līga	LU Fiz. -mat.fak.	doktorantūra	4 gads	algots darbs + disertācijas izstrāde	Kleperis Jānis	2.1.	Disertācija aizstāvēta 2007
13	Grūbe	Uģis	LU Fiz.-mat.fak.	bakalaura	3 kurss	algots darbs+ bakalaura darba izstrāde	ŠarakovskisA., un Butikova J.		
14	Hodakovska	Jūlija	LU fiz.-mat. fak.	doktorantūra	3gads	algots darbs +disertācijas izstrāde	Kleperis Jānis	2.4.	
15	Kaļinko	Aleksandrs	LU Fiz.-mat.fak.	doktorantūra	1 gads	algots darbs + dokt.disert. izstāde	Kuzmins Aleksejs	2.4.	
16	Kasjane	Darja	LU Fiz.-mat.fak.	bakalaura	2 kurss	algots darbs + bakalaura darba izstrāde	Trinklere Iaima	2.9.	
17	Klotiņš	Ēriks(juniors)	LU Fiz.-mat.fak.	bakalaura	4 kurss	algots darbs+ bakalaura darba izstrāde	Klotiņš Ēriks	2.3.	
18	Korsaks	Valdis	LU Fiz.-mat.fak.	doktorantūra	1 gads	algots darbs + doktora disert. izstrāde	Bērziņa Baiba	2.9.	
19	Krutohovostovs	Romāns	LU Fiz.-mat. fak	doktorantūra	3 gads	algots darbs + disertācijas izstrāde	Zauls Vismants	2.3.	
20	Kuzņecovs	Ainārs	LU Fiz.-mat.fak.	bakalaura	4 kurss	algots darbs+ bakalaura darba izstrāde	Klotiņš Ēriks	2.3.	

21	Laizāne	Elīna	LU Fiz.-mat.fak.	maģistrantūra	2 kurss	algots darbs+ maģ. darba izstrāde	Muzikante Inta	2.12.	
22	Mārciņš	Guntis	LU Fiz.-mat.fak.	maģistrantūra	2 kurss	algot darbs + maģ.darba izstrāde	Tāle Ivars	2.1.	
23	Nazārovs	Pāvels	LU Fiz.-mat.fak.	bakalaura	3 kurss	algots darbs+ bakalaura darba izstrāde	Kleperis Jānis	2.4.	
24	Nitišs	Edgars	LU Fiz.-mat.fak.	bakalaura	2 kurss	algot darbs + bakalaura darba izstrāde	Muzikante Inta	2.12.	
25	Petruhins	Andrejs	LU Fiz.-mat.fak.	bakalaura	3 kurss	algots darbs+ bakalaura darba izstrāde	Pojakovs Boriss	2.1.	
26	Proskurins	Jevgeņijs	LU fiz.-mat. fak.	doktorantūra	3 gads	algot darbs + disertācijas izstrāde	Tambergs Juris	2.11.	
27	Sīpols	Jurģis	LU Fiz.-mat.fak.	bakalaura	2 kurss	algot darbs + bakalaura darba izstrāde	Muzikante Inta	2.12.	
28	Šarakovskis	Anatolijs	LU fiz.-mat. fak.	doktorantūra	3 gads	algot darbs + disertācijas izstrāde	Springiņis Māris+Tāle I.	2.1.	
29	Šmits	Krišjānis	LU Fiz.-mat.fak.	doktorantūra	3gads	algots darbs+disertācijas izstrāde	Grigorjeva Larisa	2.2.	
30	Šorohovs	Mihails	LU Fiz.-mat.fak.	doktorantūra	2gads	algots darbs+disertācijas izstrāde	Grigorjeva Larisa	2.2.	
31	Vembris	Aivars	LU fiz.-mat.fak.	maģistrantūra	2 kurss	algot darbs + maģ.darba izstrāde	Rutkis Mārtiņš	2.12.	
32	Bavrins	Konstantīns	LU Fiz.-mat.fak.	bakalaura	2 kurss	algot darbs + bakalaura darba izstrāde	Tambergs Juris	2.11.	
33	Bīdermane	Ieva	LU Fiz.-mat.fak.	maģistrantūra	1 kurss	algots darbs+ maģ. darba izstrāde	Muzikante Inta	2.12.	
34	Daņilovs	Artūrs	LU Fiz.-mat.fak.	bakalaura	2 kurss	algot darbs + bakalaura darba izstrāde	Teteris Jānis	2.8.	
35	Duboviks	Vladislavs	LU Fiz.-mat.fak.	bakalaura	2 kurss	algot darbs + bakalaura darba izstrāde	Teteris Jānis	2.8.	
36	Fomins	Sergejs	LU Fiz.-mat.fak.	doktorantūra	1gads	algots darbs+disertācijas izstrāde	Ozoliņš Māris	2.3.	
37	Gopejenko	Aleksejs	LU Fiz.-mat.fak.	doktorantūra	1gads	algots darbs+disertācijas izstrāde	Kuzovkovs Vladimirs	2.6.	
38	Karitāns	Varis	LU Fiz.-mat.fak.	doktorantūra	1gads	algots darbs+disertācijas izstrāde	Ozoliņš Māris	2.3.	
39	Magone	Dārta	LU Fiz.-mat.fak.	bakalaura	2 kurss	algot darbs + bakalaura darba izstrāde	Bērziņš Jānis	2.11.	
40	Vanags	Mārtiņš	LU Fiz.-mat.fak.	doktorantūra	1gads	algots darbs+disertācijas izstrāde	Kleperis Jānis	2.4.	
41	Lisovskis	Rolands	LU Fiz.-mat.fak.	bakalaura	4 kurss	algots darbs+ bakalaura darba izstrāde	Maniks Jānis	2.10.	
42	Smeltere	Ilze	RTU	doktorantūra	1gads	algots darbs+disertācijas izstrāde	Dambekalne Maruta	2.3.	
43	Tokmakovs	Andrejs	RTU	maģistrantūra	2 gads	algots darbs+ maģ. darba izstrāde	Muzikante Inta	2.12.	
44	Gerbreders	Andrejs	DU	doktorantūra	2gads	algots darbs+disertācijas izstrāde	Teteris Jānis	2.8.	
45	Sļedevskis	Ēriks	DU	doktorantūra	2gads	algots darbs+disertācijas izstrāde	Teteris Jānis	2.8.	

**9.2. DOKTORANTI, KAS 2007.G. SAVU PROMOCIJAS DARBU FIZIKĀ  
IZSTRĀDĀJA LU CFI**

Nr. p.k.	Doktorants	Darba vadītājs	Doktorantūras gads
1.	Kaļinko A.	Kuzmins A.	1.
2.	Korsaks V.	Bērziņa B.	1.
3.	Gopejenko A.	Žukovskis J.	1.
4.	Vanags M.	Kleperis J.	1.
5.	Bočarovs D.	Kotomins J.	2.
6.	Šorohovs M.	Grigorjeva L.	2.
7.	Šarakovskis A.	Sprīņģis M.	3.
8.	Šmits K.	Millers D.	3.
9.	Proskurins J.	Tambergs J.	3.
10.	Hodakovska J.	Kleperis J.	3.
11.	Krutohvastovs R.	Zauls V.	3.
12.	Guļāns A.	Somijā	3.
13.	Balcers O.	Teteris J.	Pretendents
14.	Dimitročenko L.	Rogulis U.	Pretendents
15.	Grīnberga L.	Kleperis J.	Pretendents
16.	Gerbreders A. (DU)	Teteris J.	2.
17.	Sļedevskis E. (DU)	Teteris J.	2.
18.	Smeltere I. (RTU)	Dambekalne M.	1.

**9.3. DOKTORANTI, KAS 2007.G. SAVU PROMOCIJAS DARBU  
OPTOMETRIJĀ IZSTRĀDĀJA LU CFI**

Nr. p.k.	Doktorants	Darba vadītājs	Doktorantūras gads
1.	Karītāns V.	Ozoliņš M.	1.
2.	Fomins S.	Ozoliņš M.	2.
3.	Paeglis R.	Lācis I.	Pretendents
4.	Ikaunieks G.	ozoliņš M.	2.

**9.4. INSTITŪTA DARBINIEKU AIZSTĀVĒTIE  
PROMOCIJAS DARBI FIZIKĀ 2007.G.**

Nr. p.k.	Doktorants	Darba vadītājs	Aizstāvēšanas vieta
1.	Kaščejevs V.	Aharaony A.	Izraēla
2.	Grīnberga L.	Kleperis J.	Latvija
3.	Dimitročenko L.	Rogulis U.	Latvija

**9.5. INSTITŪTĀ IZSTRĀDĀTIE UN LU AIZSTĀVĒTIE  
MAGISTRA DARBI FIZIKĀ**

Nr. p.k.	Maģistrants	Darba vadītājs
1.	Gopejenko A.	Eglītis R.
2.	Dobulāns R.	Muzikante I.
3.	Kaļinko A.	Grigorjeva L.
4.	Korsaks V.	Bērziņa B.
5.	Vanags M.	Kleperis J.

**9.6. INSTITŪTĀ IZSTRĀDĀTIE UN LU AIZSTĀVĒTIE  
BAKALaura DARBI FIZIKĀ**

Nr. p.k.	Bakalaurs	Darba vadītājs
1.	Belijs A.	Klotiņš Ē.
2.	Bīdermane I.	Muzikante I.
3.	Dunce M.	Zauls V.
4.	Ērgle M.	Kleperis J.
5.	Kuzņecovs A.	Klotiņš Ē.
6.	Strauss A.	Sprīngis M.
7.	Māliņš G.	Tambergs J.
8.	Bērziņš Dz.	Rogulis U.

**10. KRĀJUMI UN ŽURNĀLI, KURUS 2007.G. IR IZDEVIS LU CFI**

1. LU CFI 23.zinātniskās konferences, veltītas LU profesora Ilmāra Vītola 75 gadu atcerei, referātu tēzes (latviešu un angļu valodās)  
Redaktors: A.Krūmiņš  
Rīga, 2007, 85 lpp  
Metiens: 100 eks.  
@ LU Cietvielu fizikas institūts
2. LU CFI 23.zinātniskās konferences, veltītas LU profesora Ilmāra Vītola 75 gadu atcerei, programma (latviešu valodā)  
Redaktors: A.Krūmiņš  
Rīga, 2007, 8 lpp  
Metiens: 100 eks.  
@ LU Cietvielu fizikas institūts
3. Book of Abstracts of the International Baltic Sea Region Conference „Functional materials and nanotechnologies ” (angļu valodā)  
Redaktors: A.Šternbergs  
Rīga, 2007, 145 lpp

Metiens: 150 eks.  
@ LU Cietvielu fizikas institūts

4. 50 no augšā minētajiem konferences referātiem recenzēti un publicēti elektroniskā žurnālā „Journal of Physics: Conference Series”, Vol.93, 2007. (skat.pielikumu 1)
5. NORSTORE semināra referāti un tēzes ir publicētas Norstore mājas lapā <http://www.norstore.ife.no>

## 11. DAŽĀDI CITI INSTITŪTAM NOZĪMĪGI NOTIKUMI

1. 2007.g. 3.aprīlī notika Institūta Starptautiskais izvērtējums, ko veica LU CFI Starptautiskā padomdevēju komisija. Komisijas ziņojumu var skatīt pielikumā 2.  
Esam izstrādājuši pasākumu plānu Komisijas rekomendāciju realizēšanai (pielikums 3)
2. Kopā ar Latvijas augsto tehnoloģiju uzņēmumiem (Sidrabe, GroGlas, Alfa u.c.) tika sagatavots Kompetences centra projekts „Baltic Solar”, kas ir iesniegts Ekonomikas ministrijā.
3. Sekmīgi turpinās LU CFI infrastruktūras uzlabošanas projekti (2007.gadā tika rekonstruēta apkures sistēma, šogad strādājam pie ventilācijas sistēmas rekonstrukcijas un saimniecības ēkas korpusa pārbūves)
4. LZA par nozīmīgākajiem sasniegumiem Latvijas zinātnē 2007.gadā atzinusi: Dr.Jevgēņija Kotomina, Dr.Sergeja Piskunova un Dr.Jurija Žukovska darbu par stroncija titanāta virsmas teorētisko modelēšanu.
5. Pateicoties plašajam projektu klāstam un bāzes finansējumam 2007..g izdevās paaugstināt Institūta zinātnisko darbinieku (ar doktora grādu) atalgojumu no 611 Ls/mēn līdz 911 Ls/mēn. Tas sekmē jauno zinātnieku piesaisti institūtam.



**EVALUATION REPORT  
of the International Supervisory Board  
on Research, Education and Development activities  
of the Institute of Solid State Physics, University of Latvia**

*Board meeting, Riga, Latvia, April 3, 2007*

**Overview**

Institute of Solid State Physics (ISSP), University of Latvia was established on the basis of the University's two Laboratories: Semiconductor Physics and Ferro- and Piezoelectric Physics – in 1978. Since 1986 the ISSP had the legal status of an independent scientific institution of the University, but was reorganized as agency of the University of Latvia in 2006.

The research activities of ISSP include:

- studies of electronic and atomic processes in wide-gap materials with different degree of structural ordering and chemical composition;
- development of new inorganic and organic materials (single crystals, polymers, glasses, ceramics, thin films) for optics and electronics;
- design and manufacturing of scientific instruments and devices for analytical tasks, environmental monitoring and energy storage;
- vision research, development of new technologies for psychophysical testing and primary vision care.

The highest decision-making body of the ISSP is the Scientific Council of 21 members elected by the employees of the Institute. The total staff number of the ISSP is 222, including 32 Habilitatus Doctors of Sciences, 54 Doctors of Sciences and 55 students.

The research activities of the ISSP in 2006 were reflected in 180 publications in the internationally recognised scientific journals. The Institute obtained 21 research grants from Latvian Science Council, participated in 4 trans-institutional co-operation projects, supervised the National Research Programme (NRP) in “Material sciences”, and collaborated in the NRP “Energetics” with total financing of 418 thousand Latvian lats (LVL, 1 EUR = 0.703 LVL) in 2006. The total amount of various contract works and market-oriented research projects in 2006 was 143 thousand LVL. In addition, 281 thousand LVL were received for basic staff salaries and for maintenance of infrastructure.

The ISSP carries out RTD projects in co-operation with technology-oriented Latvian enterprises, e.g., Sidrabe, Alfa, Alfa Pro, Baltic Scientific Instruments, Valmieras Stikla Skiedra (Valmieras glass fibres). Two SMEs (Hologramma Ltd., Dardedze Holografija Ltd.) are established at the Institute as a spin-off of research projects.

Energy efficiency of the building was improved by a large-scale reconstruction work in the laboratory part of the Institute's building as part of the state investment project (total sum of 581 thous. LVL). Thermal insulation of the outer walls and windows was improved, a new double-pitch roof was constructed, and the interior was partially renovated improving energy efficiency and making the working conditions in the Institute more comfortable.

From the beginning of 2001 the ISSP has the status of the European Commission (EC) Centre of Excellence for Advanced Material Research and Technologies (CAMART) with the following main tasks:

- promote restructuring of the science and technology sectors in Latvia;
- attract young researchers;
- collaborate with the European colleagues.

The research activities in the CAMART are carried out in the following main fields:

- functional disordered materials;
- theory and modelling;
- advanced ferroelectric materials;
- solid state ionics and devices;
- materials for vision science.

In the period 2001- 2004 these activities were supported by EC funding of 492 thousand LVL. Several EC projects (EURATOM, X-TIP, MIND) are continuing in the ISSP, amounting to 245 thousand LVL in 2006. This sum includes co-financing from the Latvian government. Including the EU structural funding for scientific equipment, the total funding for the ISSP in 2006 was 1586 thousand LVL. ISSP continues to participate in EU network on materials research ERANET MATERA.

The ISSP has recently intensified its teaching activities. Four research staff members of the Institute have been elected as professors of the University of Latvia, and three others - as professors of Riga Technical University and the University of Daugavpils. Postgraduate and graduate curricula are offered in solid state physics, material physics, chemical physics, physics of condensed matter, semiconductor physics, and in experimental methods and instruments.

### **Achievements**

- 1) In the period since the first International evaluation (18.08.2002.) the overall development of ISSP has been good with excellent quality of research as evidenced by publications in internationally recognized journals, numerous citations, active participation in international projects etc. The average salary of scientific staff was recently (2006) significantly increased to 611 LVL/month, surpassing for the first time

the average salary in Latvia (around 300 LVL/month). This makes it now possible to attract young researchers to work in the ISSP.

- 2) In the last two years the renovation of scientific infrastructure was started and a number of modern scientific instruments have been acquired with a total investment of around 1.5 Mil. LVL.
- 3) An internationally recognized research group working in the field of organic semiconductors has joined the Institute with its staff and equipment in 2006.
- 4) According to the official data of the EC National Contact Point in Latvia, ISSP is the most active participant in international projects as compared with other national scientific institutions in Latvia.
- 5) The ISSP has increased its participation in higher education at the universities of Latvia.

### **Critical Issues**

- 1) The average age of research staff in the ISSP is around 54 years, therefore there is an urgent need for a new generation of researchers.
- 2) The increase in research funding has an unfortunate side-effect of increasingly complex and time-consuming project management, both concerning Latvian and EC projects. This frequently forces project leaders to devote the bulk of their time to formal issues and makes it problematic for them to do active scientific investigations.
- 3) The project funding payments have been delayed in some cases, conflicting with the project time – planning and reporting schedules.
- 4) The ISSP should play a more active role in the science popularization (communication) activities, particularly addressing the younger generation starting with school-age children.

### **Recommendations**

- 1) To guarantee the high internationally competitive level of scientific research in the ISSP, it is necessary to continue allocation of additional financial resources from the state budget of Latvia and EU Structural funds. This funding is needed both for reasonable salaries to attract and involve additional excellent scientists (young generation and researchers from abroad) and to further improve the scientific infrastructure to the internationally competitive level.
- 2) The ISSP must play a more active role in the fulfilment of the National Research Programmes, including the education of corresponding specialists.
- 3) Further development of modern scientific infrastructure with estimated cost of 15 Mio LVL is needed in ISSP for acquiring new and updating the existing equipment, and for


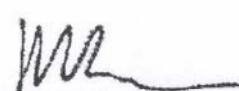
laboratory renovation. Apart from improving the research capability, this will help to develop a modern research base for PhD students in material sciences.

- 4) Strong contacts of the ISSP with international large-scale experimental centres are highly desirable to promote the research activities to the highest level and expand scientific collaboration. In particular, a participation of the ISSP in European Synchrotron Radiation Facility (ESRF), located in Grenoble (France) and operating the most powerful synchrotron radiation source in Europe, should be a strategic goal, which will open an access for the ISSP staff to a first-class scientific environment for conducting experiments at the cutting edge of modern science.
- 5) For a variety of reasons, project payments have been delayed in the past, hampering the work. While this should be avoided, such unpredictable delays can still happen in the future. Therefore, for efficient work, national resources should be made available as an emergency buffer, which would help to bridge financial "holes" in case of delayed project payments.
- 6) To avoid inflexibility inherent to large hierarchical organizations, ISSP should acquire legal status of self-governed semi-autonomous scientific institution associated with the University of Latvia. This status would facilitate an efficient research work by minimizing efforts and resources spent on purely formal issues and would significantly streamline the processes of preparing proposals and the subsequent signing of contracts.
- 7) A sound long-term recruitment plan for staff members must be worked out for the ISSP.
- 8) ISSP should further increase efforts in public relations by promoting knowledge and technologies in public media and society, particularly among the younger generation, by explaining the significance of sciences for the long-term development of Latvia.

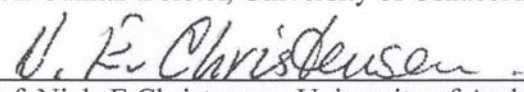
**Signed (approved) by the International Supervisory Board:**

October 20, 2007

Prof. Juras Banys, Faculty of Physics, University of  
Vilnius, Lithuania

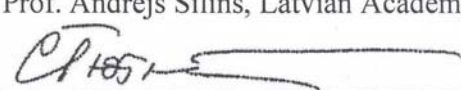
  
  
Prof. Marco Kirm, Institute of Physics, University of  
Tartu, Estonia

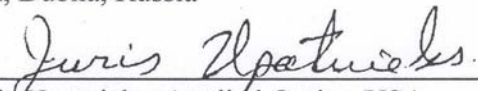
  
Prof. Gunnar Borstel, University of Osnaebrueck, Germany

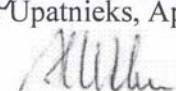
  
Prof. Niels E. Christensen, University of Aarhus, Denmark

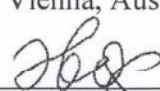
  
Prof. Claes-Goran Granqvist, Uppsala University, Sweden,

  
Prof. Andrejs Silins, Latvian Academy of Sciences, Latvia

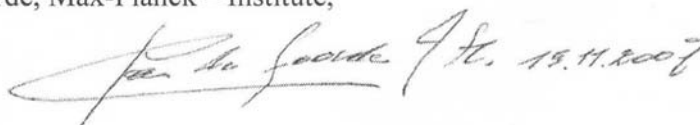
  
Prof. Sergei Tuituinnikov, Joint Institute for Nuclear  
Research, Dubna, Russia

  
Prof. Juris Upatnieks, Applied Optics, USA

  
Prof. Harald W. Weber, Atomic Institute of Austrian  
Universities, Vienna, Austria

  
Prof. Robert Evarestov, St. Petesburg University,  
Department of Chemistry, Russia

Prof. Marcel Van de Voorde, Max-Planck – Institute,  
Stuttgart, Germany

  
19.11.2007