

# **Second Asian School-Conference on Physics and Technology of Nanostructured Materials**

**(ASCO-NANOMAT 2013)**

## **PROGRAMME**

Institute of Automation and Control Processes FEB RAS

Far Eastern Federal University

Vladivostok

2013

## *General information*

**Plenary talk** – 45 minutes including questions

**Ordinary talk** – 15 minutes including questions

**Coffee break** – 15 – 20 minutes

**Lunch** – 60 minutes

---

## *Organizers*

**Institute of Automation  
and Control Processes  
FEB RAS**



**Far Eastern Federal  
University**



**Far Eastern Innovation  
Scientific-Technological  
Cluster**



*The School-Conference is supported by*

**Russian Foundation for  
Basic Research**



**Far Eastern Branch of  
Russian Academy of Science**



**Bruker Corporation  
(Russian division)**



*GENERAL SPONSOR*

**Dmitriy Zimin's  
Foundation "Dynasty"**



**Dynasty**

## General Schedule

### Tuesday, 20 August

- 12:00 – 20:00 Participants arrival at the airport of Vladivostok, transportation and accommodation  
20:00 – 21:00 Participants registration at the “Vladivostok” hotel

### Wednesday, 21 August

- 08:30 – 09:00 Participants registration  
09:00 – 09:30 Opening remarks  
09:30 – 11:45 Plenary session  
11:45 – 12:00 *Coffee break*  
12:00 – 13:30 Atomic-scale controlled surfaces/interfaces and nanostructure self organization  
13:30 – 14:30 *Lunch*  
14:30 – 16:00 Plenary session  
16:00 – 16:20 *Coffee break*  
16:20 – 16:50 First principal calculations and molecular modeling of nanostructures  
16:50 – 19:00 Free time  
19:00 – 21:00 *Welcome party (Hotel “Vladivostok”)*

### Thursday, 22 August

- 09:00 – 11:15 Plenary session  
11:15 – 11:30 *Coffee break*  
11:30 – 13:15 Semiconducting nanoheterostructures: growth, structure and characterization  
13:15 – 14:15 *Lunch*  
14:15 – 16:00 Optical materials, nonlinear optical mediums and laser metrology  
16:00 – 16:20 *Coffee break*  
16:20 – 17:00 Free time  
17:00 – 19:00 Poster session I  
19:00 – 21:30 Free time  
21:30 – 23:00 *Excursion “Night Vladivostok”*

### Friday, 23 August

- 09:00 – 11:15 Plenary session  
11:15 – 11:30 *Coffee break*

- 11:30 – 13:15 Formation and properties of ferromagnetic, thermoelectric and ferroelectric materials and nanosystems
- 13:15 – 14:15 *Lunch*
- 14:15 – 15:45 Plenary session
- 15:45 – 16:00 *Coffee break*
- 16:00 – 17:00 Sponsor session
- 17:00 – 17:45 Nanocomposites and functional hybrid materials: formation technology, structure and characterization

## **Saturday, 24 August**

- 09:00 – 11:15 Plenary session
- 11:15 – 11:30 *Coffee break*
- 11:30 – 11:45 Carbon based nanomaterials: technology, structure and characterization
- 11:50 – 12:50 Biohybrids and biomaterials: biomimetic materials, biomineralisation, and biosystems
- 12:50 – 14:00 *Lunch*
- 14:00 – 15:00 Nanostructured coatings: formation technology and properties
- 15:00 – 15:20 *Coffee break*
- 15:20 – 16:35 Nanodevices and sensors for photonics, optoelectronics and electromechanics
- 16:35 – 17:00 Free time
- 17:00 – 19:00 Poster session II
- 19:00 – 19:30 Free time
- 19:30 – 22:00 *Symposium Dinner (Hotel “Vladivostok”)*

## **Sunday, 25 August**

- 09:00 – 18:00 *Excursion “Voroshilov’s battery and beaches of Russky island”*

## **Monday, 26 August**

- 09:30 – 11:00 Plenary session
- 11:00 – 11:20 *Coffee break*
- 11:20 – 13:20 Nanocomposites and functional hybrid materials: formation technology, structure and characterization
- 13:20 – 14:20 *Lunch*
- 14:20 – 16:35 Plenary session
- 16:35 – 16:50 *Coffee break*
- 16:50 – 18:35 Nanosilicides and bulk silicides: theory, synthesis and characterization
- 18:35 – 19:20 Award ceremony and closing remarks

## **Tuesday, 27 August**

09:00 – 20:00 Participants departure



## The programme of The Second Asian School-Conference on Physics and Technology of Nanostructured Materials (ASCO-NANOMAT 2013)

### TUESDAY, 20 AUGUST

12:00 – 20:00 Participants arrival at the airport of Vladivostok, transportation and accommodation

20:00 – 21:00 Participants registration at the “Vladivostok” hotel

### WEDNESDAY, 21 AUGUST

**Participants registration** **08:30 – 09:00**

**Opening remarks** **09:00 – 09:30**

Chairman: *A.A. Saranin*

**Plenary session** **09:30 – 11:45**

PS.21.01i **S. Hasegawa**

*University of Tokyo, Tokyo, Japan*

Surface Nanomaterials for Sustainable Growth

- Superconducting and Spin-split Surface States -

PS.21.02i

**D. Pavuna**

*Swiss Federal Institute of Technology at Lausanne (EPFL), CH-1015 Lausanne - EPFL, Switzerland*

Doping, strain, electric field effect and (interface) superconductivity in high- $T_c$  and related quasi-two-dimensional nanostructures

PS.21.03i

**V.U. Nazarov**

*Research Center for Applied Sciences, Academia Sinica, Taiwan*

Scattering resonances in two-dimensional crystals with application to grapheme

**Coffee break** **11:45 – 12:00**

**Atomic-scale controlled surfaces/interfaces and nanostructure self organization** **12:00 – 13:30**

Chairman: *S. Hasegawa*

I.21.01o **L.V. Bondarenko\***, D.V. Gruznev, A.Yu. Tupchaya, A.A. Yakovlev, D. Usachev, O. Vilkov, A. Fedorov, D.V. Vyalikh, A.V. Zotov, A.A. Saranin

*\* Institute of Automation and Control Processes, 5 Radio St., Vladivostok 690041, Russia*

Spin-orbit splitting on Tl-modified Si(111) $\sqrt{3}\times\sqrt{3}$ -Au surface

I.21.02o

N.V. Denisov, E.N. Chukurov, O.A. Utas, **S.G. Azatyan\***, A.V. Zotov, A.A. Saranin

*\* Institute of Automation and Control Processes, 5 Radio St., Vladivostok 690041, Russia*

Bismuth–silver surface structures on Si(111)

- I.21.03o **A.A. Yakovlev\***, L.V. Bondarenko, A.V. Matetskiy, A.Yu. Tupchaya,  
D.V. Gruznev, A.V. Zotov, A.A. Saranin  
*\* Institute of Automation and Control Processes, 5 Radio St., Vladivostok 690041, Russia*  
STM study of alkali metals on Si(111)  $\alpha$ - $\sqrt{3}\times\sqrt{3}$ -Au surface
- I.21.04o D.A. Olyanich, V.G. Kotlyar, **T.V. Utas\***, A.V. Zotov, A.A. Saranin  
*\* Institute of Automation and Control Processes. 690041 Vladivostok, Russia*  
The manipulation of C<sub>60</sub> in molecular arrays on (Au,In)/Si(111) surface with an STM tip
- I.21.05o S.V. Komogortsev, S.N. Varnakov, S.A. Satsuk, **I.A. Yakovlev\***,  
S.G. Ovchinnikov  
*\* Kirensky Institute of Physics of SD RAS, Akademgorodok, Krasnoyarsk 660036, Russia*  
Magnetic anisotropy of Fe films on Si(001) with and without SiO<sub>2</sub> buffer layer
- I.21.06o A.S. Gournik, **M.V. Ivanchenko\***  
*\* Institute of Automation and Control Processes, 5 Radio St., Vladivostok 690041, Russia*  
Control of the In islands size by varying the deposition rate. Islands thickness selectivity revealed by AES

**Lunch** **13:30 – 14:30**

---

Chairman: *S.M. Shivaprasad*

**Plenary session** **14:30 – 16:00**

---

- PS.21.04i **V.G. Zavodinsky**  
*Institute of Materials of FEB RAS, 153 Tikhoookeanskaya str., Khabarovsk 680042, Russia*  
Quantum-mechanical modeling without Schrodinger and Kohn-Sham equations
- PS.21.05i **A.V. Vakhrushev**  
*\* Institute of Mechanics UB RAS, 34 Baramzinoy St., Izhevsk 426067, Russia*  
Molecular modeling of semiconductor nanostructures

**Coffee break** **16:00 – 16:20**

---

**First principal calculations and molecular modeling of nanostructures** Chairman: *D.B. Migas*  
**16:20 – 16:50**

---

- V.21.01o **A.S. Fedorov\***, A.A. Kuzubov, N.S. Eliseeva, Z.I. Popov  
*\* Kirensky Institute of Physics, Akademgorodok 50, Krasnoyarsk, 660036, Russia*  
Theoretical study of the lithium diffusion in the crystalline and amorphous silicon, as well as on its surface at different lithium concentrations
- V.21.02o **Yu.V. Luniakov**  
*Institute of Automation and Control Processes, 5 Radio St., Vladivostok 690041, Russia*  
DFT simulations of the extra Me adatom diffusion on the Si(111) $\sqrt{3}\times\sqrt{3}$  and Ge(111) $\sqrt{3}\times\sqrt{3}$  1/3 ML Me induced surfaces

**Welcome party (Hotel “Vladivostok”)** **19:00 – 21:00**

---

## THURSDAY, 22 AUGUST

Chairman: *E.A. Vinogradov*

### Plenary session

**09:00 – 11:15**

- PS.22.01i     **S.M. Shivaprasad**  
*Jawaharlal Nehru Centre for Advanced Scientific Research, Jakkur,  
Bangalore-560064, India*  
Nano-manifestations of Gallium Nitride grown by MBE
- PS.22.02i     **T.S. Shamirzaev**  
*A.V. Rzhanov Institute of Semiconductor Physics, SB RAS, 13 pr. Lavrentieva,  
Novosibirsk 630090, Russia*  
Spin relaxation of negatively charged trions in (In,Al)As/AlAs  
quantum dots
- PS.22.03i     **T. Suemasu\***, K. Toko, M. Ajmal Khan, W. Du, K. Nakamura, M. Baba,  
S. Koike, R. Numata, N. Shimada, R. Takabe, H. Nakazawa, K. O. Hara,  
N. Usami, K. Watanabe, T. Sekiguchi  
*\* Institute of Applied Physics, University of Tsukuba, 1-1-1 Tennohdai, Tsukuba, Ibaraki  
305-8573, Japan*  
Present status for Si-based high-efficiency thin-film solar cells using  
semiconducting silicide BaSi<sub>2</sub>: formation of a *p-n* junction

### Coffee break

**11:15 – 11:30**

### Semiconducting nanoheterostructures: growth, structure and characterization

Chairman: *A.V. Vakhrushev*

**11:30 – 13:15**

- II.22.01o     **Y.A. Suchikova**  
*Berdiansk State Pedagogical University, 4 Schmidt St., Berdyansk 71100, Ukraine*  
Analysis of the dependence of the porous InP morphology on the  
type of reacting anion
- II.22.02o     **M. Baranowski\***, R. Kudrawiec, M. Latkowska, M. Syperek, J. Misiewicz,  
T. Sarmiento, J.S. Harris  
*\* Institute of Physics, Wrocław University of Technology, Wybrzeże Wyspińskiego 27,  
50-370 Wrocław Poland*  
Investigation of carrier collection efficiency change in GaInNAsSb  
quantum wells upon annealing by time resolved photoluminescence
- II.22.03o     **M. Latkowska\***, R. Kudrawiec, G. Sek, J. Misiewicz, J. Ibáñez, M. Henini,  
M. Hopkinson  
*\* Institute of Physics, Wrocław University of Technology, Wybrzeże Wyspińskiego 27,  
50-370 Wrocław Poland*  
Investigation of localized exaction photoluminescence quenching in  
GaInNAs layers and quantum wells
- II.22.04o     **A.S. Samardak\***, M.V. Anisimova, A.V. Ognev, V.Yu. Samardak,  
L.A. Chebotkevich  
*\* Far Eastern Federal University, 8 Sukhanova St., Vladivostok 690950, Russia*  
Spot electron-beam lithography as a novel method of high resolution  
pattern nanofabrication



- II.22.05o **K. Toko\***, N. Saitoh, N. Yoshizawa, N. Usami, T. Suemasu  
*\* Institute of Applied Physics, University of Tsukuba, Tsukuba, Ibaraki 305-8573, Japan*  
 Al-induced crystallized Ge thin films on SiO<sub>2</sub> as epitaxial template for advanced materials
- II.22.06o **A.S. Kozhukhov\***, D.V. Sheglov, A.V. Latyshev  
*\* Institute of Semiconductor Physics of SB RAS, 13 pr. Lavrentieva, Novosibirsk 630090, Russia*  
 Electrochemical modification of semiconductor surface by AFM probe
- II.22.07o S.A. Gavrilov, **O.V. Pyatilova\***, Ya.S. Grishina, A.N. Belov  
*\* National Research University of Electronic Technology, 5 proezd 4806, Zelenograd, Moscow, 124498, Russia*  
 Formation of the silicon nanostructures by metal-assisted chemical etching

***Lunch***

***13:15– 14:15***

**Optical materials, nonlinear optical mediums and laser metrology**

Chairman: *G. Sęk*  
**14:15 – 16:00**

- VII.22.01o **A. K. Popov\***, I.S. Nefedov, S.A. Myslivets, M.I. Shalaev, V.V. Slabko  
*\*University of Wisconsin-Stevens Point, Stevens Point, WI 54481, USA*  
 Nonlinear optics with backward waves: extraordinary features, materials and applications
- VII.22.02o M.E. Stebliy, **A.V. Ognev\***, A.S. Samardak, G.A. Tregubov, E.A. Mikoluk, L.A. Chebotkevich  
*\* Far Eastern Federal University, 8 Sukhanova st., Vladivostok, 690095 Russia*  
 The improved magneto-optical Kerr effect method of magnetic anisotropy measurements in thin films and nanostructures
- VII.22.03o **V.A. Milichko\***, V.P. Dzyuba, Yu.N. Kulchin  
*\* Institute of Automation and Control Processes, 5 Radio St., Vladivostok 690041, Russia*  
 Dielectric nanoparticles with novel nonlinear optical properties
- VII.22.04o **A.A. Kuchmizhak\***, O.B. Vitrik, Yu.N. Kulchin  
*\* Institute of Automation and Control Processes, 5 Radio St., Vladivostok 690041, Russia*  
 Near-field optical probe based on the fiber Fabry-Perot interferometer with protruding evanescent light source
- VII.22.05o **V.A. Kolchinskiy\***, Y.N. Kulchin, Ikai Lo, C.-H. Shih, R.V. Romashko  
*\* Institute of Automation and Control Processes, 5 Radio St., Vladivostok 690041, Russia*  
 Influence of impurities on photochromic properties of GaN
- VII.22.06o **A.A. Sergeev\***, S.S. Voznesenskiy, A.N. Galkina, A.V. Nepomnyaschiy, K.M. Sergeeva  
*\* Institute of Automation and Control Processes, 5 Radio St., Vladivostok 690041, Russia*  
 Photodynamic effects in nanocomposites based on quantum dots of cadmium sulfide embedded in a silicate matrix, in their interaction with the laser beam

VII.22.07o B.I. Kidyarov, **T.A. Gavrilova\***, A.P. Zubareva, N.I. Petrova, D.Y. Troitskii,  
V.V. Atuchin, I.B. Troitskaia  
*\* Rzhanov Institute of Semiconductor Physics of SB RAS, 13 pr. Lavrentieva, Novosibirsk  
630090, Russia*  
Nonlinear optical properties of trigonal  $\alpha$ -GeO<sub>2</sub> microcrystals:  
experiment and theoretical prediction

***Coffee break*** ***16:00 – 16:20***

---

**Poster session I** **17:00 – 19:00**

---

**Excursion “Night Vladivostok”** **21:30 – 23:00**

---

## FRIDAY, 23 AUGUST

Chairman: A. Chuvilin

### Plenary session

**09:00 – 11:15**

- PS.23.01i N.N. Novikova, **E.A. Vinogradov\***, V.A. Yakovlev  
*\* Institute for Spectroscopy of Russian Academy of Sciences, Fizicheskaya st. 5, Troitsk, Moscow 142190, Russia*  
Polaritons: research and applications
- PS.23.02i **G. Sęk\***, A. Musiał, P. Mrowiński, A. Maryński, J. Andrzejewski, J. Misiewicz, S. Höfling, S. Hein, A. Forche  
*\* Institute of Physics, Wrocław University of Technology, Wybrzeże Wyspiańskiego 27, 50-370 Wrocław, Poland*  
Optical properties of quantum dashes
- PS.23.03i H.-T. Liang, W.-C. Yeh, C. Shueh, B.-Y. Lin, T.-H. Wu, N.G. Galkin, J. van Lierop, **K.-W. Lin\***  
*\* Department of Materials Science and engineering, National Chung Hsing University, Taichung 402, Taiwan*  
The structural, microstructural, and magnetic characterization of ion-beam bombarded Si-oxide/Fe bilayers

### Coffee break

**11:15 – 11:30**

### Formation and properties of ferromagnetic, thermoelectric and ferroelectric materials and nanosystems

Chairman: K.-W. Lin

**11:30 – 13:15**

- VI.23.01o **Yu.P. Ivanov**, L.G. Vivas, A. Asenjo, A. Chuvilin, O. Chubykalo-Fesenko, M. Vázquez  
*\* Instituto de Ciencia de Materiales de Madrid, CSIC, Cantoblanco, 28049 Madrid, Spain*  
Magnetic properties of Co nanopillar and nanowire arrays prepared from ordered hexagonal alumina templates
- VI.23.03o A.V. Davydenko, E.V. Pustovalov, **A.V. Ognev\***, M.E. Stebliy, A.G. Kozlov, L.A. Chebotkevich  
*\* Far Eastern Federal University, 8 Sukhanova St., Vladivostok 690950, Russia*  
Domain structure of epitaxial Co/Cu/Co nanowires with step-induced magnetic anisotropy
- VI.23.04o **M.E. Stebliy**, A.V. Ognev, A.S. Samardak, M.V. Anisimova, A.G. Kolesnikov, L.A. Chebotkevich  
*\* Far Eastern Federal University, 8 Sukhanova St., Vladivostok 690950, Russia*  
Magnetic bistability of the “small disk on big disk” structure
- VI.23.05o **E.V. Sukovatitsina\***, A.S. Samardak, A.V. Ognev, L.A. Chebotkevich, A.Yu. Samardak, M.R. Sanaeian, F. Nasirpouri  
*\* Far Eastern Federal University, 8 Sukhanova St., Vladivostok 690950, Russia*  
Crystal structure and coercivity of electrodeposited nickel films
- VI.23.06o V.V. Korobtsov, **T.A. Pisarenko\***, V.A. Vikulov, A.A. Dimitriev, V.V. Balashev  
*\* Institute of Automation and Control Processes, 5 Radio St., Vladivostok 690041, Russia*  
The influence of seed layer on growth of magnetite films on the SiO<sub>2</sub>/Si(001) surface

VI.23.07o **V.S. Pechnikov\***, R.V. Solodovnikov  
*\* Far Eastern Federal University, 8 Sukhanova St., Vladivostok 690950, Russia*  
The temperature dependence of amorphous alloy  
Fe<sub>71.5</sub>Cu<sub>1</sub>Nb<sub>5</sub>Si<sub>16.5</sub>B<sub>6</sub> saturation magnetization

VI.23.08o V.A. Vikulov, **A.A. Dimitriev\***, V.V. Balashev, T.A. Pisarenko, A.M. Maslov,  
V.V. Korobtsov  
*\* Institute of Automation and Control Processes, 5 Radio St., Vladivostok 690041, Russia*  
Electrical transport features in the Fe<sub>3</sub>O<sub>4</sub>/SiO<sub>2</sub>/Si hybrid structures

**Lunch** **13:15 – 14:15**

---

Chairman: T. Suemasu

**Plenary session** **14:15 – 15:45**

---

PS.23.04i **D.B. Migas\***, A.B. Filonov, V.E. Borisenko  
*\* Belarusian State University of Informatics and Radioelectronics, 6 P. Browka St., Minsk 220013, Belarus*  
Structural and electronic properties of TiO<sub>2</sub> nanowires

PS.23.05i **S.A. Gavrilov**  
*\* National Research University of Electronic Technology, 5 proezd 4806, Zelenograd, Moscow, 124498, Russia*  
Technology of nanocrystalline oxides for energy harvesting devices

**Coffee break** **15:45 – 16:00**

---

Chairman: V.U. Nazarov

**Sponsor session** **16:00 – 17:00**

---

SS.23.01i **S.G. Zahvaev**  
*\* Bruker, 47 Lenenskiy avenue, 119334, Moscow, Russia*  
Up-to-date Bruker equipment for X-rays analysis

SS.23.02i **A. Vakhtel**  
*\* Bruker, 47 Lenenskiy avenue, 119334, Moscow, Russia*  
FT-IR advanced techniques for high time resolution measurements  
of nanostructured radiation sources

**Nanocomposites and functional hybrid materials:  
formation technology, structure and characterization** Chairman: S.A. Gavrilov  
**17:00 – 17:45**

---

IX.23.02o **M.I. Dvornik\***, A. Zaytsev  
*\* Institute of Materials of Khabarovsk Scientific center of Far Eastern Branch of the Russian Academy of Sciences, 153 Tikhookeanskaya st., Khabarovsk, 680042, Russia.*  
Decrease in the rate of planetary ball milling of the WC and Co  
powders in the ultrafine range

IX.23.03o **A.V. Aseeva\***, A.S. Okrugin  
*\* Far East Geological Institute of FEB RAS, 159, Prospekt 100-letiya, Vladivostok 690022, Russia*  
Structural differentiation of autonomous nanoindividuals in natural  
and synthetic hydrated silicate

IX.23.04o

**A.V. Ruslan**

*Far Eastern Geological Institute of FEB RAS, 159 pr. Stoletiya Vladivostoka, Vladivostok  
690022, Russia*

**Natural nanocomposites in graphite-bearing metamorphic rocks  
(Primorie)**

## SATURDAY, 24 AUGUST

Chairman: *D. Pavuna*

### Plenary session

**09:00 – 11:15**

- PS.24.01i **A. Chuvilin**  
*CIC nanoGUNE Consolider, Av. de Tolosa 76, 20018, San Sebastian, Spain*  
Application of low voltage Cs-corrected TEM for nanocarbon materials
- PS.24.02i **V. Ryzhii\***, T. Otsuji, M. Ryzhii, V. Mitin, M.S. Shur  
*\* Research Institute for Electrical Communication, Tohoku University, Sendai 980-8577, Japan*  
Infrared and terahertz devices based on double-graphene-layer structures: concepts, features, and comparison
- PS.24.03i **S.P. Timoshenkov**  
*National Research University of Electronic Technology (MIET), Bld.5, Pas.4806, Zelenograd, 124498, Russia*  
Developed design and manufacturing technology in some MEMS application

### Coffee break

**11:15 – 11:30**

### Carbon based nanomaterials: technology, structure and characterization

Chairman: *V.G. Zavodinsky*

**11:30 – 11:45**

- III.24.01o **N.S. Saenko\*** A.M. Ziatdinov  
*\* Institute of Chemistry of FEB RAS, 159, Prospekt 100-letiya, Vladivostok, 690022, Russia*  
Multi-walled carbon nanotubes synthesized by methane pyrolysis: structure and magnetic properties

### Biohybrids and biomaterials: biomimetic materials, biomineralisation, and biosystems

Chairman: *V.G. Zavodinsky*

**11:50 – 12:50**

- X.24.01o **A.N. Galkina\***, A.A. Sergeev, S.S. Voznesenskiy, A.Yu. Mironenko, S.Yu. Bratskaya  
*\* Institute of Automation and Control Processes, 5 Radio St., Vladivostok 690041, Russia*  
Study of effect of radiation on the dynamics of the metal nanoparticles recovery in the biopolymer matrix and optical properties of obtained nanocomposites
- X.24.02o Yu.N. Kulchin, O.A. Bukin, S.S. Golik, **D.Yu. Proschenko\***, A.A. Chekhlenok, A.G. Kolesnikov, I.V. Postnova, Yu. A. Shchipunov  
*\* Institute of Automation and Control Processes, 5 Radio St., Vladivostok 690041, Russia*  
Investigation of peculiarity of interaction of the femtosecond laser radiation with new hybrid materials based on hyperbranched polyglycidol
- X.24.03o E.V. Sokolova, E.A. Chusovitin, A.O. Barabanova, **S.A. Balagan\***, N.G. Galkin, I.M. Yermak  
*\* Institute of Automation and Control Processes of Far Eastern Branch of Russian Academy of Sciences, 690041 Vladivostok, Radio 5, Russia*  
Investigation of the supramolecular structure of carrageenans from red algae by atomic-force microscopy

- X.24.04o **I.G. Agafonova\***, M.S. Palamarhyk, P.A. Lukyanov  
*\* G.B. Elyakov Pacific Institute of Bioorganic Chemistry, FEB RAS, 159, Pr. 100-let Vladivostoky, Vladivostok 690022, Russia*  
The constructing of the new paramagnetic nanosomes for precise contrast by MRI

**Lunch**

**12:50 – 14:00**

**Nanostructured coatings: formation technology and properties**

Chairman: *T.S. Shamirzaev*

**14:00 – 15:00**

- VIII.24.01o S.V. Gnedenkov, S.L. Sinebryukhov, **A.V. Puz\*\***, A.S. Gnedenkov, I. E. Vyaliy, D.V. Mashtalyar, V.S. Egorkin  
*\* Institute of Chemistry FEB RAS, 159 pr. 100-letiya Vladivostoku, Vladivostok 690022, Russia*  
Formation of phosphate-containing coatings on titanium using microsecond current pulses
- VIII.24.02o S.V. Gnedenkov, S.L. Sinebryukhov, **V.S. Egorkin\***, I.E. Vyaliy, A.M. Emelyanenko, L.B. Boinovich  
*\* Institute of Chemistry FEB RAS, 159 pr. 100-letiya Vladivostoku, Vladivostok 690022, Russia*  
Electrochemical characterization of the nanocomposite coatings on Mg alloy
- VIII.24.03o **I.M. Imshinetskiy\***, S.L. Sinebryukhov, D.V. Mashtalyar, S.V. Gnedenkov  
*\* Institute of Chemistry of FEB RAS, 159 pr. 100-letiya Vladivostoka, Vladivostok, 690022, Russia*  
Incorporation of zirconia and silica nanoparticles into PEO-coatings on magnesium alloys
- VIII.24.04o **A.B. Podgorbunskiy\***, S.L. Sinebryukhov, S.V. Gnedenkov  
*\* Institute of Chemistry of FEB RAS, 159 Pr. 100-letiya Vladivostoka, Vladivostok, 690022, Russia*  
High anionic conductivity of solids with different structure

**Coffee break**

**15:00 – 15:20**

**Nanodevices and sensors for photonics, optoelectronics and electromechanics**

Chairman: *T. Suemasu*

**15:20 – 16:35**

- XI.24.01o **R. Numata\***, K. Toko, N. Saitoh, N. Yoshizawa, N. Usami, T. Suemasu  
*\* Institute of Applied Physics, University of Tsukuba, Tsukuba, Ibaraki 305-8573, Japan*  
Formation of Si/Al/SiO<sub>2</sub> structures for Si-based solar cells by inverted Al-induced layer exchange process
- XI.24.02o **A.V. Shevlyagin\***, E.A. Chusovitin, D.L. Goroshko, N.G. Galkin  
*\* Institute of Automation and Control Processes, 5 Radio St., Vladivostok 690041, Russia*  
Device properties of Si-p/ $\beta$ -FeSi<sub>2</sub>/Si-p/Si-n mesa-diodes with embedded multilayers of  $\beta$ -FeSi<sub>2</sub> nanocrystallites
- XI.24.04o D.V. Vertyanov, K.S. Tikhonov, **S.P. Timoshenkov\***, V.S. Petrov, G.A. Blinov  
*\* Department of Microelectronics National Research University of Electronic Technology, pas. 4806, bld. 5, Moscow, Zelenograd, 124498, Russia*  
3-D multichip memory modules based on flexible board with ball leads

- XI.24.06o S. Timishenkov, V. Vodopyanov, Yu. Stepanova, Yu. Cherkasova, **N. Korobova\***  
*\* National Research University of Electronic Technology (MIET), Zelenograd,  
Moscow, Russia*  
How to get high-quality PZT films for microelectronics
- XI.24.07o **V.P. Timoshenkov**  
*National Research University of Electronic Technology (MIET), Bld.5, Pas. 4806,  
Zelenograd, Russia, 124498*  
Design of high frequency IC based on nanometric SiGe transistors

**Poster session II** **17:00 – 19:00**

---

**Symposium Dinner (Hotel “Vladivostok”)** **19:30 – 22:00**

---



**SUNDAY, 25 AUGUST**

**Excursion “Voroshilov’s battery and beaches of Russky island” 09:00 – 18:00**

## MONDAY, 26 AUGUST

Chairman: Y. Maeda

### Plenary session

**09:30 – 11:00**

- PS.26.01i **H. Tatsuoka\***, W. Li, E. Meng, S. Oda, T. Matsushita, D. Ishikawa, K. Nakane  
*\* Faculty of Engineering, Shizuoka University, 3-5-1 Johoku, Naka-ku, Hamamatsu, Shizuoka, 432-8561, Japan*  
Syntheses and structural control of silicide, oxide and metallic nano-structured materials
- PS.26.02i **Y. Gao\***, M.L. Guo, X.H. Xia, G. Shao  
*\* Faculty of Materials Science and Engineering, Hubei University, Wuhan, 430062, P. R. China*  
Enhance the hydrogen sensitivity of perpendicular oriented TiO<sub>2</sub> films via hydrothermal method

### Coffee break

**11:00 – 11:20**

### Nanocomposites and functional hybrid materials: formation technology, structure and characterization

Chairman: M. Imai

**11:20 – 13:20**

- IX.26.02o **A.S. Gnedenkov\***, S.L. Sinebryukhov, D.V. Mashtalyar, S.V. Gnedenkov  
*\* Institute of Chemistry, pr. 100-letiya Vladivostoka 159, Vladivostok 690022, Russia*  
Features of the corrosion monitoring at the magnesium alloys surface
- IX.26.03o **M.A. Pugachevskiy**  
*Institute of Materials of FEB RAS, 153 Tikhoookeanskaya, Khabarovsk 680042, Russia*  
Structure and properties of TiO<sub>2</sub> nanoparticles obtained by laser ablation
- IX.26.04o **M.H. Entezari\***, A. Talebian Kermani, N. Ghows  
*\* Department of Chemistry, Ferdowsi University of Mashhad, 91775, Mashhad, Iran*  
A novel method for the synthesis of nanocomposite (TiO<sub>2</sub>-Cu<sub>2</sub>O) and its application in degradation of surfactants from aqueous solution by sunlight
- IX.26.08o G.A. Pozdnyakov, **A.I. Saprykin\***, V.N. Yakovlev  
*\* Khristianovich Institute of Theoretical and Applied Mechanics, 4/1 Institutskaya St., Novosibirsk 630090, Russia*  
Obtain of nanodimensional structures by adiabatic compression

### Lunch

**13:20 – 14:20**

Chairman: H. Tatsuoka

### Plenary session

**14:20 – 16:35**

- PS.26.03i **Y. Maeda**  
*Department of Computer Science and Electronics, Kyushu Institute of Technology, Iizuka, Fukuoka 820-8502, Japan*  
Ion beam analysis of Fe-based Heusler alloys/Ge hetero-epitaxial interfaces toward spin transistors

- PS.26.04i **M. Imai**  
*Institute for Materials Science, 1-2-1 Sengen, Tsukuba, Ibaraki 305-0081, Japan*  
 Basic properties of alkaline-earth-metal disilicides and related materials
- PS.26.04i **Z. Remes\***, R. Vasudevan, K. Jarolimek, A. H. M. Smets, M. Zeman  
*Photovoltaic Materials and Devices Laboratory-DIMES, Delft University of Technology, 2600 GA Delft, The Netherlands*  
 The optical spectra of a-Si:H and a-SiC:H thin films measured by the absolute photothermal deflection spectroscopy (PDS)

**Coffee break**

**16:35 – 16:50**

**Nanosilicides and bulk silicides: theory,  
 synthesis and characterization**

Chairman: Z. Remes

**16:50 – 18:35**

- IV.26.01o **W. Li\***, D. Ishikawa, Y. Hayakawa, H. Tatsuoka  
*\* Graduate School of Science and Technology, Shizuoka University, Hamamatsu 4328011, Japan*  
 Preparation and electric property of MnSi<sub>1.7</sub> bulk crystals by molten salt method
- IV.26.02o **M. Baba\***, S. Tsurekawa, K. Nakamura, D. Weijie, S. Koike, Ku Toko, K.O. Hara, N. Usami, T. Suemasu  
*\* Institute of Applied Physics, University of Tsukuba, 1-1-1 Tennohdai, Tsukuba, Ibaraki 305-8573, Japan*  
 Evaluation of BaSi<sub>2</sub> epitaxial films grain boundary character by Kelvin probe force microscopy
- IV.26.03o **K.S. Ermakov\***, A.V. Ognev, A.S. Samardak, A.G. Kozlov, M.A. Anisimova, E.A. Mikoluk, L.A. Chebotkevich  
*\* Far Eastern Federal University, 8 Sukhanova st., Vladivostok, 690095 Russia*  
 Study of the growth processes of copper silicide nanostructures on Si (111) surface
- IV.26.04o **W. Du\***, K. Nakamura, M. Baba, M. Ajmal Khan, K. Toko, N. Usami, T. Suemasu  
*\* Institute of Applied Physics, University of Tsukuba, 1-1-1 Tennohdai, Tsukuba, Ibaraki 305-8573, Japan*  
 Investigation on the tunneling properties of heavily doped BaSi<sub>2</sub> layers grown on low-resistivity Si substrates
- IV.26.05o **Y. Terai\***, K. Noda, Y. Fujiwara  
*\* Division of Materials and Manufacturing Science, Graduate School of Engineering, Osaka University, 2-1 Yamadaoka, Suita, Osaka 565-0871, Japan*  
 Effects of hetero-interface on direct bandgap energy in  $\beta$ -FeSi<sub>2</sub>/Si heterostructures
- IV.26.06o **I.M. Chernev\***, K.N. Galkin, S.V. Vavanova, N.G. Galkin  
*\* Institute of Automation and Control Processes, 5 Radio St., Vladivostok 690041, Russia*  
 Optical properties of Si/Mg<sub>2</sub>Si NC/Si/.../Si(111) and Si/CrSi<sub>2</sub> NC/Si/.../Si multilayer systems
- IV.26.07o **D.L. Goroshko\***, E.A. Chusovitin, A.V. Shevlyagin, N.G. Galkin, A.V. Latyshev  
*\* Institute of Automation and Control Processes, 5 Radio St., Vladivostok 690041, Russia*  
 Distribution control of  $\beta$ -FeSi<sub>2</sub> nanocrystallites in multilayer heterostructures on silicon



**TUESDAY, 27 AUGUST**

09:00 – 20:00 Participants departure

## Poster session I

---

- I.22.01p Yu.V. Nastaushev, **T.A. Gavrilova\***, L.S. Golobokova, F.N. Dultsev, D.A. Nasimov, A.S. Kozhuhov, A.V. Latyshev  
*\* A.V. Rzhanov Institute of Semiconductor Physics of SB RAS, 13 pr. Lavrentieva, Novosibirsk 630090, Russia*  
Silicon nanopillars formed by means of e-beam lithography and plasmachemical etching
- I.22.02p **D.A. Olyanich\***, T.V. Utas, A.A. Alekseev, V.G. Kotlyar, A.V. Zotov, A.A. Saranin  
*\* Institute of Automation and Control Processes, 5 Radio St., Vladivostok 690041, Russia*  
Structure of the S(111) $\sqrt{13}\times\sqrt{13}$ -Co surface reconstruction
- I.22.03p **M.V. Ryzhkova\***, D.V. Gruznev, E.A. Borisenko, D.A. Tsukanov  
*\* Institute of Automation and Control Processes, 5 Radio St., Vladivostok 690041, Russia*  
Sodium doping of Bi/Si(111) ultra-thin films
- I.22.04p **D.I. Rogilo\***, L.I. Fedina, S.S. Kosolobov, A.V. Latyshev  
*\* Institute of Semiconductor Physics of SB RAS, 13 pr. Lavrentieva, Novosibirsk 630090, Russia*  
AL $\Leftrightarrow$ DL growth kinetic transition studied by in situ UHV REM during Si epitaxy on Si(111)-(7 $\times$ 7) surface
- I.22.05p **S.V. Sitnikov\***, S.S. Kosolobov, A.V. Latyshev  
*\* Institute of Semiconductor Physics of SB RAS, 13 pr. Lavrentieva, Novosibirsk 630090, Russia*  
The kinetics of 2D-islands on Si (111) surface during sublimation
- II.22.01p **A.V. Larionov\***, A.I. Il'in  
*\* Institute of Solid State Physics, Russian Academy of Sciences, 142432, Chernogolovka, Russia*  
Electron spin lifetime control in GaAs quantum well by means of electrically induced lateral traps
- III.22.01p V.A. Galperin, **E.P. Kitsyuk\***, T.L. Kulova, A.M. Skundin  
*\* National Research University of Electronic Technology, Bld. 5, Pas. 4806, Zelenograd, Moscow, Russia, 124498*  
Cycling stability of CNT-Si composite material in lithium-ion batteries
- III.22.02p I.I. Bobrinetskiy, **I.A. Komarov**, A.M. Malovichko, V.K. Nevolin, K.F. Ahmadishina  
*National Research University of Electronic Technology, Bld. 5, Pas. 4806, Zelenograd, Moscow, Russia, 124498*  
Single-walled carbon nanotube based devices for biological and gas sensors
- III.22.03p **I.I. Bobrinetskiy\***, G.E. Fedorov, I.A. Suetina  
*\* National Research University of Electronic Technology, Bld. 5, Pas. 4806, Zelenograd, Moscow, Russia, 124498*  
Carbon nanotube biological interfaces for bio-nano-electronics application
- V.22.01p **A.N. Chibisov**  
*Computational Center, Russian Academy of Sciences, 65 Kim Yu Chen St., Khabarovsk 680000, Russia*  
Phase transformation in titanium nanoparticles from first principles

- V.22.02p **M.I. Dvornik, E.A. Mikhailenko\***  
*\* Institute of Materials of Khabarovsk scientific centre of Far Eastern branch of the Russian Academy of Sciences, 153 Tikhookeanskaya St., Khabarovsk 680045, Russia*  
**Modeling growth of crack in hard alloy with pore**
- V.22.03p **M.A. Chibisova\***, A.N. Chibisov  
*\* Computational Center, Russian Academy of Sciences, 65 Kim Yu Chen St., Khabarovsk 680000, Russia*  
**Adsorption of CH<sub>4</sub> on Fe/SiO<sub>2</sub> nanocomposites: first-principles calculations**
- V.22.04p A.N. Chibisov, **A.N. Zhitenev\***  
*\* Computational Center, Russian Academy of Sciences, 65 Kim Yu Chen St., Khabarovsk 680000, Russia*  
**Ab initio calculations of the bulk modulus for titanium nanoclusters**
- V.22.05p A.S.Fedorov, **M.A. Visotin\***  
*\* Kirensky Institute of Physics, Akademgorodok 50, Krasnoyarsk, 660036, Russia*  
**Development of the new empirical potential based on first-principles calculations of silicon nanostructures and its application to modeling amorphous silicon**
- V.22.06p **A.A. Gnidenko**  
*Institute of Materials of Khabarovsk Scientific centre, FEB RAS, 153 Tikhookeanskaya st., Khabarovsk 680042, Russia*  
**Ab initio calculation of cobalt interlayer size influence on tensile strength in WC-Co hard alloy**
- V.22.07p A.V. Severyukhin, **O.Yu. Severyukhina\***  
*\* Institute of Mechanics UB RAS, 34 Baramzinoy St., Izhevsk 426067, Russia*  
**Modeling of the thermal conductivity of nanocomposite systems**
- VI.22.01p **A.G. Maslovskaya\***, A.V. Sivunov  
*\* Amur State University, 21 Ignatyevskoe Shosse, Blagoveshchensk 675000, Russia*  
**Simulation of electron injection and charging processes in ferroelectrics modified with the SEM-techniques**

## Poster session II

---

- VII.24.02p **T.A. Gavrilova\***, N.V. Ivannikova, V.N. Shlegel, V.D. Grigorieva, S.F. Solodovnikov, T.B. Bekker, V.V. Atuchin  
*\* Laboratory of Nanodiagnostics and Nanolithography, A.V. Rzhhanov Institute of Semiconductor Physics, SB RAS, Novosibirsk 630090, Russia*  
Growth of Na<sub>2</sub>W<sub>2</sub>O<sub>7</sub> single crystals as possible optical host material
- VII.24.04p A.A. Kuchmizhak, O.B. Vitrik, Yu.N. Kulchin, **A.G. Savchuk\***  
*\* Institute of Automation and Control Processes FEB RAS, 5 Radio St., Vladivostok 690041, Russia*  
Optical dielectric apertureless probe for surface laser modification with  $\lambda/15$  lateral resolution
- VIII.24.01p Yu.V. Nastaushev, **T.A. Gavrilova\***, E.V. Fedosenko, G.A. Pozdnyakov, F.N. Dultsev  
*\* A.V. Rzhhanov Institute of Semiconductor Physics of SB RAS, 13 pr. Lavrentieva, Novosibirsk 630090, Russia*  
DLC films formed by means of pulsed supersonic plasma flow deposition (SPFD)
- VIII.24.02p S.A. Gavrilov, **A.A. Dronov\***, Ya.S. Grishina, I.M. Gavrilin  
*\* National Research University of Electronic Technology, 5 proezd 4806, Zelenograd, Moscow, 124498, Russia*  
Factors influencing morphology of anodic titania layers
- IX.24.01p **D.P. Opra\***, S.V. Gnedenkov, S.L. Sinebryukhov, A.K. Tsvetnikov, V.G. Kuryivyi, V.I. Sergienko  
*\* Institute of Chemistry of FEB RAS, 159 pr. 100-let Vladivostoku, Vladivostok 690022, Russia*  
Lignin as lithium battery cathode material
- IX.24.02p M.H. Entezari, S. Ramandi, **N. Ghows**  
*Department of Chemistry, Ferdowsi University of Mashhad, 91775, Mashhad, Iran*  
Sono-synthesis of novel nanocomposite (Ba-doped Bi<sub>2</sub>O<sub>3</sub>- $\gamma$ -Fe<sub>2</sub>O<sub>3</sub>) and its application in mineralization of amoxicillin from aqueous solution by sunlight
- IX.24.03p V.V. Atuchin, Yu.M. Andreev, N.F. Beisel, A.R. Tsygankova, **T.A. Gavrilova\***, L.D. Pokrovsky, A.I. Saprykin  
*\* Laboratory of Nanodiagnostics and Nanolithography, A.V. Rzhhanov Institute of Semiconductor Physics, SB RAS, Novosibirsk 630090, Russia*  
Microstructure and chemical composition of heterogeneous crystal GaSe:AgGaS<sub>2</sub>
- IX.24.04p **I.B. Troitskaia\***, A.P. Zubareva, D.Y. Troitskii, L.D. Pokrovsky, V.V. Atuchin, T.A. Gavrilova  
*\* Rzhhanov Institute of Semiconductor Physics of SB RAS, 13 pr. Lavrentieva, Novosibirsk 630090, Russia*  
From micro- to nanocrystals of *h*-MoO<sub>3</sub>. Variety of crystal morphology under the changing of chemical precipitation conditions



- IX.24.05p **T.A. Gavrilova\***, O.P. Andreeva, V.V. Atuchin, I.V. Korolkov, I.S. Soldatenkov  
 \* *Laboratory of Nanodiagnosics and Nanolithography, A.V.Rzhanov Institute of Semiconductor Physics, SB RAS, Novosibirsk 630090, Russia*  
 Synthesis and micromorphology transformation of monoclinic  $\alpha\text{-Gd}_2(\text{MoO}_4)_3$
- IX.24.06p **O. Adiguzel**  
 Firat University, Department of Physics, 23169 Elazig, Turkey  
 Self-accommodating nature of martensite formation in shape memory alloys
- IX.24.07p **A.A. Burkov\***, S.A. Pyachin  
 \* *Institute of Materials, Khabarovsk Scientific Centre, Far East Branch, Russian Academy of Sciences, Khabarovsk 680042, Russia*  
 Tungsten carbide decarburization by electric discharges
- IX.24.08p **G.M. Poletaev\***, D.V. Dmitrienko, V.V. Diabdenkov, V.R. Mikrukov, M.D. Starostenkov  
 \* *Altai State Technical University, 46 Lenin St., Barnaul 656038, Russia*  
 Atomic structure and diffusion permeability of triple junctions in nickel
- IX.24.09p **D.S. Shtarev\***, M.A. Pugachevsky, N.F. Karpovich  
 \* *Department of Natural Science, Far Eastern State Transport University, 47 Seryshev St., Khabarovsk 680021, Russia*  
 Photocatalytic properties of titanium dioxide nanospheres
- X.24.01p **A.Yu. Zhizhchenko\***, O.B. Vitrik, Yu.N. Kulchin, A.G. Mirochnik, E.V. Fedorenko  
 \* *Institute for Automation and Control Processes FEB RAS, 5 Radio St., Vladivostok 690041, Russia*  
 Photorecording polymeric waveguide film based on beta-diketonates boron difluoride for photonics
- XI.24.01p S.P. Timoshenkov, **Yu.G. Dolgovykh\***, A.Yu. Titov, K.S. Tikhonov, D.V. Vertyanov  
 \* *National Research University of Electronic Technology, passage 4806, building 5, Moscow, Zelenograd 124498, Russia*  
 Peculiarities of stress-strain state in the bare crystals set on the technology of internal mounting
- XI.24.02p S.P. Timoshenkov, **S.S. Evstafyev\***, I.M. Britkov  
 \* *National Research University of Electronic Technology, Microelectronics Dept., Bld.5, Pas.4806, Zelenograd, Moscow, 124498, Russian Federation*  
 Using of bimorph thermo actuator for micro mirror development with large rotation angle

# **Second Asian School-Conference on Physics and Technology of Nanostructured Materials**

International School-Conference  
Vladivostok, Russia, August 20 – 27, 2013

## **PROGRAMME**

In charge of publication: Nikolay G. Galkin

Design and layout: Evgeniy A. Chusovitin

# **Вторая азиатская школа-конференция по физике и технологии наноструктурированных материалов**

Международная школа-конференция  
Владивосток, Россия, 20 – 27 августа 2013

## **ПРОГРАММА**

**(на англ. яз.)**

Отпечатано с оригинал-макета,  
подготовленного в Федеральном государственном бюджетном учреждении науки  
Институт автоматизации и процессов управления ДВО РАН

Подписано к печати 18.07.2013 г. Формат 60×84/16.  
Усл. п. л. 1,0. Уч.-изд. л. 0,8. Тираж 120 экз. Заказ 26