The Seventh Asian School-Conference on Physics and Technology of Nanostructured Materials

PROGRAMME

Institute of Automation and Control Processes FEB RAS
Vladivostok
2025

General information

Plenary talk – 45 minutes including questions
Invited talk – 30 minutes including questions
Ordinary talk – 15 minutes including questions
Coffee break – 15 minutes
Lunch – 75 minutes

Organizers

Institute of Automation and Control Processes FEB RAS, Russia

Presidium of Far Eastern Branch of Russian Academy of Sciences, Russia

Zhengzhou University, China

郑州大学
ZHENGZHOU UNIVERSITY

General Sponsor

LLC "Active photonics", Russia

Active Photonics

Thursday, July 10

09:00 – 20:00 Participants arrival at the airport of Vladivostok, transfer and accommodation

Friday, July 11

09:00 – 10:00 Registration of participants
10:00 – 10:15 Opening remarks
10:15 – 11:45 Plenary session
11:45 – 12:15 Sponsor session
12:15 – 13:30 *Lunch*

HALL-1

13:30 – 16:00 Advanced optical materials, technologies and devices

HALL-2

13:30 – 16:00 Formation and properties of ferromagnetic and ferroelectric materials, spintronics

16:00 – 16:10 **General photography**
16:10 – 18:30 Poster session I

Saturday, July 12

HALL-1

10:00 – 11:30 Physics and technology of semiconductor materials and devices
11:30 – 11:45 *Coffee break*
11:45 – 13:15 Physics and technology of semiconductor materials and devices

HALL-2

10:00 – 11:30 Physics of nanostructures and interfaces: self-organization processes, two-dimensional materials and metrology
11:30 – 11:45 *Coffee break*
11:45 – 13:15 Physics of nanostructures and interfaces: self-organization processes, two-dimensional materials and metrology

13:15 – 14:30 *Lunch*
14:30 – 16:00 Plenary session
16:00 – 18:30 Poster session II

Sunday, July 13

9:00 – 20:00	A visit to the Novosiltsevskaya and Voroshilov Battery with tour guides, after which a rest on the seashore with gifts of Far Eastern cuisine will be organized.

Monday, July 14

10:00 – 11:30	Plenary session
11:30 – 11:45	*Coffee break*
	HALL-1
11:45 – 13:30	Biomaterials and biosensors on their base, gas sensors
13:30 – 14:45	*Lunch*
14:45 – 16:45	Advanced optical materials, technologies and devices
16:45 – 17:00	*Coffee break*
17:00 – 18:15	Advanced optical materials, technologies and devices
	HALL-2
11:45 – 13:30	Nanostructured coverages, nanocomposites, functional hybrid materials: formation, structure and properties
13:30 – 14:45	*Lunch*
14:45 – 16:45	Nanostructured coverages, nanocomposites, functional hybrid materials: formation, structure and properties
16:45 – 17:00	*Coffee break*
17:00 – 18:30	Nanostructured coverages, nanocomposites, functional hybrid materials: formation, structure and properties

Tuesday, July 15

10:00 – 11:30	Plenary session
11:30 – 11:45	*Coffee break*
	HALL-1
11:45 – 13:00	Physics and technology of semiconductor materials and devices
13:00 – 13:15	*Conference Closing*

Wednesday, July 16

08:00 – 16:00	Participants departure

Programme of the Seventh Asian School-Conference on Physics and Technology of Nanostructured Materials ASCO-NANOMAT 2025

THURSDAY, JULY 10

09:00 – 20:00 Participants arrival at the airport of Vladivostok, transfer and accommodation

FRIDAY, JULY 11

Registration of participants **09:00 – 10:00**

Opening remarks **10:00 – 10:15**

Chairman: *N.G. Galkin*

Plenary session **10:15 – 11:00**

Plenary 01 Sindeeva O.A., Kozyreva Z.V., Proshin P.P., Abdurashitov A.S., **Sukhorukov G.B.**
Skolkovo Institute of Science and Technology (Skoltech), Moscow, Russia
Nano- and microparticulation for remote controlled drug delivery systems

Plenary 02 **Bogdanov A.A.**
Qingdao Innovation and Development Center, Harbin Engineering University, Qingdao, China
School of Physics and Engineering, ITMO University, St.Petersburg, Russia
Non-Hermitian Singularities in All-Dielectric Metastructures: from Bound States in the Continuum to Exceptional Points and Bulk Fermi Arcs

Chairman: *N.G. Galkin*

Sponsor session **11:45 – 12:15**

S.01o **Gazzaeva A.**
LLC "Active photonics", Russia
Modern instruments and methods for non-destructive surface inspection and local chemical analysis using scanning probe microscopy and optical spectroscopy

Lunch ***12:15 – 13:30***

HALL-1

Chairman: A.A. Bogdanov

Advanced optical materials, technologies and devices 13:30 – 16:00

III.i.01 Invited
Saranin D.S.
National University of Science and Technology MISIS, Moscow, Russia
Scaling Perovskite Solar Panel Technology for Ground-Based and Orbital Photovoltaics

III.i.02 Invited
Pavlov D.V., Cherepakhin A.B., Zhizhchenko A.Yu., **Kuchmizhak A.A.**
Institute of Automation and Control Processes FEB RAS, Vladivostok, Russia
Femtosecond laser nanopatterning for IR photodetection and sensing empowered by bound states in the continuum

III.o.01
Shuleiko D.V., **Sokolovskaya O.I.**, Martyshov M.N., Serdobintsev A.A., Volkovoynova L.D., Venig S.B., Pakholchuk P.P., Kuzmin E.V., Zabotnov S.V., Kashkarov P.K.
Lomonosov Moscow State University, Faculty of Physics, Moscow, Russia
Femtosecond laser modification of amorphous silicon films for photovoltaic and polarization applications

III.o.02
Kuchmizhak A.A., Cherepakhin A.B., Shevlyagin A.V., Isaenko L.I., **Syubaev S.A.**
Institute of Automation and Control Processes FEB RAS, Vladivostok, Russia
Laser-pulsed patterning of $BaGa_4Se_7$ crystals for on-demand anti-reflective surface nanoengineering

III.o.03
Fedyaj V.E., Bronnikov K.A., Simanchuk A.E., Lazarenko P.I., Yakubov A.O., Zhizhchenko A.Y., Kuchmizhak A.A., Dostovalov A.V.
Institute of Automation and Electrometry of the SB RAS, Novosibirsk, Russia
Formation of 2D laser-induced periodic surface structures on metal and semiconductor thin films

III.o.04
Levshakova A.S., Kaneva M.V., Ninayan R., Satymov E.T., Kuchmizhak A.A., **Khairullina E.M.**
Institute of Automation and Control Processes FEB RAS, Vladivostok, Russia
Laser-assisted fabrication of materials for electrochemical applications

III.o.05
Borodaenko Yu.M., Banniy D.E., Bozhok A.V., Shevlyagin A.V., Gurbatov S.O., Kuchmizhak A.A.
Institute of Automation and Control Processes FEB RAS, Vladivostok, Russia
Si LIPSS/Mg_2Si Platform for Polarization-Selective Infrared Detection

III.o.06
Lapidas V.S., Zhizhchenko A.Yu., Kuchmizhak A.A.
Institute of Automation and Control Processes FEB RAS, Vladivostok, Russia
High-resolution femtosecond laser coloring of titanium films: diversity of nanotexturing regimes analyzed by neural network

HALL-2

Formation and properties of ferromagnetic and ferroelectric materials, spintronics Chairman: *A.S. Tarasov* **13:30 – 16:00**

IV.i.01 Invited
Kamzin A.S.
Ioffe Physical-Technical Institute RAS, St. Petersburg, Russia
Magnetic nanocomposites for terranostic applications: diagnostics (MPI, MPI) and magneto-hyperthermic treatment (MHT)

IV.i.02 Invited
Chernousov N.N., Kozlov A.G., Turpak A.A., Pashenko A.S., **Davydenko A.V.**
Far Eastern Federal University, Vladivostok, Russia
Dynamics of domain walls in thin magnetic films with perpendicular magnetic anisotropy

IV.o.01
Chernousov N.N., Silina S.K., Pashenko A.S., Turpak A.A., Kozlov A.G., Davydenko A.V.
Far Eastern Federal University, Vladivostok, Russia
The influence of interface roughness induced by Cu bottom layer on dynamics of domain walls in Cu/Pd/Co/Pd system

IV.o.02
Kuznetsova M.A., Turpak A.A., Prikhodchenko A.V., Kozlov A.G.
Far Eastern Federal University, Vladivostok, Russia
Magnetic structure of bilayered thin films Pt/Co/(CoO)

IV.o.03
Lobanova E.A., Makarov A.G., Nefedev K.V.
Institute of Applied Mathematics FEB RAS, Vladivostok, Russia
Motion of the ground state of the Edwards-Anderson spin system in the state space under the action of an external field

IV.o.04
Namsaraev Zh.Zh., Turpak A.A., Kuznetsova M.A., Y. Wang, Kozlov A.G.
Far Eastern Federal University, Vladivostok, Russia
SOT and DMI in WTe_x/Pt/Co/MgO

IV.o.05
Prikhodchenko A.V., Kuznetsova M.A., F.Y. Meng, Y. Feng, Y. Wang, Kozlov A.G.
Far Eastern Federal University, Vladivostok, Russia
Influence of structure on magnetic properties of Pt/Co/MgO and WTe_x/Pt/Co/MgO films

IV.o.06
Sapovskii I.M., Rakhmatullaev T.R., Pinchuk K.E., Komogortsev S.V., Kraynova G.S.
Far Eastern Federal University, Vladivostok, Russia
Improvement Magnetic Properties through Transition Metal Alloying in Fe-Si-B Amorphous Matrices

General photography ***16:00 – 16:10***

Poster session I ***16:10 – 18:30***

SATURDAY, JULY 12

HALL-1

Physics and technology Chairman: *A.V. Novikov*
of semiconductor materials and devices **10:00 – 11:30**

II.i.01 **H. Tatsuoka**
Invited *Graduate School of Integrated Science and Technology, Shizuoka University, Hamamatsu, Japan*
Synthesis of Silicide- and Silicate-Based Nanostructures, Thin Films, and Bulk Crystals via Reactive Interdiffusion

II.i.02 **Y. Terai**, Y. Sakurai, T. Takahashi
Invited *Department of Physics and Information Technology, Kyushu Institute of Technology, Fukuoka, Japan*
Electrical and photoresponse properties of ternary silicide semiconductor Ru-doped β-$FeSi_2$

II.i.03 **Haruhiko Udono**
Invited *Graduate School of Science and Engineering, Ibaraki University, Ibaraki, Japan*
Recent advances in short wavelength infrared sensors using single crystalline Mg_2Si

Coffee break ***11:30 – 11:45***

Physics and technology Chairman: *D.L. Goroshko*
of semiconductor materials and devices **11:45 – 13:15**

II.i.04 **Bandarenka H.V.**
Invited *Belarusian State University of Informatics and Radioelectronics, Minsk, Belarus*
Recent progress in optical characterization of silicon micro- and nanostructures

II.o.01 **Shtrom I.V.**, Sibirev N.V., Ilkiv I.V., Soshnikov I.P., Gridchin V.O., R.R. Reznik, Alekseev P.A., Cirlin G.E.
St. Petersburg State University, St. Petersburg, Russia
Formation of p-type and n-type Si doped (Ga,Al)As nanowires

II.o.02 **Terekov D.Yu.**, Al-Khadge L.A, Yakubov A.O., Lazarenko P.I., Sherchenkov A.A.
National Research University of Electronic Technology (MIET), Moscow, Russia
Thermoelectric potential of $Ge_2Sb_2Te_5$ phase change thin films for energy harvesting of low-grade heat

II.o.03 **Reznik R.R.**, Ilkiv I.V., Gridchin V.O., Kotlyar K.P., Khrebrov A.I., Kryzhanovskaya N.V., Barettin D., Akopian N., Cirlin G.E.
St. Petersburg State University, St. Petersburg, Russia
III-V semiconductor nanostructures of different dimensionality: MBE growth and physical properties

II.o.04 **Voloshchuk I.A.**, Babich A.V., Kiselev A.V., Mikhalevsky V.A., Sherchenkov A.A.
National Research University of Electronic Technology, Moscow, Russia
The influence of heat treatment on the characteristics of composite thermoelectric materials based on $Bi_2Te_{2.8}Se_{0.2}$ and $Bi_{0.5}Sb_{1.5}Te_3$

HALL-2

Physics of nanostructures and interfaces: self-organization processes, two-dimensional materials and metrology Chairman: *A.A. Saranin*

10:00 – 11:30

I.i.01 Invited
Plusnin N.I.
Institute of Nanotechnology of Microelectronics, Moscow, Russia
Initial stage of ultrathin film growth in metal-silicon systems: from surface phases to solid wetting layers

I.i.02 Invited
Bondarenko L.V., Tupchaya A.Y., Vekovshinin Yu.E., Utas T.V., Denisov N.V., Mihalyuk A.N., Gruznev D.V., Zotov A.V., Saranin A.A.
Institute of Automation and Control Processes FEB RAS, Vladivostok, Russia
Monoatomic Lead Layer: Exploring the Interplay Between Atomic Arrangement, Electronic Structure, and Superconductivity

I.o.01
Petrov A.S., Gumbarg V.V., Rogilo D.I., Sheglov D.V., Latyshev A.V.
Institute of Semiconductor Physics of SB RAS, Novosibirsk, Russia
In situ UHV REM observation of structural transitions on Si(111) surface induced by III-V group metals adsorption

I.o.02
Mushtuk P.S., Iliushin I.G., Afremov L.L.
Far Eastern Federal University, Vladivostok, Russia
Ab initio calculations of the effect of lattice strain on the band structure of Cr_2CFBr MXene

Coffee break ***11:30 – 11:45***

Physics of nanostructures and interfaces: self-organization processes, two-dimensional materials and metrology Chairman: *A.V. Zotov*

11:45 – 12:45

I.o.03
Durakov D.E., Petrov A.S., Rogilo D.I., Makeeva A.A., Nikiforov D.F., Kurus N.N., Milekhin A.G., Sheglov D.V., Latyshev A.V.
Institute of Semiconductor Physics of SB RAS, Novosibirsk, Russia
Controlling of 6H-SiC surface graphitization by RHEED

I.o.04
Pochinok A.S., Molochkov A.V., Chernodub M.N., Chepak A.K.
Far Eastern Federal University, Vladivostok, Russia
Ising model on Fibonacci lattices: sphere, ring topologies of the sphere and torus

I.o.05
Burkovskaya P.V., Kotlyar V.G., Utas T.V., Mihalyuk A.N., Zotov A.V., Saranin A.A.
Institute of Automation and Control Processes FEB RAS, Vladivostok, Russia
Surface reconstructions in a submonolayer system La/Si(111)

I.o.06
Ponomarev S.A., Rogilo D.I., Golyashov V.A., Nasimov D.A., Kokh K.A., Sheglov D.V., Latyshev A.V.
Institute of Semiconductor Physics of SB RAS, Novosibirsk, Russia
Structural and morphological Bi_2Se_3(0001) surface transformations under Indium deposition

I.o.07 **Luniakov Yu.V.**
Institute of Automation and Control Processes FEB RAS, Vladivostok, Russia
New possible structure of magnesium based germanium-silicon alloys: first-principles evolution search results

Lunch ***13:15 – 14:30***

Chairman: *D.B. Migas*

Plenary session **14:30 – 16:00**

Plenary 03 **T. Suemasu**
Institute of Pure and Applied Sciences, University of Tsukuba, Tsukuba, Japan
Research progress on Ba-Si compound thin films for energy applications

Plenary 04 **Yoshiaki Nakamura**
Graduate School of Engineering Science, Osaka University, Osaka, Japan
Desing of nanomaterial and nanostructure for thin film thermoelectric generator

Poster session II ***16:00 – 18:30***

SUNDAY, JULY 13

Meeting near Submarine S56	***09:00 – 09:30***
Transfer to Novosiltsevskaya Battery	***09:30 – 10:00***
Novosiltsevskaya Battery tour	***10:00 – 10:40***
Transfer to Novosiltsevskaya Battery	***10:40 – 11:00***
Voroshilov Battery and Park "Patriot" tour	***11:00 – 12:30***
Transfer to Café "Biergarten" and Lazurnaya Bay Beach	***12:30 – 13:30***
Symposium lunch	***13:30 – 15:00***
Free time in Lazurnaya Bay Beach	***15:00 – 18:00***
Transfer to Hotel Primorye	***18:00 – 20:00***

MONDAY, JULY 14

Chairman: *G.B. Sukhorukov*

Plenary session **10:00 – 11:30**

Plenary 05 **Gorin D.A.**
Skolkovo Institute of Science and Technology (Skoltech), Moscow, Russia
Nano- and microstructured materials and photonics work together for biomedical applications

Plenary 06 **Junhua Hu**, Guoqin Cao
School of Materials Science and Engineering, Zhengzhou University, Zhengzhou, China
Oxidation of silicides

Coffee break ***11:30 – 11:45***

HALL-1

Chairman: *D.A. Gorin*

Biomaterials and biosensors on their base, gas sensors **11:45 – 13:30**

VI.i.01 Invited **Kichkailo A.C.,** Zamay T.N., Zamay G.S., Moryachkov R.V., Shabalina A.V., Lapin I.N., Svetlichnyi V.A., Zamay S.S.
Federal Research Center "Krasnoyarsk Science Center of SB RAS", Krasnoyarsk, Russia
Aptamer-conjugated biosensors

VI.i.02 Invited Dzhun I.O., Shuleiko D.V., Nesterov V.Yu., Presnov D.E., Perova N.N., Mineev Ya.S., Nazarov A.V., Romashkina I.L., Kozin M.G., Chechenin N.G., **Zabotnov S.V.**
Faculty of Physics, Lomonosov Moscow State University, Moscow, Russia
Laser-assisted fabrication of magnetic biosensors

VI.o.01 **Shelaev A.V.**, Kulikova D.P., Baryshev A.V.
Dukhov Automatics Research Institute (VNIIA), Moscow, Russia
Diffractive Pd/PdO Nanostructures as a Hydrogen Sensor Element

VI.o.02 **Markin N.S.**, Gordeev I.S., Fu H.E., Lapidas V.S., Shevlyagin, A.V. Kuchmizhak, A.A., Ivannikov S.I., Kim Y.B. Samardak A.Yu., Samardak A.S., Kim Y.K., Ognev A.V.
Far Eastern Federal University, Vladivostok, Russia
Fe_3O_4-SiO_2-Au nanoparticles for combined radiation therapy and phototherapy

VI.o.03 Mushenkov V.A., Nechaev A.N., Kukushkin V.I., **Zavyalova E.G.**
Chemistry Department of Lomonosov Moscow State University, Moscow, Russia
SERS-based biosensors for drug resistance testing

Lunch ***13:30 – 14:45***

Chairman: *A.A. Kuchmozhak*

Advanced optical materials, technologies and devices 14:45 – 18:15

III.i.03 Invited
Lei Pan
Harbin Institute of Technology, Harbin, China
Monodisperse silica microspheres for reducing friction in lubricating oil

III.i.04 Invited
Lazarenko P.I., Kovalyuk V.V., Kitsyuk E.P., Prokhodtsov A.I., Nevzorov A.A., Menshikov E.V., Sinev I.S., Kozyukhin S.A., Goltsman G.N., Svetukhin V.V.
National Research University of Electronic Technology (MIET), Zelenograd, Russia
Phase change materials and their application

III.o.07
Pavlov D.V., Banniy D.E., Bozhok A.V., Il'yaschenko V.M., Cherepakhin A.B., Zhou H., Dou S., Li Y., Kuchmizhak A.A., **Shevlyagin A.V.**
Institute of Automation and Control Processes FEB RAS, Vladivostok, Russia
IR transparent semimetal $CaSi_2$ electrodes for thermal switching of VO_2 phase change thin films

III.o.08
Pestova V.B., Pestov G.N., Kitsyuk E.P., Smayev M.P., Saurov M.A., Lazarenko P.I.
National Research University of Electronic Technology, Zelenograd, Russia
Switching platform for tunable metasurfaces based on phase change materials

III.o.09
Fedorov A.S., Eremkin E.V., Teplinskaia A.S., Gerasimov V.S.
Kirensky Institute of Physics, Federal Research Center KSC SB RAS, Krasnoyarsk, Russia
Charge-Transfer Plasmons in non-periodic and periodic systems

III.o.10
Sibirev N.V., Serov A.Yu., Labzovskaya M.E., Kadinskaya S.A., Kondratev V.M., Mikushev S.V., Agekyan V.F., Bolshakov A.D., Shtrom I.V.
St. Petersburg State University, St. Petersburg, Russia
Lasing generation in disordered ZnO resonators

Coffee break ***16:45 – 17:00***

Chairman: *Lei Pan*

III.o.11
Ignatieva L.N., Polyantsev M.M., Galkin K.N., Savchenko N.N., Marchenko Yu.V., Mashchenko V.A.., **Pikalov D.O.**
Institute of Chemistry FEB RAS, Vladivostok, Russia
New erbium-activated oxyfluoroniobate glasses

III.o.12
Sgibnev Y.M., Shelaev A.V., Tananaev P.N., Buzaverov K.A., Baburin A.S., Rodionov I.A., Baryshev A.V.
Dukhov Automatics Research Institute (VNIIA), Moscow, Russia
Monolithic Integration of Bismuth-Substituted Yttrium Iron Garnet on a Silicon Nitride Platform for Nonreciprocal Photonic Devices

III.o.13
Yurasov D.V., Dyakov S.A., Smagin I.A., Tikhodeev S.G., Gippius N.A., Stepikhova M.V., Peretokin A.V., Shaleev M.V., Smagina Zh.V., Utkin D.E., Novikov A.V.
Institute for Physics of Microstructures RAS, Nizhny Novgorod, Russia
Tuning the optical properties of bound states in the continuum in photonic crystal slabs with embedded Ge nanoislands by symmetry reduction

III.o.14 **Peretokin A.V.**, Stepikhova M.V., Dyakov S.A., Yurasov D.V., Shaleev M.V., Shengurov D.V., Smagina Zh.V., Rodyakina E.E., Novikov A.V.
Institute of Physics of Microstructures RAS, Nizhny Novgorod, Russia
Observation of bound states in the continuum of different types in the luminescence response of silicon photonic crystal slabs with Ge(Si) nanoislands

III.o.15 **Maksimov F**., Goldt A., Dozmorov S., Kalachikova P., Vildanova A., Morozov A., Gladush Yu., Nasibulin A., Chernov A.
Moscow Institute of Physics and Technology, Dolgoprudny, Russia
Photoluminescence from functionalized single-walled carbon nanotubes

HALL-2

Nanostructured coverages, nanocomposites, functional hybrid materials: formation, structure and properties Chairman: *N.I. Plusnin* **11:45 – 13:30**

V.i.01 Invited **Karasev P.A.**, Pukha V.E., Kabachkov E.N., Karasev K.P., Strizhkin D.A., Shakhmin A.L.
Peter the Great St.-Petersburg Polytechnic University, St.-Petersburg, Russia
Tuning properties of carbon nanocomposite coatings formed by accelerated C_{60} ions

V.i.02 Invited **Tarasov A.S.**, Lyaschenko S.A., Rautskii M.V., Fedorova N.A., Andryushchenko T.A., Lukyanenko A.V., Yakovlev I.A., Bondarev M.A., Bondarev I.A., Solovyov L.A., Maximova O.A., Tomilin F.N., Varnakov S.N., Ovchinnikov S.G.
Kirensky Institute of Physics, Federal Research Center KSC SB RAS, Krasnoyarsk, Russia
Synthesis, structure and electronic properties of epitaxial thin films of MAX phases

V.o.01 **Gorokh G.G.**, Fiadosenka U.S., Chaeusky V.V., Em M., Taratyn I.A.
Belarusian State University of Informatics and Radioelectronics, Minsk, Belarus
Hydrochemical synthesis of nanostructured metal-oxide compound of the Nb–Bi–Fe–O system

V.o.02 **Sorokina L.I.**, Volkova L.S., Zhurina E.S. Dubkov S.V., Gromov D.G.
National Research University of Electronic Technology (MIET), Zelenograd, Russia
Heterostructured TiO_2–CuO_x Layers: Electrophoretic Deposition Approach to Efficient Photocatalysis

V.o.03 **Andryushchenko T.A.**, Lyaschenko S.A., Yakovlev I.A., Kriukov R.N., Lukyanenko A.V., Solovyov L.A., Varnakov S.N., Ovchinnikov S.G.
Kirensky Institute of Physics, Federal Research Center KSC SB RAS, Krasnoyarsk, Russia
Electron spectroscopy of MAX phase $(Cr_{1-x}Mn_x)_2GeC$ and $Cr_2(Ge_{1-x}Si_x)C$ thin films

Lunch ***13:30 – 14:45***

Nanostructured coverages, nanocomposites, functional hybrid materials: formation, structure and properties Chairman: *A.S. Kamzin* **14:45 – 18:30**

V.i.03 Invited
Mikhailov M.M., **Neshchimenko V.V.**, Morev N.G., Lapin A.N.
Amur State University, Blagoveshchensk, Russia
Prospects of using hollow particles of oxide powders in thermal control systems of spacecraft

V.o.04
Marchenko V.S., Gnedenkov A.S., Sinebryukhov S.L., Gnedenkov S.V.
Institute of Chemistry FEB RAS, Vladivostok, Russia
Stearic acid as green corrosion inhibitor of MA8 bioabsorbable magnesium alloy: *in vitro* coating characterization

V.o.05
Novikov D.V., Chumachenko Yu.V., Dubkov S.V., Kolmogorov V.S., Gorelkin P.V., Erofeev A.S., Parkhomenko Yu.N., Volkova L.S., Zheleznyakova A.V., Popenko V.F.
National Research University of Electronic Technology (MIET), Zelenograd, Russia
Effects of silver nanoparticle array degradation on SERS and SICM measurements of living cells by ion-conducting nanopipette

V.o.06
Mitsai E.V., Pilnik A.A., Borodaenko Yu.M., Kuchmizhak A.A.
Institute of Automation and Control Processes FEB RAS, Vladivostok, Russia
Periodically spallated Ag+Au films for SERS-detection of polydopamine and chemosensing applications

V.o.07
Lyaschenko S.A., Andryushchenko T.A., Yakovlev I.A., Lukyanenko A.V., Varnakov S.N., Ovchinnikov S.G.
Kirensky Institute of Physics of SB RAS, Krasnoyarsk, Russia
Structure and optical properties of epitaxial Cr_2AC MAX-films (A - Ge, Si, Al and Ga)

V.i.04 Invited
Alekseeva O.A., Koroleva E.Yu., Molokov A.Yu., **Naberezhnov A.A.**, Sysoeva A.A., Gorshkova E.Yu.
Ioffe Institute, St.-Petersburg, Russia
Ferroelectric nanocomposites on base of porous glasses with modified interfaces

Coffee break ***16:45 – 17:00***

Chairman: *P.A. Karasev*

V.o.08
Kulikova D.P., Shelaev A.V., Lotkov E.S., Baburin A.S., Rodionov I.A., Baryshev A.V.
Dukhov Automatics Research Institute (VNIIA), Moscow, Russia
Amorphous and crystallized tungsten trioxide: structural and optical responses in H_2-rich atmosphere

V.o.09
Nomerovskii A.D., Gnedenkov A.S., Marchenko V.S., Sinebryukhov S.L., Gnedenkov S.V.
Institute of Chemistry FEB RAS, Vladivostok, Russia
Hybrid Fumarate-containing Protective Coatings for MA8 Magnesium Alloy

V.o.10 **Al-Khadge L.A.**, Nikitin K.G., Terekhov D.Yu., Ermachikhin A.V., Kiselev A.V., Goroshko O.A., Goroshko D.L.
National Research University of Electronic Technology (MIET), Zelenograd, Russia
Specifics of sample fabrication for studying high-resistivity thin films of phase-change materials

V.o.11 **Novoselcev A.I.**, Novikov D.V., Ryazanov R.M., Kruzhalina M.D., Dubkov S.V., Lebedev E.A.
National Research University of Electronic Technology (MIET), Zelenograd, Russia
Features of the formation SERS-substrates as a result of the combustion of multilayer thermite structures Al/CuO + Ag

V.o.12 **Saritsky D.A.**, Grishchenko D.N., Medkov M.A., Ziatdinov A.M.
Institute of Chemistry FEB RAS, Vladivostok, Russia
Electron Paramagnetic Resonance of Fe-doped NASICON

TUESDAY, JULY 15

Chairman: *Junhua Hu*

Plenary session **10:00 – 11:30**

Plenary 07 **Migas D.B.**
Belarusian State University of Informatics and Radioelectronics, Minsk, Belarus
3D, 2D and 1D in silicon, silicides, III-V compounds and transition metal oxides: *ab initio* prediction of unexpected properties

Plenary 08 **Novikov A.V.**, Yablonskiy A.N., Yurasov D.V., Stepikhova M.V., Peretokin A.V., Shmagin V.B., Demidov E.V., Shaleev M.V., Shengurov D.V., Zaharov V.E, Shmyrin D.A., Pankratov E.L., Revin L.S., Krasilnik Z.F., Dyakov S.A., Gippius N.A., Sitnikov S.V., Sheglov D.V.
Institute for Physics of Microstructures RAS, Nizhny Novgorod, Russia
Group IV heterostructures for quantum technologies and silicon photonics

Coffee break ***11:30 – 11:45***

HALL-1

Physics and technology of semiconductor materials and devices Chairman: *N.G. Galkin* **11:45 – 13:00**

II.o.05 **Guoqin Cao**, Junhua Hu
School of Materials Science and Engineering, Zhengzhou University, Zhengzhou, China
In-situ Bonding Reorganization and self-reinforcement of Si-Zr-O Amorphous under High Temperature Marine Environment

II.o.06 **Jinjin Ban**, Junhua Hu
School of Materials Science and Engineering, Zhengzhou University, Zhengzhou, China
In-situ Formation of a Metal–Organic Interphase for Interfacial Kinetic Reconstruction in Low-Temperature Aqueous Aluminum–Air Batteries

II.o.07 **Bondarev I.A.**, Rautskii M.V., Volkov N.V., Lukyanenko A.V., Yakovlev I.A., Varnakov S.N., Tarasov A.S.
Kirensky Institute of Physics, Federal Research Center KSC SB RAS, Krasnoyarsk, Russia
Diffusion-driven photovoltaic effect in Mn/SiO_2/n-Si

II.o.08 **Gouralnik A.S.**, Subbotin Eu.Yu., Chernev I.M., Kitan S.A., Gerasimenko A.V., Ustinov A.Yu., Kozlov A.G., Volkova L.S., Dudin A.A., Poliakov M.V.
Institute of Automation and Control Processes FEB RAS, Vladivostok, Russia
$Mg_2Si_xSn_{1-x}$ film growth by ultra-fast deposition of Mg onto (Si-Sn)/Si structure with gradT

II.o.09 **Subbotin E.Yu.,** Khoroshilov D.A., Goroshko D.L., Prokopeva G.A., Kozlov A.G., Prikhodchenko A.V., Chernev I.M., Lisenkov O.E., Sinotova S.A., Galkin N.G.
Institute of Automation and Control Processes FEB RAS, Vladivostok, Russia
Thermoelectric properties of Mg_3Bi_2 flexible films

13:00 – 13:15 ***Conference Closing***

POSTER SESSION I, JULY 11

Section III

Advanced optical materials, technologies and devices

III.p.01 **Bezruk M.N.**, Romashko R.V., Efimov T.A., Storozhenko D.V.
Institute of Automation and Control Processes FEB RAS, Vladivostok, Russia
Model of orthogonal two-wave mixing in photorefractive crystal of cubic symmetry with optical activity

III.p.02 **Gromov V.D.**, Lebedev E.A., Volkov R.L., Borgardt N.I., Anikin A.V., Komlenok M. S., Kurochitskiy N. D., Pavlikov A.V., Gromov D.G.
National Research University of Electronic Technology (MIET), Moscow, Russia
Comparison of phase-shifting properties of MoSiON and TaSiON layers formed by magnetron sputtering

III.p.03 **Kruzhalina M.D.**, Sorokina L.I., Yakubov A.O., Fedyanina M.E., Dubkov S.V., Gromov D.G.
National Research University of Electronic Technology (MIET), Moscow, Russia
Effect of different gas media, temperature and UV-visible irradiation on the volt-ampere characteristics of TiO_2 nanopowder layer

III.p.04 **Rybina N.V.**, Kunkel T.S., Ermachikhin A.V., Rybin N.B., Vorobyov Y.V.
Ryazan State Radio Engineering University, Ryazan, Russia
Surface Analysis of Laser-Irradiated $Ge_2Sb_2Te_5$ Films

Section IV

Formation and properties of ferromagnetic and ferroelectric materials, spintronics

IV.p.01 **Rogachev K.A.**, Samardak A.Yu., Bazrov M.A., Shishelov A.F., Samardak A.S., Ognev A.V.
Far Eastern Federal University, Vladivostok, Russia
Magnetic multilayer thin films on nanorelief with modulated curvature

IV.p.02 **Silibin M.V.**, Mikhailova M.S., Zhaludkevich D.V., Latushka S.I., Karpinsky D.V.
National Research University of Electronic Technology (MIET), Moscow, Russia
Magnetic state of $BiFeO_3$ compounds co-doped with Sm- and Ti at the morphotropic phase boundary

IV.p.03 **Matveeva T.G.**, Ivanova M.S., Solovyev V.G.
Pskov State University Branch in Velikiye Luki, Velikiye Luki, Russia
Electrophysical properties of the Rochelle salt / asbestos nanocomposite material

IV.p.04 **Turpak A.A.**, Pashenko A.S., Chernousov N.N., Ognev A.V., Davydenko A.V.
Far Eastern Federal University, Vladivostok, Russia
Interfacial ferromagnetism in sputtered Pt/Gd/Pt system at room temperature

Section V

Nanostructured coverages, nanocomposites, functional hybrid materials: formation, structure and properties

V.p.01 **Chumachenko J.V.**, Novikov D.V., Dubkov S.V., Gromov D.G., Volkova L.S., Gavrilov S.A.
National Research University of Electronic Technology (MIET), Moscow, Russia
Investigation of electric current influence on properties and morphology of SERS-active Ag-Nb-N-O film for photonic sensorics

V.p.02 **Churilov G.N.**, Glushenko G.A., Nikolaev N.S., Shalygina T.A., Elesina V.I., Lopatin V.A., Vnukova N.G., Zhyzhaev A.M., Ivaneeva A.D., Loktev A.N., Tomashevich Y.V.
Kirensky Institute of Physics, FSBSI "Federal Research Center "Krasnoyarsk Science Center SB RAS", Krasnoyarsk, Russia
Synthesis of boron and aluminium-based ligatures in a low-frequency arc discharge plasma

V.p.03 **Churilov G.N.**, Elesina V.I., Isakova V.G., Vnukova N.G., Glushenko G.A., Nikolaev N.S., Tomashevich Y.V., Lopatin V.A.
Kirensky Institute of Physics, FSBSI "Federal Research Center "Krasnoyarsk Science Center SB RAS", Krasnoyarsk, Russia
Obtaining and investigation of properties of C, Ni and Pd-based nanocomposites

V.p.04 **Dubkov S.V.**, Tarasov A.M., Medenkov G.A., Gromov D.G., Novikov D.V., Chumachenko J.V., Volkova L.S., Gavrilov S.A.
National Research University of Electronic Technology (MIET), Moscow, Russia
Development of technology for formation of SERS-active nanostructures on Ag/Mo and Ag/Nb alloys

V.p.05 **Grishin T.S.**, Volkova L.S., Dudin A.A., Dubkov S.V., Medenkov G.A., Gromov D.G.
Institute of Nanotechnology of Microelectronics of RAS, Moscow, Russia
Thermal Annealing of Ultrathin Ag Films on SiO_2 for Morphology-Optimized SERS Substrates

V.p.06 **Khoroshko L.S.**, Baglov A.V., Yauseichyk M.A., Korolik O.V.
Belarusian State University, Minsk, Belarus
Sol-Gel Derived Nanostructured Materials for Luminescence and Photocatalytic Applications

V.p.07 Volovlikova O.V., Goroshko D.L., **Lazorkina E.N.**, Dubovitsky A.A., Gavrilov S.A.
National Research University of Electronic Technology (MIET), Moscow, Russia
The Effect of Deposition Potential on the Electrodeposition of Platinum particles on highly-doped silicon wafer for Ethanol Electrooxidation

V.p.08 Novoselcev A.I., Ryazanov R.M., Volkova L.S., Dubkov S.V., Gromov D.G., **Lebedev E.A.**
National Research University of Electronic Technology (MIET), Moscow, Russia
Morphology control of Al-CuO_x thermite materials combustion products due to variation of geometrical characteristics of initial multilayer structure

V.p.09 **Pustovalova A.A.**, Morozov A.V., Nedoluzhko A.I.
Skolkovo Institute of Science and Technology, Skolkovo Innovation Center, Moscow, Russia
Application of silicon anode materials in lithium-ion full cells

V.p.10 **Saritsky D.A.**, Zheleznov V.V., Ziatdinov A.M.
Institute of Chemistry FEB RAS, Vladivostok, Russia
Electron Paramagnetic Resonance of Fe-doped $Na_2Ti_6O_{13}$

V.p.11 **Volkova L.S.**, Grishin T.S., Dudin A.A., Nazarkina Yu.V., Dubkov S.V., Gromov D.G.
Institute of Nanotechnology of Microelectronics of RAS, Moscow, Russia
Self-Cleaning SERS Substrates Based on TiO_2 Nanopillars Decorated with Ag and Cu Nanoparticles

V.p.12 **Ziatdinov A.M.**
Institute of Chemistry FEB RAS, Vladivostok, Russia
Raman scattering of sp^2-hybridized carbon clusters in graphite oxide

V.p.13 **Maximova O.A.**, Lyaschenko S.A, Yakovlev I.A. , Shevtsov D.V., Tarasov A.S., Varnakov S.N., Ovchinnikov S.G.
Kirensky Institute of Physics, Federal Research Center KSC SB RAS, Krasnoyarsk, Russia
Magneto-optical ellipsometry for experimental studies of functional thin films of atomic-layered carbon-based MAX phases

Section VI

Biomaterials and biosensors on their base, gas sensors

VI.p.01 **Dronova D.A.**, Savchuk T.P., Butmanov D.D., Zheleztsov A.D.
National Research University of Electronic Technology (MIET), Moscow, Russia
Improving the sensitivity of a gas sensor based on anodic titanium oxide nanotubes

VI.p.02 **Kondrateva A.S.**, Enns Y.B., Kazakin A.N., Komarevtsev I.M., Karaseov K.P., Bakanova M.D., Karaseov P.A.
Alferov University, St. Petersburg, Russia
Development of MEMS Resistive Gas Sensors for Smart Nose Technology

VI.p.03 **Sain A.Yu.**, Abdurashitov A.S., Proshin P.I., Terentyeva D.A., Sukhorukov G.B., Sindeeva O.A.
Vladimir Zelman Center for Neurobiology for Brain Rehabilitation, Skolkovo Institute of Science and Technology, Moscow, Russia
Led-based compact illuminator design for effective photodynamic therapy

POSTER SESSION II, JULY 12

Section I

Physics of nanostructures and interfaces: self-organization processes, two-dimensional materials and metrology

I.p.01 **Gromov D.G.**, Volkov R.L., Dubkov S.V., Grishin T.S., Novikov D.V., Borgardt N.I.
National Research University of Electronic Technology (MIET), Moscow, Russia
Self-organization of Ag and Au nanoparticle array on an inert surface during PVD and annealing

I.p.02 **Petrov A.S.**, Gumbarg V.V., Rogilo D.I., Sheglov D.V., Latyshev A.V.
Institute of Semiconductor Physics of SB RAS, Novosibirsk, Russia
3D/nanodots/2D growth in Sb-mediated Ge epitaxy on Si(111)

I.p.03 Zavodinsky V.G., **Plusnin N.I.**, Gorkusha O.A.
Institute of Nanotechnology of Microelectronics, Moscow, Russia
Growth of two-dimensional Si layers on $CrSi_2$(0001): quantum mechanical modeling

I.p.04 **Ryzhkova M.V.**, Tsukanov D.A.
Institute of Automation and Control Processes FEB RAS, Vladivostok, Russia
Ab initio calculation of Si(111)$\frac{2}{3}\sqrt{3}x\frac{2}{3}\sqrt{3}$-Mg models

I.p.05 **Vasiliev E.V.**, Kapitan V.Yu., Makarov A.G., Nefedev K.V.
Far Eastern Federal University, Vladivostok, Russia
Monte Carlo simulations of stable topological structures

I.p.06 **Zhdanov V.S.**, Sevryukov D.K., Vekovshinin Y.E., Bondarenko L.V., Tupchaya A.Y., Mihalyuk A.N., Olyanich D.A., Gruznev D.V., Zotov A.V., Saranin A.A.
Institute of Automation and Control Processes FEB RAS, Vladivostok, Russia
Atomic structure and electronic properties of Bi monolayers on ultra-thin films of rare-earth silicides

I.p.06 Kotlyar V.G., **Utas T.V.,** Burkovskaya P.V., Olyanich D.A., Saranin A.A., Zotov A.V.
Institute of Automation and Control Processes FEB RAS, Vladivostok, Russia
Morphological features of ultrathin films of betta-$FeSi_2$ on Si(100)

Section II

Physics and technology of semiconductor materials and devices

II.p.01 **Ermachikhin A.V.**, Vorobyov Y.V., Trusov E.P., Litvinov V.G.
Ryazan State Radio Engineering University, Ryazan, Russia
Nonlinear resistance drift kinetics in $Ge_2Sb_2Te_5$ thin films

II.p.02 **Galkin K.N.**, Kropachev O.V., Goroshko O.A., Subbotin E.Yu., Goroshko D.L., Galkin N.G.
Institute of Automation and Control Processes FEB RAS, Vladivostok, Russia
Thermoelectric properties of a nanocomposite with embedded α-$FeSi_2$ NCs in the silicon matrix

II.p.03 Galkin N.G., Galkin K.N., **Kropachev O.V.**, Migas D.B., Fogarassy Z., Cora I., Pécz B.
Institute of Automation and Control Processes FEB RAS, Vladivostok, Russia
Single-phase formation of Ca_5Si_3 films on Si(111), electronic and phonon structure and optical properties: experiment and theory

II.p.04 **Pisarenko T.A.**, Yakovlev A.A., Mararov V.V., Tsukanov D.A.
Institute of Automation and Control Processes FEB RAS, Vladivostok, Russia
Influence of protective transparent covering on lateral photovoltaic effect in the cover/Bi_2Te_3/n-Si(111) multilayer structure

II.p.05 **Polyakov A.B.**, Fomin D.V., Sholygin I.O., Galkin N.G., Galkin K.N.
Tsiolkovsky Scientific Research Center, Amur state university, Blagoveshchensk, Russia
Optical and electronic properties of magnesium silicide films formed on silicon

II.p.06 Fomin D.V., **Ryabov I.A.**, Polyakov A.V., Sholygin I.O., Shemetov D.A., Galkin N.G., Galkin K.N.
Tsiolkovsky Scientific Research Center, Amur state university, Blagoveshchensk, Russia
Optical spectra and surface morphology of magnesium silicide nanofilms

II.p.07 **Sholygin I.O.**, FominD.V., Polyakov A.B., GalkinN.G., GalkinK.N.
Tsiolkovsky Scientific Research Center, Amur state university, Blagoveshchensk, Russia
Structural properties of Mg_2Si films formed on Si (111)

II.p.08 **Trusov E.P.**, Vorobyov Y. V., Ermachikhin A.V.
Ryazan State Radio Engineering University, Ryazan, Russia
Resistance Drift in GeTe–Sb_2Te_3 system

II.p.09 **Yakovlev A.A.**, Pisarenko T.A., Tsukanov D.A., Mararov V.V., Balashev V.V., Ignatovich K.V.
Institute of Automation and Control Processes FEB RAS, Vladivostok, Russia
The origin of the lateral photovoltaic effect in the SiO_2/TeO_2/Bi_2Te_3/n-Si(111) structure: by varying laser illumination

II.p.10 **Goroshko D.L.,** Goroshko O.A., Galkin K.N., Kropachev O.V., Galkin N.G.
Institute of Automation and Control Processes FEB RAS, Vladivostok, Russia
Features of magnetotransport in ultrathin CoSi films on Si(111)

II.p.11 **Subbotin E.Yu.,** Kozlov A.G., Pavlov D.V., Lisenkov O.E., Udilov A.D., Prokopeva G.A., Goroshko D.L., Chernev I.M., Khoroshilov D.A., Sinotova S.A., Galkin N.G.
Institute of Automation and Control Processes FEB RAS, Vladivostok, Russia
Synthesis of Mg2Si core-shell nanowires by solid-phase epitaxy

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