

**Conference Chair:** Yu. Gulyaev, Russian Academy of Sciences (RAS), Moscow, Russia

**Conference Co-chair:** V. Lukichev, Russian Academy of Sciences, Moscow, Russia

**Conference Co-chair:** G. Krasnikov, Russian Academy of Sciences, Moscow, Russia

## COMMITTEES

### International Advisory Committee

A. Aseev, Rzhanov Institute of Semiconductor Physics of Siberian Branch of RAS, Novosibirsk, Russia

D. Averin, Stony Brook University, New York, USA

M. Baklanov, International Microelectronic Center (IMEC), Leuven, Belgium

F. Balestra, Grenoble Institute of Technology, Grenoble, France

V. Labunov, Belarusian State University of Informatics and Radioelectronics, Minsk, Belarus

K. Likharev, Stony Brook University, New York, USA

K. Novoselov, University of Manchester, Manchester, UK

T. Otsuji, Tohoku University, Sendai, Japan

I. Rangelow, University of Ilmenau, Ilmenau, Germany

S. Schulz, Fraunhofer Institute for Electronic Nanosystems, Chemnitz, Germany

R. Suris, Ioffe Institute of RAS, St. Peterburg, Russia

A. Toriumi, University of Tokyo, Tokyo, Japan

### Program Committee

**Chair:** Yu. Gulyaev, Russian Academy of Sciences, Moscow, Russia

**Co-chair:** I. Neizvestnyi, Russian Academy of Sciences (Siberian Branch), Novosibirsk, Russia

**Co-chair:** V. Lukichev, Russian Academy of Sciences, Moscow, Russia

#### Members:

Yu. Bogdanov, Institute of Physics and Technology of RAS, Moscow, Russia

Yu. Chaplygin, National Research University of Electronic Technology - MIET, Zelenograd, Russia

M. Chuev, Institute of Physics and Technology of RAS, Moscow, Russia

L. Fedichkin, Moscow Institute of Physics and Technology (State University), Dolgoprudny, Russia

F. Komarov, Belorussian State University, Minsk, Belorussia

V. Kudrya, Institute of Physics and Technology of RAS, Moscow, Russia

P. Maltsev, V.G. Mokerov UHF Semiconductor Microelectronics Institute of RAS, Moscow, Russia

V. Panchenko, Institute on Laser and Informatics Technologies Problems of RAS, Shatura, Russia

D. Roshchupkin, Institute of Microelectronics Technology and High Purity Materials of RAS, Chernogolovka, Russia

K. Rudenko, Institute of Physics and Technology of RAS, Moscow, Russia

A. Rudy, P.G. Demidov Yaroslavl State University, Yaroslavl, Russia

V. Ryzhii, Tohoku University, Sendai, Japan

N. Salaschenko, Institute for Physics of Microstructures of RAS, Nizhny Novgorod, Russia

A. Sigov, Russian Technological University - MIREA, Moscow, Russia

V. Vyurkov, Institute of Physics and Technology of RAS, Moscow, Russia

## **Organizing Committee**

**Chair:** V. Lukichev, Russian Academy of Sciences, Moscow, Russia

**Co-chair:** K. Rudenko, Russian Academy of Sciences, Moscow, Russia

### **Members:**

I. Abramov, Belarusian State University of Informatics and Radioelectronics, Minsk, Belarus

I. Amirov, Yaroslavl Branch of the Institute of Physics and Technology of RAS, Yaroslavl, Russia

Yu. Bogdanov, Institute of Physics and Technology of RAS, Moscow, Russia

A. Buharaev, Kazan E.K. Zavoisky Physical-Technical Institute, Kasan, Russia

M. Chuev, Institute of Physics and Technology of RAS, Moscow, Russia

A. Gorbazevitch, P.N. Lebedev Physical Institute of RAS, Moscow, Russia

Eu. Gornev, Moscow Institute of Physics and Technology (State University), Dolgoprudny, Russia; АО НИИМЭ, Moscow, Russia

M. Korolev, National Research University of Electronic Technology - MIET, Zelenograd, Russia

O. Pchelyakov, Rzhanov Institute of Semiconductor Physics of Siberian Branch of RAS, Novosibirsk, Russia

V. Popov, Rzhanov Institute of Semiconductor Physics of Siberian Branch of RAS, Novosibirsk, Russia

V. Rubaev, NIX Company, Moscow, Russia

## **Local Organizing Committee**

Vladimir Lukichev – Chair of the Local Organizing Committee

Konstantin Rudenko - Co-chair of the Local Organizing Committee

Yuri Bogdanov - Chair of the Extended Session "Quantum Informatics"

Vladimir Vyurkov – Moderator of the Russia-Japan round table, contacts to the invited speakers

Vladimir Kudrya - Scientific Secretary

Sergey Skalkin – Financial Director

Vladimir Yudenkov - Administrator

Alexey Dianov - PR support

Andrey Chernyavskiy - WEB design

Andrey Miakonkikh – Abstracts publication

Alexander Rogozhin - Technical support

Igor Semenikhin - Visa support

Lidiya Besschastnova - Registration and accommodation

Irina Lukianova - Registration and accommodation

Inna Nikitushkina - Conference fee manager

Irina Novojilova - Conference fee manager

## SESSIONS LOCATION

**Monday, October 1, 2018**

TIME	CONFERENCE HALL	AUDITORIUM A	AUDITORIUM B
15.00 – 16.20	Hi-Tech Companies Presentations	-----	-----

**Tuesday, October 2, 2018**

### 8.50. Conference Hall. WELCOME REMARKS

TIME	CONFERENCE HALL	AUDITORIUM A	AUDITORIUM B
9.00 – 11.00	<b>Plenary Session I</b> Emerging Devices	-----	-----
11.30 – 13.30	<b>Plenary Session II.</b> Quantum Informatics I	-----	-----
14.30 – 16.20	Session 1. 2D Materials for Nanodevices	Session 2. Thin Films	Session 3. Quantum Informatics II
16.40 – 18.40	Session 4. Advanced Nanoelectronic Technologies	Session 5. Modeling and Simulation of FETs	Session 6. Quantum Informatics III

**Wednesday, October 3, 2018**

TIME	CONFERENCE HALL	AUDITORIUM A	AUDITORIUM B
9.00 – 11.00	<b>Plenary Session III</b> THz Photonics	-----	-----
11.20 – 13.10	Session 7. Nanoscale Lithography	Session 8. Spintronic Devices	Session 9. Quantum Informatics IV
14.20 – 16.00	Session 10. Beyond CMOS	Session 11. Solid-State THz Electronics	Session 12. Quantum Informatics V

TIME	HALL	HALL
16.20 – 18.40	POSTER SESSION I	EXHIBITION

## Thursday, October 4, 2018

<b>TIME</b>	<b>CONFERENCE HALL</b>	<b>AUDITORIUM A</b>	<b>AUDITORIUM B</b>
9.00 – 10.40	Session 13. Superconducting Devices	Session 14. MEMS Devices	Session 15. Quantum Informatics VI
11.00 - 13.00	Session 16. Plasma Processing	Session 17. Metrology and Characterization I	Session 18. Quantum Informatics VII
14.00 – 15.40	Session 19. 30th Anniversary of the IPT RAS	Session 20. Metrology and Characterization II	Session 21. Integrated Photonic Devices

<b>TIME</b>	<b>HALL</b>
16.00 – 18.20	POSTER SESSION II

**18.30. Conference Hall. CLOSING CONFERENCE REMARKS**

# ICMNE-2018 SCIENTIFIC PROGRAM

## Oral Sessions

Monday, October 1, 2018

---

**9.00 Registration & Accommodation**

**13.00-14.00 Lunch**

### Conference Hall

#### Special Session. Presentations of Hi-Tech Companies

**Session Chairman: Konstantin Rudenko, *Institute of Physics and Technology of RAS, Moscow, Russia***

**15.00 S1-01** Advanced equipment for manufacturing nanostructures, 2D materials, new semiconductor devices, and other applications. *A. Krynin. Technoinfo Limited, Moscow, Russia.*

**15.20 S1-02** *To be announced later.*

**16.20-16.40 Coffee break**

**18.00**

**Welcome Party**

**19.00**

**Dinner**

**8.15 Breakfast**

**Conference Hall**

**8.50 WELCOME REMARKS**

**Yu.V. Gulyaev, Program Committee Chair, Kotelnikov Institute of Radioengineering and Electronics of RAS, Moscow, Russia.**

**V.F. Lukichev, Program Committee Co-Chair, Institute of Physics and Technology of RAS, Moscow, Russia.**

**Plenary Session I. Emerging Devices**

**Session Chairman: Vladimir Lukichev, Institute of Physics and Technology of RAS, Moscow, Russia**

**9.00 L1-01 KEYNOTE: Novelty in vacuum nanoelectronics. Yu.V. Gulyaev. Kotelnikov Institute of Radioengineering and Electronics of RAS, Moscow, Russia.**

**9.30 L1-02 KEYNOTE: Modeling and Characterization of Electron Devices for More-than-Moore integrated electronic systems. C. Fiegna, S. Reggiani, A. Tallarico, E. Sangiorgi, M. Zanucoli. DEI, Advanced Research Center on Electronic Systems, University of Bologna and IUNET, Italy.**

**10.00 L1-03 INVITED: Electron Spin for Modern and Future Microelectronics. V. Sverdlov<sup>1</sup>, S. Selberherr<sup>2</sup>. 1. Christian Doppler Laboratory for Nonvolatile Magnetoresistive Memory and Logic. 2. Institute for Microelectronics TU Wien, Vienna, Austria.**

**10.30 L1-04 INVITED: Ferroelectric properties of SOS and SOI pseudo-MOSFETs with HfO<sub>2</sub> interlayers. V.P. Popov<sup>1</sup>, M.A. Ilnitskii<sup>1</sup>, V.I. Vdovin<sup>1</sup>, V.A. Antonov<sup>1</sup>, A.V. Miakonkikh<sup>2</sup>, K.V. Rudenko<sup>2</sup>. 1. Institute of Semiconductor Physics of Siberian Branch of RAS, Novosibirsk, Russia. 2. Institute of Physics and Technology of RAS, Moscow, Russia.**

**11.00-11.20 Coffee break**

**Conference Hall**

**Plenary Session II. Quantum Informatics I**

**Session Chairman: Andrey Chernyavskiy, Institute of Physics and Technology of RAS, Moscow, Russia.**

**11.30 qL1-01 INVITED: Quantum Technologies: State of Art and Perspectives. S.P. Kulik<sup>1,2</sup>. 1. Faculty of Physics, M.V. Lomonosov Moscow State University, Moscow, Russia. 2. Quantum Technologies Centre, M.V. Lomonosov Moscow State University, Moscow, Russia.**

**12.00 qL1-02 INVITED: Optimizing heralded single-photon sources based on spontaneous four-wave mixing in a system of coupled microresonators. I.N. Chuprina<sup>1,2</sup>, N.S. Perminov<sup>1,3</sup>, A.A. Kalachev<sup>1,2</sup>. 1. Kazan E.K. Zavoisky Physical-Technical Institute, Kazan Scientific Center, Kazan, Russia. 2. Institute of Physics, Kazan Federal University, Kazan, Russia. 3. Kazan Quantum Center, Kazan National Research Technical University, Kazan, Russia.**

- 12.30 qL1-03 INVITED: Decoherence in a one-dimensional system of interacting nuclear spins: experimental and theoretical investigations.** *G. Bochkina, E. Fel'dman, S. Vasil'ev.* *Institute of Problems of Chemical Physics of RAS, Chernogolovka, Russia.*
- 13.00 qL1-04 INVITED: Three-body Förster resonances in cold Rydberg atoms and their applications in quantum information.** *D.B. Tretyakov<sup>1,2</sup>, I.I. Beterov<sup>1,2</sup>, E.A. Yakshina<sup>1,2</sup>, V.M. Entin<sup>1,2</sup>, I.I. Ryabtsev<sup>1,2</sup>, P. Cheinet<sup>3</sup>, P. Pillet<sup>3</sup>.* *1. Institute of Semiconductor Physics of Siberian Branch of RAS, Novosibirsk, Russia. 2. Novosibirsk State University, Novosibirsk, Russia. 3. Laboratoire Aime Cotton, CNRS, Univ. Paris-Sud, ENS Paris-Saclay, Orsay, France.*

**13.30-14.30 Lunch**

### **Conference Hall**

#### **Session 1. 2D Materials for Nanodevices**

**Session Chairman:** *Vladimir Vuyrkov, Institute of Physics and Technology of RAS, Moscow, Russia*

- 14.30 O1-01 INVITED: 2D Ferromagnetism and Charge Transport in Silicene and Graphene.** *D.V. Averyanov, A.M. Tokmachev, O.E. Parfenov, I.A. Karateev, I.S. Sokolov, A.N. Taldenkov, V.G. Storchak.* *National Research Center "Kurchatov Institute", Moscow, Russia.*
- 15.00 O1-02 Simulation of Graphene Field-Effect Transistors and Resonant Tunneling Diodes Based on Carbon Nanomaterials.** *I. Abramov, V. Labunov, N. Kolomejtseva, I. Romanova, I. Shcherbakova.* *Belarusian State University of Informatics and Radioelectronics, Minsk, Belarus.*
- 15.20 O1-03 Theoretical and experimental graphene's electron transparency.** *E. Il'ichev<sup>1</sup>, V. Khaustov<sup>1</sup>, A. Kuleshov<sup>1</sup>, D. Migunov<sup>1</sup>, R. Nabiev<sup>1</sup>, G. Petrukhin<sup>1,2</sup>, E. Teverovskaya<sup>1</sup>, G. Rychkov<sup>1</sup>.* *1. National Research University of Electronic Technology - MIET, Zelenograd, Russia. 2. LLC "CNEL Devices", Zelenograd, Russia.*
- 15.40 O1-04 Planar ring-shaped matrix field emission nanostructure based on multigraphene/SiC.** *I. Jityaev, A. Svetlichnyi, O. Ageev.* *Southern Federal University, Institute of Nanotechnologies, Electronics and Equipment Engineering, Taganrog, Russia.*
- 16.00 O1-05 Laser reduction of graphene oxide thin films for nanoelectronic application.** *I.A. Komarov<sup>1</sup>, N.S. Struchkov<sup>2</sup>, D.D. Levin<sup>2</sup>, E.E. Danelyan<sup>1</sup>, M.A. Orlov<sup>1</sup>, S.N. Sherbin<sup>1</sup>, V.V. Bogachev<sup>1</sup>, N.K. Lagodenko<sup>1</sup>.* *1. Bauman Moscow State Technical University, Moscow, Russia. 2. National Research University of Electronic Technology - MIET, Zelenograd, Russia.*

## Auditorium A

### Session 2. Thin Films

**Session Chairman: Vladimir Popov**, *Rzhanov Institute of Semiconductor Physics of Siberian Branch of RAS, Novosibirsk, Russia*

- 14.30 O1-06 Silicon oxides and silicon nitrides: structure, properties and applications in memristors.** V.A. Volodin<sup>1,2</sup>, G.N. Kamaev<sup>1</sup>, V.N. Kruchinin<sup>1</sup>, V.A. Gritsenko<sup>1,2,3</sup>. 1. *Rzhanov Institute of Semiconductor Physics of Siberian Branch of RAS, Novosibirsk, Russia.* 2. *Novosibirsk State University, Novosibirsk, Russia.* 3. *Novosibirsk State Technical University, Novosibirsk, Russia.*
- 14.50 O1-07 Influence of the vacuum-plasma etching on the electrophysical characteristics of thin ferroelectric PZT films.** D.A. Abdullaev<sup>1,2</sup>, D.S. Seregin<sup>2</sup>, D.N. Zubov<sup>1</sup>, K.A. Vorotilov<sup>2</sup>. 1. *Institute of Nanotechnology of Microelectronics of RAS, Moscow, Russia.* 2. *Russian Technological University - MIREA, Moscow, Russia.*
- 15.10 O1-08 Electronic and optical properties of MoS<sub>2</sub> thin films deposited by magnetron sputtering studying.** A.I. Belikov, Z.P. Kyaw, A.I. Semochkin. *Bauman Moscow State Technical University, Moscow, Russia.*
- 15.30 O1-09 Study of the Co<sub>2</sub>FeAl Heusler alloy films growth on R- and A-plane sapphire substrates and investigation of their magnetic properties.** I.V. Malikov, L.A. Fomin, V.A. Berezin, G.M. Mikhailov. *Institute of Microelectronics Technology and High Purity Materials of RAS, Chernogolovka, Russia.*
- 15.50 O1-10 Nanocrystalline diamond films heavily doped by boron: structure, optical and electrical properties.** V.A. Volodin<sup>1,2</sup>, S.G. Cherkova<sup>1</sup>, V. Kumar<sup>3</sup>, V.A. Sachkov<sup>4</sup>, V. Mortet<sup>5</sup>, A. Taylor<sup>5</sup>, Z. Remes<sup>5</sup>, T.H. Stuchliková<sup>5</sup>, J. Stuchlik<sup>5</sup>. 1. *Rzhanov Institute of Semiconductor Physics of Siberian Branch of RAS, Novosibirsk, Russia.* 2. *Novosibirsk State University, Novosibirsk, Russia.* 3. *Indian Institute of Information Technology Design & Manufacturing, Kancheepuram Melakottaiyur, Chennai, Tamil Nadu, India.* 4. *Omsk Scientific Center of Siberian Branch of RAS, Omsk, Russia.* 5. *Institute of Physics ASCR, Praha, Czech Republic.*

## Auditorium B

### Session 3. Quantum Informatics II

**Session Chairman: Leonid Fedichkin**, *Institute of Physics and Technology of RAS, Moscow, Russia;*  
*Moscow Institute of Physics and Technology (State University), Dolgoprudny, Russia.*

- 14.30 q1-01 Quantum wavelet transforms as alternative to the quantum Fourier transforms for a quantum computing.** A.A. Kokin. *Institute of Physics and Technology of RAS, Moscow, Russia.*
- 14.50 q1-02 INVITED: Homogeneous atomic ensembles and single-mode field: review of simulation results.** A.V. Kulagin<sup>1</sup>, V.Y. Ladunov<sup>1</sup>, Y.I. Ozhigov<sup>1,2</sup>, N.A. Skovoroda<sup>1</sup>, N.B. Victorova<sup>3</sup>. 1. *Faculty of Computational Mathematics and Cybernetics, Lomonosov Moscow State University, Moscow, Russia.* 2. *Institute of Physics and Technology of RAS, Moscow, Russia.* 3. *Russian State University for the Humanities, Institute of Informational Sciences and Secure Technologies, Chair of Fundamental and Applied Mathematics, Moscow, Russia.*



- 15.20 q1-03 **INVITED: Secure quantum devices on dark atomic states.** Y.I. Ozhigov<sup>1,2</sup>. 1. Faculty of Computational Mathematics and Cybernetics, Lomonosov Moscow State University, Moscow, Russia. 2. Institute of Physics and Technology of RAS, Moscow, Russia.
- 15.50 q1-04 **Representation of Boolean functions in terms of quantum computation.** Yu.I. Bogdanov<sup>1,2,3</sup>, N.A. Bogdanova<sup>1,2</sup>, D.V. Fastovets<sup>1,2</sup>, V.F. Lukichev<sup>1</sup>. 1. Institute of Physics and Technology of RAS, Moscow, Russia. 2. National Research University of Electronic Technology - MIET, Zelenograd, Russia. 3. National Research Nuclear University MEPhI, Moscow, Russia.

16.20-16.40 Coffee break

## Conference Hall

### Session 4. Advanced Nanoelectronic Technologies

Session Chairman: Konstantin Rudenko, Institute of Physics and Technology of RAS, Moscow, Russia

- 16.40 O1-11 **INVITED: Scaled-up deposition of 2D materials and heterostructures: Technology and processes.** F. Reale, R.S. Sundaram, T. Miller, O. Thomas. Oxford Instruments Plasma Technology, Yatton, United Kingdom.
- 17.10 O1-12 **INVITED: Flicker Noise Reduction for 110nm Technology.** N. Belova, T. Myers, B. Huang, E.A. Process, J. Kimball, N. Menninger. ON Semiconductor, Phoenix, AZ, USA.
- 17.40 O1-13 **Alternative BEOL approach: gap filling with CSD low-*k* dielectric.** V. Gvozdev<sup>1</sup>, D. Seregin<sup>2</sup>, P. Kuznetsov<sup>1</sup>, A. Valeev<sup>1</sup>, K. Vorotilov<sup>2</sup>, O. Gushin<sup>1</sup>, G. Krasnikov<sup>1</sup>, A. Sigov<sup>2</sup>. 1. JSC Molecular Electronics Research Institute, Zelenograd, Russia. 2. Russian Technological University - MIREA, Moscow, Russia.
- 18.00 O1-14 **Investigation of technological operations for manufacturing 3D micro-assemblies with embedded elements.** S. Kruchinin, S. Timoshenkov. National Research University of Electronic Technology - MIET, Zelenograd, Russia.
- 18.20 O1-15 **Graphoepitaxial growth of Y:ZrO<sub>2</sub> thin films on tilted-axes substrates.** P.B. Mozhaev<sup>1</sup>, J.E. Mozhaeva<sup>1</sup>, A.V. Khoryushin<sup>2</sup>, I.M. Kotelyanskii<sup>3</sup>, V.A. Luzanov<sup>3</sup>, J.B. Hansen<sup>2</sup>, C.S. Jacobsen<sup>2</sup>. 1. Institute of Physics and Technology of RAS, Moscow, Russia. 2. Department of Physics, Technical University of Denmark, Kongens Lyngby, Denmark. 3. Institute of Radio Engineering and Electronics of RAS, Moscow, Russia.

## Auditorium A

### Session 5. Modeling and Simulation of FETs

**Session Chairman:** Vladimir Vyurkov, *Institute of Physics and Technology of RAS, Moscow, Russia*

- 16.40 O1-16** A New Universal Physics Based Strategy for the Field-Effect Transistor Modeling. G.I. Zebrev. *National Research Nuclear University MEPhI, Moscow, Russia.*
- 17.00 O1-17** Modeling of the submicron MOSFETs characteristics for UTSi technology. A.S. Adonin<sup>1</sup>, K.O. Petrosyants<sup>2</sup>, D.A. Popov<sup>2</sup>. 1. OJSC Research-and-Production Enterprise “Pulsar”, Moscow, Russia. 2. National Research University Higher School of Economics (Moscow Institute of Electronics and Mathematics), Moscow, Russia.
- 17.20 O1-18** A linear “extrinsic” compact model for short-channel MOSFET drain current asymptotic dependence on drain bias in saturation regime. V. Turin<sup>1</sup>, R. Shkarlat<sup>1,2</sup>, V. Poyarkov<sup>2</sup>, O. Kshensky<sup>2</sup>, G. Zebrev<sup>3</sup>, B. Iñiguez<sup>4</sup>, M. Shur<sup>5</sup>. 1. Orel State University named after I.S Turgenev, Orel, Russia. 2. JSC “Bolkhov Plant of Semiconductor Devices”, Bolkhov, Russia. 3. National Research Nuclear University MEPhI), Moscow, Russia. 4. Rovira i Virgili University, Tarragona, Spain. 5. Rensselaer Polytechnic Institute, Troy, USA.
- 17.40 O1-19** A linear “extrinsic” compact model for OFET drain current in saturation regime with nonzero differential conductance. V. Turin<sup>1</sup>, B. Rakhmatov<sup>1</sup>, C.-H. Kim<sup>2</sup>. 1. Orel State University named after I.S. Turgenev, Orel, Russia. 2. Gachon University, Seongnam, Republic of Korea.
- 18.00 O1-20** TCAD-based performance analysis of nanoscale vacuum field-emission transistors at advanced technology nodes. I.D. Evsikov, N.A. Djuzhev, G.D. Demin. *National Research University of Electronic Technology - MIET, Moscow, Russia.*

## Auditorium B

### Session 6. Quantum Informatics III

**Session Chairman:** Yuri Ozhigov, *Faculty of Computational Mathematics and Cybernetics, M.V. Lomonosov Moscow State University, Moscow, Russia; Institute of Physics and Technology of RAS, Moscow, Russia.*

- 16.40 q1-05** Jumps of optimal measurement angle and fractures on the curves of quantum correlation functions in two-qubit systems. M.A. Yurischev. *Institute of Problems of Chemical Physics of RAS, Chernogolovka, Russia.*
- 17.00 q1-06** MQ-coherence matrix transfer and remote block-scaled states creation. G.A. Bochkin, E.B. Feldman, A.I. Zenchuk. *Institute of Problems of Chemical Physics of RAS, Chernogolovka, Russia.*
- 17.20 q1-07** An investigation of entanglement in trimer clusters. E. Fel’dman, E. Kuznetsova. *Institute of Problems of Chemical Physics of RAS, Chernogolovka, Russia.*
- 17.40 q1-08** The multiple quantum coherence transfer and quantum correlations in NMR experiments in solids. G. Bochkin, A. Fedorova, E. Fel’dman, A. Zenchuk. *Institute of Problems of Chemical Physics of RAS, Chernogolovka, Russia.*

- 18.00 q1-09 Quantum information processing with macroscopic BEC qubits.** A.N. Pyrkov<sup>1</sup>, T. Byrnes<sup>2,3</sup>. 1. Institute of Problems of Chemical Physics of RAS, Chernogolovka, Russia. 2. New York University Shanghai, Shanghai, China. 3. Department of Physics, New York University, New York, USA.

**19.00 Dinner**

Wednesday, October 3, 2018

---

**8.15 Breakfast**

**Conference Hall**

**Plenary Session III. THz Photonics**

**Session Chairman:** Vladimir Vyurkov, *Institute of Physics and Technology of RAS, Moscow, Russia*

- 9.00 L2-01 INVITED: Graphene-based 2D heterostructures for terahertz photonic and plasmonic light-sources applications.** D. Yadav<sup>1</sup>, T. Watanabe<sup>1</sup>, S. Boubanga-Tombet<sup>1</sup>, A. Satou<sup>1</sup>, V. Ryzhii<sup>1,2</sup>, M. Ryzhii<sup>3</sup>, A.A. Dubinov<sup>4</sup>, W. Knap<sup>5</sup>, V.V. Popov<sup>6</sup>, T. Otsuji<sup>1</sup>. 1. Research Institute of Electrical Communication, Tohoku University, Sendai, Japan. 2. V.G. Mokerov Institute of Ultra High Frequency Semiconductor Electronics of RAS, Moscow, Russia. 3. Department of Computer Science and Engineering, University of Aizu, Aizu-Wakamatsu, Japan. 4. Institute for Physics of Microstructures of RAS, Lobachevsky State University of Nizhny Novgorod, Nizhny Novgorod, Russia. 5. Laboratory Charles Coulomb, University of Montpellier and CNRS, Montpellier, France. 6. Saratov Branch of the Kotelnikov Institute of Radio Engineering and Electronics of RAS, Saratov, Russia.
- 9.30 L2-02 INVITED: Graphene-phosphorene hybrid structures and their applications.** V. Ryzhii<sup>1,2,3,4</sup>, T. Otsuji<sup>1</sup>, M. Ryzhii<sup>5</sup>, V. Leiman<sup>4</sup>, D. Ponomarev<sup>2,4</sup>, P.P. Maltsev<sup>2</sup>, D. Svintsov<sup>4</sup>, V. Mitin<sup>6</sup>, M.S. Shur<sup>7</sup>. 1. Research Institute of Electrical Communication, Tohoku University, Sendai, Japan. 2. V.G. Mokerov Institute of Ultra High Semiconductor Electronics of RAS, Moscow, Russia. 3. Center of Photonics and Infrared Engineering, Bauman Moscow State Technical University, Moscow. 4. Center of Photonics and Two-Dimensional Materials, Moscow Institute of Physics and Technology (State University), Russia. 5. Department of Computer Science and Engineering, University of Aizu, Aizu-Wakamatsu, Japan. 6. Department of Electrical Engineering, University at Buffalo, Buffalo, USA. 7. Department of Electrical, Computer, and Systems Engineering, Rensselaer Polytechnic Institute, Troy, USA.
- 10.00 L2-03 INVITED: Photonic Double-Mixing by InGaAs-HEMTs for Optical to MMW/THz Carrier Frequency Down-Conversion.** A. Satou<sup>1,3</sup>, Y. Omori<sup>1,3</sup>, S. Manabe<sup>1,3</sup>, T. Hosotani<sup>1,3</sup>, T. Suemitsu<sup>2,3</sup>, T. Otsuji<sup>1,3</sup>. 1. Research Institute of Electrical Communication, Tohoku University, Sendai, Japan. 2. Center for Innovative Integrated Electronic Systems, Tohoku University, Sendai, Japan. 3. Research Organization of Electrical Communication, Tohoku University, Sendai, Japan.
- 10.30 L2-04 INVITED: Graphene plasmonics for resonant voltage-tunable terahertz detectors.** D. Svintsov<sup>1</sup>, D. Bandurin<sup>2</sup>, I. Gayduchenko<sup>3</sup>, G. Fedorov<sup>1</sup>, A. Geim<sup>2</sup>, G. Goltsman<sup>3</sup>. 1. Moscow Institute of Physics and Technology (State University), Dolgoprudny, Russia. 2. School of Physics and Astronomy, University of Manchester, Manchester, UK. 3. Moscow State Pedagogical University, Moscow, Russia.

11.00 - 11.20 Coffee break

**Conference Hall**  
**Session 7. Nanoscale Lithography**

**Session Chairman: Konstantin Rudenko**, *Institute of Physics and Technology of RAS, Moscow, Russia*

- 11.20 O2-01 INVITED: Maskless nanolithography on the basis of microfocus X-ray tubes: conversion of electron energy into the BeK $\alpha$  line.** *N.I. Chkhalo<sup>1</sup>, A.Ya. Lopatin<sup>1</sup>, A.E. Pestov<sup>1</sup>, N.N. Salashchenko<sup>1</sup>, G.D. Demin<sup>2</sup>, N.A. Dyuzhev<sup>2</sup>, M.A. Makhaboroda<sup>2</sup>. 1. Institute for Physics of Microstructures of RAS, Nizhny Novgorod, Russia. 2. National University Research Institute of Electronic Technology – MIET, Zelenograd, Russia.*
- 11.50 O2-02 Cellular automata method for directed self-assembly modelling.** *E. Gornev<sup>1,2</sup>, M. Litavrin<sup>1,2</sup>, I. Matyushkin<sup>1</sup>, O. Gushin<sup>1</sup>. 1. JSC Molecular Electronics Research Institute, Zelenograd, Russia. 2. Moscow Institute of Physics and Technology (State University), Dolgoprudny, Russia.*
- 12.10 O2-03 E-beam lithography of dense 10 nm line/space pattern using the HSQ mask.** *A.A. Tatarintsev<sup>1</sup>, A.V. Miakonkikh<sup>1</sup>, K.V. Rudenko<sup>1</sup>, A. Shishlyannikov<sup>2</sup>. 1. Institute of Physics and Technology of RAS, Moscow, Russia. 2. JSC Molecular Electronics Research Institute, Zelenograd, Russia.*
- 12.30 O2-04 Simulation of hybrid e-beam lithography: experimental evidence.** *A. Rogozhin<sup>1,2</sup>, F. Sidorov<sup>1,2</sup>, M. Bruk<sup>1,3</sup>, E. Zhikharev<sup>1</sup>. 1. Institute of Physics and Technology of RAS, Moscow, Russia. 2. Moscow Institute of Physics and Technology (State University), Dolgoprudny, Russia. 3. L.Ya. Karpov Institute of Physical Chemistry, Moscow, Russia.*
- 12.50 O2-05 Simulation algorithm of PMMA depolymerization in dry e-beam etching of resist.** *A. Rogozhin<sup>1</sup>, F. Sidorov<sup>1,2</sup>, M. Bruk<sup>1</sup>, E. Zhikharev<sup>1</sup>. 1. Institute of Physics and Technology of RAS, Moscow, Russia. 2. Moscow Institute of Physics and Technology (State University), Dolgoprudny, Russia.*

**Auditorium A**  
**Session 8. Spintronics Devices**

**Session Chairman: Oleg Trushin**, *Yaroslavl Branch of the Institute of Physics and Technology of RAS, Yaroslavl, Russia*

- 11.20 O2-06 Diffraction model of the electronic transport in rough normal metal and ferromagnetic nanowires.** *G.M. Mikhailov<sup>1</sup>, L.A. Fomin<sup>1</sup>, A.E. Rassadin<sup>2</sup>. 1. Institute of Microelectronic Technology and High Purity Materials of RAS, Chernogolovka, Russia. 2. Member of the Board of Nizhny Novgorod Mathematical Society, Nizhny Novgorod, Russia.*
- 11.40 O2-07 Static and dynamic spin-torque-diode sensitivity induced by the thermoelectric charge and spin currents in magnetic tunnel junctions.** *G.D. Demin<sup>1,2</sup>, A.F. Popkov<sup>1,2</sup>. 1. Moscow Institute of Physics and Technology (State University), Dolgoprudny, Russia. 2. National Research University of Electronic Technology - MIET, Zelenograd, Russia.*

- 12.00 O2-08 Quantization and thermal effects during the scalability of magnetic-nanobridge-based STT-MRAM towards sub-20-nm technology nodes.** A.V. Popov<sup>1</sup>, G.D. Demin<sup>1,2</sup>, A.F. Popkov<sup>1,2</sup>. 1. Moscow Institute of Physics and Technology (State University), Dolgoprudny, Russia. 2. National Research University of Electronic Technology - MIET, Zelenograd, Russia.
- 12.20 O2-09 Quality control of multilayer spin-tunnel structure using combination of methods.** O.S. Trushin<sup>1</sup>, S.V. Vasiliev<sup>1</sup>, S.G. Simakin<sup>1</sup>, A.N. Pestova<sup>2</sup>. 1. Yaroslavl Branch of the Institute of Physics and Technology of RAS, Yaroslavl, Russia. 2. P.G. Demidov Yaroslavl State University, Yaroslavl, Russia.

## Auditorium B

### Session 9. Quantum Informatics IV

**Session Chairmen:** Alexey Kalachev, *Zavoisky Physical-Technical Institute, Kazan Scientific Center, Kazan, Russia;* Institute of Physics, Kazan Federal University, Kazan, Russia.

- 11.20 q2-01 INVITED: Photon echo schemes for quantum memory in optical and microwave resonators reasons.** S.A. Moiseev. *Kazan Quantum Center, Kazan National Research Technical University, Kazan, Russia.*
- 11.50 q2-02 Revival of silenced echo quantum memory in the optical resonator.** M.M. Minnegaliev, K.I. Gerasimov, R.V. Urmancheev, S.A. Moiseev. *Kazan Quantum Center, Kazan National Research Technical University named after A.N. Tupolev - KAI, Kazan, Russia.*
- 12.10 q2-03 Quantum computer based on triangular atom-photon molecule.** S.N. Andrianov<sup>1</sup>, F.M. Ablayev<sup>2</sup>, S.A. Moiseev<sup>3</sup>, A.V. Vasiliev<sup>2</sup>. 1. *Institute of Applied Research of Tatarstan Republic Academy of Sciences, Kazan, Russia.* 2. *Kazan Federal University, Kazan, Russia.* 3. *Quantum Center of Kazan National Research Technical University, Kazan, Russia.*
- 12.30 q2-04 The photon concentrator and source on the quantum well/dot cascade nanostructure in optical microcavity for charge qubit control.** A.V. Tsukanov, I.Yu. Kateev. *Institute of Physics and Technology of RAS, Russia.*
- 12.50 q2-05 Multiphoton subtracted thermal states: description, preparation, measurement and utilization.** K.G. Katamadze<sup>1,2,3,4</sup>, G.V. Avosopiants<sup>1,2,4</sup>, B.I. Bantysh<sup>1,5</sup>, Yu.I. Bogdanov<sup>1,4,5</sup>, S.P. Kulik<sup>2,3</sup>. 1. *Institute of Physics and Technology of RAS, Moscow, Russia.* 2. *Faculty of Physics, M.V. Lomonosov Moscow State University, Moscow, Russia.* 3. *Quantum Technology Centre, M.V. Lomonosov Moscow State University, Moscow, Russia.* 4. *National Research Nuclear University MEPhI, Moscow, Russia.* 5. *National Research University of Electronic Technology - MIET, Zelenograd, Russia.*

**13.10-14.10 Lunch**

## Conference Hall

### Session 10. Beyond CMOS

**Session Chairman: Konstantin Rudenko**, *Institute of Physics and Technology of RAS, Moscow, Russia*

- 14.10 O2-10 Field-effect transistors for ULSI.** *A. Krivospitsky<sup>1</sup>, A. Miakonkikh<sup>1,2</sup>, V. Vyurkov<sup>1,2</sup>, D. Svintsov<sup>1,2</sup>, Yu. Semin<sup>1</sup>, K. Rudenko<sup>1,2</sup>, V. Lukichev<sup>1,2</sup>. 1. Institute of Physics and Technology of RAS, Moscow, Russia. 2. Moscow Institute of Physics and Technology (State University), Dolgoprudny, Russia.*
- 14.30 O2-11 Quantum interference molecular inverter.** *A.A. Gorbatsevich<sup>1,2,3</sup>, G.Ya. Krasnikov<sup>3</sup>, N.M. Shubin<sup>1,2,3</sup>. 1. P.N. Lebedev Physical Institute of RAS, Moscow, Russia. 2. National Research University of Electronic Technology - MIET, Zelenograd, Russia. 3. JSC Molecular Electronics Research Institute, Zelenograd, Russia.*
- 14.50 O2-12 Development of a molecular single-electron transistor with a single-atom charge center.** *V. Gaidamachenko<sup>1</sup>, E. Morozova<sup>1</sup>, S. Dagesyan<sup>1,2</sup>, E. Soldatov<sup>1,2</sup>, E. Beloglazkina<sup>1</sup>. 1. M.V. Lomonosov Moscow State University, Moscow, Russia. 2. The Center for Quantum Technologies of M.V. Lomonosov Moscow State University, Moscow, Russia.*
- 15.10 O2-13 Simulation of single-electron transistor based on the molecule with single-atom charge center.** *A.A. Parshintsev, V.V. Shorokhov, E.S. Soldatov. Quantum Technology Centre, Faculty of Physics, M.V. Lomonosov Moscow State University, Moscow, Russia.*

## Auditorium A

### Session 11. Solid-State THz Electronics

**Session Chairman: Victor Ryzhii**, *Tohoku University, Sendai, Japan*

- 14.10 O2-14 INVITED: Transit-time transistors for terahertz generation.** *V. Vyurkov<sup>1,2</sup>, D. Svintsov<sup>1,2</sup>, M. Rudenko<sup>1</sup>, A. Borzdov<sup>3</sup>, V. Borzdov<sup>3</sup>, K. Rudenko<sup>1,2</sup>, V. Lukichev<sup>1,2</sup>. 1. Institute of Physics and Technology of RAS, Moscow, Russia. 2. Moscow Institute of Physics and Technology (State University), Dolgoprudny, Russia. 3. Belarusian State University, Minsk, Belarus.*
- 14.35 O2-15 INVITED: Polarons in Resonant-Tunneling Diodes and Their Possible Application in Terahertz Emission.** *V.G. Popov<sup>1</sup>, V.G. Krishtop<sup>1</sup>, T.I. Ahmedov<sup>1</sup>, S.G. Chigarev<sup>2</sup>, M. Henini<sup>3</sup>. 1. Institute of Microelectronics Technology and High Purity Materials of RAS, Chernogolovka, Russia. 2. Fryazino Branch of the Kotelnikov Institute of Radioengineering and Electronics of RAS, Fryazino, Russia. 3. School of Physics and Astronomy of Nottingham University, Nottingham, UK.*
- 15.00 O2-16 Plasmonic terahertz emitters with high-aspect ratio metal gratings.** *A. Yachmenev<sup>1,2</sup>, D. Lavrukhin<sup>1,2</sup>, I. Glinskiy<sup>1</sup>, R. Khabibullin<sup>1,3</sup>, R. Galiev<sup>1</sup>, A. Pavlov<sup>1</sup>, Yu. Goncharov<sup>4</sup>, I. Spektor<sup>4</sup>, M. Ryzhii<sup>5</sup>, T. Otsuji<sup>6</sup>, K. Zaytsev<sup>2,4</sup>, D. Ponomarev<sup>1,2,3</sup>. 1. V.G. Mokerov Institute of UHF Semiconductor Electronics of RAS, Moscow, Russia. 2. Bauman Moscow State Technical University, Moscow, Russia. 3. Center for Photonics and 2D Materials, Moscow Institute of Physics and Technology (State University), Dolgoprudny, Russia. 4. A.M. Prokhorov General Physics Institute of RAS, Moscow, Russia. 5. University of Aizu, Aizu-Wakamatsu, Japan. 6. Research Institute of Electrical Communication, Tohoku University, Japan.*

- 15.20 O2-17 **Silver-based double metal waveguide for terahertz quantum cascade laser.** R.A. Khabibullin<sup>1,2,3</sup>, N.V. Shchavruk<sup>1,2</sup>, D.S. Ponomarev<sup>1,2,3</sup>, D.V. Ushakov<sup>4</sup>, A.A. Afonenko<sup>4</sup>, O.Yu. Volkov<sup>5</sup>, V.V. Pavlovskiy<sup>5</sup>, A.A. Dubinov<sup>2</sup>. 1. V.G. Mokerov Institute of UHF Semiconductor Electronics of RAS, Moscow, Russia. 2. Institute for Physics of Microstructures of RAS, Nizhny Novgorod, Russia. 3. Center for Photonics and 2D Materials, Moscow Institute of Physics and Technology (State University), Dolgoprudny, Russia. 4. Belarusian State University, Minsk, Belarus. 5. Kotelnikov Institute of Radioengineering and Electronics of RAS, Moscow, Russia.
- 15.40 O2-18 **Silicon hot-electron bolometer for terahertz radiation.** V. Smirnov<sup>1</sup>, D. Kibalov<sup>1</sup>, V. Vyurkov<sup>2,3</sup>, M. Rudenko<sup>2</sup>, A. Miakonkikh<sup>2,3</sup>, A. Rogozhin<sup>2,3</sup>, K. Rudenko<sup>2,3</sup>, V. Lukichev<sup>2,3</sup>. 1. Quantum Silicon, Ltd., Moscow, Russia. 2. Institute of Physics and Technology of RAS, Moscow, Russia. 3. Moscow Institute of Physics and Technology (State University), Dolgoprudny, Russia.

## Auditorium B

### Session 12. Quantum Informatics V

**Session Chairman:** Farid Ablayev, Kazan Federal University, Kazan, Russia.

- 14.10 q2-06 **Quantum algorithms implementation on noisy quantum computers: from digital modeling of spin dynamics to quantum machine learning.** A.A. Zhukov<sup>1,2</sup>, E.O. Kiktenko<sup>3,4</sup>, D.V. Babukhin<sup>1,5</sup>, A.A. Elistratov<sup>1</sup>, S.V. Remizov<sup>1,6</sup>, W.V. Pogosov<sup>1,7</sup>, Yu.E. Lozovik<sup>1,8</sup>. 1. Dukhov Research Institute of Automatics (VNIIA), Moscow, Russia. 2. National Research Nuclear University MEPhI, Moscow, Russia. 3. Steklov Mathematical Institute of RAS, Moscow, Russia. 4. Russian Quantum Center, Skolkovo, Russia. 5. Department of Physics, M.V. Lomonosov Moscow State University, Moscow, Russia. 6. Kotelnikov Institute of Radioengineering and Electronics of RAS, Moscow, Russia. 7. Institute for Theoretical and Applied Electrodynamics of RAS, Moscow, Russia. 8. Institute of Spectroscopy of RAS, Moscow, Russia.
- 14.30 q2-07 **Two-Way Quantum and Classical Machines with Small Memory for Online Minimization Problems.** K. Khadiev<sup>1,2,3</sup>, A. Khadieva<sup>2,4</sup>. 1. Smart Quantum Technologies, Ltd, Kazan, Russia. 2. Kazan Federal University, Kazan, Russia. 3. Center for Quantum Computer Science, Faculty of Computing, University of Latvia, Riga. 4. University of Latvia, Riga, Latvia.
- 14.50 q2-08 **Applications of Machine Learning for Noisy Intermediate-Scale Quantum Devices.** Y. Kharkov<sup>1,2</sup>, A. Karazeev<sup>1,3</sup>, E. Kiktenko<sup>1,4</sup>, A. Fedorov<sup>1</sup>. 1. Russian Quantum Center, Skolkovo, Russia. 2. University of New South Wales, Sydney, Australia. 3. Moscow Institute of Physics and Technology (State University), Dolgoprudny, Russia. 4. Steklov Mathematical Institute of RAS, Moscow, Russia.
- 15.10 q2-09 **Machine learning methods in quantum computing theory.** D.V. Fastovets<sup>1,2</sup>, Yu.I. Bogdanov<sup>1,2,3</sup>, V.F. Lukichev<sup>1</sup>. 1. Institute of Physics and Technology of RAS, Moscow, Russia. 2. National Research University of Electronic Technology - MIET, Zelenograd, Russia. 3. National Research Nuclear University MEPhI, Moscow, Russia.

**16.00-16.20 Coffee break**

## 16.20-18.40 POSTER SESSION I

19.00 Dinner

Thursday, October 4, 2018

---

08.15 Breakfast

### Conference Hall Session 13. Superconducting Devices

**Session Chairman:** Vladimir Lukichev, *Institute of Physics and Technology of RAS, Moscow, Russia*

- 9.00 O3-01 **Bi-SQUID design requirements.** N. Kolotinskiy<sup>1</sup>, V. Kornev<sup>1</sup>, D. Bazulin<sup>1</sup>, O. Mukhanov<sup>2</sup>. 1. Faculty of Physics, M.V. Lomonosov Moscow State University, Moscow, Russia. 2. Hypres, Inc., Elmsford, NY, USA.
- 9.20 O3-02 **Relaxation of the coherent excited states of a superconductor to a normal metal or superconducting reservoir.** I.A. Devyatov<sup>1,2</sup>, A.V. Semenov<sup>2,3</sup>. 1. M.V. Lomonosov Moscow State University, Scobeltsyn Institute of Nuclear Physics, Moscow, Russia. 2. Moscow Institute of Physics and Technology (State University), Dolgoprudny, Russia. 3. Moscow State Pedagogical University, Moscow, Russia.
- 9.40 O3-03 **Superconducting current in heterostructures with a strontium iridate interlayers.** Y.V. Kislinskiy, K.Y. Constantinian, A.S. Grishin, G.A. Ovsyannikov, A.M. Petrzhik, A.V. Shadrin. Kotelnikov Institute of Radioengineering and Electronics of RAS, Moscow, Russia.
- 10.00 O3-04 **Quantum magnetic-resistive  $hc/2em$  periodic oscillations in a superconducting thin-film aluminum ring.** V.I. Kuznetsov. Institute of Microelectronics Technology and High Purity Materials of RAS, Chernogolovka, Russia.
- 10.20 O3-05 **Fundamental difference between the Aharonov-Bohm effects observed in micro- and nano-structures and in the two-slit interference experiment.** A.V. Nikulov. Institute of Microelectronics Technology and High Purity Materials of RAS, Chernogolovka, Russia.

### Auditorium A Session 14. MEMS Devices

**Session Chairman:** Il'dar Amirov, *Yaroslavl Branch of the Institute of Physics and Technology of RAS, Yaroslavl, Russia*

- 9.00 O3-06 **A low actuation voltage MEMS switch with protection against stiction.** I.V. Uvarov, A.N. Kupriyanov. Yaroslavl Branch of the Institute of Physics and Technology of RAS, Yaroslavl, Russia.
- 9.20 O3-07 **Research of the microelectromechanical switch with different materials of metal membrane.** I.E. Lysenko, A.V. Tkachenko, O.A. Ezhova. Southern Federal University, Institute of Nanotechnology, Electronics and Electronic Equipment Engineering, Taganrog.



- 9.40 O3-08 **Computer Simulation of Heavy Charged Particles Damage on Distributed Microsystems.** *A. Glushko, V. Makarchuk, L. Zinchenko, V. Terekhov, S. Mikhaylichenko, D. Paliy.* *Bauman Moscow State Technical University, Moscow, Russia.*
- 10.00 O3-09 **A novel approach to model high-speed microelectronic switch on the basis of hydrodynamic approximation.** *E. Ryndin, A. Al-Saman.* *Southern Federal University, Taganrog, Russia.*
- 10.20 O3-10 **Improving the selectivity of carbon nanotube-based gas sensors to ammonia and nitrogen dioxide via UV irradiation.** *N. Nekrasov<sup>1</sup>, V. Nevolin<sup>1</sup>, F. Fedorov<sup>2</sup>, A. Nasibulin<sup>2</sup>, I. Bobrinetskii<sup>1</sup>.* *1. National Research University of Electronic Technology - MIET, Zelenograd, Russia. 2. Skolkovo Institute of Science and Technology, Skolkovo, Russia.*

## Auditorium B

### Session 15. Quantum Informatics VI

**Session Chairman:** *Eduard Fel'dman, Institute of Problems of Chemical Physics of RAS, Chernogolovka, Russia.*

- 9.00 q3-01 **INVITED: New families of quantum hash functions.** *F.M. Ablayev, M.F. Ablayev.* *Kazan Federal University, Kazan, Russia.*
- 9.20 q3-02 **Hitting time for quantum walks of identical particles.** *A.A. Melnikov<sup>1</sup>, L.E. Fedichkin<sup>1,2,3</sup>.* *1. Institute of Physics and Technology of RAS, Moscow, Russia. 2. NIX, Moscow, Russia. 3. Moscow Institute of Physics and Technology (State University), Dolgoprudny, Russia.*
- 9.40 q3-03 **Exponential bound on heating rate in periodically driven spin systems.** *V.E. Zobov<sup>1</sup>, M.M. Kucherov<sup>2</sup>.* *1. Kirensky Institute of Physics, Federal Research Center KSC of Siberian Branch of RAS, Krasnoyarsk, Russia. 2. Institute of Space and Information Technologies, Siberian Federal University, Krasnoyarsk, Russia.*
- 10.00 q3-04 **On the fidelity of quantum gates under T1 and T2 relaxation.** *A.Yu. Chernyavskiy.* *Institute of Physics and Technology of RAS, Moscow, Russia.*
- 10.20 q3-05 **Quantum dynamics induced by selective measurements.** *S.N. Filippov.* *Institute of Physics and Technology of RAS, Moscow, Russia; Moscow Institute of Physics and Technology (State University), Dolgoprudny, Russia.*

**10.40-11.00 Coffee break**

## Conference Hall

### Session 16. Plasma Processing

**Session Chairman:** Ildar Amirov, Yaroslavl Branch of the Institute of Physics and Technology of RAS, Yaroslavl, Russia

- 11.00 O3-11 INVITED: Deep Silicon Plasma Etching: Selection of Processes for Different Applications.** A.V. Miakonkikh, S.N. Averkin, K.V. Rudenko, V.F. Lukichev. *Institute of Physics and Technology of RAS, Moscow, Russia.*
- 11.30 O3-12 Model-based approach for optimization of plasma etching processes in non-oxygenated fluorocarbon plasmas.** A. Efremov<sup>1</sup>, D. Murin<sup>1</sup>, K.-H. Kwon<sup>2</sup>. *1. Ivanovo State University of Chemistry & Technology, Ivanovo, Russia. 2. Korea University, Sejong, South Korea.*
- 11.50 O3-13 Effect of terminal methyl group concentration on plasma resistance of spin-on low-k dielectric films.** A. Rezyanov<sup>1,2</sup>, A. Miakonkikh<sup>3</sup>, A. Vishnevskiy<sup>4</sup>, D. Seregin<sup>4</sup>, U. Baislamova<sup>1</sup>, K. Vorotilov<sup>4</sup>, K. Rudenko<sup>3</sup>, M. Baklanov<sup>5</sup>. *1. Moscow Institute of Physics and Technology (State University), Dolgoprudny, Russia. 2. JSC Molecular Electronics Research Institute, Zelenograd, Russia. 3. Institute of Physics and Technology of RAS, Moscow, Russia. 4. Russian Technological University - MIREA, Moscow, Russia. 5. North China University of Technology, Beijing, China.*
- 12.10 O3-14 Formation of metallic nanowire and nanonet structures on the surface of SiO<sub>2</sub> by combine plasma etching processes.** I.I. Amirov, E.S. Gortachev, L.A. Mazaletsky, M.O. Izyumov. *Yaroslavl Branch of the Institute of Physics and Technology of RAS, Yaroslavl, Russia.*
- 12.30 O3-15 Effect of Ar ion-plasma treatment on residual stress in thin Cr films.** A. Babushkin, R. Selyukov, I. Amirov. *Yaroslavl Branch of the Institute of Physics and Technology of RAS, Yaroslavl, Russia.*

## Auditorium A

### Session 17. Metrology and Characterization I

**Session Chairman:** Andrey Miakonkikh, Institute of Physics and Technology of RAS, Moscow, Russia

- 11.00 O3-16 Interprocess quality control of critical dimensions in MEMS manufacturing.** N. Izrailev<sup>1,2</sup>, A. Kazachkov<sup>2</sup>, I. Rod<sup>1,2</sup>, A. Isachenko<sup>2</sup>, D. Shamiryan<sup>2</sup>. *1. LLC Mapper, Moscow, Russia. 2. Moscow Institute of Physics and Technology (State University), Dolgoprudny, Russia.*
- 11.20 O3-17 The opportunities of Rutherford backscattering spectroscopy for analysis of multilayer nanometer thin film structures.** V. Bachurin, A. Churilov, N. Melesov, E. Parshin, A. Rudy, O. Trushin. *Yaroslavl Branch of the Institute of Physics and Technology of RAS, Yaroslavl, Russia.*
- 11.40 O3-18 Fast local IC delayering using high energy BIB.** E. Kelm, D. Zubov, S. Sokolov, R. Milovanov. *Institute of Nanotechnology of Microelectronics of RAS, Moscow, Russia.*
- 12.00 O3-19 Local IC delayering using FIB technology.** R. Milovanov<sup>1,2</sup>, D. Abdullaev<sup>1,2</sup>, S. Sokolov<sup>1,2</sup>, E. Kelm<sup>1,2</sup>. *1. Institute of Nanotechnology of Microelectronics of RAS, Moscow, Russia. 2. Russian Technological University - MIREA, Moscow, Russia.*

## Auditorium B

### Session 18. Quantum Informatics VII

**Session Chairman: Sergey Moiseev**, *Kazan Quantum Center, Kazan National Research Technical University, Kazan, Russia.*

- 11.00 q3-06 Quantum tomography based on principles of completeness, adequacy and fidelity.** Yu.I. Bogdanov<sup>1,2,3</sup>, *N.A. Bogdanova*<sup>1,2</sup>, *B.I. Bantysh*<sup>1,2</sup>, *D.V. Fastovets*<sup>1,2</sup>, *V.F. Lukichev*<sup>1</sup>. 1. *Institute of Physics and Technology of RAS, Moscow, Russia.* 2. *National Research University of Electronic Technology - MIET, Zelenograd, Russia.* 3. *National Research Nuclear University MEPhI, Moscow, Russia.*
- 11.20 q3-07 Adaptive quantum tomography of high-dimensional bipartite systems.** G.I. Struchalin, *E.V. Kovlakov*, *S.S. Straupe*, *S.P. Kulik*. *Faculty of Physics, M.V. Lomonosov Moscow State University and Quantum Technologies Centre, M.V. Lomonosov Moscow State University, Moscow, Russia.*
- 11.40 q3-08 High-fidelity quantum tomography with imperfect measurements.** B.I. Bantysh<sup>1,2</sup>, *D.V. Fastovets*<sup>1,2</sup>, *Yu.I. Bogdanov*<sup>1,2,3</sup>. 1. *Institute of Physics and Technology of RAS, Moscow, Russia.* 2. *National Research University of Electronic Technology - MIET, Zelenograd, Russia.* 3. *National Research Nuclear University MEPhI, Moscow, Russia.*
- 12.00 q3-09 Precision guaranteed quantum process tomography.** E. Kiktenko<sup>1,2</sup>, *D. Norkin*<sup>1,3</sup>, *D. Kublikova*<sup>3</sup>, *A. Karazeev*<sup>1,3</sup>, *A. Fedorov*<sup>1</sup>. 1. *Russian Quantum Center, Skolkovo, Russia.* 2. *Steklov Mathematical Institute of RAS, Moscow, Russia.* 3. *Moscow Institute of Physics and Technology (State University), Dolgoprudny, Russia.*

**13.00-14.00 Lunch**

### Conference Hall

### Session 19. 30th Anniversary of the Institute of Physics and Technology of Russian Academy of Sciences

**Session Chairman: Vladimir Lukichev**, *Institute of Physics and Technology of Russian Academy of Sciences, Moscow, Russia*

**14.00 - 15.40**

**16.00 - 18.20**

## Auditorium A

### Session 20. Metrology and Characterization II

**Session Chairman:** Andrey Miakonkikh, *Institute of Physics and Technology of RAS, Moscow, Russia*

- 14.00 O3-20 INVITED: Excitation spectra and magnetic dynamics of antiferromagnetic and ferrimagnetic nanoparticles revealed in Mössbauer spectroscopy.** *M.A. Chuev. Institute of Physics and Technology of RAS, Moscow, Russia.*
- 14.20 O3-21 Determination of Al content in Al/Si thermomigration fabricated structures by X-ray diffraction.** *A. Lomov<sup>1</sup>, A.Yu. Belov<sup>2</sup>, B. Seredin<sup>3</sup>, A. Tatarintsev<sup>1</sup>, S. Simakin<sup>4</sup>. 1. Institute of Physics and Technology of RAS, Moscow, Russia. 2. FSRC “Crystallography and Photonics” of RAS, Moscow. 3. Platov South Russian State Polytechnic University, Novocherkassk, Russia. 4. Yaroslavl Branch of the Institute of Physics and Technology of RAS, Yaroslavl, Russia.*
- 14.40 O3-22 The depth distributions of crystalline structure parameters in thin textured films and the method of their determination.** *R. Selyukov, V. Naumov. Yaroslavl Branch of the Institute of Physics and Technology of RAS, Yaroslavl, Russia.*
- 15.00 O3-23 Investigation of ALD initial stage and precursor kinetic by spectroscopic ellipsometry.** *I. Clemente<sup>1,2</sup>, A. Miakonkikh<sup>1,2</sup>. 1. Institute of Physics and Technology of RAS, Moscow, Russia. 2. Moscow Institute of Physics and Technology (State University), Dolgoprudny, Russia.*
- 15.20 O3-24 Optical emission spectrum of BF<sub>3</sub> plasma: Identification of lines and bands belonging to boron-contained species.** *V.P. Kudrya. Institute of Physics and Technology of RAS, Moscow, Russia.*

## Auditorium B

### Session 21. Integrated Photonic Devices

**Session Chairmen:** Eugeny Ryndin, *Southern Federal University, Taganrog, Russia*

- 14.00 O3-25 Experimental study of a broadband vacuum photosensor with tunnel emission of a metal nanoscale blade.** *D.A. Zimnyakov<sup>1,2</sup>, N.P. Aban'shin<sup>1</sup>, G.G. Akchurin<sup>1</sup>, Yu.A. Avetisyan<sup>1</sup>, A.P. Loginov<sup>3</sup>, S.A. Yuvchenko<sup>1,2</sup>, A.N. Yakunin<sup>1</sup>. 1. Institute of Precision Mechanics and Control, Saratov, Russia. 2. Yury Gagarin State Technical University of Saratov, Saratov, Russia. 3. Volga-Svet Co., Ltd., Saratov, Russia.*
- 14.20 O3-26 Vacuum photoemission diode and triode based on ultraviolet detector.** *E. Il'ichev<sup>1</sup>, V. Khaustov<sup>1</sup>, A. Kuleshov<sup>1</sup>, R. Nabiev<sup>1</sup>, G. Petrukhin<sup>1,2</sup>, E. Teverovskaya<sup>1</sup>, G. Rychkov<sup>1</sup>. 1. National Research University of Electronic Technology - MIET, Zelenograd, Russia. 2. LLC “CNEL Devices”, Zelenograd, Russia.*
- 14.40 O3-27 Theory and numerical modeling of nanoresonators, discrete waveguides, and modulators of planar radio-photonic assemblies.** *M. Barabanenkov<sup>1,2</sup>, A. Italyantsev<sup>1</sup>, M. Makarov<sup>1</sup>, A. Sapegin<sup>2,3</sup>, R. Minnullin<sup>3</sup>. 1. JSC Molecular Electronics Research Institute, Zelenograd, Russia. 2. Institute of Microelectronics Technology and High Purity Materials of RAS, Chernogolovka, Russia. 3. Moscow Institute of Physics and Technology (State University), Dolgoprudny, Russia.*

- 15.00 O3-28 Quasi-Hydrodynamic Numerical Model of High-Speed On-chip Photodetectors for Optical Interconnections. I. Pisarenko, E. Ryndin, B. Konoplev. Southern Federal University, Institute of Nanotechnology, Electronics and Electronic Equipment Engineering, Taganrog, Russia.**
- 15.20 O3-29 Study of complex reflectivity of ultrathin metal films at frequencies 9-11 GHz. V. Vdovin<sup>1</sup>, V. Andreev<sup>2</sup>, S. Pronin<sup>2</sup>, I. Khorin<sup>3</sup>. 1. Kotelnikov Institute of Radioengineering and Electronics of RAS, Moscow, Russia. 2. Moscow State University, Moscow, Russia. 3. Institute of Physics and Technology of RAS, Moscow, Russia.**

**15.40-16.00 Coffee break**

**16.00-18.20 POSTER SESSION II**

**18.30. Conference Hall. CLOSING CONFERENCE REMARKS**

**V.F. Lukichev, Program Committee Chair,**  
*Institute of Physics and Technology of RAS, Moscow, Russia*

**19.30 CONFERENCE DINNER**

**Friday, October 5, 2018**

---

**09.00 Breakfast**

**10.00 DEPARTURE**

# ICMNE-2018 SCIENTIFIC PROGRAM

## POSTER SESSIONS

Wednesday, October 3, 2018

16.20 – 18.40                      Poster session I

### Physics of Semiconducting, Superconducting, and Spintronic Devices

- P1-01** AlGaIn/AlN/GaN HEMT with regrown ohmic contacts. *V.Yu. Pavlov, D.N. Slapovskiy, A.Yu. Pavlov, M.V. Maytama, Yu.V. Fedorov. V.G. Mokerov Institute of UHF Semiconductor Electronics of RAS, Moscow, Russia.*
- P1-02** Fabrication of electrodes for a logic element based on a disordered dopant atoms network. *S. Dagesyan<sup>1</sup>, S. Ryzhenkova<sup>1</sup>, D. Presnov<sup>2</sup>, I. Sapkov, V. Gaydamachenko<sup>1</sup>, G. Zharik<sup>1</sup>, A. Stepanov<sup>2</sup>. 1. Faculty of Physics, M.V. Lomonosov Moscow State University, Russia. 2. Skobeltsyn Institute of Nuclear Physics, Moscow, Russia.*
- P1-03** Compact Modeling of Electrical Characteristics of p-MNOS Based RADFETs. *E. Mrozovskaya<sup>1,2</sup>, P. Zimin<sup>1,2</sup>, P. Chubunov<sup>1,2</sup>, G. Zebrev<sup>1</sup>. 1. National Research Nuclear University MEPhI, Moscow, Russia. 2. United Rocket and Space Corporation, Institute of Space Device Engineering, Moscow, Russia.*
- P1-04** A Study of Junctionless MOSFET Using TCAD Simulations. *A. Korolev, A. Krasukov, T. Krupkina, Yu. Chaplygin. National Research University of Electronic Technology - MIET, Zelenograd, Russia.*
- P1-05** Charge effects in dielectric films of MIS structures being under high-field injection of electrons at ionizing radiation. *V.V. Andreev<sup>1</sup>, V.M. Maslovsky<sup>2</sup>, D.V. Andreev<sup>1</sup>, A.A. Stolyarov<sup>1</sup>. 1. Bauman Moscow State Technical University (Kaluga Branch), Kaluga, Russia. 2. Moscow Institute of Physics and Technology (State University), Dolgoprudny, Russia.*
- P1-06** Generation of surface states in MOS devices by space radiation protons. *A.N. Volkov<sup>1</sup>, D.V. Andreev<sup>2</sup>, V.M. Maslovsky<sup>3</sup>. 1. Research Institute of Physical Problems, Zelenograd, Russia. 2. Bauman Moscow State Technical University (Kaluga Branch), Kaluga, Russia. 3. Moscow Institute of Physics and Technology (State University), Dolgoprudny, Russia.*
- P1-07** The physics-based modeling of TID induced leakage currents atop the buried oxide in SOI MOSFETs. *M. Drosdetsky<sup>1</sup>, M. Gorbunov<sup>1,2</sup>, G. Zebrev<sup>1</sup>. 1. National Research Nuclear University MEPhI, Moscow, Russia. 2. Scientific Research Institute of System Analysis of RAS, Moscow, Russia.*
- P1-08** Stabilization methods of  $V_{SET}$  and  $R_{OFF}$  in cycling process for ReRAM based on hafnium oxide. *A.O. Lebedev, S.V. Ivanov, O.M. Orlov. JCS Molecular Electronics Research Institute, Zelenograd, Russia.*
- P1-09** Electroforming-free titanium oxide nanoscale memristor structures for neuromorphic and RRAM elements. *V. Avilov<sup>1</sup>, V. Smirnov<sup>1</sup>, N. Polupanov<sup>1</sup>, N. Sharapov<sup>1</sup>, O. Ageev<sup>1,2</sup>. 1. Southern Federal University, Institute of Nanotechnologies, Electronics and Equipment Engineering, Taganrog, Russia. 2. Southern Federal University, Research and Education Center "Nanotechnologies", Taganrog, Russia.*

- P1-10** Investigation of size effect on memristive properties of ZnO thin films. R. Tominov<sup>1</sup>, V. Avilov<sup>1</sup>, V. Smirnov<sup>1</sup>, E. Zamburg<sup>2</sup>, O. Ageev<sup>1</sup>. 1. Southern Federal University, Institute of Nanotechnologies, Electronics and Equipment Engineering, Taganrog, Russia. 2. National University of Singapore, Department of Electrical & Computer Engineering, Singapore.
- P1-11** Investigations of the resistive switching of the TiN-TiO<sub>2</sub>-SiO<sub>2</sub>-W memristors in the oxygen atmosphere with varying pressure. E.S. Gorlachev, V.M. Mordvintsev, S.E. Kudryavtsev. Yaroslavl Branch of the Institute of Physics and Technology of RAS, Yaroslavl, Russia.
- P1-12** Efficiency of terahertz harmonic generation in GaAs quantum wire structure: a Monte Carlo simulation. A.V. Borzdov<sup>1</sup>, V.M. Borzdov<sup>1</sup>, V.A. Labunov<sup>2</sup>, V.V. V'yurkov<sup>3</sup>. 1. Belarusian State University, Minsk, Belarus. 2. Belarusian State University of Informatics and Radioelectronics, Minsk, Belarus. 3. Institute of Physics and Technology of RAS, Moscow, Russia.
- P1-13** THz GaAs/AlAs double barrier nanostructures in the rectification mode with internal amplification. A.A. Aleksanyan<sup>1</sup>, A.L. Karuzskii<sup>1</sup>, Yu.A. Mityagin<sup>1</sup>, V.N. Murzin<sup>1</sup>, A.V. Perestoronin<sup>1</sup>, A.P. Chernyaev<sup>2</sup>. 1. P.N. Lebedev Physical Institute of RAS, Moscow, Russia. 2. Moscow Institute of Physics and Technology (State University), Dolgoprudny, Russia.
- P1-14** Investigation of the characteristics of relaxation processes in multi-barrier heterostructures based on GaAs. V.A. Gergel<sup>1</sup>, N.M. Gorshkova<sup>1</sup>, A.S. Sobolev<sup>1,2</sup>, M.A. Tarasov<sup>1</sup>, V.S. Minkin<sup>1</sup>, R.A. Khabibullin<sup>3</sup>. 1. Kotelnikov Institute of Radioengineering and Electronics of RAS, Moscow, Russia. 2. Moscow Institute of Physics and Technology (State University), Dolgoprudny, Russia. 3. V.G. Mokerov Institute of UHF Semiconductor Electronics of RAS, Moscow, Russia.
- P1-15** Phase Locking in Josephson High-Q Arrays. N. Kolotinskiy, V. Kornev. Faculty of Physics, M.V. Lomonosov Moscow State University, Moscow, Russia.
- P1-16** Spin waves in coupled easy-axis antiferromagnet crystals. A.Yu. Sharaevskaya<sup>1,2</sup>, E.N. Beginin<sup>1</sup>, D.V. Kalyabin<sup>2,3</sup>, S.A. Nikitov<sup>1,2,3</sup>, Yu.P. Sharaveskii<sup>1</sup>. 1. Laboratory "Metamaterials", Saratov State University, Saratov, Russia. 2. Kotelnikov Institute of Radioengineering and Electronics of RAS, Moscow, Russia. 3. Moscow Institute of Physics and Technology (State University), Dolgoprudny, Russia.
- P1-17** Spin waves in 3D magnonic crystals. P. Popov<sup>2,3</sup>, A. Sharaevskaia<sup>1,2</sup>, E. Beginin<sup>1</sup>, A. Sadovnikov<sup>1,2</sup>, and S. Nikitov<sup>1,2,3</sup>. 1. Laboratory "Metamaterials", Saratov State University, Saratov, Russia. 2. Kotelnikov Institute of Radioengineering and Electronics of RAS, Moscow, Russia. 3. Moscow Institute of Physics and Technology (State University), Dolgoprudny, Russia.
- P1-18** Different magneto-optical properties of metallized nanostructural arrays on silicon surface. A.V. Prokaznikov<sup>1</sup>, V.A. Paporkov<sup>2</sup>, N.Yu. Zvezdin<sup>2</sup>. 1. Yaroslavl Branch of the Institute of Physics and Technology of RAS, Yaroslavl, Russia. 2. P.G. Demidov Yaroslavl State University, Yaroslavl, Russia.
- P1-19** Energetics of domain wall in magnetic nanowire. O.S. Trushin<sup>1</sup>, E. Granato<sup>2</sup>, S.C. Ying<sup>3</sup>. 1. Yaroslavl Branch of the Institute of Physics and Technology of RAS, Yaroslavl, Russia. 2. LAS, National Institute for Space Research, São José dos Campos, Brazil. 3. Department of Physics, Brown University, Providence, Rhode Island, USA.

**P1-20** Edge and defect modes of spin waves in finite chains of ferromagnetic pillars. S. Osokin<sup>1,2</sup>, A. Safin<sup>1</sup>, S. Nikitov<sup>1,2</sup>, D. Kalyabin<sup>1,2</sup>. 1. Kotelnikov Institute of Radioengineering and Electronics of RAS, Moscow, Russia. 2. Moscow Institute of Physics and Technology (State University), Dolgoprudny, Russia.

## **MEMS Devices**

---

**P1-21** Modeling of characteristics of low-voltage lateral MEMS switch type based on the double fixed beam. K.V. Lebedev. Institute of Physics and Technology of RAS, Moscow, Russia.

**P1-22** Finite-element predictive 3D modelling and optimization of membrane-based thermoresistive MEMS accelerometers. N.A. Djuzhev, R.V. Lapshin, A.M. Belin, A.I. Ovodov, D.V. Novikov, G.D. Demin. National Research University of Electronic Technology - MIET, Zelenograd, Russia.

**P1-23** Simulation of the sensitive element of the micro-accelerometer with the software product ANSYS. S.P. Timoshenkov, V.V. Kalugin, S.A. Anchutin, E.S. Kochurina. National Research University of Electronic Technology - MIET, Zelenograd, Russia.

**P1-24** Magnetometric MEMS manufacture based on magnetoresistive nanostructures. N. Djuzhev, A. Iurov, M. Chinenkov. National Research University of Electronic Technology - MIET), Zelenograd, Russia.

**P1-25** Research and analysis of heat exchange processes of a micromechanical mirror based on a thermal microactuator. S. Evstafiev, V. Samoylikov. National Research University of Electronic Technology - MIET, Zelenograd, Russia.

**P1-26** Silicon nanobridge as high quality mechanical resonator. D. Presnov<sup>1,2</sup>, S. Kafanov<sup>3</sup>, A. Dorofeev<sup>1</sup>, I. Bozhev<sup>1</sup>, A. Trifonov<sup>1,2</sup>, Yu. Pashkin<sup>3,4</sup>, V. Krupenin<sup>1</sup>. 1. Quantum Technology Centre, Faculty of Physics, M.V. Lomonosov Moscow State University, Moscow, Russia. 2. D.V. Skobeltsyn Institute of Nuclear Physics, M.V. Lomonosov Moscow State University, Moscow, Russia. 3. Department of Physics, Lancaster University, Lancaster, United Kingdom. 4. P.N. Lebedev Physical Institute of RAS, Moscow, Russia.

**P1-27** Determination of vibration axes of a micromachined ring resonator for the modal tuning purposes. O.V. Morozov, I.V. Uvarov. Yaroslavl Branch of the Institute of Physics and Technology of RAS, Yaroslavl, Russia.

**P1-28** Development of hybrid acousto-nano-biosensors. V. Kolesov<sup>1</sup>, V. Anisimkin<sup>1</sup>, I. Kuznetsova<sup>1</sup>, E. Soldatov<sup>2</sup>, S. Dagesyan<sup>2</sup>, A. Melnikov<sup>2</sup>, V. Kashin<sup>1</sup>, A. Smirnov<sup>1</sup>. 1. Kotelnikov Institute of Radioengineering and Electronics of RAS, Moscow, Russia. 2. Faculty of Physics, M.V. Lomonosov Moscow State University, Moscow, Russia.

**P1-29** Prototype of multi-sensor system for gas detection based on effect of adsorption modified resistivity. I. Gasenkova<sup>1</sup>, N. Mukhurov<sup>1</sup>, S. Denicuk<sup>1</sup>, V. Lukichev<sup>2</sup>, K. Rudenko<sup>2</sup>, A. Miakonkikh<sup>2</sup>. 1. State Research and Production Association "Optic, Optoelectronic and Laser technique". 2. Institute of Physics and Technology of RAS, Moscow, Russia.



- P1-30** Biosensor with two independent Si NW FETs for cancer biomarker detection. I.I. Tsiniakin<sup>1</sup>, G.V. Presnova<sup>3</sup>, V.V. Shorokhov<sup>1</sup>, M.Yu Rubtsova<sup>3</sup>, I.V. Bozhev<sup>1</sup>, A.S. Trifonov<sup>1,2</sup>, S.A. Dagesyan<sup>1</sup>, M.M. Ulyashova<sup>3</sup>, V.A. Krupenin<sup>1</sup>, D.E. Presnov<sup>1</sup>. 1. Faculty of Physics, M.V. Lomonosov Moscow State University, Moscow, Russia. 2. Skobeltsin Nuclear Physics Institute, M.V. Lomonosov Moscow State University, Moscow, Russia. 3. Faculty of Chemistry, M.V. Lomonosov Moscow State University, Moscow, Russia.

## **Metrology and Characterization**

---

- P1-31** Basic principles of non-destructive 3-D microtomography in scanning electron microscopy. E.I. Rau, S.V. Zaytsev, V.Yu. Karaulov. M.V. Lomonosov Moscow State University, Moscow, Russia.
- P1-32** Investigation of carbon nanostructures by Photoelectron Spectroscopy. V.P. Afanas'ev<sup>1</sup>, A.D. Barinov<sup>1,2</sup>, G.S. Bocharov<sup>1</sup>, Y.N. Bodisko<sup>1</sup>, A.V. Eletsii<sup>1</sup>, A.S. Gryazev<sup>1</sup>, P.S. Kaplya<sup>3</sup>, A.I. Popov<sup>1,2</sup>, O.Yu. Ridzel<sup>1,4</sup>. 1. National Research University "Moscow Power Engineering Institute", Moscow, Russia. 2. Institute of Nanotechnology of Microelectronics of RAS, Moscow, Russia. 3. Raspletina st. 15, Moscow, Russia. 4. Vienna University of Technology, Vienna, Austria.
- P1-33** Formation of the tungsten compound phases in diamond-like silicon-carbon nanocomposites. A.I. Popov<sup>1,3</sup>, V.P. Afanas'ev<sup>1</sup>, A.D. Barinov<sup>1,3</sup>, Y.N. Bodisko<sup>1</sup>, A.S. Gryazev<sup>1</sup>, I.N. Miroshnikova<sup>1,3</sup>, M.Y. Presniakov<sup>2</sup>, M.L. Shupegin<sup>1</sup>. 1. National Research University "Moscow Power Engineering Institute", Moscow, Russia. 2. National Research Center "Kurchatov Institute", Moscow, Russia. 3. Institute of Nanotechnology of Microelectronics of RAS, Moscow, Russia.
- P1-34** Photoluminescence of AlGaAs/GaAs quantum well heteroepitaxial structures. M.R. Yuskaev<sup>1</sup>, D.A. Pashkev<sup>1,3</sup>, A.V. Nikonov<sup>1,2</sup>, V.E. Goncharov<sup>1,3</sup>. 1. JSC Scientific and Production Association "Orion", Moscow, Russia. 2. Moscow Institute of Physics and Technology (State University), Dolgoprudny, Russia. 3. Russian Technological University - MIREA, Moscow, Russia.
- P1-35** Structural properties of InSb substrates for MBE. A.E. Mirofyanchenko, E.V. Mirofyanchenko. JSC Scientific and Production Association "Orion", Moscow, Russia.

## **Quantum Informatics**

---

- P1-36** The investigation of the quantum entanglement generation in the process of state transfer along the quantum chain. E.I. Kuznetsova<sup>1</sup>, I.D. Lazarev<sup>2</sup>. 1. Institute of Problems of Chemical Physics of RAS, Chernogolovka, Russia. 2. Faculty of Fundamental Physical-Chemical Engineering, M.V. Lomonosov Moscow State University, Moscow, Russia.
- P1-37** Multi-qubit controlled NOT gates for artificial intelligence natural languages processing. M.F. Ablayev<sup>1</sup>, S.N. Andrianov<sup>2</sup>, N.S. Andrianova<sup>1</sup>, A.A. Kalachev<sup>3</sup>, S.A. Moiseev<sup>4</sup>, A.V. Vasiliev<sup>1</sup>. 1. Kazan Federal University, Kazan, Russia. 2. Institute for Applied Research of Tatarstan Academy of Sciences, Kazan, Russia. 3. Kazan Physical and Technical Institute of Kazan Scientific Center of RAS, Kazan, Russia. 4. Quantum Center of Kazan National Technical University, Kazan, Russia.

- P1-38 Robust compact transistor based random number generator.** F.M. Ablayev<sup>1</sup>, S.N. Andrianov<sup>2</sup>, D.V. Vahrushev<sup>1</sup>, M.T. Ziatdinov<sup>1</sup>, V.S. Romanov<sup>3</sup>, A.A. Soloviev<sup>3</sup>. 1. Kazan Federal University, Kazan, Russia. 2. Institute for Applied Research of Tatarstan Academy of Sciences, Kazan, Russia. 3. Kazan Physical and Technical Institute of Kazan Scientific Center of RAS, Kazan, Russia.
- P1-39 Optical properties of a microdisk resonator in a diamond substrate with metal contacts.** M.S. Rogachev<sup>1,2</sup>, I.Yu. Kateev<sup>1</sup>, A.V. Tsukanov<sup>1</sup>. 1. Institute of Physics and Technology of RAS, Moscow, Russia. 2. Moscow Institute of Physics and Technology (State University), Dolgoprudny, Russia.
- P1-40 The influence of decoherence on the implementation of a C-NOT gate in a double quantum dots-microcavity system under a laser pulse.** A.V. Tsukanov, V.G. Chekmachev. Institute of Physics and Technology of RAS, Moscow, Russia.
- P1-41 Molecule ground state estimation via continuous-time quantum walks.** L. Fedichkin<sup>1,2,3</sup>, F. Meshchaninov<sup>2,3</sup>. 1. NIX, Moscow, Russia. 2. Institute of Physics and Technology of RAS, Moscow, Russia. 3. Moscow Institute of Physics and Technology (State University), Dolgoprudny, Russia.
- P1-42 Theoretical and experimental investigation of multi-mode thermal states with subtraction of a random number of photons.** Yu.I. Bogdanov<sup>1,2,3</sup>, N.A. Bogdanova<sup>1,2</sup>, K.G. Katamadze<sup>1,4</sup>, G.V. Avosopiants<sup>1,3</sup>. 1. Institute of Physics and Technology of RAS, Moscow, Russia. 2. National Research University of Electronic Technology - MIET, Zelenograd, Russia. 3. National Research Nuclear University MEPhI, Moscow, Russia. 4. Faculty of Physics, M.V. Lomonosov Moscow State University, Moscow, Russia.
- P1-43 Quantum approach to the dynamical systems modeling.** Yu.I. Bogdanov<sup>1,2,3</sup>, N.A. Bogdanova<sup>1,2</sup>, D.V. Fastovets<sup>1,2</sup>, V.F. Lukichev<sup>1</sup>. 1. Institute of Physics and Technology of RAS, Moscow, Russia. 2. National Research University of Electronic Technology - MIET, Zelenograd, Russia. 3. National Research Nuclear University MEPhI, Moscow, Russia.
- P1-44 The concept of weak measurements and the super-efficiency of quantum tomography.** Yu.I. Bogdanov<sup>1,2,3</sup>, N.A. Bogdanova<sup>1,2</sup>, B.I. Bantysh<sup>1,2</sup>, Yu.A. Kuznetsov<sup>1,2</sup>, V.F. Lukichev<sup>1</sup>. 1. Institute of Physics and Technology of RAS, Moscow, Russia. 2. National Research University of Electronic Technology - MIET, Zelenograd, Russia. 3. National Research Nuclear University MEPhI, Moscow, Russia.
- P1-45 Sequences of selective rotation operators to engineer interactions for quantum annealing on three qutrits.** V.E. Zobov<sup>1</sup>, I.S. Pichkovskiy<sup>2</sup>. 1. Kirensky Institute of Physics, Federal Research Center KSC of Siberian Branch of RAS, Krasnoyarsk, Russia. 2. Institute of Engineering Physics and Radio Electronics, Siberian Federal University, Krasnoyarsk, Russia.
- P1-46 Fast quantum randomness generation from vacuum fluctuation induced phase diffusion between pulses of laser diode.** R. Ermakov<sup>1</sup>, V. Sharoglazova<sup>2</sup>, A. Losev<sup>1</sup>, V. Zavodilenko, V. Kurochkin<sup>1</sup>, Y. Kurochkin<sup>1</sup>. 1. Russian Quantum Centre, Moscow, Russia. 2. National Research Nuclear University MEPhI, Moscow, Russia.

**Materials and Films**

---

- P2-01**    **The manifestation of rising of the impurity density of states after the field stress in increasing of the effective electron mobility in the inversion channel at the silicon-oxide contact.** G. Chucheva<sup>1</sup>, E. Goldman<sup>1</sup>, A. Nabiev<sup>2</sup>, V. Naryshkina<sup>1</sup>. 1. Fryazino Branch of the Kotelnikov Institute of Radioengineering and Electronics of RAS, Fryazino, Russia. 2. Azerbaijan State Pedagogical University, Baku, Azerbaijan.
- P2-02**    **Features of the field damage of ultra-thin insulating layers of the silicon oxide.** G. Chucheva, E. Goldman, Yu. Gulyaev. Fryazino Branch of the Kotelnikov Institute of Radioengineering and Electronics of RAS, Fryazino, Russia .
- P2-03**    **Synergistic effects of deformation and solid-state reactions in Si with buried glass layer initiated by annealing in non-isothermal reactor.** Yu.I. Denisenko. Yaroslavl Branch of the Institute of Physics and Technology of RAS, Yaroslavl, Russia.
- P2-04**    **Structural and morphological properties of Ga(Al)N grown by MBE on 3C-SiC/Si (111) templates with off-axis and on-axis substrate orientation.** K.A. Tsarik<sup>1</sup>, S.D. Fedotov<sup>1,2</sup>, V.K. Nevolin<sup>1</sup>, V.N. Statsenko<sup>2</sup>. 1. National Research University of Electronic Technology - MIET, Zelenograd, Russia. 2. Epiel JSC, Zelenograd, Russia.
- P2-05**    **Dependence of dielectric constant of hydrocarbon bridged low-k films on porosity.** A. Palov<sup>1</sup>, M. Baklanov<sup>2</sup>, Sh. Wei<sup>2</sup>. 1. Skobeltsyn Institute of Nuclear Physics, M.V. Lomonosov Moscow State University, Moscow Russia. 2. North China University of Technology, Beijing, China.
- P2-06**    **Hydrocarbon bridged low-k films.** D. Seregin<sup>1</sup>, A. Vishnevskiy<sup>1</sup>, N. Kotova<sup>1</sup>, K. Vorotilov<sup>1</sup>, A. Sigov<sup>1</sup>, Y. Wang<sup>2</sup>, J. Zhang<sup>2</sup>, J. Lew<sup>3</sup>, M. Baklanov<sup>1,2</sup>. 1. Russian Technological University - MIREA, Moscow, Russia. 2. North China University of Technology, Beijing, China. 3. National Chia Tung University, Hsinchu, Taiwan.
- P2-07**    **Evaluation of technology for obtaining sol-gel Al<sub>2</sub>O<sub>3</sub> film for organic field-effect transistors.** S. Avdeev<sup>1</sup>, E. Gusev<sup>1,2</sup>. 1. Southern Federal University, Institute of Nanotechnology, Electronics and Equipment Engineering, Taganrog, Russia. 2. Southern Federal University, Research and Educational Centre "Nanotechnologies", Taganrog, Russia.
- P2-08**    **Nanoscale domain growth dynamics of lead-free ferroelectric BST thin films.** M.S. Afanasiev<sup>1</sup>, G.V. Chucheva<sup>1</sup>, D.A. Kiselev<sup>1,2</sup>. 1. Fryazino Branch of the Kotelnikov Institute of Radioengineering and Electronics of RAS, Fryazino, Russia. 2. Department of Materials Science of Semiconductors and Dielectrics, National University of Science and Technology MISIS, Moscow, Russia.
- P2-09**    **Forming methods research and electrophysical properties of ferroelectric films ZnO study.** A. Zotov, A. Perevalov, V. Shevyakov. National Research University of Electronic Technology - MIET, Zelenograd, Russia.

- P2-10** Features of ferroelectric charging process and switching of the domains under electron beam irradiation. A.A. Tatarintsev<sup>1,2</sup>, E.I. Rau<sup>1</sup>, K.E. Markovets<sup>1</sup>. 1. M.V. Lomonosov Moscow State University, Moscow, Russia. 2. Institute of Physics and Technology of RAS, Moscow, Russia.
- P2-11** Influence of Power and Pulsed Regime of Low Frequency Discharge on Clusters Incorporation in Dielectric Films for ReRAM Application. A.A. Popov, A.E. Berdnikov. Yaroslavl Branch of the Institute of Physics and Technology of RAS, Yaroslavl, Russia.
- P2-12** Effect of mechanical deformations on absorption spectrum of metallic films of nanometer thickness. K.M. Tsysar<sup>1</sup>, E.M. Smelova<sup>1</sup>, V.S. Zelensky<sup>1</sup>, V.G. Andreev<sup>1</sup>, V.A. Vdovin<sup>2</sup>. 1. Faculty of Physics, M.V. Lomonosov Moscow State University, Moscow, Russia. 2. Kotelnikov Institute of Radioengineering and Electronics of RAS, Moscow, Russia.
- P2-13** Modeling of the effective ion charges in grain boundaries of polycrystalline interconnects. T. Makhviladze, M. Sarychev. Institute of Physics and Technology of RAS, Moscow, Russia.
- P2-14** Swift heavy ion stimulated formation of the Si quantum dots in Si/SiO<sub>2</sub> multilayer heterostructures. G. Kamaev<sup>1</sup>, S. Cherkova<sup>1</sup>, A. Gismatulin<sup>1</sup>, V. Volodin<sup>1,2</sup>, V. Skuratov<sup>3,4,5</sup>. 1. Rzhhanov Institute of Semiconductor Physics of Siberian Branch of RAS, Novosibirsk, Russia. 2. Novosibirsk State University, Novosibirsk, Russia. 3. Joint Institute for Nuclear Research, Dubna, Russia. 4. National Research Nuclear University MEPhI, Moscow, Russia. 5. Dubna State University, Dubna, Russia.
- P2-15** Luminescent properties of GeO<sub>x</sub> thin films and GeO/SiO<sub>2</sub> heterostructures modified with swift heavy ions. S.G. Cherkova<sup>1</sup>, V.A. Volodin<sup>1,2</sup>, V.A. Skuratov<sup>3,4,5</sup>, M. Stoffel<sup>6</sup>, H. Rinner<sup>6</sup>, M. Vergnat<sup>6</sup>. 1. Rzhhanov Institute of Semiconductor Physics of Siberian Branch of RAS, Novosibirsk, Russia. 2. Novosibirsk State University, Novosibirsk, Russia. 3. Joint Institute for Nuclear Research, Dubna, Russia. 4. National Research Nuclear University MEPhI, Moscow, Russia. 5. Dubna State University, Dubna, Russia. 6. Université de Lorraine, CNRS, IJL, Nancy, France.
- P2-16** Growing on silicon multilayer heterostructures of Ge/SiGe for optoelectronics. T.M. Burbaev, Yu.G. Sadofyev, M.A. Akmaev<sup>1</sup>, V.Ya. Aleshkin<sup>3</sup>, Yu.A. Aleshchenko<sup>1,2</sup>, A.V. Klekovkin<sup>1,4</sup>, A.V. Muratov<sup>1</sup>, A.V. Novikov<sup>3</sup>, V.V. Ushakov<sup>3</sup>, P.A. Yunin<sup>3</sup>, D.V. Yurasov<sup>3</sup>. 1. P.N. Lebedev Physical Institute of RAS, Moscow, Russia. 2. National Research Nuclear University MEPhI, Moscow, Russia. 3. Institute for Physics of Microstructures of RAS, Nizhny Novgorod, Russia. 4. V.G. Mokerov Institute of UHF Semiconductor Electronics of RAS, Moscow, Russia.
- P2-17** Concept of glass formation in chalcogenide systems and the possibility of predicting new compounds for micro- and nanoelectronics. N. Korobova, S. Timoshenkov, V. Minaev. Institute of Nano-MicroSystem Technique, National Research University of Electronic Technology - MIET, Zelenograd, Russia.
- P2-18** Crystallization and amorphization of Ge-Sb-Te thin films by ns-laser pulses. P. Lazarenko<sup>1</sup>, Y. Vorobyov<sup>2</sup>, M. Savelyev<sup>1</sup>, A. Yakubov<sup>1</sup>, A. Sherchenkov<sup>1</sup>, S. Kozyukhin<sup>3</sup>, A. Gerasimenko<sup>1</sup>, V. Glukhenkaya<sup>1</sup>, A. Polohin<sup>1</sup>. 1. National Research University of Electronic Technology - MIET, Zelenograd, Russia. 2. Ryazan State Radio Engineering University, Ryazan, Russia. 3. Kurnakov Institute of General and Inorganic Chemistry of RAS, Moscow, Russia.

- P2-19 Mechanical properties and adhesion of Ge<sub>2</sub>Sb<sub>2</sub>Te<sub>5</sub> thin films obtained by different deposition methods.** *A. Yakubov<sup>1</sup>, A. Sherchenkov<sup>1</sup>, I. Bdikin<sup>2</sup>, P. Lazarenko<sup>1</sup>, D. Terekhov<sup>1</sup>, A. Babich<sup>1</sup>.* 1. National Research University of Electronic Technology - MIET, Zelenograd, Russia. 2. Department of Mechanical Engineering & Centre for Mechanical Technology & Automation, University of Aveiro, Portugal.
- P2-20 Influence of annealing on nanocrystalline LiNbO<sub>3</sub> films properties.** *Z.E. Vakulov<sup>1</sup>, R.V. Tominov<sup>1</sup>, Yu.N. Varzarev<sup>1</sup>, E.G. Zamburg<sup>2</sup>, I.E. Clemente<sup>3</sup>, A.V. Miakonkikh<sup>3</sup>, K.V. Rudenko<sup>3</sup> O.A. Ageev<sup>1</sup>.* 1. Institute of Nanotechnologies, Electronics and Equipment Engineering, Taganrog, Russia. 2. National University of Singapore, Singapore. 3. Institute of Physics and Technology of RAS, Moscow, Russia.
- P2-21 Materials based on AgGaS<sub>2</sub> for X-ray Detection.** *S. Asadov<sup>1</sup>, S. Mustafaeva<sup>2</sup>, V. Lukichev<sup>3</sup>.* 1. Institute of Catalysis and Inorganic Chemistry, Baku, Azerbaijan. 2. Institute of Physics, Baku, Azerbaijan. 3. Institute of Physics and Technology of RAS, Moscow, Russia.

## **Micro- and Nanoelectronic Technologies**

---

- P2-22 Comparative study of the dependence of line edge roughness of resists patterns on its molecular structure.** *A. Sharapov<sup>1,2</sup>, G. Baranov<sup>1,2</sup>, A. Shishlyannikov<sup>1,2</sup>, A. Tatarintsev<sup>3</sup>, O. Gushin<sup>1</sup>, K. Rudenko<sup>3</sup>.* 1. JSC Molecular Electronics Research Institute, Zelenograd, Russia. 2. Moscow Institute of Physics and Technology (State University), Dolgoprudny, Russia. 3. Institute of Physics and Technology of RAS, Moscow, Russia.
- P2-23 Dry&Wet Hybrid Electron Lithography.** *M.A. Bruk<sup>1</sup>, E.N. Zhikharev<sup>2</sup>, A.E. Rogozhin<sup>2</sup>.* 1. L.Ya. Karpov Institute of Physical Chemistry, Moscow, Russia. 2. Institute of Physics and Technology of RAS, Moscow, Russia.
- P2-24 Formation of nanosized elements by ion beam lithography for multiple fin field effect transistor prototyping.** *K.A. Tsarik<sup>1</sup>, A.I. Martynov<sup>1</sup>, S.D. Fedotov<sup>1,2</sup>, V.K. Nevolin<sup>1</sup>.* 1. National Research University of Electronic Technology - MIET, Zelenograd, Russia. 2. Epiel JSC, Zelenograd, Russia.
- P2-25 Mask formation on GaAs substrate by focused ion beams of Ga<sup>+</sup> for plasma chemical etch.** *I.N. Kots<sup>1</sup>, V.S. Klimin<sup>1,2</sup>, V.V. Polyakova<sup>1</sup>, A.A. Rezvan<sup>1</sup>, O.A. Ageev<sup>2</sup>.* 1. Southern Federal University, Institute of Nanotechnologies, Electronics, and Equipment Engineering, Department of Nanotechnologies and Microsystems, Taganrog, Russia. 2. Southern Federal University, Research and Education Center "Nanotechnology", Taganrog, Russia.
- P2-26 Nanoscale profiling of A<sub>3</sub>B<sub>5</sub> surface by the local anodic oxidation and plasma chemical etching.** *V.S. Klimin<sup>1,2</sup>, M.S. Solodovnik<sup>1,2</sup>, R.V. Tominov<sup>2</sup>, A.A. Rezvan<sup>1</sup>, O.A. Ageev<sup>2</sup>.* 1. Southern Federal University, Institute of Nanotechnologies, Electronics, and Equipment Engineering, Department of Nanotechnologies and Microsystems, Taganrog, Russia. 2. Southern Federal University, Research and Education Center "Nanotechnology", Taganrog, Russia.
- P2-27 Investigation modes profiling of silicon surface by the method of local anodic oxidation to create promising elements of nanoelectronics.** *V. Polyakova<sup>1</sup>, I. Kots<sup>1</sup>, O. Ageev<sup>2</sup>.* 1. Southern Federal University, Institute of Nanotechnologies, Electronics and Equipment Engineering, Taganrog. 2. Scientific and Educational Center of Nanotechnology of Southern Federal University, Taganrog, Russia.

- P2-28 Sidewall defects in deep cryogenic Si etching in SF<sub>6</sub>/O<sub>2</sub> plasma: numerical simulation.** M. Rudenko, A. Miakonkikh, D. Kurbat, V. Lukichev. Institute of Physics and Technology of RAS, Moscow, Russia.
- P2-29 Cyclic discrete etching of Silicon oxide in deposition-sputtering cycles: towards to ALE.** V. Kuzmenko<sup>1,2</sup>, A. Miakonkikh<sup>1,2</sup>, K. Rudenko<sup>1,2</sup>. 1. Moscow Institute of Physics and Technology (State University), Dolgoprudny, Russia. 2. Institute of Physics and Technology of RAS, Moscow, Russia.
- P2-30 Study of synergy phenomena for atomic layer etching of Silicon, Aluminum, and Hafnium oxides.** V. Kuzmenko<sup>1,2</sup>, A. Miakonkikh<sup>1,2</sup>, K. Rudenko<sup>1,2</sup>. 1. Moscow Institute of Physics and Technology (State University), Dolgoprudny, Russia. 2. Institute of Physics and Technology of RAS, Moscow, Russia..
- P2-31 Features of silicon deep plasma etching process at 3D-TSV structures producing.** A.A. Golishnikov, D.A. Kostyukov, M.G. Putrya, V.I. Shevyakov. National Research University of Electronic Technology - MIET, Zelenograd, Russia.
- P2-32 Radicals and molecules on the wafer surfaces after plasma activation for direct bonding.** V.A. Antonov, L.N. Safronov, E.D. Zhanaev, V.P. Popov. Rzhanov Institute of Semiconductor Physics of Siberian Branch of RAS, Novosibirsk, Russia.
- P2-33 Growing of Si/Si<sub>1-x</sub>Ge<sub>x</sub>/Si (x < 0.1) quantum wells by modulation of the Ge flow.** A.V. Klekovkin<sup>1,2</sup>, I.P. Kazakov<sup>1</sup>, V.A. Tsvetkov<sup>1</sup>, M.A. Akmaev<sup>1</sup>, O.V. Uvarov<sup>3</sup>. 1. P.N. Lebedev Physical Institute of RAS, Moscow, Russia. 2. V.G. Mokerov Institute of UHF Semiconductor Electronics of RAS, Moscow, Russia. 3. A.M. Prokhorov General Physics Institute of RAS, Moscow, Russia.
- P2-34 Formation of In/AlGaAs nanostructures by droplet molecular beam epitaxy.** M.S. Solodovnik<sup>1,2</sup>, S.V. Balakirev<sup>1</sup>, M.M. Eremenko<sup>2</sup>, I.A. Mikhaylin<sup>2</sup>, O.A. Ageev<sup>2</sup>. 1. Southern Federal University, Institute of Nanotechnologies, Electronics and Equipment Engineering, Department of Nanotechnologies and Microsystems, Taganrog, Russia. 2. Southern Federal University, Research and Education Center "Nanotechnologies", Taganrog, Russia.
- P2-35 Droplet epitaxy of indium on nanopatterned GaAs(001) substrate studied by kinetic Monte Carlo simulations.** S.V. Balakirev<sup>1</sup>, M.M. Eremenko<sup>2</sup>, I.A. Mikhaylin<sup>2</sup>, M.S. Solodovnik<sup>1,2</sup>, O.A. Ageev<sup>2</sup>. 1. Southern Federal University, Institute of Nanotechnologies, Electronics and Equipment Engineering, Department of Nanotechnologies and Microsystems, Taganrog, Russia. 2. Southern Federal University, Research and Education Center "Nanotechnologies", Taganrog, Russia.
- P2-36 Effect of *in situ* laser radiation on the parameters of the alumina films fabricated by atomic layer deposition.** A.V. Miakonkikh<sup>1</sup>, I.E. Clemente<sup>1</sup>, A.A. Dedkova<sup>2</sup>, N.A. Dyuzhev<sup>2</sup>, V.Yu. Kireev<sup>2</sup>, K.V. Rudenko<sup>1</sup>. 1. Institute of Physics and Technology of RAS, Moscow, Russia. 2. National Research University of Electronic Technology - MIET, Zelenograd, Russia.
- P2-37 Induced bistability into quartz glass by silicon wafer heat treatment in lamp-based reactor.** V. Prigara, V. Ovcharov. Yaroslavl Branch of the Institute of Physics and Technology of RAS, Yaroslavl, Russia.

- P2-38** Localization of a thermo-optical travelling wave on an optical inhomogeneity in a silicon wafer under lamp-based heating. V. Ovcharov, V. Prigara, A. Kurenaya, V. Rudakov. Yaroslavl Branch of the Institute of Physics and Technology of RAS, Yaroslavl, Russia.
- P2-39** Features of the formation thermite materials based on Al/CuO nanopowders by the electrophoretic deposition technology for reactive bonding. L. Sorokina<sup>1</sup>, E. Lebedev<sup>1</sup>, D. Gromov<sup>1</sup>, Y. Shaman<sup>2</sup>, R. Ryazanov<sup>2</sup>. 1. Institute of Advanced Materials and Technologies, National Research University of Electronic Technology - MIET, Zelenograd, Russia. 2. Scientific Manufacturing Complex "Technological Centre", Zelenograd, Russia.
- P2-40** Fabrication and properties of SOI-based planar silicon nanowire arrays. A. Rogozhin<sup>1,2</sup>, A. Miakonkikh<sup>1,2</sup>, A. Tatarintsev<sup>1</sup>, K. Rudenko<sup>1</sup>. 1. Institute of Physics and Technology of RAS, Moscow, Russia. 2. Moscow Institute of Physics and Technology (State University), Dolgoprudny, Russia.
- P2-41** Effect of the sublayer material on the growth rate of carbon nanotubes in low-temperature plasma. V.S. Klimin<sup>1,2</sup>, A.A. Rezvan<sup>1</sup>, O.I. Il'In<sup>1,2</sup>, O.A. Ageev<sup>2</sup>. 1. Southern Federal University, Institute of Nanotechnologies, Electronics, and Equipment Engineering, Department of Nanotechnologies and Microsystems, Taganrog, Russia. 2. Southern Federal University, Research and Education Center "Nanotechnology", Taganrog, Russia.
- P2-42** A Novel Method of Graphene Hydrogenation by MWCVD Plasma. E. Paramonov<sup>1</sup>, A. Saveliev<sup>1</sup>, M. Rybin<sup>2,3</sup>, E. Obraztsova<sup>2</sup>, M. Biryukov<sup>4</sup>, G. Pavlov<sup>4</sup>, A. Molin<sup>5</sup>, A. Kusnetsov<sup>5</sup>. 1. Laboratory of Carbon Nanomaterials, Ltd, Skolkovo, Russia. 2. A.M. Prokhorov General Physics Institute of RAS, Moscow, Russia. 3. LLC "RUSGRAPHENE", Protvino, Russia. 4. JSC Research Institute of Precision Machine Manufacturing, Zelenograd, Russia. 5. LLC "Atommedcenter", Moscow, Russia.
- P2-43** PECVD CNT-Si nanocomposite technology for MEMS applications. E. Gusev<sup>1,2</sup>, J. Jityaeva<sup>2</sup>, N. Rudyk<sup>1</sup>, O. Ageev<sup>1,2</sup>. 1. Southern Federal University, Institute of Nanotechnology, Electronics and Equipment Engineering, Taganrog, Russia. 2. Southern Federal University, Research and Educational Centre "Nanotechnologies", Taganrog, Russia.
- P2-44** Methods and means of experimental investigation of gas-phase deposition of material layers in MEMS processes. V. Samoylikov, S. Evstafiev. National Research University of Electronic Technology - MIET, Zelenograd, Russia.
- P2-45** Ion-plasma sputtering of (111) textured Pt films with various crystalline structure parameters. R. Selyukov, I. Amirov, M. Izyumov, V. Naumov. Yaroslavl Branch of the Institute of Physics and Technology of RAS, Yaroslavl, Russia.
- P2-46** Sub-micron inorganic masks for high-quality Josephson structures. S.B. Izyurov<sup>1</sup>, V.L. Gurtovoi<sup>1,2</sup>, I.N. Khrapach<sup>1,3</sup>, V.B. Lubsanov<sup>1</sup>, O.V. Astafiev<sup>1,3,4</sup>. 1. Moscow Institute of Physics and Technology (State University), Dolgoprudny, Russia. 2. Institute of Microelectronics Technology and High Purity Materials of RAS, Chernogolovka, Russia. 3. Russian Quantum Center, Skolkovo, Russia. 4. Physics Department, Royal Holloway, University of London, Egham, United Kingdom.

## **Delayed papers**

---

- D-01** **Highly sensitive ultra-low frequency hydrophone.** *T.V. Krishtop<sup>1</sup>, D.A. Zhevnenko<sup>1,2,3</sup>, S.V. Kokhanovsky<sup>1</sup>, P.V. Dudkin<sup>1,2</sup>, A.S. Zlobin<sup>2</sup>, A.Y. Belyaev<sup>2,3</sup>, V.G. Krishtop<sup>1,4</sup>.* 1 LLC «Seysmotronika», Moscow, Russia. 2 Moscow Institute of Physics and Technology (State University), Dolgoprudny, Russia. 3 JCS Molecular Electronics Research Institute, Zelenograd, Russia. 4 Institute of Microelectronics Technology and High Purity Materials RAS, Chernogolovka, Russia.
- D-02** **Influence of the electromigration on the characteristics of electrochemical microsystems.** *D.A. Zhevnenko<sup>1,2,3</sup>, E.S. Gornev<sup>2,3</sup>, V.O. Kuzmenko<sup>2</sup>, P.V. Dudkin<sup>1,2</sup>, S.N. Zhabin<sup>2</sup>, T.V. Krishtop<sup>1</sup>, V.G. Krishtop<sup>1,4</sup>.* 1. Seismotronics LLC, Moscow, Russia. 2. Moscow Institute of Physics and Technology (State University), Dolgoprudny, Russia. 3. JCS Molecular Electronics Research Institute, Zelenograd, Russia. 4. Institute of Microelectronics Technology and High Purity Materials RAS, Chernogolovka, Russia.