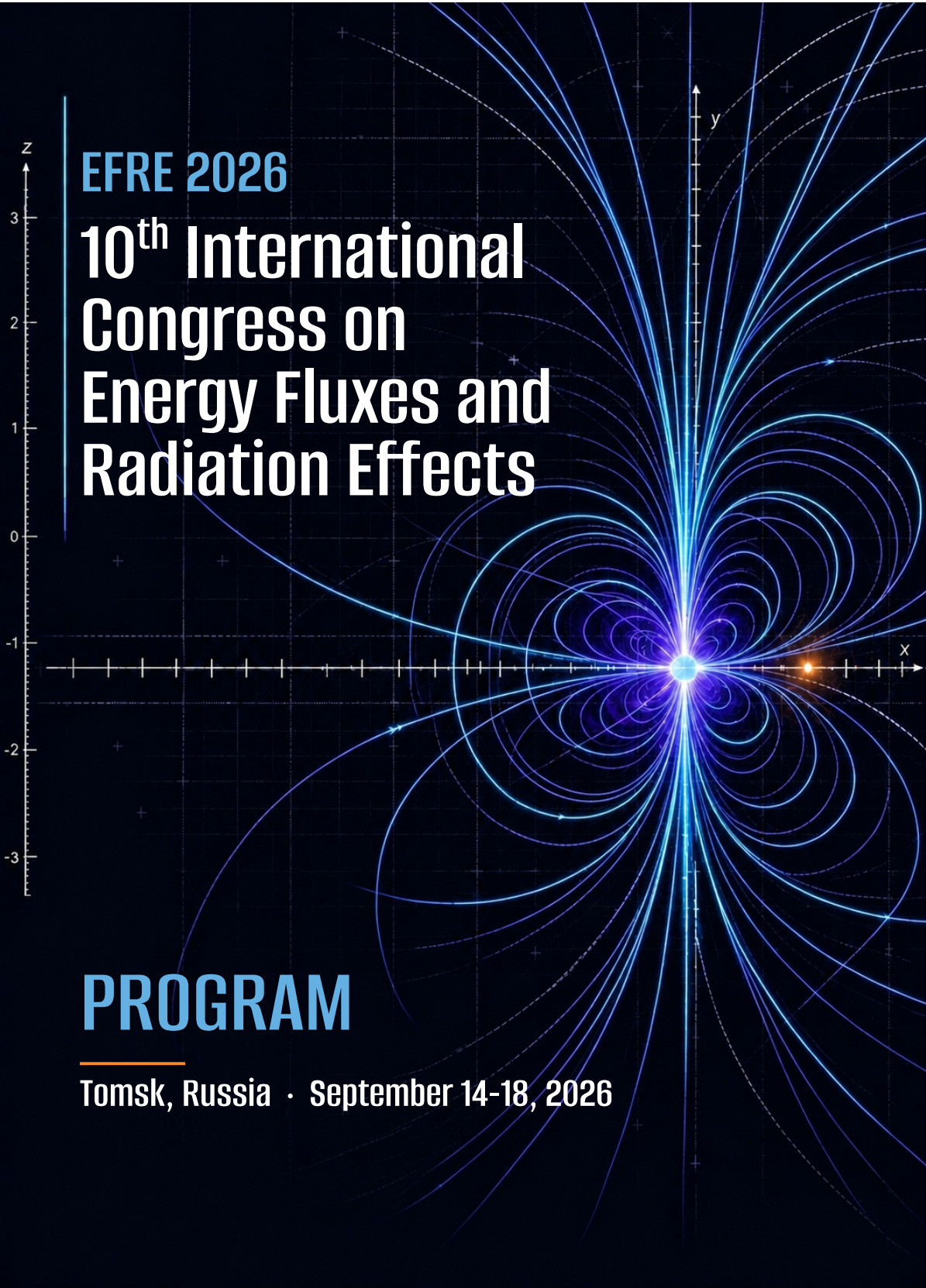


The background of the entire page is a dark blue field filled with a complex pattern of glowing blue and purple lines. These lines form a series of concentric, overlapping loops and spirals that radiate from a central point, resembling a visualization of electromagnetic fields or particle trajectories. A faint, light blue grid is visible in the background. On the left side, there is a vertical axis labeled 'z' with tick marks from -3 to 3. On the right side, there is a horizontal axis labeled 'x' and a vertical axis labeled 'y', both with tick marks. The overall aesthetic is scientific and futuristic.

EFRE 2026

10th International Congress on Energy Fluxes and Radiation Effects

PROGRAM

Tomsk, Russia · September 14-18, 2026

Sept. 13 | Sunday

17:00-19:00	Registration	Restaurant in the Rubin
19:00-21:00	Welcome Party	Hall in the Rubin

Sept. 14 | Monday

8:30-9:00	Registration	Hall in the Rubin*
9:00-9:25	Opening Ceremony	Large Conference Hall in the Rubin
9:25-10:55	Plenary Lectures	Large Conference Hall in the Rubin
10:55-11:15	Photographing	Main Entrance in the Rubin
11:15-11:45	Coffee Break	
11:45-13:55	Oral Sessions	S1, S2 C4 R1 N5
14:00-15:30	Lunch	
15:30-17:40	Oral Sessions	S1, S2 C4 R1 N5
17:40-19:40	Poster Session	S1, S2, S3, S4, S5 C1 R1, R2, R3, R4

Sept. 15 | Tuesday

9:00-11:15	Plenary Lectures	Large Conference Hall in the Rubin
11:15-11:45	Coffee Break	
11:45-13:55	Oral Sessions	S1, S5 C4, C6 R2 N2
14:00-15:30	Lunch	
15:30-17:40	Oral Sessions	S3, S5 C3, C6 R2, R4 N2
17:40-19:40	Poster Session	C2, C3, C4, C5, C6 N1, N2, N3, N4, N5
19:30-21:30	Excursion to Scientific Organizations	IHCE SB RAS, NR TPU, TSC SB RAS

Sept. 16 | Wednesday

9:00-11:15	Plenary Lectures	Large Conference Hall in the Rubin
11:15-11:45	Coffee Break	
11:45-13:55	Oral Sessions	S3, S5 C3, C6 R4 N2
14:00-15:30	Lunch	
15:30-21:00	Cultural Program	
15:30-18:20	Science in Simple Terms	Large Conference Hall in the Rubin

Sept. 17 | Thursday

9:00-11:15	Plenary Lectures	Large Conference Hall in the Rubin
11:15-11:45	Coffee Break	
11:45-13:55	Oral Sessions	S4 C1, C5 R3 N1
14:00-15:30	Lunch	
15:30-17:40	Oral Sessions	S4 C1, C2 R3 N4
19:00-23:00	Banquet	

Sept. 18 | Friday

9:00-11:10	Oral Sessions	S4 C1 N3
11:10-11:40	Coffee Break	
11:40-13:50	Oral Sessions	C1 N1
13:50-14:20	Closing Ceremony	Large Conference Hall in the Rubin

*For the following days, please register at the LOC office in the Rubin

See the actual program on the website <https://efre2026.hcei.ru/program/sch/>



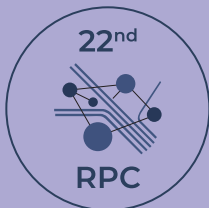
24th SHCE International Symposium on High Current Electronics

- S1 Intense electron and ion beams
- S2 Pinches, plasma focus and capillary discharge
- S3 High power microwaves
- S4 Pulsed power technology and applications
- S5 Discharges with runaway electrons



18th CMM International Conference on Modification of Materials with Particle Beams and Plasma Flows

- C1 Beam and plasma sources
- C2 Fundamentals of modification processes
- C3 Modification of material properties
- C4 Coatings deposition
- C5 Nanoscience and nanotechnology
- C6 Synchrotron and neutron research in materials science



22th RPC International Conference on Radiation Physics and Chemistry of Condensed Matter

- R1 Physical and chemical processes in inorganic materials induced by energy beams
- R2 Materials under extreme conditions: design, characterization and applications
- R3 Modern research methods and instruments, modeling of the interaction of radiation with materials
- R4 Radiation technologies: advantages and applications



7th NMHT International Conference on New Materials and High Technologies

- N1 Inorganic materials and coatings
- N2 Self-propagating high-temperature synthesis and advanced powder technologies
- N3 Carbon materials for electronics and photonics
- N4 Resource- and energy-saving technologies
- N5 Synchrotron radiation detectors

Organizers



Operator



Sponsors





CONTENTS

PLENARY LECTURES

September 14 Monday	12
September 15 Tuesday	13
September 16 Wednesday	14
September 17 Thursday	15

ORAL SESSIONS

24th International Symposium on High Current Electronics (SHCE)

September 14 | Monday

S1 – Intense electron and ion beams 1 st Oral Session	17
S1 – Intense electron and ion beams 2 nd Oral Session	19
S2 – Pinches, plasma focus and capillary discharge 1 st Oral Session ...	20
S2 – Pinches, plasma focus and capillary discharge 2 nd Oral Session ..	22

September 15 | Tuesday

S1 – Intense electron and ion beams 3 rd Oral Session	25
S3 – High power microwaves 1 st Oral Session	27
S5 – Discharges with runaway electrons 1 st Oral Session	29
S5 – Discharges with runaway electrons 2 nd Oral Session	31

September 16 | Wednesday

S3 – High power microwaves 2 nd Oral Session	34
S5 – Discharges with runaway electrons 3 rd Oral Session	36

September 17 | Thursday

S4 – Pulsed power technology and applications | 1st Oral Session..... 39

S4 – Pulsed power technology and applications | 2nd Oral Session 41

September 18 | Friday

S4 – Pulsed power technology and applications | 3rd Oral Session 44

18th International Conference on Modification of Materials with Particle Beams and Plasma Flows (CMM)

September 14 | Monday

C4 – Coatings deposition | 1st Oral Session..... 47

C4 – Coatings deposition | 2nd Oral Session 49

September 15 | Tuesday

C4 – Coatings deposition | 3rd Oral Session 51

C3 – Modification of material properties | 1st Oral Session 53

C6 – Synchrotron and neutron research in materials science | 1st Oral
Session..... 55

C6 – Synchrotron and neutron research in materials science | 2nd Oral
Session..... 58

September 16 | Wednesday

C3 – Modification of material properties | 2nd Oral Session 60

C6 – Synchrotron and neutron research in materials science | 3rd Oral
Session..... 62

September 17 | Thursday

C1 – Beam and plasma sources | 1st Oral Session 65

C1 – Beam and plasma sources | 2nd Oral Session..... 67

C5 – Nanoscience and nanotechnology 69

C2 – Fundamentals of modification processes 71

September 18 | Friday

C1 – Beam and plasma sources | 3rd Oral Session 73

C1 – Beam and plasma sources | 4th Oral Session 75

22nd International Conference on Radiation Physics and Chemistry of Condensed Matter (RPC)

September 14 | Monday

R1 – Physical and chemical processes in inorganic materials induced by energy beams | 1st Oral Session..... 78

R1 – Physical and chemical processes in inorganic materials induced by energy beams | 2nd Oral Session 80

September 15 | Tuesday

R2 – Materials under extreme conditions: design, characterization and applications | 1st Oral Session..... 82

R2 – Materials under extreme conditions: design, characterization and applications | 2nd Oral Session 84

R4 – Radiation technologies: advantages and applications | 1st Oral Session... 85

September 16 | Wednesday

R4 – Radiation technologies: advantages and applications | 2nd Oral Session... 87

September 17 | Thursday

R3 – Modern research methods and instruments, modeling of the interaction of radiation with materials | 1st Oral Session..... 89

R3 – Modern research methods and instruments, modeling of the interaction of radiation with materials | 2nd Oral Session 91

7th International Conference on New Materials and High Technologies (NMHT)

September 14 | Monday

N5 – Synchrotron radiation detectors 1 st Oral Session.....	94
N5 – Synchrotron radiation detectors 2 nd Oral Session.....	96

September 15 | Tuesday

N2 – Self-propagating high-temperature synthesis and advanced powder technologies 1 st Oral Session	98
N2 – Self-propagating high-temperature synthesis and advanced powder technologies 2 nd Oral Session	100

September 16 | Wednesday

N2 – Self-propagating high-temperature synthesis and advanced powder technologies 3 rd Oral Session.....	102
---	-----

September 17 | Thursday

N1 – Inorganic materials and coatings 1 st Oral Session	104
N4 – Resource- and energy-saving technologies 1 st Oral Session	106

September 18 | Friday

N3 – Carbon materials for electronics and photonics.....	108
N1 – Inorganic materials and coatings 2 nd Oral Session	110

POSTER SESSIONS

24th International Symposium on High Current Electronics (SHCE)

September 14 | Monday

S1 – Intense electron and ion beams.....	113
S2 – Pinches, plasma focus and capillary discharge	114

S3 – High power microwaves.....	117
S4 – Pulsed power technology and applications.....	118
S5 – Discharges with runaway electrons	124

18th International Conference on Modification of Materials with Particle Beams and Plasma Flows (CMM)

September 14 | Monday

C1 – Beam and plasma sources	131
------------------------------------	-----

September 15 | Tuesday

C2 – Fundamentals of modification processes	138
C3 – Modification of material properties	139
C4 – Coatings deposition.....	149
C5 – Nanoscience and nanotechnology	155
C6 – Synchrotron and neutron research in materials science	157

22nd International Conference on Radiation Physics and Chemistry of Condensed Matter (RPC)

September 14 | Monday

R1 – Physical and chemical processes in inorganic materials induced by energy beams.....	160
R2 – Materials under extreme conditions: design, characterization and applications.....	162
R3 – Modern research methods and instruments, modeling of the interaction of radiation with materials.....	164
R4 – Radiation technologies: advantages and applications.....	165

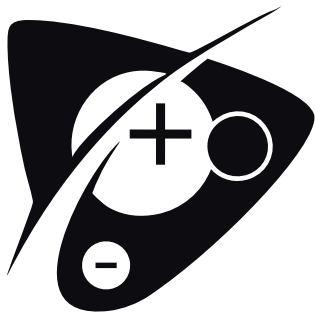
7th International Conference on New Materials and High Technologies (NMHT)

September 15 | Tuesday

N1 – Inorganic materials and coatings	167
N2 – Self-propagating high-temperature synthesis and advanced powder technologies	173
N3 – Carbon materials for electronics and photonics	174
N4 – Resource- and energy-saving technologies.....	175
N5 – Synchrotron radiation detectors.....	176

SCIENCE IN SIMPLE TERMS

September 16 Wednesday	177
---------------------------------------	------------



**10th International Congress on Energy Fluxes and Radiation
Effects
EFRE 2026
September 14-18, 2026, Tomsk, Russia**

Organizing Committee of the Congress

General Chair of the Congress

Gennady Mesyats

Russian Academy of Sciences, Moscow, Russia

Co-chair of the Congress

Andrey Zherlitsyn

Institute of High Current Electronics SB RAS, Tomsk, Russia

Co-chair of the Congress

Leonid Sukhih

National Research Tomsk Polytechnic University, Tomsk, Russia

Co-chair of the Congress

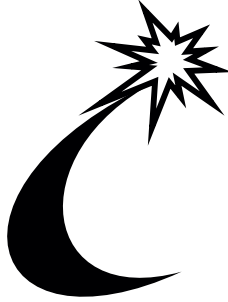
Alexey Markov

Tomsk Scientific Center SB RAS, Tomsk, Russia

Congress Program Chair

Alexander Batrakov

Institute of High Current Electronics SB RAS, Tomsk, Russia



24th International Symposium on High Current Electronics (SHCE)

Chair of the Symposium

Nikolay Ratakhin

Institute of High Current Electronics SB RAS, Tomsk, Russia

Co-chair of the Symposium

Gennadii Remnev

National Research Tomsk Polytechnic University, Tomsk, Russia

Program Chair of the Symposium

Igor Pegel

Institute of High Current Electronics SB RAS, Tomsk, Russia

Symposium Topics:

- S1 – Intense electron and ion beams
- S2 – Pinches, plasma focus and capillary discharge
- S3 – High power microwaves
- S4 – Pulsed power technology and applications
- S5 – Discharges with runaway electrons

Program Committee

Efim Oks

Institute of High Current Electronics SB RAS, Tomsk, Russia

Alexander Shishlov

Institute of High Current Electronics SB RAS, Tomsk, Russia

Pavel Priputnev

Institute of High Current Electronics SB RAS, Tomsk, Russia

Gennadii Remnev

National Research Tomsk Polytechnic University, Tomsk, Russia

Victor Tarasenko

Institute of High Current Electronics SB RAS, Tomsk, Russia



18th International Conference on Modification of Materials with Particle Beams and Plasma Flows (CMM)

Chair of the Conference

Nikolay Koval

Institute of High Current Electronics SB RAS, Tomsk, Russia

Co-chair of the Conference

Valery Krivobokov

National Research Tomsk Polytechnic University, Tomsk, Russia

Program Chair of the Conference

Yuri Akhmadeev

Institute of High Current Electronics SB RAS, Tomsk, Russia

Conference Topics:

- C1 – Beam and plasma sources
- C2 – Fundamentals of modification processes
- C3 – Modification of material properties
- C4 – Coatings deposition
- C5 – Nanoscience and nanotechnology
- C6 – Synchrotron and neutron research in materials science

Program Committee

Vladimir Denisov

Institute of High Current Electronics SB RAS, Tomsk, Russia

Valery Krivobokov

National Research Tomsk Polytechnic University, Tomsk, Russia

Yuri Ivanov

Institute of High Current Electronics SB RAS, Tomsk, Russia

Yuri Akhmadeev

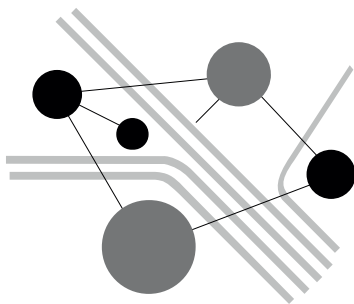
Institute of High Current Electronics SB RAS, Tomsk, Russia

Yuri Sharkeev

Institute of Strength Physics and Materials Science SB RAS, Tomsk, Russia

Yan Zubavichus

Synchrotron Radiation Facility SKIF of Boreskov Institute of Catalysis SB RAS, Novosibirsk, Russia



22nd International Conference on Radiation Physics and Chemistry of Condensed Matter (RPC)

Chair of the Conference

Elena Polisadova

National Research Tomsk Polytechnic University, Tomsk, Russia

Co-chair of the Conference

Maksim Vorobyov

National Research Tomsk Polytechnic University, Tomsk, Russia

Program of the Conference

Sergey Ghyngazov

National Research Tomsk Polytechnic University, Tomsk, Russia

Conference Topics:

- R1 – Physical and chemical processes in inorganic materials induced by energy beams
- R2 – Materials under extreme conditions: design, characterization and applications
- R3 – Modern research methods and instruments, modeling of the interaction of radiation with materials
- R4 – Radiation technologies: advantages and applications

Program Committee

Sergey Ghyngazov

National Research Tomsk Polytechnic University, Tomsk, Russia

Maksim Vorobyov

National Research Tomsk Polytechnic University, Tomsk, Russia

Sergey Stepanov

National Research Tomsk Polytechnic University, Tomsk, Russia

Anna Karnaukhova

National Research Tomsk Polytechnic University, Tomsk, Russia

Victor Lisitsyn

National Research Tomsk Polytechnic University, Tomsk, Russia



7th International Conference on New Materials and High Technologies (NMHT)

Chair of the Conference

Alexey Markov

Tomsk Scientific Center SB RAS, Tomsk, Russia

Co-chair of the Conference

Anatoly Maznoy

Tomsk Scientific Center SB RAS, Tomsk, Russia

Program Chair of the Conference

Oksana Ivanova

Tomsk Scientific Center SB RAS, Tomsk, Russia

Symposium Topics:

- *N1 – Inorganic materials and coatings*
- *N2 – Self-propagating high-temperature synthesis and advanced powder technologies*
- *N3 – Carbon materials for electronics and photonics*
- *N4 – Resource- and energy-saving technologies*
- *N5 – Synchrotron radiation detectors*

Program Committee

Sergey Zelepugin

Tomsk Scientific Center SB RAS, Tomsk, Russia

Alexander Potekaev

Tomsk Scientific Center SB RAS, Tomsk, Russia

Anatoly Maznoy

Tomsk Scientific Center of SB RAS, Tomsk, Russia

Dmitry Genin

National Research Tomsk State University, Tomsk, Russia

Oleg Tolbanov

National Research Tomsk State University, Tomsk, Russia

Ivan Chsherbakov

National Research Tomsk State University, Tomsk, Russia

September 14 | Monday

Plenary Lectures

Large Conference Hall in the Rubin

09:25 **Air-insulated Fast Linear Transformer Driver**

–

S4-O-047401

10:10 *Andrey Zherlitsyn, Evgeniy Kumpyak, Alexander Lenskiy,
Grigory Smorudov, Nikolay Tsoy*

Institute of High Current Electronics SB RAS, Tomsk, Russia

10:10 **Synchrotron Radiation Facility SKIF: Project
Status and Programme of Infrastructure**

–

10:55 **Development**

C6-O-032501

Yan Zubavichus, Andrey Bukhtiyarov

Synchrotron Radiation Facility 'SKIF', Novosibirsk, Russia

September 15 | Tuesday

Plenary Lectures

Large Conference Hall in the Rubin

09:00 **Hierarchical Design in Digital Dentistry**

– N1-O-044801

09:45 Sergey Panin¹, Sergey Arutyunov²

¹ V.E.Panin Institute of Strength Physics and Materials Science SB
RAS, Tomsk, Russia

² Russian University of Medicine, Moscow, Russia, Moscow, Russia

09:45 **Modern Solutions for Research Challenges**

– C3-O-048001

10:05 Mikhail Mikhaylov

Erstvsk, Moscow, Russia

10:05 **Modern Analytical Solutions from the Exiton
Group of Companies**

–

10:25 Dmitrii Safonov

Exiton Test LLC, Saint-Petersburg, Russia

10:25 **Plasma Technologies for the Remanufacturing of
Cemented Carbide Tools: Enabling a Circular
Economy in the Cutting Tool Industry**

–

11:10

N1-O-022201

Massimiliano Bestetti

Politecnico di Milano, Milan, Italy

September 16 | Wednesday

Plenary Lectures

Large Conference Hall in the Rubin

- 09:00 **Roll-to-roll Boosting the Energy Storage of**
– **Ultrathin Biaxially-oriented Polypropylene Film**
09:45 **by Pulsed Excimer-induced Crosslink Implanted**
S4-O-038801

Tao Shao^{1,2}, Bangdou Huang¹, Cheng Zhang¹

¹ Institute of Electrical Engineering, Chinese Academy of Sciences, Beijing, China

² Beijing International S&T Cooperation Base for Plasma Science and Energy Conversion, School of Electrical Engineering and Automation, Wuhan University, Wuhan, China

- 09:45 **Vacuum and plasma technology. Current state of**
– **the industry and development prospects**
10:30 Iaroslav Zhelonkin

FERRY VATT Group, Kazan, Russia

- 10:30 **Special Optical Fibers Application for High-**
– **energy Facilities Radiation Environment**
11:15 **Monitoring**
R2-O-046701

Irina Azanova, Damir Khisamov, Yulia Sharonova

Public Joint Stock Company "Perm Scientific and Production Instrument-Making Company", Perm, Russia

September 17 | Thursday

Plenary Lectures

Large Conference Hall in the Rubin

- 09:00 **Studies of the Kinetics of Radiation Damage to**
– **Structural Materials Using the Ion Irradiation**
09:45 **Method**

R4-P-006602

Vladimir Uglov¹, Igor Ivanov², Bauyrzhan Amanzhulov²,
Mikhail Koloberdin², Artem Kozlovskiy²

¹ Belarusian State University, Minsk, Belarus

² Institute of Nuclear Physics of the ARKAE, Almaty, Kazakhstan

- 09:45 **Degradation Mechanisms and Mitigation**
– **Strategies for Hybrid Halide Perovskites Exposed**
10:30 **to Light, Heat and Radiation**

R1-O-046601

Ivan Zhidkov

Ural Federal University, Yekaterinburg, Russia

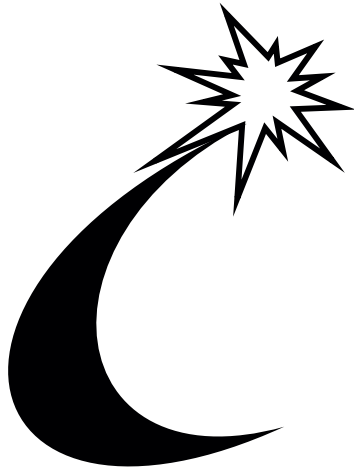
- 10:30 **Polymer Combustion and Pyrolysis: Challenges,**
– **Modeling and State of the Art**

11:15 N2-O-047901

Roman Fursenko

Khristianovich Institute of Theoretical and Applied Mechanics SB RAS,
Novosibirsk, Russia

Oral Sessions of the
24th International Symposium on
High Current Electronics
(SHCE)



Symposium Topics:

- *S1 – Intense electron and ion beams*
- *S2 – Pinches, plasma focus and capillary discharge*
- *S3 – High power microwaves*
- *S4 – Pulsed power technology and applications*
- *S5 – Discharges with runaway electrons*

September 14 | Monday

S1 – Intense electron and ion beams

1st Oral Session

Large Conference Hall in IHCE

- Invited **Influence of an External Magnetic Field on
Operation of Explosive-emission Cathode
Based on Vacuum Arcs**
- 11:45
–
12:15 S1-P-042601
*Pavel Kiziridi, Grigory Ozur, Alexander Batrakov
Institute of High Current Electronics SB RAS, Tomsk, Russia*
- 12:15 **The Influence of Cathode Roughness and
Magnetic Field Tilt in a Plasma Anode Diode on
the Angular Characteristics of the Electron
Beam**
- 12:35 S1-O-015101
*Vitaly Astrelin, Ivan Ivanov, Vladimir Postupaev, Dmitriy
Cherepanov
Budker Institute of Nuclear Physics SB RAS, Novosibirsk, Russia*
- 12:35 **Energy Spectrum Recovery of Collectively
Accelerated Protons Using the Radioactivation
Method**
- 12:55 S1-O-033501-Y
*Predrag Glumac, Vladislav Ryzhkov, Gennady Remnev
National Research Tomsk Polytechnic University, Tomsk, Russia*

- 12:55 **Metal-dielectric Plasma Source for Plyutto-
Luce Diode**
–
13:15 S1-O-016201-Y
*Khertek Romesh, Maksim Serebrennikov,
Gennady Remnev*
National Research Tomsk Polytechnic University, Tomsk, Russia
- 13:15 **Generation of Twisted Photons in a Medium
Filled Elliptical Undulator**
–
13:35 S1-O-013201-Y
George Lazarenko, Nataliya Malygina
National Research Tomsk Polytechnic University, Tomsk, Russia
- 13:35 **Nonionizing Scattering Cross Section of
Electron with Finite Coherence Length on
Anatomic System**
–
13:55 S1-P-035901-Y
Danil Zainutdinov¹, Nikita Medvedev^{2,3}, Alexander Volkov¹
¹ P.N. Lebedev Physical Institute RAS, Moscow, Russia
*² Institute of Physics, Czech Academy of Sciences, Prague,
Czechia*
*³ Institute of Plasma Physics, Czech Academy of Sciences,
Prague, Czechia*
- 13:55 **Lunch**
–
15:30

S1 – Intense electron and ion beams

2nd Oral Session

Large Conference Hall in IHCE

- Invited **Generation of Technological and Emission
Beam-plasma Formations in Large Vacuum
Volumes in a High-current Low-pressure
Hollow Cathode Glow Discharge**
15:30
–
16:00
S1-O-024602
*Vladimir Denisov, Mikhail Savchuk,
Nikolai Koval, Ostroverkhov, Danil Ignatov, Artem Egorov,
Sergey Kovalsky, Tamara Koval, Ilya Podgorny, Vladislav
Krivshenko, Vladislav Yakovlev, Yulia Denisova, Andrey
Leonov, Danil Zaytsev*
Institute of High Current Electronics SB RAS, Tomsk, Russia
- 16:00 **Titanium Foils as Extraction Windows for a
Pulsed Ion Beam**
–
16:20
S1-O-034601
*Mikhail Zhuravlev, Predrag Glumac, Grigory Kurapov,
Sergey Martemyanov, Andrey Bukharkin,
Gennady Remnev*
National Research Tomsk Polytechnic University, Tomsk, Russia
- 16:20 **Kinetic Model of the Near Cathode Layer of a
High-current Vacuum Arc**
–
16:40
S1-P-015201
Dmitry Shmelev¹, Sergei Barengolts², Igor Uimanov¹
¹ *Institute of Electrophysics UB RAS, Yekaterinburg, Russia*
² *A.M. Prokhorov General Physics Institute RAS, Moscow, Russia*

- 16:40 **High Voltage Gap for Ion Beam Acceleration and Deceleration**
 –
 17:00 S1-O-024701
Tatyana Devyataikina, Vladimir Korchagin, Vadim Pavlyuchenko, Aleksandr Putmakov, Aleksandr Starostenko, Aleksandr Tsyganov
Budker Institute of Nuclear Physics SB RAS, Novosibirsk, Russia
- 17:00 **The Role of the Internal Resistance of the Plasma Emitter Power Supply in Beam Current Stabilization**
 –
 17:20 S1-P-029902
Maxim Vorobyov, Nikolay Koval, Ruslan Kartavtsov, Anton Grishkov, Diana Mokeeva, Daniil Chugunov
Institute of High Current Electronics SB RAS, Tomsk, Russia

S2 – Pinches, plasma focus and capillary discharge

1st Oral Session

Small Hall in IHCE

- Invited **Marple 3D, Software for Modeling Plasmodynamic Processes in Modern Electrophysical Facilities**
 11:45 S2-P-022401
 –
 12:15 *Olga Olkhovskaya*
Keldysh Institute of Applied Mathematics RAS, Moscow, Russia

- 12:15 **Generation of Ultra-strong Magnetic Fields by**
 – **Nanosecond Switching of Megaampere Current**
 12:35 **on a Cylindrical Conductor**

S2-O-008001

Sergey Sorokin

Institute of High Current Electronics SB RAS, Tomsk, Russian Federation

- 12:35 **Integral of Action of Current for Tungsten Fuzz**
 – **Nanostructure and Vacuum Arc Spot Explosive**
 12:55 **Plasma Parameters Estimation**

S2-O-036401

Mikhail Tsvetoukh

Lebedev Physical Institute of Russian Academy of Sciences, Moscow, Russia

- 12:55 **Regulation of Neutron Radiation Parameters of**
 – **Plasma Focus Chambers**

13:15 S2-O-014301

Ilya Prokuratov, Yuri Mikhailov, Boris Lemeshko

Dukhov Automatics Research Institute, ROSATOM, Moscow, Russia

- 13:15 **Calculating Transition Probabilities in the NeII**
 – **Spectra Emitted by Plasma of Current Sheets**

13:35 S2-O-020301

Elena Koryukina

National Research Tomsk State University, Tomsk, Russia

- 13:35 **Refinement of Two-level Model Parameters**
 – **Based on Experimental Data on K-shell**
 13:55 **Radiation Generation Using Hybrid Load**

S2-O-006201

*Rustam Cherdizov, Alexander Shishlov, Vladimir Oreshkin,
 Vladimir Kokshenev, Nikolay Kurmaev*

Institute of High Current Electronics SB RAS, Tomsk, Russia

- 13:55 **Lunch**

–

15:30

S2 – Pinches, plasma focus and capillary discharge **2nd Oral Session**

Small Hall in IHCE

- Invited **Simulation of a Capillary Plasma Channel**
 15:30 **Formation by a Knife-like Laser Pulse**

–

S2-P-017801

- 16:00 *Vladimir Gasilov, Olga Olkhovskaya*

Keldysh Institute of Applied Mathematics RAS, Moscow, Russia

- 16:00 **PZ-pinch Based on a Plasma Gun with a**
 – **Molybdenum Cathode**

16:20 S2-P-012301

*Anton Artyomov, Anatoly Fedunin, Alexander Roussikh,
 Vladimir Oreshkin*

Institute of High Current Electronics SB RAS, Tomsk, Russia

- 16:20 **Simulation of the Effect of Cathode and Anode
– Plasma Interaction in the Diode Gap of the
16:40 Kalmar Accelerator on the Propagation of
Shock Waves Inside the Target**

S2-O-036501-Y

Anna Smirnova^{1,2,3}, Dmitry Boikov⁴, Evgeny Kazakov^{2,1},
Olga Olkhovskaya⁴, Svetlana Tkachenko^{1,2,3}

¹ Moscow Institute of Physics and Technology, Moscow, Russia

² National Research Center "Kurchatov Institute", Moscow, Russia

³ Joint Institute for High Temperatures RAS, Moscow, Russia

⁴ Keldysh Institute of Applied Mathematics RAS, Moscow, Russia

- 16:40 **Operation of Small-sized Plasma Focus
– Chambers as a Part of Device with an Energy
17:00 Capacity 1-2 kJ**

S2-P-010901-Y

Igor Il'ichev, Boris Lemeshko, Yuri Mikhailov, Ilya
Prokuratov, Alexander Sadiikin, Ekaterina Zyablitsevs,
Stanislav Puchkin, Yanina Nikolaeva

Dukhov Automatics Research Institute, ROSATOM, Moscow,
Russia

- 17:00 **Modeling of a Discharge in a Humid Inert Gas
– with a Water Anode**

17:20 S2-O-012601

Almaz Saifutdinov, Aliia Saifutdinov, Vadim Purin

A.N.Tupolev Kazan National Research Technical University,
Kazan, Russia

17:20 **Probe Measurements of the Magnetic Field of a**
– **Plasma Jet Formed with a Vacuum Arc**
17:40 **Discharge**

S2-P-004201-Y

*Alexandr Kuzminykh, Alexander Rousskikh, Alexander
Zhigalin, Vladimir Oreshkin*

Institute of High Current Electronics SB RAS, Tomsk, Russia

September 15 | Tuesday

S1 – Intense electron and ion beams 3rd Oral Session

Large Conference Hall in IHCE

- Invited **High-current Pulsed Electron Accelerators of
Nanosecond Duration for Collective
Acceleration of Light Ions**
11:45 –
12:15 S1-O-039001
Gennadii Remnev
National Research Tomsk Polytechnic University, Tomsk, Russia
- 12:15 **Emission of Photons with OAM Created by a
Uniformly Accelerated Electron**
–
12:35 S1-O-023901-Y
Nataliya Malygina, George Lazarenko
National Research Tomsk Polytechnic University, Tomsk, Russia
- 12:35 **Influence of Reactive Inductive Coupling Two-
grid Plasma Cathod on the Stability of
Generation of Pulsed Electron Beam**
–
12:55 S1-O-001501-Y
*Diana Mokeeva, Maksim Vorobiev, Nikolay Koval, Sergey
Doroshkevich, Daniil Chugunov*
Institute of High Current Electronics SB RAS, Tomsk, Russia

- 12:55 **Generation of an Intense Electron Beam in
Collector Vapors in a HVGD-based Source with
a Plasma Cathode**
–
13:15 S1-O-011301-Y
*Ruslan Kartavtsov, Sergey Doroshkevich, Maksim
Vorobyov, Nikolay Koval, Nikita Prokopenko, Maria Rygina
Institute of High Current Electronics SB RAS, Tomsk, Russia*
- 13:15 **Unitary Emission Cell of a Multiarc Grid Plasma
Cathode for Generation of a Radially
Convergent Electron Beam**
–
13:35 S1-O-024502-Y
*Maksim Torba, Sergey Doroshkevich, Maksim Vorobyov,
Anton Grishkov, Nikolai Koval, Daniil Chugunov
Institute of High Current Electronics SB RAS, Tomsk, Russia*
- 13:35 **Investigation of the Relative Nonuniformity of
an Electron Beam in a Multi-arc Source with a
Plasma Cathode**
–
13:55 S1-O-037701-Y
*Maksim Mokeev, Diana Mokeeva, Pavel Moskvina, Maksim
Vorobyov, Nikolai Koval, Vladimir Devyatkov, Ruslan
Kartavtsov
Institute of High Current Electronics SB RAS, Tomsk, Russia*
- 13:55 **Lunch**
–
15:30

S3 – High power microwaves

1st Oral Session

Large Conference Hall in IHCE

Invited **Design of W-band Relativistic Gyrotron with
15:30 Sub-gigawatt Pulsed Power**

– S3-O-037901

16:00 *Vladislav Zaslavsky, Nikolay Peskov, Ilya Zheleznov,
Kseniya Leshcheva, Mikhail Vilkov, Vladimir Manuilov
Institute of Applied Physics RAS, Nizhniy Novgorod, Russia*

16:00 **Project of 140 GHz Megawatt Power-level
– Planar Gyrotron with Transverse Energy
16:20 Extraction**

S3-O-034401

*Michael Vilkov, Vladislav Zaslavsky, Naum Ginzburg,
Ilya Zheleznov, Alexander Sergeev, Andrey Kuftin,
Kseniya Leshcheva, Dmitry Sobolev, Vladimir Manuilov
Institute of Applied Physics RAS, Nizhniy Novgorod, Russia*

16:20 **Computer Modeling of Plasma-chemical**
 – **Methane Decomposition Processes in a**
 16:40 **Microwave Discharge**

S3-O-009801-Y

Alina Agatanova^{1,2}, Mazhyn Skakov³, Arman Miniyazov¹,
 Balzhan Bekmagambetova^{1,4}, Kuanyshbek Toleubekov¹,
 Gainiya Zhanbolatova¹

¹ Institute of Atomic Energy of National Nuclear Center of the
 Republic of Kazakhstan, Kurchatov, Kazakhstan

² NPJSC "Shakarim University", Semey, Kazakhstan

³ RSE "National Nuclear Center of the Republic of Kazakhstan",
 Kurchatov, Kazakhstan

⁴ Serikbayev East Kazakhstan Technical University, Ust-
 Kamenogorsk, Kazakhstan

16:40 **Generation of High Power Microwave**
 – **Oscillations at S-100 Facility**

17:00 S3-O-030801

Maksim Pedos, Sergei Timoshenkov, Sergei Rukin, Vitaly
 Patrakov

Institute of Electrophysics UB RAS, Yekaterinburg, Russia

17:00 **Self-similar Amplification and Compression of**
 – **Ultrashort Microwave Pulses During the**
 17:20 **Nonlinear Interaction of Electromagnetic**
 Waves with Quasi-stationary Electron Beams

S3-O-010801-Y

Alena Rostuntsova^{1,2}, Nikita Ryskin^{1,2}

¹ Saratov Branch of Kotelnikov Institute of Radio Engineering and
 Electronics RAS, Saratov, Russia

² Saratov State University, Saratov, Russia

- 17:20 **Dispersion Equation for Virtual Cathode**
 – **Oscillations: a One-dimensional Ultrarelativistic**
 17:40 **Case**

S3-O-019801

Igor Pegel

Institute of High Current Electronics SB RAS, Tomsk, Russia

- 17:40 **Study of a Relativistic Traveling Wave Tube**
 – **with External Feedback**

18:00 S3-O-019001-Y

Egor Tishin, *Ruslan Tsygankov, Vladislav Rostov*

Institute of High Current Electronics SB RAS, Tomsk, Russia

S5 – Discharges with runaway electrons

1st Oral Session

Small Hall in IHCE

- Invited **Obtaining Electrohydrodynamic Flows Using**
 11:45 **Barrier and Corona Discharges, and Prospects**
 – **for Their Application**

12:15 S5-O-028701

Vladimir Yamshchikov, *Vladislav Khomich*

*Institute of Electrophysics and Electric Power of the Russian
 Academy of Sciences, Saint Petersburg, Russia*

- Invited
12:15 **Plasma Reactor with an Extended Hollow Cathode for Precision Additive Technologies**
– S5-O-026201
12:45 Nazir Ashurbekov¹, Kadi Iminov¹, Kurban Rabadanov^{1,2}, Gadzhi Shakhsinov¹, Hizri Hizriev³
¹ Dagestan State University, Makhachkala, Russia
² Harbin Institute of Technology, Harbin, China
³ Institute of Physics DFR Center of the RAS, Makhachkala, Russia
- 12:45 **Detection of X- and Gamma Rays in Experiments on Modeling of Lightning Discharge at the GIN-1MV Facility of the Institute of Applied Physics of the Russian Academy of Sciences**
– S5-O-008801
13:05 Sergey Svertilov¹, Evgeny Mareev², Yurii Shlyugaev², Maria Shatalina², Fedor Sarafanov², Vitaly Bogomolov¹, Anatoly Yyudin¹, Ivan Yashin¹
¹ Lomonosov Moscow State University, Moscow, Russia
² Institute of Applied Physics RAS, Nizhniy Novgorod, Russia
- 13:05 **Dynamics of Nanosecond Discharges in Water and Ethanol**
– S5-P-000301
13:25 Dmitry Sorokin^{1,2}, Dmitry Beloplotov¹
¹ Institute of High Current Electronics SB RAS, Tomsk, Russia
² National Research Tomsk State University, Tomsk, Russia

13:25 **Plasma Cathode Switches Based on Slit and Capillary Discharges**

–
13:45 S5-O-037501

*Maxim Lavrukhin, Petr Bokhan, Pavel Gugin,
Gleb Shevchenko, Dmytry Zakrevsky*

*A.V. RzhanoV Institute of Semiconductor Physics SB RAS,
Novosibirsk, Russia*

13:45 **Research of Conditions for Increasing the Efficiency of Pyroelectric Generation from Lithium Niobate Crystals**

–
14:05

S5-P-005001

Leonid Orlikov, Stanislav Shandarov

*Tomsk State University of Control Systems and Radioelectronics,
Tomsk, Russia*

14:05 **Lunch**

–
15:30

S5 – Discharges with runaway electrons

2nd Oral Session

Small Hall in IHCE

Invited **The Study of the Kinetics of N₂ Triplet States and N₂⁺ Doublet State in Sprites and a Discharge Chamber**

15:30

–

16:00 S5-O-039501

Andrey Kirillov¹, Victor Tarasenko²

¹ *Polar Geophysical Institute, Apatity, Russia*

² *Institute of High Current Electronics SB RAS, Tomsk, Russia*

Invited **Study of Spatial Structure of Pulsed Discharge
in Helium at Various Pressures in "Needle-
Plane" Gap**

16:00

–

16:30 S5-O-018201

Artem Belonogov¹, Alexey Trenkin¹, Kseniya Almazova¹,
Evgeny Gorelov¹, Alexander Dolotov¹, Igor Morozov¹,
Gadzhimirza Ragimkhanov², Zaira Khalikova²

¹ Russian Federal Nuclear Center - All-Russian Research Institute
of Experimental Physics, Sarov, Russia

² Dagestan State University, Makhachkala, Russian Federation

16:30 **Possibilities of Experiments on Satellite SINP-
MSU-80 for Observations of High-altitude
Electromagnetic Discharges**

–

16:50 S5-O-008701

Vitaly Bogomolov, Sergey Svertilov, Alexander Belov, Egor
Voskresenskov, Iyudin Anatoly, Pavel Klimov, Ivan
Kucherenko, Alexey Murashov, Vladislav Osedlo, Ivan
Yashin

Lomonosov Moscow State University, Moscow, Russia

16:50 **Formation of Discharges in the Atmosphere of
Mars and Venus**

–

17:10 S5-O-008001

Victor Tarasenko^{1,2}, Andrey Kirillov², Alexei Panchenko¹

¹ Institute of High Current Electronics SB RAS, Tomsk, Russia

² Polar Geophysical Institute, Apatity, Russia

17:10 **Yellow, Red and Infrared Emissions of**
 Molecular Nitrogen in Aurora, Sprites and
17:30 **Plasma Diffuse Jets**

S5-O-039701-Y

Vitalii Kirillov¹, Boris Zolotenkov²

¹ Polar Geophysical Institute, Apatity, Russia

² Institute of High Current Electronics SB RAS, Tomsk, Russia

17:30 **Characteristics of a High-power VUV-UV**
 Radiation Source Based on a Nanosecond
17:50 **Volume Discharge in Xenon**

S5-O-014001

Victor Paperny¹, Valentin Baryshnikov²

¹ Irkutsk State University, Irkutsk, Russia

² Irkutsk State Transport University, Irkutsk, Russia

September 16 | Wednesday

S3 – High power microwaves

2nd Oral Session

Large Conference Hall in IHCE

- Invited **Liquide Calorimeters for Measuring the Energy**
 11:45 **of High-power Microwave Pulses**
 – S3-O-003102
 12:15 Aleksei Klimov
Institute of High Current Electronics SB RAS, Tomsk, Russia
- 12:15 **Regimes of Electron Beam and Electromagnetic**
 – **Field Interaction in Multiwave Cherenkov**
 12:35 **Generators of G-band**
 S3-O-003901
Vladimir Koshelev, Vadim Chazov, Andrey Petkun
Institute of High Current Electronics SB RAS, Tomsk, Russia
- 12:35 **Vavilov-Cherenkov Radiation in Plasma**
 – **Relativistic Microwave Electronics**
 12:55 S3-O-013901
Igor Ivanov
Prokhorov General Physics Institute of the Russian Academy of Sciences, Moscow, Russia

12:55 **Development of a Sub-THz Traveling Wave Tube**
 – **with a Metamaterial-inspired Slow-wave**
 13:15 **Structure**

S3-O-035601

Nikita Ryskin^{1,2}, Alena Rostuntsova¹, Roman Torgashov¹,
 Dmitry Nozhkin¹, Dmitry Bessonov¹, Valeriy Emelianov¹,
 Anna Akst², Igor Navrotsky¹

¹ Saratov Branch of Kotelnikov Institute of Radio Engineering and
 Electronics RAS, Saratov, Russia

² Saratov State University, Saratov, Russia

13:15 **On the Effect of the Trailing Edge on the**
 – **Dynamics of Oscillations in a High-frequency**
 13:35 **Pulse Generated in a Nonlinear Transmission**
 Line

S3-P-032702-Y

Oleg Mutylin, Igor Pegel, Pavel Priputnev

Institute of High Current Electronics SB RAS, Tomsk, Russia

13:35 **Design of a Powerful C-band Klystron**

– S3-O-026101

13:55 Valentin Ivanov, Alexey Barnyakov, Alexey Levichev,
 Danila Nikiforov

Budker Institute of Nuclear Physics SB RAS, Novosibirsk, Russia

13:55 **Radiation of a Monopolar Pulse During the**
 – **Emission of a Short Tubular Electron Beam from**
 14:15 **a Cathode**

S3-P-032001

Vladimir Kornienko¹, Victor Kulagin²

¹ Kotelnikov Institute of Radioengineering and Electronics RAS,
 Moscow, Russia

² Lomonosov Moscow State University, Moscow, Russia

14:15 **Influence of Paraboloid Geometry on the Effective Potential of a Reflector Antenna**

–
14:35 S3-O-023701-Y

Maria Koloskova, Yury Andreev, Evgeny Balzovsky
Institute of High Current Electronics SB RAS, Tomsk, Russia

14:35 **Lunch**

–
15:30

S5 – Discharges with runaway electrons

3rd Oral Session

Small Hall in IHCE

Invited **Dynamic Conditions of Electron Runaway in Dense Gases in Sharply Inhomogeneous Electric Fields**

11:45

–

12:15 S5-O-026401

Nikolay Zubarev^{1,2}, Michael Yalandin^{1,2}, Olga Zubareva¹

¹ *Institute of Electrophysics UB RAS, Yekaterinburg, Russia*

² *P.N. Lebedev Physical Institute RAS, Moscow, Russia*

Invited **High-voltage Nanosecond Discharge: Dynamics of the Initial Stage of Breakdown in a Sharply Non-uniform Electric Field**

12:15

–

12:45 S5-O-006001

Mikhail Lomaev^{1,2}, Dmitry Beloplotov¹, Dmitry Pechenichin¹, Dmitry Sorokin^{1,2}

¹ *Institute of High Current Electronics SB RAS, Tomsk, Russia*

² *National Research Tomsk State University, Tomsk, Russia*

12:45 **Electron Beam Generation Efficiency in
– Abnormal Discharge in Pure Inert Gases**

13:05 S5-O-014701-Y

*Gleb Shevchenko, Petr Bokhan, Pavel Gugin, Maxim
Lavrukhin, Dmitry Zakrevsky*

*A.V. RzhanoV Institute of Semiconductor Physics SB RAS,
Novosibirsk, Russia*

13:05 **Dynamics of Formation and Spectral
– Characteristics of a Nanosecond Discharge in
13:25 Atmospheric Air of Various Humidity**

S5-O-016802

*Dmitry Beloplotov¹, Victor Tarasenko¹, Alexei Panchenko¹,
Dmitry Sorokin^{1,2}*

¹ *Institute of High Current Electronics SB RAS, Tomsk, Russia*

² *National Research Tomsk State University, Tomsk, Russia*

13:25 **Self-sustained Subnanosecond Discharge in
– Highly Overvoltaged Gas Gaps**

13:45 S5-O-017401

Stepan Ivanov

Institute of Electrophysics UB RAS, Yekaterinburg, Russia

13:45 **Influence of the Pre-pulse on the Emission of**
 – **the Runaway Electrons in an Atmospheric**
 14:05 **Pressure Air-filled Diode**

S5-O-020201-Y

Leonid Lobanov¹, Michael Yalandin^{1,2}, Sergey Shunailov¹,
 Konstantin Sharypov¹, Nikolay Zubarev^{1,2}, Natalia
 Semeniuk^{1,3}, Andrey Kozyrev³

¹ Institute of Electrophysics UB RAS, Yekaterinburg, Russia

² P.N. Lebedev Physical Institute RAS, Moscow, Russia

³ Institute of High Current Electronics SB RAS, Tomsk, Russia

14:05 **Lunch**

–
 15:30

September 17 | Thursday

S4 – Pulsed power technology and applications 1st Oral Session

Large Conference Hall in IHCE

- Invited **Formation of Controlled Magnetic Pressure
Pulses: Capabilities and Constraints**
 11:45 – S4-O-029301
 12:15 *Sergey Krivosheev, Ivan Kuznetsov, Sergey Magazinov,
Yuri Adamyan*
*Peter the Great St.Petersburg Polytechnic University, Saint
Petersburg, Russia*
- 12:15 **The Investigation of the Instability of a High-
voltage High-pressure Gas Discharge Triggered
by Pulsed Laser Radiation**
 12:35 – S4-O-012901
*Alexander Lipchak, Nikolay Volkov, Ivan Turmyshev,
Efrem Makarov*
Institute of Electrophysics UB RAS, Yekaterinburg, Russia

12:35 **Simulation of Electrical Explosion of Profiled**
– **Cylindrical Conductors.**

12:55 S4-O-021701

*Evgeny Oreshkin^{1,2}, Igor Datsko³, Stanislav Chaikovsky²,
Vladislav Van'kevich³, Natalia Labetskaya³,
Vladimir Oreshkin³, Nikolay Ratakhin³, Gennady Mesyats¹*

¹ P.N. Lebedev Physical Institute RAS, Moscow, Russia

² Institute of Electrophysics UB RAS, Yekaterinburg, Russia

³ Institute of High Current Electronics SB RAS, Tomsk, Russia

12:55 **Estimation of a Vacuum Gap Breakdown Voltage**
– **by Considering Cathode Field Emission Properties**

13:15 S4-O-023201-Y

*Yuriy Mamontov¹, Sergei Barengolts^{2,3}, Igor Uimanov¹,
Yury Zemskov¹*

¹ Institute of Electrophysics UB RAS, Yekaterinburg, Russia

² A.M. Prokhorov General Physics Institute RAS, Moscow, Russia

³ P.N. Lebedev Physical Institute RAS, Moscow, Russia

13:15 **All-solid-state I Pulse Power Generator Using**
– **Inductive Energy Storage Method for Plasma**
13:35 **Discharge**

S4-O-037301-Y

Yu Feng¹, Cheng Zhang¹, Tao Shao^{1,2}

¹ Institute of Electrical Engineering CAS, Beijing, China

² University of Chinese Academy of Sciences, Beijing, China

13:35 **Energy Balance in a Different-mode Pulsed**
– **Plasma Accelerator**

13:55 S4-O-028601-Y

Denis Egoshin, Yuri Grishin, Victor Telekh

Bauman Moscow State Technical University, Moscow, Russia

13:55 **Nanosecond Pulse Generator Based on a Linear
Transformer and a Double Forming Line**

–
14:15 S4-O-025201

*Andrey Bukharkin, Mikhail Zhuravlev, Grigory Kurapov,
Sergey Martemyanov, Predrag Glumac, Gennady Remnev
National Research Tomsk Polytechnic University, Tomsk, Russia*

14:15 **Lunch**

–
15:30

S4 – Pulsed power technology and applications

2nd Oral Session

Large Conference Hall in IHCE

Invited **Interlayer Energy Dynamics and Vortex Structure
of Solitons in Multi-gigawatt Magnetic
Compression Lines**

15:30
–
16:00 S4-P-004001-Y

*Vitaly Patravkov, Maxim Pedos, Sergei Rukin,
Sergei Timoshenkov
Institute of Electrophysics UB RAS, Yekaterinburg, Russia*

16:00 **Dynamics of High-frequency Pulsed Discharge
Formation in Air at Atmospheric Pressure**

–
16:20 S4-O-041401-Y

*Artem Belev, Nikolay Sharapov
Bauman Moscow State Technical University, Moscow, Russia*

- 16:20 **Obtaining Monel Alloy Micron-sized Metal**
 – **Particles by Electric Explosion of a Wire**
 16:40 S4-O-015701
Aleksei Pustovalov, Kirill Akimov, Alexander Pervikov
Institute of Strength Physics and Materials Science SB RAS, Tomsk, Russia
- 16:40 **Phase Transitions and Formation of**
 – **Nanocomposite Based High-entropy Oxide and**
 17:00 **Noble Metals Alloy Under Conditions of Joint**
Exploding Wires
 S4-O-014501
Alexander Pervikov
Institute of Strength Physics and Materials Science SB RAS, Tomsk, Russia
- 17:00 **Use of a Luce Diode for Radioactivation Analysis**
 – **of Light Elements**
 17:20 S4-O-030901
Vladislav Ryzhkov, Predrag Glumac
National Research Tomsk Polytechnic University, Tomsk, Russia
- 17:20 **Stem Cell Response to Nanosecond Microwave**
 – **Pulses**
 17:40 S4-O-001601
Liubov Zharkova¹, Anna Samoylova¹, Alena Gostyukhina²,
 Oleg Kutenkov¹, Vladislav Rostov¹
¹ *Institute of High Current Electronics SB RAS, Tomsk, Russia*
² *Federal Scientific and Clinical Center of Medical Rehabilitation and Balneology, Tomsk, Russia, Tomsk, Russia*

17:40 **Entropy Analysis of Burn Wound Regeneration**
– **After Nanosecond Microwave Pulse Exposure**

18:00 S4-O-006301

*Anna Samoylova, Loubov Zharkova, Alena Gostyukhina,
Oleg Kutenkov, Vladislav Rostov*

Institute of High Current Electronics SB RAS, Tomsk, Russia

September 18 | Friday

S4 – Pulsed power technology and applications **3rd Oral Session**

Large Conference Hall in IHCE

Invited **A New Concept: Dual-switch Pulse Slicing**

09:00 S4-O-012701

– *Junfeng Rao*

09:30 *Suzhou Institute of Biomedical Engineering and Technology, Chinese Academy of Sciences, Suzhou, China*

09:30 **Pulse Modulators for SKIF Booster Ring Kicker**
– **Magnets Power Supply**

09:50 S4-O-032101

Aleksandr Akimov^{1,2}, *Valentin Akimov*¹, *Peter Bak*¹,
*Arkadii Spesiftzev*¹, *Oleg Anchugov*¹, *Dmitry Shvedov*¹

¹ *Budker Institute of Nuclear Physics SB RAS, Novosibirsk, Russia*

² *Novosibirsk State University, Novosibirsk, Russia*

09:50 **Investigation of a Power Silicon Thyristor**
– **Switched by a Shock Ionization Wave**

10:10 S4-O-011101

Sergey Tsyranov, *Sergey Rukin*, *Sergey Lyubutin*,
Boris Slovikovsky

Institute of Electrophysics UB RAS, Yekaterinburg, Russia

- 10:10 **Control and Data Acquisition System for the**
 – **Operation of Quasi-stationary High-current**
 10:30 **Plasma Accelerator in Pulse-periodic Mode**
 S4-O-013301-Y
Anton Mamonov, Konstantin Gutorov, Valentin Chernyshev,
Maxim Krapivin, Vyacheslav Podkovyrov
State Research Center of Russian Federation Troitsk Institute for
Innovation and Fusion Research, Moscow, Russia
- 10:30 **Field-effect Plasma Switch**
 – S4-O-024401
 10:50 *Pavel Gugin, Bokhan Petr, Dmitry Zakrevsky,*
Maxim Lavrukhin, Gleb Shevchenko
A.V. Rzhannov Institute of Semiconductor Physics SB RAS,
Novosibirsk, Russia
- 10:50 **Influence of Gas Mixture Composition on the**
 – **Switching Characteristics of a Multi-channel Gas**
 11:10 **Spark Gap**
 S4-O-025301
Grigory Kurapov, Sergey Martemyanov, Mikhail Zhuravlev,
Andrey Bukharkin, Gennady Remnev
National Research Tomsk Polytechnic University, Tomsk, Russia
- 11:10 **Coffee Break**
 –
 11:40

Oral Sessions of the

18th International Conference on Modification of Materials with Particle Beams and Plasma Flows (CMM)



Conference Topics:

- *C1 – Beam and plasma sources*
- *C2 – Fundamentals of modification processes*
- *C3 – Modification of material properties*
- *C4 – Coatings deposition*
- *C5 – Nanoscience and nanotechnology*
- *C6 – Synchrotron and neutron research in materials science*

September 14 | Monday

C4 – Coatings deposition

1st Oral Session

Large Conference Hall in the Rubin

CMM

- Invited **Structure and Properties of Coatings Based on Ti and Zr Diboride**
11:45 – C4-O-008501
12:15 *Sergey Fedorov, Mars Migranov, Anton Fedorov, Artem Mitrofanov, Sergey Grigoriev*
Moscow State University of Technology STANKIN, Moscow, Russia
- 12:15 **Behavior of Cr₂AC Max-phase Coatings on SiC Substrates Under Hydrothermal and High-temperature Conditions**
–
12:35 C4-O-008901-Y
Elena Chubieva, Pavel Dzhumaev, Egor Korenevsky
National Research Nuclear University MEPhI, Moscow, Russia
- 12:35 **Sputtering Facility for Depositing Multilayer Structures on Long Substrates**
–
12:55 C4-O-005201
Aleksandr Ivanov, Dmitry Karpov, Ivan Lazarenko
JSC "D.V.Efremov Institute of Electrophysical Apparatus", Saint Petersburg, Russia

- 12:55 **Mechanical and Tribological Properties of**
 – **Multilayer Cr-Al-N/Ti-B-N Coatings Obtained by**
 13:15 **Dual Magnetron Sputtering**

C4-O-023401

Andrey Solovyev, Elizaveta Kraynova,
Alexander Grenadyorov, Alexander Zakharov,
Konstantin Oskomov

Institute of High Current Electronics SB RAS, Tomsk, Russia

- 13:15 **Production of Y-Al-O Ceramics by Solid-phase**
 – **Synthesis**

- 13:35 C4-O-005801-Y

Aleksandr Nikitin, Almaz Nazarov

Ufa University of Science and Technology, Ufa, Russia

- 13:35 **Boron Carbide Coatings by DC Magnetron with**
 – **Boron and Boron Carbide Targets**

- 13:55 C4-O-014601-Y

Vadim Gridilev, Alexey Nikolaev, Efim Oks,
Georgy Yushkov

Institute of High Current Electronics SB RAS, Tomsk, Russia

- 13:55 **Lunch**

- 15:30

C4 – Coatings deposition

2nd Oral Session

Large Conference Hall in the Rubin

- Invited **Thickness Non-uniformity of the YSZ Coatings
Deposited from Fore-vacuum Beam Plasma on
the Curved Objects**
- 15:30
–
16:00 C4-O-002901-Y
*Denis Zolotukhin, Hamidou Benjamin, Artem Andronov,
Andrey Tyunkov, Yury Yushkov*
*Tomsk State University of Control Systems and Radioelectronics,
Tomsk, Russia*
- 16:00 **Study of the Influence of Vacuum Arc
Deposition Parameters on the Properties of
TiAlCrN Coatings**
- 16:20 C4-O-018801-Y
Angela Tulina, Almaz Nazarov, Kamil Ramazanov
Ufa University of Science and Technology, Ufa, Russia
- 16:20 **Magnetron Deposited Titanium Nitride Coatings
for Cathodes of Temporary Pacemaker
Electrodes**
- 16:40 C4-O-029601-Y
*Yuliya Rukina¹, Oleg Obrezkov¹, Yuri Martynenko^{1,2},
Sergey Shevchuk¹*
¹ National Research Center "Kurchatov Institute", Moscow, Russia
² National Research Nuclear University MEPhI, Moscow, Russia

- 16:40 **Effect of Deposition Parameters on Mechanical and Tribological Properties of Ti-B-C Coatings Deposited by Dual Magnetron Sputtering**

C4-O-021201-Y

Elisaveta Kraynova, Alexander Grenadyorov, Alexander Zakharov, Andrey Leonov, Konstantin Oskomov, Andrey Solovye

Institute of High Current Electronics SB RAS, Tomsk, Russia

- 17:00 **Modification of the Structural and Electrophysical Properties of CVD Graphene by Magnetron Sputtering**

C4-O-020901-Y

Timur Gareev¹, Oleg Zaitsev^{1,2}, Dmitry Sorokin¹, Dmitry Smovzh¹

¹ *Kutateladze Institute of Thermophysics SB RAS, Novosibirsk, Russia*

² *Novosibirsk State University, Novosibirsk, Russia*

- 17:20 **Physico-mechanical Properties of Ti-doped a-C:H:SiO_x Coatings on Titanium Nickelide for Biomedical Applications**

C4-O-030501-Y

Tomiris Dzhambulova¹, Nikita Madzhara¹, Aleksander Grenadyorov¹, Dmitry Sirota², Maksim Zhulkov²

¹ *Institute of High Current Electronics SB RAS, Tomsk, Russia*

² *Meshalkin National Medical Research Center of Ministry of Health, Novosibirsk, Russia*

September 15 | Tuesday

C4 – Coatings deposition

3rd Oral Session

Large Conference Hall in the Rubin

CMM

Invited **Synthesis of TiON Coatings by Reactive Anodic
Evaporation of Titanium in Hollow Cathode Arc
Discharge**

11:45

–

12:15

C4-O-018501

Andrey Menshakov¹, Yulia Menshakova¹, Efrem Makarov¹,
Polina Skorynina²

¹ Institute of Electrophysics UB RAS, Yekaterinburg, Russia

² Institute of Engineering Science UB RAS, Yekaterinburg, Russia

12:15 **Influence of Ion Bombardment on Growth of Al
Films, Prepared by Magnetron Sputtering**

–

12:35

C4-O-020801-Y

Oleg Zaitsev, Timur Gareev, Evgeniy Baranov,
Dmitriy Smovzh

Kutateladze Institute of Thermophysics SB RAS, Novosibirsk,
Russia

- 12:35 **Properties of W Films Co-deposited in H₂/He**
– **and H₂/He/Ar Mixtures Using Various**
12:55 **Magnetron Discharge Modes**
C4-O-036301-Y
Gleb Lomonosov¹, Andrey Kaziev¹, Dobrynya Kolodko^{1,2}, Vladimir Sidorov¹, Maxim Kharkov¹, Alexander Tumarkin¹
¹ National Research Nuclear University MEPhI, Moscow, Russia
² Fryazino Branch of Kotelnikov Institute of Radio Engineering and Electronics RAS, Fryazino, Russia
- 12:55 **Study of the Biocompatibility of Plasma-**
– **polymerized SiOCH Coatings Deposited Via**
13:15 **Glow Discharge Plasma in an Ar/HMDSO/O₂**
Mixture
C4-O-006601-Y
Daniil Zuza¹, Alexander Gorbunov², Igor Khlusov³
¹ Institute of High Current Electronics SB RAS, Tomsk, Russia
² National Research Tomsk State University, Tomsk, Russia
³ Laboratory of Cellular and Microfluidic Technologies, Siberian State Medical University, Tomsk, Russia
- 13:15 **Structuring the TiN Surface to Improve**
– **Tribological Characteristics**
13:35 C4-O-040201
Marina Gazizova¹, Nikita Smirnov², Sergey Kudryashov², Vladimir Shugurov³, Yuriy Akhmadeev³, Olga Klimova-Korsmik¹, Marat Gazizov¹
¹ Saint Petersburg State Marine Technical University, Saint Petersburg, Russia
² Lebedev Physical Institute of Russian Academy of Sciences, Moscow, Russia
³ Institute of High Current Electronics SB RAS, Tomsk, Russia

- 13:35 **Influence of the Bias Potential on the Mechanical Properties and Corrosion Resistance of Titanium Nickelide Modified with Hydrocarbon Coatings**
-
- 13:55

C4-O-042301-Y

Evgenia Ivanova¹, Nikita Madzhara¹,
Aleksandr Grenadyorov¹, Konstantin Oskomov¹,
Andrey Solovyev¹, Olga Korneva²

¹ Institute of High Current Electronics SB RAS, Tomsk, Russia

² National Research Tomsk Polytechnic University, Tomsk, Russia

- 13:55 **Lunch**
-
- 15:30

C3 – Modification of material properties

1st Oral Session

Large Conference Hall in the Rubin

- Invited **Modification of the Surface Layers of Magnesium Alloys Under the Action of a High-power Ion Beam of Nanosecond Duration for the Creation of Biodegradable Implants**
- 15:30
-
- 16:00

C3-O-036701

Vladimir Kovivchak, Tatyana Panova, Alexey Belozarov,
Alexander Viterishpan

Dostoevsky Omsk State University, Omsk, Russia

- 16:00 **The Influence of Chromium Coating on the**
 – **Resistance of Zirconium E110 Alloy to the**
 16:20 **Complex Effects of Hydrogen, Irradiation and**
 High-temperature Oxidation
 C3-O-001001-Y
 Mark Kruglyakov, Viktor Kudiiarov, Roman Laptev
 National Research Tomsk Polytechnic University, Tomsk, Russia
- 16:20 **Creation of Composites Based on β -C₃N₄/g-C₃N₄**
 – **by Pulsed Underwater Plasma**
 16:40 C3-O-025001
 Anna Khlyustova¹, Valeria Aisina¹, Andrey Larionov¹,
 Nikolay Sirotkin¹, Alexander Baranchikov²,
 Alrxander Agafonov¹
 ¹ G. A. Krestov Institute of Solution Chemistry of RAS, Ivanovo,
 Russia
 ² Kurnakov Institute of General and Inorganic Chemistry, Moscow,
 Russia
- 16:40 **The Influence of Technological Parameters of**
 – **Ion-plasma Nitriding on the Structural-phase**
 17:00 **State and Properties of the Modified Layer of**
 Cr12MoV Die Steel
 C3-O-003601-Y
 Andrey Leonov, Julia Denisova, Vladimir Denisov,
 Evgeny Ostroverkhov, Vasily Tishchenko, Mikhail Savchuk
 Institute of High Current Electronics SB RAS, Tomsk, Russia

17:00 **Plasma as a Tool for Creating Multifunctional Materials**

–
17:20 C3-O-025901-Y

Valeriia Aisina¹, Anna Khlustova¹, Nikolay Sirotkin¹,
Andrey Larionov^{1,2}, Alexander Agafonov¹

¹ G.A. Krestov Institute of Solution Chemistry RAS, Ivanovo, Russia

² Ivanovo State University of Chemistry and Technology, Ivanovo, Russia

17:20 **Modification of Surface Structure and Technological Properties of Natural Spodumene by Low-temperature Dielectric Barrier Discharge Plasma**

–
17:40

C3-O-009901

Igor Bunin, Irina Khabarova

N.V.Melnikov's Institute of Comprehensive Exploitation of Mineral Resources Russian Academy of Sciences, Moscow, Russia

C6 – Synchrotron and neutron research in materials science

1st Oral Session

Meeting room in IHCE

Invited **In Situ Synchrotron X-ray Diffraction Studies of Gas-metal Plasma Coating Synthesis and Evolution**

11:45
–

12:15 C6-O-034101

Alexander Shmakov¹, Nikolay Koval², Nikolay Ratakhin²,
Anton Teresov², Maxim Syrtanov³, Stepan Korneev³,
Gleb Dovzhenko¹

¹ Synchrotron Radiation Facility 'SKIF', Novosibirsk, Russia

² Institute of High Current Electronics SB RAS, Tomsk, Russia

³ National Research Tomsk Polytechnic University, Tomsk, Russia

12:15 **Instrumentation Modules Based on the VEIPS**
 – **Vacuum Electron-ion-plasma Stand for the**
 12:35 **Beamlines of SRF SKIF**

C6-O-033001

Vladimir Denisov¹, Alexandr Shmakov^{2,3}, Nikolay Koval¹,
 Michael Savchuk¹, Sergey Kovalsky¹,
 Evgeny Ostroverkhov¹, Konstantin Beskonchin¹,
 Danil Ignatov¹, Yakovlev Vladislav¹, Artem Egorov¹,
 Anton Teresov¹, Yulia Denisova¹, Andrey Leonov¹,
 Alexandr Nazarov¹, Andrey Solovyov¹, Anton Shneider¹,
 Evgeny Yakovlev¹, Efim Oks^{1,4}, Yury Yushkov⁴

¹ Institute of High Current Electronics SB RAS, Tomsk, Russia

² Budker Institute of Nuclear Physics SB RAS, Novosibirsk, Russia

³ Borekov Institute of Catalysis, Novosibirsk, Russia

⁴ Tomsk State University of Control Systems and Radioelectronics,
 Tomsk, Russia

12:35 **Conceptual Design of a Macromolecular**
 – **Crystallography-specialized Beamline of SRF**
 12:55 **SKIF**

C6-O-044301

Sergey Arkhipov¹, Zakhar Vinokurov¹, Alexander Selyutin¹,
 Valentin Borshchevskiy², Alexander Popov²,
 Anatoly Snigirev³

¹ Synchrotron Radiation Facility 'SKIF', Novosibirsk, Russia

² Moscow Institute of Physics and Technology, Moscow, Russia

³ Immanuel Kant Baltic Federal University, Kaliningrad, Russia

12:55 **Software Environment for Supporting Single-crystal X-ray Diffraction Experiments**

–

13:15 C6-O-044501-Y

Dmitrii Ulybin, Tatyana Nikolaeva, Ruslan Khalilov, Vladislav Komarov, Sergey Arkhipov

Synchrotron Radiation Facility 'SKIF', Novosibirsk, Russia

13:15 **Control System and Control Algorithms for Monocrystal Diffraction Diffractometer Units of Station 1-2 "Structural Diagnostics" SRF SKIF**

13:35

C6-O-043701

Vladislav Yakovlev¹, Vladimir Denisov¹, Mikhail Andreev¹, Sergey Kovalskiy¹, Artyom Egorov¹, Konstantin Beskonchin¹, Zakhar Vinokurov², Sergey Arkhipov², Denis Mishchenko², Alexander Selyutin², Georgiy Fatkin³

¹ *Institute of High Current Electronics SB RAS, Tomsk, Russia*

² *Boreskov Institute of Catalysis, Novosibirsk, Russia*

³ *Buro-F, LLC, Novosibirsk, Russia*

13:55 **Lunch**

–

15:30

C6 – Synchrotron and neutron research in materials science

2nd Oral Session

Meeting room in IHCE

Invited **Engineering Materials Science Beamline at SRF SKIF**

15:30

–

16:00

C6-O-044101-Y

Gleb Dovzhenko^{1,2}, Ivan Bataev^{1,2}, Kemal Emurlaev^{1,2}, Igor Nasennik^{1,2}, Natalia Aleksandrova^{1,2}, Alexander Yurgin^{1,2}, Dmitry Zverev³, Anatoly Snigirev³, Olga Klimova-Korsmik⁴

¹ Synchrotron Radiation Facility 'SKIF', Novosibirsk, Russia

² Novosibirsk State Technical University, Novosibirsk, Russia

³ Immanuel Kant Baltic Federal University, Kaliningrad, Russia

⁴ State Marine Technical University, St. Petersburg, Russia

16:00

–

16:20

Conceptual Design of the Second-stage Station of the SRF SKIF: Small-angle X-ray Scattering

C6-O-044601

Yurii Larichev^{1,2}, Alexander Selyutin^{1,2}, Sergey Arkhipov², Yan Zubavichus²

¹ Borekov Institute of Catalysis, Novosibirsk, Russia

² SRF «SKIF» of Borekov Institute of Catalysis, Koltsovo, Russia

16:20

–

16:40

In Situ Diffraction Studies of Structural and Functional Materials Using Synchrotron Radiation from the VEPP-3 Storage Ring

C6-O-033901

Maxim Syrtanov^{1,2}, Vladimirov Denisov², Anton Teresov², Egor Kashkarov¹, Viktor Kudiarov¹, Dmitriy Krotkevich¹, Kristina Kamelina¹

¹ National Research Tomsk Polytechnic University, Tomsk, Russia

² Institute of High Current Electronics SB RAS, Tomsk, Russia

16:40 **Magnetism of Ferromagnetic-superconducting**
 – **Layered Heterostructures: from**
 17:00 **Nanocomposites to Fibonacci Quasicrystals**

C6-O-037201-Y

*Vladimir Zhaketov^{1,2,3}, Zaky A. Zaky^{2,4}, Dmitriy Tatarskiy⁵,
 Evgeny Kolupaev², Roman Sadradze⁶*

¹ Moscow Institute of Physics and Technology (National Research University), Dolgoprudny, Russia

² Joint Institute for Nuclear Research, Dubna, Russia

³ HSE University, Moscow, Russia

⁴ Beni-Suef University, Beni-Suef, Egypt

⁵ Lobachevsky University, Nizhny Novgorod, Russia

⁶ Dubna State University, Dubna, Russia

17:00 **Nine-channel Scintillation Spectrometer for**
 – **High-resolution Diffractometer of Station 1-2**
 17:20 **Structural Diagnostics Synchrotron Radiation**
 Facility SKIF

C6-O-043101-Y

*Viacheslav Eruntsov, Aleksey Gogolev, Nikolay Filatov,
 Sergey Chistyakov, Nikita Alekseev, Egor Smolyanskiy
 National Research Tomsk Polytechnic University, Tomsk, Russia*

17:20 **Development of a Sector Microstrip Detector**
 – **Based on Hr GaAs:Cr for the 1-2 "structural**
 17:40 **Diagnostics" Beamline at the SRF "SKIF"**

C6-O-043801

*Kovalsky Sergey, Victor Khristenko, Konstantin
 Beskonchin, Dmitry Kokin, Anton Teresov,
 Vladimir Denisov*

Institute of High Current Electronics SB RAS, Tomsk, Russia

September 16 | Wednesday

C3 – Modification of material properties 2nd Oral Session

Large Conference Hall in the Rubin

CMM

Invited **Continuous Electron Beam Treatment of 3D
Fabricated TiC/CP-Ti and TiC/Ti 6Al-4V
Composites**

11:45

–

12:15

C3-O-023801

*Alexey Panin, Tatyana Lobova, Marina Kazachenok,
Sergey Martynov*

*Institute of Strength Physics and Materials Sciences of Siberian
Branch of Russian Academy of Sciences, Tomsk, Russia*

12:15 **Modification of YSZ Ceramics Surface
Properties by Electron Beam Sintering in
Forevacuum**

–

12:35

C3-O-016402

*Aleksandr Klimov¹, Ilya Bakeev¹, Anna Dolgova¹,
Efim Oks^{1,2}, Aleksey Zenin¹*

*¹ Tomsk State University of Control Systems and Radioelectronics,
Tomsk, Russia*

² Institute of High Current Electronics SB RAS, Tomsk, Russia

- 12:35 **Influence of Electron Beam Treatment on**
 – **Structure and Properties of "ZrO₂*3%Y₂O₃**
 12:55 **(substrate) , Al (coating)" System**

C3-O-032801-Y

Dmitry Shpanov^{1,2}, Pavel Moskvina¹, Elizaveta Petrikova¹,
 Oleg Tolkachev², Yuri Ivanov¹, Maxim Vorobyov^{1,2}

¹ Institute of High Current Electronics SB RAS, Tomsk, Russia

² National Research Tomsk Polytechnic University, Tomsk, Russia

- 12:55 **Plasma Modification of Polytetrafluoroethylene**
 – **as a Method of Surface Activation for the**
 13:15 **Attachment of Bioactive Molecules**

C3-O-029801-Y

Alena Korzhova¹, Olesya Laput¹, Yurii Akhmadev²,
 Daniil Zuza², Vitaly Nekhoroshev², Irina Kurzina¹

¹ National Research Tomsk State University, Tomsk, Russia

² Institute of High Current Electronics SB RAS, Tomsk, Russia

- 13:15 **Electron-beam Deposition of Hydroxyapatite on**
 – **3D Polycaprolactone Scaffolds**

13:35 C3-O-038301-Y

Ulyana Khomutova^{1,2}, Olesya Laput¹, Andrey Kazakov³,
 Irina Kurzina¹

¹ National Research Tomsk State University, Tomsk, Russia

² Institute of High Current Electronics SB RAS, Tomsk, Russia

³ Tomsk State University of Control Systems and Radioelectronics,
 Tomsk, Russia

13:35 **Effect of High-intense Pulsed Ion Beam**
 – **Irradiation on the Structure and Properties of**
 13:55 **High-entropy Alloys**

C3-O-043201

Vladislav Tarbokov¹, Sergey Pavlov¹, Sergey Zenkin²,
 Gennady Remnev¹, Peng Zhang³, Feng Jiang³, Xianxiu Mei³

¹ National Research Tomsk Polytechnic University, Tomsk, Russia

² National Research Tomsk State University, Tomsk, Russia

³ Dalian University of Technology, Dalian, China

13:55 **Lunch**

–

15:30

C6 – Synchrotron and neutron research in materials science

3rd Oral Session

Meeting room in IHCE

Invited **Status of the Creation of Beamlines 1-2**
 11:45 **"Structural Diagnostics" and 1-4 "XAFS**
 – **Spectroscopy and Magnetic Dichroism" of SRF**
 12:15 **SKIF**

C6-O-030602

Anton Teresov¹, Vladimir Denisov¹, Sergey Kovalskiy¹,
 Konstantin Beskonchin¹, Zahar Vinokurov²,
 Andrey Saraev², Yan Zubavichus², Yuriy Panchenko¹,
 Mikhail Andreev¹

¹ Institute of High Current Electronics SB RAS, Tomsk, Russia

² Synchrotron Radiation Facility 'SKIF', Novosibirsk, Russia

12:15 **X-ray Optical Elements of the Experimental**
 – **Beamline 1-2 of the SRF SKIF with Precise**
 12:35 **Positioning Systems**

C6-O-043601

Konstantin Beskonchin

Institute of High Current Electronics SB RAS, Tomsk, Russia

12:35 **Station Control System 1-4 XAFS Spectroscopy**
 – **and Magnetic Dichroism of the SKIF Collective**
 12:55 **Use Center**

C6-O-008102

Mikhail Andreev¹, Vladimir Kisilev¹, Yuri Panchenko¹,
 Alexander Erfort¹, Vladimir Artamonov¹, Leonid Najlovec¹,
 Vladislav Yakovlev¹, Andrei Saraev², Sergey Kovalsky¹,
 George Fatkin^{3,4}, Konstantin Beskonchin¹,
 Vladimir Denisov¹, Alexander Senchenko³, Fedor Sannikov³

¹ *Institute of High Current Electronics SB RAS, Tomsk, Russia*

² *Borisev Institute of Catalysis, Novosibirsk, Russia*

³ *Buro-F, Novosibirsk, Russia*

⁴ *Novosibirsk State University, Novosibirsk, Russia*

12:55 **X-ray Diffraction Study of Potential Fusion**
 – **Reactor Ceramics**

13:15 C6-P-038501-Y

Ilya Balash^{1,2,3}, Sergei Kazantsev^{1,2,3},
 Alexander Shmakov^{1,2}, Dmitriy Cherepanov^{2,3,4,5},
 Alexei Seregin⁶

¹ *Synchrotron Radiation Facility 'SKIF', Novosibirsk, Russia*

² *Budker Institute of Nuclear Physics SB RAS, Novosibirsk, Russia*

³ *Institute of Solid State Chemistry and Mechanochemistry SB
 RAS, Novosibirsk, Russia*

⁴ *Novosibirsk State University, Novosibirsk, Russia*

⁵ *Patrice Lumumba Peoples' Friendship University of Russia,
 Moscow, Russia*

⁶ *National Research Center "Kurchatov Institute", Moscow, Russia*

13:15 **Optical Layout and Parameters of the "surface"**
 – **Beamline**

13:35 C6-P-033902

*Maxim Syrtanov^{1,2}, Alexander Shmakov^{3,4}, Nikolay Koval²,
Vladimir Denisov², Stepan Korneev^{2,1}, Anton Teresov²,
Gleb Dovzhenko³*

¹ *National Research Tomsk Polytechnic University, Tomsk, Russia*

² *Institute of High Current Electronics SB RAS, Tomsk, Russia*

³ *Synchrotron Radiation Facility 'SKIF', Novosibirsk, Russia*

⁴ *Budker Institute of Nuclear Physics SB RAS, Novosibirsk, Russia*

13:35 **Lunch**

 –

15:30

September 17 | Thursday

C1 – Beam and plasma sources

1st Oral Session

Large Conference Hall in the Rubin

CMM

- Invited **Investigation of Compression and Heat Processes in Multilayer Targets Under the Influence of Laser and Wide-band Radiation**
- 11:45 –
- 12:15 C1-O-000501
- Sergei Ryzhkov, Victor Kuzenov*
Bauman Moscow State Technical University, Moscow, Russia
-
- 12:15 **Generation and Focusing of an Electron Beam by a Forevacuum Plasma Source with a Multichannel Emission Electrode**
-
- 12:35 C1-O-002102-Y
- Ilya Bakeev*
Tomsk State University of Control Systems and Radioelectronics, Tomsk, Russia
-
- 12:35 **Hybrid-type Beam-plasma Systems: Plasma Volume Control and Application for Organic Materials Processing**
-
- 12:55 C1-O-006901
- Tatiana Vasilieva¹, Michael Vasiliev²*
¹ *Moscow Institute of Physics and Technology, Dolgoprudnyy, Russia*
² *Joint Institute for High Temperatures RAS, Moscow, Russia*

12:55 **Probe Measurements of Arc-enhanced Glow**
 – **Discharge Assisted Magnetron Sputtering**
 13:15 **System**

C1-O-014401-Y

*Anton Fedorov, Sergey Fedorov, Marina Volosova,
Sergey Grigoriev*

Moscow State University of Technology STANKIN, Moscow, Russia

13:15 **Application of a Discharge with a Plasma**
 – **Cathode and Oscillating Electrons in a Source of**
 13:35 **Ion Beams of Light Gases**

C1-O-007201

Daniil Emlin, Nikolay Gavrilov

Institute of Electrophysics UB RAS, Yekaterinburg, Russia

13:35 **Time Dependence of the Energy Spectra of the**
 – **Vacuum Arc Plasma Flow**

13:55 C1-O-023601

Ilya Muzyukin, Pavel Mikhailov

Institute of Electrophysics UB RAS, Yekaterinburg, Russia

13:55 **Lunch**

–
 15:30

C1 – Beam and plasma sources

2nd Oral Session

Large Conference Hall in the Rubin

- Invited **High-frequency and Bimodal Atmospheric-pressure Plasma Jet**
15:30 – C1-O-047001
16:00 Irina Schweigert¹, Pavel Gugin^{1,2}, Dmitry Zakrevsky^{1,2},
Gleb Shevchenko^{1,2}
¹ Khristianovich Institute of Theoretical and Applied Mechanics SB
RAS, Novosibirsk, Russia
² A.V. Rzhanov Institute of Semiconductor Physics SB RAS,
Novosibirsk, Russia
- 16:00 **Investigation of Instabilities in Background Plasma of Mass-separator Using Four-channel Floating Probe**
– 16:20 C1-O-021601-Y
Marat Valinurov, Ravil Usmanov, Andrey Oiler,
Andrey Gavrikov
Joint Institute for High Temperatures RAS, Moscow, Russia
- 16:20 **Plasma Boundary Simulation in the Bernas-type Ion Source**
– 16:40 C1-O-023301-Y
Anton Ralnikov^{1,2}, Mihail Danilov¹, Nikita Mamedov^{1,2}
¹ Joint-Stock Company Research Institute of Precision Engineering
(JSC NIITM), Moscow, Russia
² National Research Nuclear University MEPhI, Moscow, Russia

16:40 **End-to-end Model of Ion Beam for TM-200T**
– **Implanter**

17:00 C1-O-027801-Y

*Mikhail Danilov¹, Anton Ralnikov^{1,2}, Nikita Mamedov^{1,2},
Evgeniy Tretyakov¹, Tatyana Devyataikina³,
Vadim Pavlyuchenko³*

¹ *Joint-Stock Company Research Institute of Precision Engineering (JSC NIITM), Moscow, Russia*

² *National Research Nuclear University MEPhI, Moscow, Russia*

³ *Budker Institute of Nuclear Physics SB RAS, Novosibirsk, Russia*

17:00 **Simulation and Design of a 30 kV Electron**
– **Source for Electron Beam Micro-welding**

17:20 C1-O-029401-Y

*Pavel Makukha^{1,2}, Tatyana Devyataikina^{1,2},
Alexander Anatolyevich^{1,2}*

¹ *Budker Institute of Nuclear Physics SB RAS, Novosibirsk, Russia*

² *Novosibirsk State University, Novosibirsk, Russia*

17:20 **Development of a Program for Calculations Gas-**
– **dynamic Parameters of Plasma Torches and**
17:40 **Ore-thermal Reactors**

C1-O-037401

Vladimir Andryushchenko, Dmitry Smovzh

*Kutateladze Institute of Thermophysics SB RAS, Novosibirsk,
Russia*

C5 – Nanoscience and nanotechnology

Small Hall in the Rubin

CMM

- Invited **Insights into Cu-based Catalysts Interface Properties: a Strategy to Improve Methanol Synthesis from Plasma-coupled CO₂ Hydrogenation**
11:45
–
12:15
C5-O-002401
Liguang Dou, Cheng Zhang, Tao Shao
Institute of Electrical Engineering, Chinese Academy of Sciences, Beijing, China
- 12:15 **Synthesis of Mixed Oxide Nanoparticles in Plasma Discharge Under Ultrasonic Treatment**
–
12:35
C5-O-011001
Nikolay Bulychev
Moscow Aviation Institute, Moscow, Russia
- 12:35 **Structure and Catalytic Activity of Electroexplosive Nanoparticles of Multicomponent Alloys in Pyrolysis of Hydrocarbons**
–
12:55
C5-O-015401
Alexander Pervikov^{1,2}, Yuri Bauman¹, Danil Shvtsov¹, Anton Popov¹, Yuri Shubin¹, Ilya Mishakov¹
¹ *Boreskov Institute of Catalysis, Novosibirsk, Russia*
² *Institute of Strength Physics and Materials Science SB RAS, Tomsk, Russia*

12:55 **Photocatalytic Activity of Fhy-SiO₂-Ag Nanocomposite**

–
13:15 C5-O-016001-Y

Andrey Gerasimov, Sergey Sokovnin

Institute of Electrophysics UB RAS, Yekaterinburg, Russia

13:15 **Formation of Nanoparticles as a Result of Electric Discharge in Water Using Silver and Titanium Electrodes**

–
13:35 C5-O-042801

Svetlana Makarova¹, Vadim Snetov¹, Dmitry Subbotin¹,
Ksenia Babich²

¹ *Institute for Electrophysics and Electric Power, Saint Petersburg, Russia*

² *Saint-Petersburg State Institute of Technology (Technical University), Saint Petersburg, Russia*

13:35 **Lunch**

–
15:30

C2 – Fundamentals of modification processes

Small Hall in the Rubin

Invited **Modification of the Composition of Surface
Layers of Thin Dielectric Films by a High-power
Ion Beam of Nanosecond Duration**

15:30

–

16:00

C2-O-036601

Vladimir Kovivchak^{1,2}, Sergei Nesov³, Alexsandr Kuklev^{1,2},
Oleg Dubovik³

¹ Omsk Scientific Center SB RAS, Omsk, Russia

² Dostoevsky Omsk State University, Omsk, Russia

³ Omsk State Technical University, Omsk, Russia

16:00

–

16:20

**Transportation of Arc-evaporated Material
Through a Quarter-torus Separator**

Vassily Grigoriev, Evgeniy Berlin, Sergey Turenko

Laboratory of Vacuum Technologies, LLC, Moscow, Russia

16:20

–

16:40

**Investigation of Tungsten Erosion at the Linear
Plasma Device BPD-PSI**

Nikita Sergeev

National Research Nuclear University MEPhI, Moscow, Russia

- 16:40 **Modeling of Gas Plasma of Non-self-sustained**
– **Glow Discharge in a Hollow Cylindrical Cathode**
17:00 **with Two Electron Sources in Ar/N₂ Mixture**

C2-O-020701-Y

*Daniil Zaytsev, Tamara Koval, Vladimir Denisov,
Evgeniy Ostroverkhov, Sergey Kovalsky
Institute of High Current Electronics SB RAS, Tomsk, Russia*

- 17:00 **Changes in the Substance of Stone Meteorites**
– **Under the Impact of Air Plasma**

17:20 C2-P-035201-Y

*Aleksandr Popov, Anatoly Kokorin, Nikita Smirnov,
Eugenia Petrova, Victor Grokhovsky
Ural Federal University, Yekaterinburg, Russia*

September 18 | Friday

C1 – Beam and plasma sources

3rd Oral Session

Large Conference Hall in the Rubin

CMIM

Invited **Conditions for Diffuse Mode in Vacuum Arc Discharge on Thermionic and Non-thermionic Cathodes**

09:00

–

09:30

C1-O-020501-Y

Mikhail Paramonov, Anton Melnikov, Artemii Belostotskii, Ravil Usmanov, Andrey Gavrikov

Joint Institute for High Temperatures RAS, Moscow, Russia

09:30

–

09:50

Gasless Magnetron Plasma Parameters in DC and Hybrid Modes.

C1-O-038401

Maxim Shandrikov, Dmitry Beloplotov, Alexander Cherkasov, Efim Oks, Alexander Zaharov, Semyon Vagaytsev, Maxim Azhgikhin

Institute of High Current Electronics SB RAS, Tomsk, Russia

09:50

–

10:10

Investigation of a Two-cathode Spark Ion Source for a Vacuum Neutron Tube

C1-O-011401-Y

Luka Polyanskiy, Aleksei Uzvolok, Artem Chergintsev, Segrei Sarapulov, Yuriy Mikhailov

Dukhov Automatics Research Institute, ROSATOM, Moscow, Russia

10:10 **Operating Features and Emission Characteristics**
 – **of the Planar Magnetron Discharge in a Pulsed**
 10:30 **Forevacuum Plasma Electron Source**

C1-O-004401

Andrey Kazakov¹, Valery Arkatov¹, Efim Oks^{1,2}

¹ Tomsk State University of Control Systems and Radioelectronics,
 Tomsk, Russia

² Institute of High Current Electronics SB RAS, Tomsk, Russia

10:30 **Design Features of a Charged Particle Flux**
 – **Analyzer Based on a Wien Filter for an**
 10:50 **Electrodeless Plasma Thruster**

C1-O-015601-Y

Aleksandra Aksenova¹, Dobrynya Kolodko^{2,1},
 Maksim Kharkov¹, Andrey Kaziev¹, Aleksander Tumarkin¹

¹ National Research Nuclear University MEPhI, Moscow, Russia

² Fryazino Branch of Kotelnikov Institute of Radio Engineering and
 Electronics RAS, Fryazino, Russia

10:50 **The Influence of Electron Injection Through a**
 – **Cylindrical Grid on the Parameters of Plasma**
 11:10 **Generated by a Non-self-sustaining Glow**
Discharge Inside an Elongated Hollow Cathode

C1-O-033701

Danil Ignatov, Vladimir Denisov, Sergey Kovalsky

Institute of High Current Electronics SB RAS, Tomsk, Russia

11:10 **Coffee Break**
 –

11:40

C1 – Beam and plasma sources

4th Oral Session

Large Conference Hall in the Rubin

Invited **On the Controllability of Self-oscillation
Parameters Induced by the Secondary-emission
Instability of a Plasmasurface Contact**
11:40 –
12:10 C1-O-018001
Ivan Sorokin
*Fryazino Branch of Kotelnikov Institute of Radio Engineering and
Electronics RAS, Fryazino, Russia*

12:10 **Study of the Ion Current of an Ion Source of a
Vacuum Neutron Tube**
–
12:30 C1-O-026701-Y
Sergey Shmelev, Vladimir Ermakov, Ali Dulatov,
Sergey Maslennikov
Dukhov Automatics Research Institute, ROSATOM, Moscow, Russia

12:30 **Numerical Determination of Integral
Characteristics of Plasma Torches Taking into
Account the Influence of the Working Gas**
–
12:50 C1-O-037601-Y
Pavel Kovalenko, Lev Kvasnikov, Andrey Orlov,
Vladimir Andryushchenko, Dmitry Smovzh
*Kutateladze Institute of Thermophysics SB RAS, Novosibirsk,
Russia*

12:50 **Dynamics of Zinc Nanoparticle Formation in an
Atmospheric Pressure Glow Discharge**

13:10 C1-O-005401

*Konstantin Savkin, Dmitry Beloplotov, Alexey Nikolaev,
Valeria Frolova, Vadim Gridilev*

Institute of High Current Electronics SB RAS, Tomsk, Russia

13:10 **Regularities in the Generation of Volumetrically
Uniform Gas-metal Beam-plasma Formations**

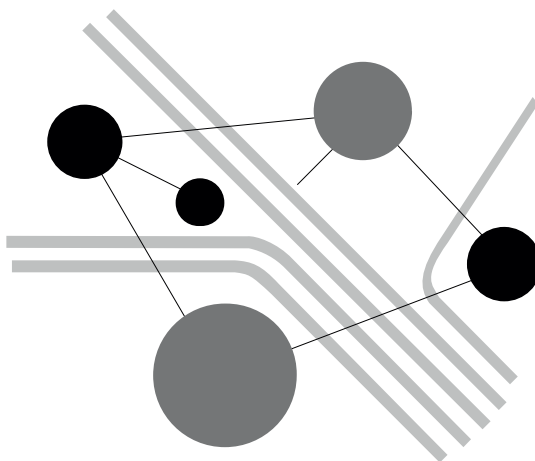
13:30 C1-O-024601-Y

*Mikhail Savchuk, Vladimir Denisov, Sergey Kovalsky,
Evgeniy Ostroverkhov, Artem Egorov, Danil Zaytsev*

Institute of High Current Electronics SB RAS, Tomsk, Russia

Oral Sessions of the

22nd International Conference on Radiation Physics and Chemistry of Condensed Matter (RPC)



Conference Topics:

- R1 – *Physical and chemical processes in inorganic materials induced by energy beams*
- R2 – *Materials under extreme conditions: design, characterization and applications*
- R3 – *Modern research methods and instruments, modeling of the interaction of radiation with materials*
- R4 – *Radiation technologies: advantages and applications*

September 14 | Monday

R1 – Physical and chemical processes in inorganic materials induced by energy beams

1st Oral Session

Hearth Room in the Rubin

RPC

- Invited **Radiation Synthesis of Luminofor Ceramics**
- 11:45 R1-O-028301
- Victor Lisitsyn
- 12:15 *National Research Tomsk Polytechnic University, Tomsk, Russia*
-
- 12:15 **Properties of YAG:Tb,Ce Phosphorus Coatings**
- **Prepared by Reactive Magnetron Co-sputtering**
- 12:35 R1-O-028501-Y
- Artem Runts, Galina Bleykher
- National Research Tomsk Polytechnic University, Tomsk, Russia*
-
- 12:35 **Energy Transfer to Substance During the**
- **Radiation Synthesis of YAG:Ce Ceramics**
- 12:55 R1-O-010101
- Anna Karnaukhova, Victor Lisitsyn
- National Research Tomsk Polytechnic University, Tomsk, Russia*
-
- 12:55 **Laser Synthesis of YAG-Ce Ceramics in**
- **Atmospheric Air**
- 13:15 R1-P-029701
- Vladimir Oleshko, Ilya Zykov, Yichang Liu
- National Research Tomsk Polytechnic University, Tomsk, Russia*

13:15 **Influence of the Inhomogeneity of Electron**
– **Energy Losses in the Charge on the Synthesis**
13:35 **of Tungstates**

R4-P-029201

Zhanara Bakiyeva¹, Gulnur Alpysova¹, Dmitriy
Afanasyev¹, Anna Karnaukhova², Dossymkhan
Mussakhanov³

¹ Karaganda Buketov University, Qaraghandy, Kazakhstan

² National Research Tomsk Polytechnic University, Tomsk, Russia

³ L.N.Gumilyov Eurasian National University, Qaraghandy,
Kazakhstan

13:35 **Assessment of Degradation of the Structural**
– **Order of Irradiated Quartz Materials**

13:55 R1-O-001201-Y

Veronika Kurskaya¹, Mikhail Korovkin^{2,3},
Ludmila Ananieva², Bulat Soktoev²

¹ Tomsk State University of Control Systems and Radioelectronics,
Tomsk, Russia

² National Research Tomsk Polytechnic University, Tomsk, Russia

³ National Research Tomsk State University, Tomsk, Russia

13:55 **Lunch**

–
15:30

R1 – Physical and chemical processes in inorganic materials induced by energy beams

2nd Oral Session

Hearth Room in the Rubin

- Invited **Anion-deficient Corundum as the Basis for Neutron OSL Detectors**
15:30 – R1-O-012201-Y
16:00 Alexander Boyarintsev^{1,2}, Rinat Abashev¹,
Alexander Surdo¹
¹ *M.N.Mikheev Institute of Metal Physics UB RAS, Yekaterinburg, Russia*
² *Ural Federal University, Yekaterinburg, Russia*
- 16:00 **The Effect of UV Laser Treatment on the Surface Microstructure and Functional Properties of TiNi Alloy**
– R1-O-012001-Y
16:20 Marina Kandaurova, Tatiana Sablina, Ilya Zyatikov,
Ilya Lopatkin, Yuri Panchenko
Institute of High Current Electronics SB RAS, Tomsk, Russia
- 16:20 **Recombination Processes of Charge Carriers in Al₂O₃ Ceramics**
– R1-O-029501-Y
16:40 Nataliia Karavannova, Sergey Nikiforov, Daria Ananchenko,
Yulia Kuznetsova
Ural Federal University, Yekaterinburg, Russia

16:40 **Sputtering Resistance of Thin W-Ta-V-Cr(-Hf) High Entropy Films Under 2 keV Ar⁺ Bombardment**

–
17:00 R1-P-044001

*Sergey Pavlov¹, Shuhuey Li¹, Sergey Zenkin¹, Jingrui Huang¹,
Fedor Konusov¹, Maxim Syrtanov¹, Olga Korneva¹,
Kristina Kamelina¹, Vladislav Tarbokov¹, Yuri Turin¹,
Peng Zhang², Feng Jiang², Xianxiu Mei², Gennady Remnev¹*

¹ National Research Tomsk Polytechnic University, Tomsk, Russia

² Dalian University of Technology, Dalian, China

17:00 **Radiation-chemical Synthesis of Copper Nanoparticles and Its Oxides in an Aqueous Solution of Copper Sulfate with Polyvinylpyrrolidone**

–
17:20 R1-P-002502

*Vladislav Ilves, Mikhail Balezin, Sergey Sokovnin
Institute of Electrophysics UB RAS, Yekaterinburg, Russia*

17:20 **Comparative Analysis of the Maxwell Classical Electrodynamic Model and the Theory of Ordered Quantum Systems**

–
17:40 R1-O-022701

*Boris Gritsenko, Valeriy Krivobokov, Dmitriy Lubenko
National Research Tomsk Polytechnic University, Tomsk, Russia*

September 15 | Tuesday

R2 – Materials under extreme conditions: design, characterization and applications

1st Oral Session

Hearth Room in the Rubin

RPC

Invited **Pyrotechnic Generation of Titanium Dioxide and Parameters of Its Photocatalytic Activity**

11:45

–

R2-O-005301-Y

12:15

Ivan Sorokin, Oleg Glotov, Grigory Surodin

Voevodsky Institute of Chemical Kinetics and Combustion SB RAS, Novosibirsk, Russia

12:15

Halide Perovskites Under Irradiation Towards Stable and Efficient Photovoltaics for Space Applications

–

12:35

R2-O-012401

Ivan Zhidkov^{1,2}, Andrey Kukharensky^{1,2}, Viktoria Ozerova³, Maxim Gerasimov¹, Lyubov Frolova⁴, Ernst Kurmaev^{1,2}, Pavel Troshin^{3,5}

¹ Ural Federal University, Yekaterinburg, Russia

² M.N.Mikheev Institute of Metal Physics UB RAS, Yekaterinburg, Russia

³ Federal Research Center for Problems of Chemical Physics and Medicinal Chemistry of Russian Academy of Sciences, Chernogolovka, Russia

⁴ Federal Research Center for Problems of Chemical Physics and Medicinal Chemistry of Russian Academy of Sciences, Yekaterinburg, Russia

⁵ Zhengzhou Advanced Research Institute of HIT, Zhengzhou, China

- 12:35 **Plasma Synthesis of Fluorescent Carbon Dots in Gas-liquid Media**
–
12:55 R2-O-019501-Y
Aleksander Tyutrin, Aleksander Rakevich, Yaroslav Grigorov
Irkutsk Branch of Institute of Laser Physics SB RAS, Irkutsk, Russia
- 12:55 **The Development of the Micro Hot Spot Model of the Composite Explosives Laser Initiation**
–
13:15 R2-O-025101
Anastasia Borovikova, Alexander Zvekov, Alexander Kalenskii, Alexey Ivanov
Kemerovo State University, Kemerovo, Russia
- 13:15 **Pulsed Cathodoluminescence of Radiation-assisted Synthesized ZnAl_2O_4 Spinel Ceramics Doped with Eu^{3+} and Er^{3+}**
–
13:35 R2-O-036201-Y
Lingyin Long, Elena Polisadova, Victor Lisitsyn
National Research Tomsk Polytechnic University, Tomsk, Russia
- 13:35 **Substantiation of Experimental Parameters for Corium Interaction with AlOSb Sacrificial Material by Numerical Modeling**
–
13:55 R2-P-034901
Yekaterina Martynenko¹, Mazhyn Skakov², Maxat Bekmuldin¹, Kuanyshbek Toleubekov¹
¹ *Institute of Atomic Energy of National Nuclear Center of the Republic of Kazakhstan, Semey, Kazakhstan*
² *National Nuclear Center of the Republic of Kazakhstan, Semey, Kazakhstan*

13:55 **Lunch**

–

15:30

R2 – Materials under extreme conditions: design, characterization and applications

2nd Oral Session

Hearth Room in the Rubin

RPC

Invited **La-doping as a Strategy for Stabilizing the
Crystal Structure of CsFAPbI₃ Perovskites Under
Electron Irradiation**

15:30

–

16:00 R2-O-011601-Y

*Maxim Gerassimov¹, Marina Ustinova², Sergey Nikiforov¹,
Lyubov Frolova², Ernst Kurmaev^{3,1}, Pavel Troshin^{4,2},
Ivan Zhidkov^{1,3}*

¹ Ural Federal University, Yekaterinburg, Russia

² Federal Research Center for Problems of Chemical Physics and
Medicinal Chemistry of Russian Academy of Sciences,
Chernogolovka, Russia

³ M.N.Mikheev Institute of Metal Physics UB RAS, Yekaterinburg,
Russia

⁴ Zhengzhou Advanced Research Institute of HIT, Zhengzhou, China

16:00 **Fast Radiation Converters Based on Solid
Solutions of Chalcogenides: Electronic Structure,
Optical Properties**

–

16:20

R2-O-039801-Y

*Dmitry Tavruncov¹, Vladimir Pustovarov¹, Maksim Sarychev¹,
Alexander Sapov², Maria Tarasenko³*

¹ Ural Federal University, Yekaterinburg, Russia

² Novosibirsk State University, Novosibirsk, Russia

³ Institute of Inorganic Chemistry SB RAS, Novosibirsk, Russia

- 16:20 **The Use of ZrB₂ Synthesized by the Electric Arc**
– **Vacuumless Method for Producing a Metal Matrix**
16:40 **Composite**

R2-P-036901-Y

Yulia Li, Sabina Babaeva, Yaroslav Shugonsov,
Anna Pavlenko

National Research Tomsk Polytechnic University, Tomsk, Russia

R4 – Radiation technologies: advantages and applications

1st Oral Session

Hearth Room in the Rubin

- 16:40 **Installations for Annealing and Testing**
– **Thermionic Cathodes LaB6**

17:00 R4-O-035801

Evgeny Domarov, Yuri Golubenko, Vladimir Zhivotiagin,
Nikolay Kuksanov, Alexander Lavruhin, Yulia Potapova,
Rustam Salimov, Alexey Semenov, Sergey Fadeev
Budker Institute of Nuclear Physics SB RAS, Novosibirsk, Russia

- 17:00 **DC Electron Beam Accelerator with Energy up to**
– **4 MeV**

17:20 R4-O-035701

Denis Vorobev, Evgeny Domarov, Yuri Gokubenko, Alexey
Korchagin, Rustam Salimov, Sergey Fadeev, Ivan Chakin,
Alexey Semenov, Alexander Lavrukhin, Yulia Potapova
Budker Institute of Nuclear Physics SB RAS, Novosibirsk, Russia

17:20 **Modification of Polyethylene Films by a Pulsed**
– **Electron Beam Extracted into the Atmosphere**

17:40 R4-O-029901

*Maxim Vorobyov, Maxim Mokeev, Sergey Doroshkevich,
Maxim Torba, Nikolay Koval, Vladislav Nedoshivin*

Institute of High Current Electronics SB RAS, Tomsk, Russia

September 16 | Wednesday

R4 – Radiation technologies: advantages and applications

2nd Oral Session

Hearth Room in the Rubin

- Invited **Electrodeposition of Multicomponent Alloys
Under an Effect of the X-ray Radiation**
11:45 R4-O-042101
–
12:15 Natalia Valko¹, Dmitry Lavysh¹, Natalia Poliak²,
Victor Anishchik²
¹ Yanka Kupala State University of Grodno, Grodno, Belarus
² Belarusian State University, Minsk, Belarus
- 12:15 **Radiation of Twisted Photons in Multifrequency
Laser Fields**
–
12:35 R4-O-007501-Y
Sergey Braagin, Oleg Bogdanov
National Research Tomsk Polytechnic University, Tomsk, Russia
- 12:35 **Hydrogen-driven Phase Transformations and
Property Alterations in NbZr Functionally
Graded Materials**
–
12:55 R4-O-001102-Y
Stepan Korneev, Anton Lomygin, Dmitry Krotkevich
National Research Tomsk Polytechnic University, Tomsk, Russia

12:55 **Nanosecond Electron Beams Irradiation of**
 – **Sulfonamide Antibiotics: Degradation Efficiency**
 13:15 **and Toxicity Assessment**

R4-O-026601-Y

Nadezhda Bezlepkin^{1,2}, Elena Bocharnikova^{1,2},
 Alfia Spirina², Olga Tchaikovskaya^{1,2}, Vladimir Solomonov²

¹ National Research Tomsk State University, Tomsk, Russia

² Institute of Electrophysics UB RAS, Yekaterinburg, Russia

13:15 **Influence of Composition on the Luminescent**
 – **Properties of High-entropy Ce³⁺-activated**
 13:35 **Garnets Synthesized by Radiation Methods**

R4-O-018601-Y

Gulnur Nogaibekova, Aida Tulegenova

Al-Farabi Kazakh National University, Almaty, Kazakhstan

13:35 **Effect of Plasma Modification on the Surface**
 – **Properties of Polypropylene**

13:55 R4-O-049701-Y

Kirill Demin^{1,2}, Stephan Agnaev^{1,2}, Sayan Dondukov^{1,2},
 Andrei Khagleev^{1,2}, Alexander Semenov¹

¹ Institute of Physical Materials Science SB RAS, Ulan-Ude, Russia

² East Siberian State University of Technology and Management,
 Ulan-Ude, Russia

13:55 **Lunch**

–
 15:30

September 17 | Thursday

R3 – Modern research methods and instruments, modeling of the interaction of radiation with materials

1st Oral Session

Hearth Room in the Rubin

- Invited **Application of Synchrotron Radiation in the Petroleum Industry**
11:45 R3-O-043301
–
12:15 Aleksey Gogolev, Vladimir Smolyansky¹, Mikhail Khodakov²
¹ National Research Tomsk Polytechnic University, Tomsk, Russia
² LLC Scientific Devices and Systems, Novosibirsk, Russia
- 12:15 **Validation of Dose Distribution Detection for Potassium Chloride-based Radiation Detectors**
–
12:35 **Using Radiochromic Dosimetry Film and a Calorimeter**
R3-O-005601-Y
Yuchun Ding, Maksim Serebrennikov, Ivan Egorov
National Research Tomsk Polytechnic University, Tomsk, Russia
- 12:35 **Monte Carlo Simulation of the Ion-charge States Time Dynamics During the Cascade**
–
12:55 **Decay of Single Inner-shell Vacancies in Atomic Gadolinium**
R3-O-013401
Andrei Kochur, Alexander Chaynikov, Alexei Dudenko
Rostov State Transport University, Rostov, Russia

12:55 **Monte Carlo Modeling of Radiation Effects in**
 – **APbI₃ Perovskites**

13:15 R3-O-016301-Y

Ivan Novoselov¹, Ivan Zhidkov^{1,2}

¹ Ural Federal University, Yekaterinburg, Russia

² M.N.Mikheev Institute of Metal Physics UB RAS, Yekaterinburg,
 Russia

13:15 **Comparative Numerical Study of Radiative**
 – **Transfer Models in Hv Gas Blast Interrupters**

13:35 R3-O-023501

*Natalia Kurakina, Nikita Obrastsov, Svetlana Averyanova,
 Ruslan Zhiligitov*

*Peter the Great St.Petersburg Polytechnic University, Saint
 Petersburg, Russia*

13:35 **Lunch**

–

15:30

R3 – Modern research methods and instruments, modeling of the interaction of radiation with materials

2nd Oral Session

Hearth Room in the Rubin

Invited **Time-resolved Optical Absorption
Measurements of Fluoride Crystals**

15:30

–

R3-O-043901

16:00

Sergey Stepanov, Evgeny Chinkov

National Research Tomsk Polytechnic University, Tomsk, Russia

16:00

**The Anomalous Effect of Thermoluminescence
Decay in Terms of the Kinetic Models with One
Recombination Center**

–

16:20

R3-O-028201-Y

Samuel Kiggundu, Dariya Ananchenko, Sergey Nikiforov

Ural Federal University, Yekaterinburg, Russia

16:20

**Monte Carlo Simulation of the Passage of High-
energy Electrons (1.4 MeV) through
Multicomponent Oxide Layers with Different
Bulk Densities**

–

16:40

R3-O-030001-Y

Dossymkhan Mussakhanov¹, Abylai Kobey¹,
Aida Tulegenova²

¹ L.N.Gumilyov Eurasian National University, Astana, Kazakhstan

² Al-Farabi Kazakh National University, Almaty, Kazakhstan

16:40 **The Limit of Applicability of the Kubelka-Munk Formula**

–
17:00 R3-O-030401-Y

Ibrokhimkhon Saidazimov

National Research Tomsk Polytechnic University, Tomsk, Russia

17:00 **Experimental Verification of a Non-destructive Position-sensitive Electron Beam Profilometer Using a 16-channel Ionization Chamber System**

–
17:20

R3-O-031001-Y

Konstantin Timoshenko^{1,2}, Elizaveta Bushmina^{1,2},

Sergey Alexeev¹, Angelina Bulavskaya²,

Irina Miloichikova^{2,3}, Semen Mitrofanov¹,

Daria Polomoshnova², Yuri Teterev¹, Sergey Stuchebrov²

¹ Joint Institute for Nuclear Research, Dubna, Russia

² National Research Tomsk Polytechnic University, Tomsk, Russia

³ Tomsk National Research Medical Center, Tomsk, Russia

Oral Sessions of the

7th International Conference on New Materials and High Technologies (NMHT)



Symposium Topics:

- *N1 – Inorganic materials and coatings*
- *N2 – Self-propagating high-temperature synthesis and advanced powder technologies*
- *N3 – Carbon materials for electronics and photonics*
- *N4 – Resource- and energy-saving technologies*
- *N5 – Synchrotron radiation detectors*

September 14 | Monday

N5 – Synchrotron radiation detectors

1st Oral session

Academic Room in the Rubin

Invited **Development of Detectors for Studies of
Dynamic Processes at a Synchrotron Radiation
Beam**

11:45

–

12:15 N5-O-014101

Lev Shekhtman

Budker Institute of Nuclear Physics SB RAS, Novosibirsk, Russia

12:15 **Application of Allpix2 Software for Simulation of
Amplitude Spectrum of Si P⁺-N⁰-N⁺ Sensors**
–
12:35 **Irradiated with 10 - 81 keV Quanta**

N5-O-009401-Y

Kirill Chashtanov, Anton Tyazhev, Alexander Vinnik,
Ivan Chsherbakov, Mikhail Trofimov

National Research Tomsk State University, Tomsk, Russia

12:35 **Temporal Stability of Photocurrent Pulses from**
 – **Chromium-compensated Gallium Arsenide**
 12:55 **Sensors Under the Influence of Synchrotron**
Radiation

N5-O-011701

Mikhail Trofimov¹, Ivan Chsherbakov¹, Oleg Tolbanov¹,
 Anton Tyazhev¹, Lev Shektman²

¹ National Research Tomsk State University, Tomsk, Russia

² Budker Institute of Nuclear Physics SB RAS, Novosibirsk, Russia

12:55 **In Situ Study of the Growth Process of High- and**
 – **Medium-entropy Alloys and Nitrides Based on**
 13:15 **Them Using Synchrotron Radiation**

N5-O-016602

Yurii Ivanov¹, Nikita Prokopenko¹, Elizaveta Petrikova¹, Yurii
 Akhmadeev¹, Olga Krysina¹, Nikolai Koval¹,
 Aleksandr Shmakov²

¹ Institute of High Current Electronics SB RAS, Tomsk, Russia

² Boreskov Institute of Catalysis, Novosibirsk, Russia

13:15 **Ultraviolet Photodetector Based on Gallium**
 – **Oxide**

13:35 N5-O-004701-Y

Dmitry Almaev^{1,2}, Viktor Kopyev¹, Alexander Tsymbalov¹,
 Inna Keda¹

¹ National Research Tomsk State University, Tomsk, Russia

² Tomsk State University of Control Systems and Radioelectronics,
 Tomsk, Russia

13:35 **Lunch**

–
 15:30

N5 – Synchrotron radiation detectors

2nd Oral session

Academic Room in the Rubin

- Invited **Research at Tomsk State University in the Field of Ionizing Radiation Sensors Based on Wide-band Semiconductors**
15:30 –
16:00 N5-O-038701
Anton Tyazhev, Alexander Vinnik, Kirill Chashtanov, Oleg Tolbanov, Leila Shaimerdenova, Maxim Skakunov, Andrei Zarubin, Anastasiya Shemeryankina, Yulianna Petrova
National Research Tomsk State University, Tomsk, Russia
- 16:00 **Dynamics of Photocurrent in Chromium-compensated Gallium Arsenide Sensors Under X-ray Radiation**
–
16:20 N5-O-020401
Vlastimir Tkachev, Mikhail Trofimov, Ivan Chsherbakov, Oleg Tolbanov, Anton Tyazhev, Andrey Zarubin
National Research Tomsk State University, Tomsk, Russia
- 16:20 **Studies of Characteristics HR-GaAs:Cr Sensors That Determine Radiation Durability**
–
16:40 N5-O-033801-Y
Vladislav Babeshko¹, Oleg Tolbanov¹, Anton Tyazhev¹, Ivan Chsherbakov¹, Mikhail Trofimov¹, Boris Goldenberg², Lev Shekhtman²
¹ National Research Tomsk State University, Tomsk, Russia
² Budker Institute of Nuclear Physics SB RAS, Novosibirsk, Russia

16:40 **Dark Current Dynamics in Ionizing Radiation**
 Sensors Based on HR-GaAs:Cr

17:00 N5-O-015301-Y

*Viktor Chernenko, Ivan Chsherbakov, Oleg Tolbanov,
Anton Tyazhev, Andrei Zarubin, Pavel Kosmachev,
Anastasia Shemeryankina, Yulianna Petrova
National Research Tomsk State University, Tomsk, Russia*

17:00 **Simulation of Steady-state IV Characteristics**
 and Electric Field Profiles Within X-ray HR-
17:20 **GaAs:Cr Pixel Sensors**

N5-O-016901-Y

*Alexander Vinnik, Kirill Chashtanov, Anton Tyazhev,
Leila Shaimerdenova, Maksim Skakunov, Andrey Zarubin,
Anastasia Shemeryankina
National Research Tomsk State University, Tomsk, Russia*

September 15 | Tuesday

N2 – Self-propagating high-temperature synthesis and advanced powder technologies

1st Oral Session

Academic Room in the Rubin

Invited **The Effect of Irradiation by High-intensity
11:45 High-current Pulsed Electron Beams on the
– Surface Layers of Ti-6Al-4V Titanium Alloy
12:15 Samples Obtained Using SLM Technology**

N2-O-025601

Oxana Bytchenko¹, *Alexander Shirokozhukhov²*,
Alexey Gromov², *Kirill Bernatskii³*

¹ *Moscow Aviation Institute (National Research University); Joint
Stock Company United Engine Corporation, Branch UEC-SALUT,
Moscow, Russia*

² *Joint Stock Company United Engine Corporation, Branch UEC-
SALUT, Moscow, Russia*

³ *Moscow Aviation Institute, Moscow, Russia*

12:15 **Development of Electro-explosive Powder
– Compositions for Extrusion Based 3D-printing
12:35 of Products Based on Multicomponent Alloys**

N2-O-018301

Alexander Pervikov^{1,2}, *Konstantin Suliz^{1,2}*, *Egor Ryumin^{1,2}*,
Elena Glazkova², *Natalya Svarovskaya^{1,2}*, *Marat Lerner^{1,2}*

¹ *National Research Tomsk State University, Tomsk, Russia*

² *Institute of Strength Physics and Materials Science SB RAS,
Tomsk, Russia*

- 12:35 **Plasma Fragmentation of Water-kerosene**
– **Emulsion Droplets Under High-voltage Pulsed**
12:55 **Electric Discharge**
N2-O-005901-Y
Dmitrii Antonov
National Research Tomsk Polytechnic University, Tomsk, Russia
- 12:55 **Combustion Synthesis of Porous B-SiAlON**
– **Fiber-reinforced Filters**
13:15 N2-O-016501-Y
Anton Reger, Pavel Vashurkin
Tomsk Scientific Center SB RAS, Tomsk, Russia
- 13:15 **The Influence of Pine Nut Shells on Aluminum**
– **Nitridation in Combustion Mode**
13:35 N2-O-015001-Y
Pavel Vashurkin, Anton Reger
Tomsk Scientific Center SB RAS, Tomsk, Russia
- 13:35 **Mechanochemically Synthesized Niobium**
– **Silicides from Waste Materials: Properties and**
13:55 **Application in Conductive Composites**
N2-O-007601
Olga Shkoda, Nikita Belyaev, Alexander Shulpekoy,
Evgeny Golovin
Tomsk Scientific Center SB RAS, Tomsk, Russia
- 13:55 **Lunch**
–
15:30

N2 – Self-propagating high-temperature synthesis and advanced powder technologies

2nd Oral Session

Academic Room in the Rubin

- Invited **Self-propagating High-temperature Synthesis of TiN-TiC Composition Using Sodium Azide and Polytetrafluoroethylene**
15:30 –
16:00 N2-P-036802
Yuliya Titova, Alexander Amosov, Alsu Yakubova, Alina Ivanova
Samara State Technical University, Samara, Russia
- 16:00 **Azide SHS of Compositions of Highly Dispersed Nitride Powders with Silicon Carbide**
–
16:20 N2-O-036801
Yuliya Titova
Samara State Technical University, Samara, Russia
- 16:20 **The Impact of Shock Wave Action on Formation of Amorphous-crystalline Structure in Ti-Al System**
–
16:40 N2-O-021901
Alexey Sobachkin¹, Marina Loginova¹, Alexander Sitnikov¹, Vladimir Yakovlev¹, Valery Filimonov^{1,2}, Alexey Negodyaev¹, Andrey Myasnikov¹, Alexander Roznyj¹, Evgenij Lakman¹, Alexander Sobachkin¹, Yakov Ochakovskii¹
¹ Polzunov Altai State Technical University, Barnaul, Russia
² Institute for Water and Environment Problems SB RAS, Barnaul, Russia

16:40 **Critical Combustion Conditions of a Two-layer**
– **Powder System (Ni+Al)/Me**

17:00 N2-O-001801

*Vadim Prokof'ev^{1,2}, Ramil Gabbasov¹, Vladimir Kitler¹,
Alexandr Shul'pekoy¹*

¹ Tomsk Scientific Center SB RAS, Tomsk, Russia

² National Research Tomsk State University, Tomsk, Russia

17:00 **A Multi-component Kinetic Model for**
– **Numerical Investigation of Shock-induced**
17:20 **Exothermic Reactions in W-PTFE-Al Reactive**
 Composites

N2-O-001901

Sergey Zelepugin, Oksana Ivanova, Roman Cherepanov

Tomsk Scientific Center SB RAS, Tomsk, Russia

17:20 **Nonisothermal Synthesis of TiN and ZrN**
– **Powders by Calciothermal Reactions Under**
17:40 **Nitrodgen**

N2-O-024001

Alexander Avramchik, Boris Braverman

¹ Tomsk Scientific Center SB RAS, Tomsk, Russia

September 16 | Wednesday

N2 – Self-propagating high-temperature synthesis and advanced powder technologies

3rd Oral Session

Academic Room in the Rubin

Invited **Synthesis of Hybrid Composites by the SHS Method Using PET-plastic and Aluminum Waste**

11:45

–

12:15 N2-O-009101-Y

Aleksey Matveev, Nikita Pichugin

Tomsk Scientific Center SB RAS, Tomsk, Russia

12:15 **Photocatalytic Water Purification from Methylene Blue Using an Iron-ceramic**

–

12:35 **Composite Obtained by Self-propagating High-temperature Synthesis**

N2-O-022901-Y

Tatyana Tatarinova, Olga Kryukova

Tomsk Scientific Center SB RAS, Tomsk, Russia

12:35 **Combustion Synthesis of Macroporous Ni-Fe-Al Alloys**

–

12:55 N2-O-007801-Y

Nikita Pichugin, Anatoly Maznoy

Tomsk Scientific Center SB RAS, Tomsk, Russia

- 12:55 **The Influence of Mutual Concentration of Ni**
 – **and Al Powders on the Agglomeration**
 13:15 **Processes of Mechanocomposites**
 N2-O-002601
Evgeny Boyangin, Oleg Lapshin
Tomsk Scientific Center SB RAS, Tomsk, Russia
- 13:15 **Features of Spinel Synthesis in the MnO-MgO-**
 – **Al₂O₃ System by the SHS Method**
 13:35 N2-O-002301
Nina Radishevskaya, Oleg Lvov, Roman Minin
Tomsk Scientific Center SB RAS, Tomsk, Russia
- 13:35 **Non-isothermal Synthesis of the Magnesium**
 – **Boronitride Phase**
 13:55 N2-O-012802
Olga Lepakova, Boris Braverman
Tomsk Scientific Center SB RAS, Tomsk, Russia
- 13:55 **Lunch**
 –
 15:30

September 17 | Thursday

N1 – Inorganic materials and coatings

1st Oral Session

Academic Room in the Rubin

- Invited **Deposition of a Uniform Nanocrystalline
Diamond Coating on a High Aspect Ratio
Tungsten Carbide Substrate in a Microwave
Plasma Reactor**

N1-P-008502

Sergey Fedorov¹, Evgeny Ashkinazi², Artem Martyanov²,
Andrey Litvinov¹, Konstantin Sergeychev²,
Mikhail Shevchenko²

¹ Moscow State University of Technology STANKIN, Moscow, Russia

² A.M. Prokhorov General Physics Institute RAS, Moscow, Russia

- 12:15 **Synthesis, Composition, and Properties of
Granular Strontium-tricalcium Phosphate**

12:35 N1-O-021301

Olga Golovanova

Dostoevsky Omsk State University, Omsk, Russia

- 12:35 **On The Use Of Oxalates Decomposition For
Magnetic Adsorbents And Catalysts Preparation**

12:55 N1-O-011801

Alexander Zvekov, Alexander Kalenskii, Alexey Ivanov,
Vyacheslav Kachurin, Sergey Yakovlev

Kemerovo State University, Kemerovo, Russia

12:55 **Low-viscosity High-solid Loading Photosensitive**
– **Slurries for 3D Printing of Garnet Oxide**
13:15 **Ceramics**

N1-O-005101

*Petr Sokolov¹, Alexander Sergeev^{1,2}, Lidiya Ermakova¹,
Valentina Smyslova¹, Ilya Komendo^{1,2},
Sergey Fedorchenko¹*

¹ National Research Centre "Kurchatov Institute", Moscow, Russia

² Mendelev University of Chemical Technology of Russia, Moscow, Russia

13:15 **Zr-B-Si-C-(N) Coatings Formed from an Ion Flux**
– **Formed by the Action of a Vacuum Electric Arc**
13:35 **on a Ceramic-metal Cathode**

N1-O-009701

Igor Blinkov, Dmitry Belov, Alexander Demirov

NUST MISIS, Moscow, Russia

13:35 **Fabrication of Electroactive Oxide-phosphate**
– **and Calcium-phosphate Coatings on Titanium by**
13:55 **Micro-arc Oxidation**

N1-O-033101-Y

*Elizaveta Akimova¹, Ekaterina Komarova¹,
Alexander Kashin¹, Marina Ostapenko¹,
Tatiana Tolkacheva¹, Anatoly Zharin², Yurii Sharkeev¹*

¹ Institute of Strength Physics and Materials Science SB RAS, Tomsk, Russia

² Belarussian National Technical University, Minsk, Belarus

13:55 **Current Status and Challenges in Industrial**
– **Implementation of High-energy Surface**
14:15 **Processing Techniques for Metal-based Materials**

N1-O-044701

Mikhail Slobodyan, Alexey Markov

Tomsk Scientific Center SB RAS, Tomsk, Russia

13:55 **Lunch**

–

15:30

N4 – Resource- and energy-saving technologies

Academic Room in the Rubin

Invited **A Liquid Phase Gliding Arc Strategy for Stable Methanol Reforming Toward Efficient Hydrogen Production**

15:30

–

16:00 N4-O-002701-Y

Yanbin Xin, Quanli Wang, Bing Sun

Dalian Maritime University, Dalian, China

16:00 **Characteristics and Mechanism of Heavy Oil Upgrading by Liquid Phase Gliding Arc Plasma**

–

16:20 N4-O-005501

Quanli Wang, Yanbin Xin, Bing Sun

Dalian Maritime University, Dalian, China

16:20 **Microwave Fragmentation of Composite Droplets**

–

16:40 N4-O-024901-Y

Dmitry Kovalev, Dmitry Antonov

National Research Tomsk Polytechnic University, Tomsk, Russia

16:40 **Effect of Radiative Heat Transfer on Pyrolysis-gasification of a Single Biomass Particle: a Numerical Study**

–

17:00

N4-O-034301

Igor Yakovlev, Dmitry Hoptyar

Tomsk Scientific Center SB RAS, Tomsk, Russia

17:00 **Numerical Evaluation of Radiant Efficiency of**
 – **Cylindrical Hollow Porous Burners of Increased**
 17:20 **Length**

N4-O-034201-Y

Daniil Astakhov, Igor Yakovlev

Tomsk Scientific Center SB RAS, Tomsk, Russia

17:20 **Pyrolysis Waste Processing: Methods for**
 – **Increasing Efficiency**

17:40 N4-O-043501

Alina Ponomareva^{1,2}, Mensura Muradova^{3,2}

¹ Saint Petersburg State University, Saint Petersburg, Russia

² Far Eastern Federal University, Vladivostok, Russia

³ ITMO University, Saint Petersburg, Russia

17:40 **The Investigation of Co-pyrolysis of Polymers**
 – **and Birch Phloem Wastes**

18:00 N4-O-043401-Y

Mensura Muradova^{1,2}, Olesya Petryaeva¹,

Alina Ponomareva^{1,2,3}

¹ ITMO University, Saint Petersburg, Russia

² Far Eastern Federal University, Vladivostok, Russia

³ Saint Petersburg State University, Saint Petersburg, Russia

18:00 **Application of Porous Inert Media Combustion**
 – **to Enhance the Efficiency of Radiant Tubes**

18:20 N4-O-003501

Anatoly Maznoy¹, Igor Yakovlev¹, Alexander Guschin¹,

Kirill Larionov^{1,2}

¹ Tomsk Scientific Center SB RAS, Tomsk, Russia

² National Research Tomsk Polytechnic University, Tomsk, Russia

September 18 | Friday

N3 – Carbon materials for electronics and photonics

Academic Room in the Rubin

Invited **Graphene Cleaning by External Heating and Joule Heating Annealing**

09:00

–

N3-O-030301-Y

09:30

Dmitry Sorokin^{1,2}, Dmitry Smovzh^{1,2}

¹ Kutateladze Institute of Thermophysics SB RAS, Novosibirsk, Russia

² Novosibirsk State University, Novosibirsk, Russia

09:30 **Modeling of Photoelectron Diffraction Map of the C60F18 Framework**

–

09:50

N3-P-041101-Y

Vasilii Nevtninov¹, Anton Shurygin¹, Yaroslav Zernov¹,
Savelii Pisarev¹, Egor Shramkov², Natalya Fedorova¹,
Daniil Dakamin¹

¹ Far Eastern Federal University, Vladivostok, Russia

² National Research Center "Kurchatov Institute", Moscow, Russia

09:50 **Laser Processing of Industrial By-products and the Routes to Improve Their Performance in Flexible Electronics**

–

10:10

N3-O-049001-Y

Ilya Petrov, Andrey Grinko, Elizaveta Dogadina,
Raul Rodriguez, Evgeniya Sheremet

National Research Tomsk Polytechnic University, Tomsk, Russia

10:10 **Optically Stimulated Luminescence in Synthetic Diamonds**
–

10:30 N3-P-000701-Y

Darya Peresedova, Vasilii Ripenko, Dmitriy Genin,
Evgeniy Lipatov

Institute of High Current Electronics SB RAS, Tomsk, Russia

10:30 **Numerical Simulation of a P-i-N Diode Based on Diamond Doped with Boron and Phosphorus**
–

10:50 N3-P-039901-Y

Roman Kurdyukov¹, Evgeny Lipatov^{1,2}

¹ *Institute of High Current Electronics SB RAS, Tomsk, Russia*

² *National Research Tomsk State University, Tomsk, Russia*

10:50 **Artificial Diamonds as a Active Laser Media**
–

N3-O-035501

11:10 Dmitriy Genin¹, Evgeniy Lipatov^{1,2}, Polina Komarova^{1,2},
Victor Vins³

¹ *Institute of High Current Electronics SB RAS, Tomsk, Russia*

² *National Research Tomsk State University, Tomsk, Russia*

³ *Welman LLC, Novosibirsk, Russia*

11:10 **Coffee Break**
–

11:40

N1 – Inorganic materials and coatings

2nd Oral Session

Academic Room in the Rubin

- Invited **Investigation of Mechanical and**
11:40 **Electrochemical Properties of Additively**
– **Manufactured AlSi10Mg Pretreated by LEHCEB**
12:10 N1-O-022202
Massimiliano Bestetti, Andrea Gaboli
Politecnico di Milano, Milan, Italy
- 12:10 **3D Printing of Refractory Mullite-bonded**
– **Silicon Carbide Ceramics Using the Robocasting**
12:30 **Method**
N1-O-010301-Y
Sharif Sharafeev, Alexander Mezhenin, Varvara Polyakova
Tomsk Scientific Center SB RAS, Tomsk, Russia
- 12:30 **Tailoring the Microstructure of CVD Diamond**
– **Coatings for Enhanced Tribological**
12:50 **Performance**
N1-O-020601-Y
Alexander Mitulinsky, Alexander Gaydaychuk,
Sergei Zenkin, Stepan Linnik
National Research Tomsk Polytechnic University, Tomsk, Russia

12:50 **Selective Hydrogenation of PdMe (Me = Co, Cr)**
 – **Alloys: Mechanisms of Hydride Formation**
 13:10 **Suppression and Limiting Hydrogen Solubility**

N1-O-031401

Sergey Melentyev¹, Yuri Abzaev¹, Anatoly Klopotov¹,
 Yuri Tyurin², Alexander Potekaev³, Maxim Syrtanov²,
 Vladimir Sypchenko², Oleg Volokitin¹

¹ Tomsk State University of Architecture and Building, Tomsk, Russia

² National Research Tomsk Polytechnic University, Tomsk, Russia

³ National Research Tomsk State University, Tomsk Russia

13:10 **Features of Ti+SiC Composite Layers Formation**
 – **Using the Electron Beam Surfacing in a**
 13:30 **Forevacuum**

N1-O-031301

Aleksey Zenin, Anna Dolgova, Aleksandr Klimov

Tomsk State University of Control Systems and Radioelectronics,
 Tomsk, Russia

13:30 **Phase Evolution in Ti-LaB₆ Multilayers Under**
 – **Pulsed Electron Beam Melting: an in Situ XRD**
 13:50 **Study**

N1-O-047801

Evgeniy Yakovlev¹, Evgeniy Pesterev¹, Vsevolod Petrov¹,
 Andrey Solovyov¹, Ludmila Meisner², Alexander Shmakov³,
 Anton Schneider⁴, Aleksey Markov¹

¹ Tomsk Scientific Center SB RAS, Tomsk, Russia

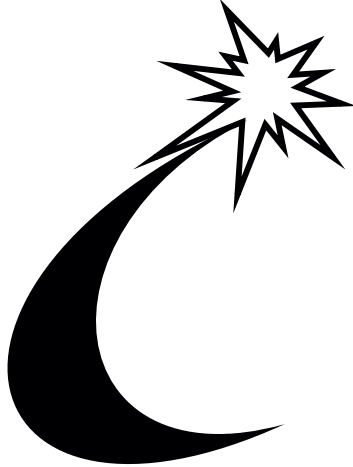
² Panin Institute of Strength Physics and Materials Science SB
 RAS, Tomsk, Russia

³ Synchrotron Radiation Facility SKIF, Koltsovo, Russia

⁴ Institute of High Current Electronics SB RAS, Tomsk, Russia

Poster Sessions of the

24th International Symposium on High Current Electronics (SHCE)



Symposium Topics:

- *S1 – Intense electron and ion beams*
- *S2 – Pinches, plasma focus and capillary discharge*
- *S3 – High power microwaves*
- *S4 – Pulsed power technology and applications*
- *S5 – Discharges with runaway electrons*

September 14 | Monday

House of Scientists

S1 – Intense electron and ion beams

- 1 **Simulation of Low-temperature Plasma of a Non-self-sustained Glow Discharge in an Extended Metal Tube**
S1-P-040901
Tamara Koval, Daniil Zaytsev, Dinil Ignatov, Vladimir Denisov, Sergey Koval'sky
Institute of High Current Electronics SB RAS, Tomsk, Russia

- 2 **Influence of Hollow Anode Size on Plasma Parameters of Low-pressure Pulsed Arc Discharge**
S1-P-024501-Y
Maksim Torba, Sergey Doroshkevich, Anton Grichkov, Nikolai Landl, Maksim Vorobyov, Vladislav Nedoshivin
Institute of High Current Electronics SB RAS, Tomsk, Russia

- 3 **Design and Optimization Study of a Cold Cathodes Penning Ion Source for High-intensity Proton Beam**
S1-P-010601
Vasily Gushenets, Alexey Bugaev, Efim Oks
Institute of High Current Electronics SB RAS, Tomsk, Russia

4 **Anomalous Proton Beam Transport through Gabor-type Space-charge Lens**

S1-P-010602

Vasily Gushenets, Alexey Bugaev, Efim Oks

Institute of High Current Electronics SB RAS, Tomsk, Russia

S2 – Pinches, plasma focus and capillary discharge

5 **Influence of Polarity of Vacuum High-current Arc Discharge Electrodes on the Metal-puff Liner Implosion**

S2-P-010401

Alexander Rousskikh, Alexander Zhigalin, Vladimir Oreshkin, Alexander Kuzminykh, Anton Artyomov

Institute of High Current Electronics SB RAS, Tomsk, Russia

6 **Study of the Development of RT Instabilities During Implosion of Metal-puff Plasma Liners on the GIT-12 Generator**

S2-P-010402

Alexander Rousskikh, Vladimir Oreshkin, Alexander Kuzminykh, Anton Artyomov, Rustam Cherdizov, Alexander Shishlov, Vladimir Kokshenev, Nikolay Kurmaev

Institute of High Current Electronics SB RAS, Tomsk, Russia

- 7 **Study of the Influence of Plasma Gun Electrode Polarity on the Plasma Jet Compression Process Under MIG Generator Conditions**
S2-P-021501
Zhigalin Alexander, Alexander Rousskikh, Alexandr Kuzminykh, Anton Artyomov, Vladislav Van'kevich, Vladimir Oreshkin
Institute of High Current Electronics SB RAS, Tomsk, Russia
- 8 **Optimization of Parameters of Two-cascade Plasma Liners**
S2-P-019901
Vladimir Oreshkin, Rustam Cherdizov, Alexander Rousskikh, Alexander Shishlov
Institute of High Current Electronics SB RAS, Tomsk, Russia
- 9 **Determination of the Current Distribution in Planar Wire Array in Experiments on Generator GIT-12 Using B-dot Probes**
S2-P-019702
Vladimir Kokshenev, Alexander Shishlov
Institute of High Current Electronics SB RAS, Tomsk, Russia
- 10 **Optimization of a Hybrid Load for Operation in the Long Implosion Time Regime**
S2-P-033201
Alexander Shishlov, Rustam Cherdizov, Sergey Kobayakov, Vladimir Kokshenev, Nikolay Kurmaev, Andrey Zherlitsyn
Institute of High Current Electronics SB RAS, Tomsk, Russia

11 Features of Plasma Formation During the Explosion of Conductors with Flat Surfaces in Megagauss Magnetic Fields

S2-P-039301

Labetskaya Natalia¹, Datsko Igor¹, Vankevich Vladislav¹,
Oreshkin Vladimir¹, Chaikovsky Stanislav²

¹ Institute of High Current Electronics SB RAS, Tomsk, Russia

² Institute of Electrophysics UB RAS, Yekaterinburg, Russia

12 Features of Skin Explosion of Foil Conductors of Grooved Configuration

S2-P-017701

Igor Datsko¹, Vladislav Vankevich¹, Evgeny Oreshkin²,
Vladimir Oreshkin¹, Natalia Labetskaya¹

¹ Institute of High Current Electronics SB RAS, Tomsk, Russia

² P.N. Lebedev Physical Institute RAS, Tomsk, Russia

13 Plasma Formation and Its Characteristics During the Explosion of Flat Conductors with Holes

S2-P-035401-Y

Vladislav Van'kevich¹, Igor Datsko¹, Natalia Labetskaya¹,
Stanislav Chaikovsky², Vladimir Oreshkin¹

¹ Institute of High Current Electronics SB RAS, Tomsk, Russia

² Institute of Electrophysics UB RAS, Yekaterinburg, Russia

14 Formation of Field Reversed Configuration in Plasma Discharge

S2-O-045901

Alexander Mozgovoy, Ivan Baidin, Alexander Oginov,
Ivan Tilikin

P.N. Lebedev Physical Institute RAS, Moscow, Russia

- 15 **Simulation of the Dynamics of Magnetically Collimated Jets Under Multi-beam Heating of Laser Targets**

S2-P-045701-Y

Anton Bay

Keldysh Institute of Applied Mathematics RAS, Moscow, Russia

S3 – High power microwaves

- 16 **Experimental Investigations of Multiwave Cherenkov Generator with Linear Polarization of Radiation**

S3-P-003902

Vladimir Koshelev, Sergey Smirnov

Institute of High Current Electronics SB RAS, Tomsk, Russia

- 17 **"Dry" Calorimeters for Measuring the Energy of High-power Microwave Pulses**

S3-P-003101

Aleksei Klimov

Institute of High Current Electronics SB RAS, Tomsk, Russia

- 18 **Comparative Analysis of the Influence of Dispersion Properties and Configuration Features of Corrugated and Homogeneous Nonlinear Transmission Lines with Saturated Ferrite on the Dynamics of Generated Microwave Oscillations. Numerical Simulation**

S3-O-032701-Y

Oleg Mutylin, Pavel Priputnev

Institute of High Current Electronics SB RAS, Tomsk, Russia

S4 – Pulsed power technology and applications

19 Longitudinal Discharge Pumped Air Laser

S4-P-008101

*Mikhail Andreev, Ivan Konovalov, Yuri Panchenko,
Alexey Puchikin, Dmitrii Lubenko*

Institute of High Current Electronics SB RAS, Tomsk, Russia

20 Features of Calculating the Jitter of the Output Pulse of the LTD Stage

S4-P-000401

Vitaly Alexeenko, Andrey Zherlitsyn, Alexander Lenskiy

Institute of High Current Electronics SB RAS, Tomsk, Russia

21 Pulse Transformation in Trigger Circuit of LTD Cavity

S4-P-000402

Vitaly Alexeenko, Sergey Kondratiev, Vadim Sinebryukhov

Institute of High Current Electronics SB RAS, Tomsk, Russia

22 Analytical Description of Ferrite-filled Nonlinear Transmission Line with Non-negligible Dispersion of Quasi-TEM Mode

S4-P-004002-Y

Vitaly Patrakov

Institute of Electrophysics UB RAS, Yekaterinburg, Russia

- 23 **A Former of Bipolar High-voltage Pulses with a Duration of 0.5 ns in a Circuit with a Single Spark Gap**
S4-P-004901
Anatolii Efremov
Institute of High Current Electronics SB RAS, Tomsk, Russia
- 24 **Influence of RLC-parameters on the Energy Balance in an Ablative Pulsed Plasma Accelerator**
S4-P-005701-Y
Daria Fedorova, Denis Egoshin, Victor Telekh
Bauman Moscow State Technical University, Moscow, Russia
- 25 **Determination of the Current Channel Diameter in a Power Silicon Thyristor Switched by a Shock Ionization Wave**
S4-P-011102
Sergey Tsyanov¹, Olga Perminova²
¹ *Institute of Electrophysics UB RAS, Yekaterinburg, Russia*
² *Ural Federal University, Yekaterinburg, Russia*
- 26 **Influence of the Design of the Cathode Cavity on the Static Breakdown Voltage in Pseudospark Switch**
S4-P-012101
Yury Korolev, Nikolay Landl, Oleg Frants, Alexander Bolotov, Vitaly Nekhoroshev
Institute of High Current Electronics SB RAS, Tomsk, Russia

- 27 **Operation of the Trigger Unit Based on a Discharge over a Semiconductor Surface in the Pseudospark Switch**
S4-P-012102
Yury Korolev, Nikolay Landl, Oleg Frants, Alexander Bolotov, Vitaly Nekhoroshev
Institute of High Current Electronics SB RAS, Tomsk, Russia
- 28 **High-current Discharge-induced Shock Waves in a Cylindrical Chamber at Initial Pressures up to 35 MPa**
S4-P-010501
Jaroslav Triaskin, Alexander Budin, Michael Pinchuk, Nikita Tryaskin, Alexander Bogomaz
Institute for Electrophysics and Electric Power, Saint Petersburg, Russia
- 29 **About the Mechanism of High-energy Neutron Generation in Deuterium Gas-puff Z-pinch**
S4-P-019701
Vladimir Kokshenev, Alexander Shishlov, Nikolay Kurmaev, Rustam Cherdizov, Andrey Zherlitsyn
Institute of High Current Electronics SB RAS, Tomsk, Russia
- 30 **Numerical Simulation of Electron Flow Dynamics in Magnetically Insulated Transmission Lines with Submicrosecond Current at the 100 kA Level**
S4-P-019802
Igor Pegel, Vitaly Alexeenko, Oleg Mutylin, Andrey Zherlitsyn
Institute of High Current Electronics SB RAS, Tomsk, Russia

- 31 **Investigation of a Hybrid Ferrite Line with an Additional Shielding Electrode**
S4-P-022001
Anna Sadykova, Marat Ulmaskulov, Erik Ulmaskulov
Institute of Electrophysics UB RAS, Yekaterinburg, Russia
- 32 **A Stand for Studying the Processes of Plasma Formation and Decay in High-current Vacuum Interrupters**
S4-P-022601
Anatoly Yushkov¹, Sergey Popov², Alexey Nikolaev², Olga Nikitenko¹
¹ *National Research Tomsk Polytechnic University, Tomsk, Russia*
² *Institute of High Current Electronics SB RAS, Tomsk, Russia*
- 33 **Study of Conditioning a Heated Copper Needle Cathode**
S4-P-024201
Yuriy Zemskov¹, Yuriy Mamontov¹, Igor Uimanov¹, Sergey Barengolts^{2,3}
¹ *Institute of Electrophysics UB RAS, Yekaterinburg, Russia*
² *A.M. Prokhorov General Physics Institute RAS, Moscow, Russia*
³ *P.N. Lebedev Physical Institute RAS, Moscow, Russia*
- 34 **Estimating the Temperature of a Micrometer-sized Copper Cathode Based on Measuring Its Thermal Elongation**
S4-P-024202
Yuriy Zemskov
Institute of Electrophysics UB RAS, Yekaterinburg, Russia

35 **Bricks of a Capacitive Storage for Generating a Square Pulse in an Air-insulated LTD Stage**

S4-P-024301

Andrey Zherlitsyn, Vitaly Alexeenko, Sergey Kondratiev

Institute of High Current Electronics SB RAS, Tomsk, Russia

36 **Upgrading the LT-6 Generator to Obtain a Flat-top Pulse in an Electron Diode**

S4-P-024302

Andrey Zherlitsyn, Igor Pegel, Ilya Tereshchenko, Vitaly Alexeenko

Institute of High Current Electronics SB RAS, Tomsk, Russia

37 **High-pressure Pulse-periodic Dielectric Barrier Discharge**

S4-P-024402

Pavel Gugin, Petr Bokhan, Dmitry Zakrevsky,
Maxim Lavrukhin

*A.V. Rzhhanov Institute of Semiconductor Physics SB RAS,
Novosibirsk, Russia*

38 **Numerical Simulation of Increasing the Voltage Pulse Duration in a Helical Forming Line with a Tesla Transformer**

S4-P-024801

Ruslan Tsygankov, Vladimir Konev, Pavel Vykhodtsev

Institute of High Current Electronics SB RAS, Tomsk, Russia

- 39 **Switching Characteristics of Serial Ro-43 Type Gas Spark Gaps During the Sharpening of Nanosecond Voltage Pulses**
S4-P-025302
Grigory Kurapov¹, Sergey Martemyanov¹, Mikhail Zhuravlev¹, Andrey Bukharkin¹, Dmitriy Makhanko², Gennady Remnev¹
¹ National Research Tomsk Polytechnic University, Tomsk, Russia
² AO "Plazma", Ryazan, Russia
- 40 **Simulation of Radiation Transfer in Optically Transparent Plasma in Pulsed Plasma Thruster**
S4-P-027101-Y
Vadim Danilov, Victor Telekh, Denis Egoshin, Maksim Gembar
Bauman Moscow State Technical University, Moscow, Russia
- 41 **Movable Multi-gap Electrode System for Electropulse Destruction of Concrete Surface Layer in Water**
S4-P-028001
Artem Yudin, Michail Zhurkov, Sergey Mertemyanov, Sergey Datskevich
National Research Tomsk Polytechnic University, Tomsk, Russia
- 42 **Influence of Voltage Pulse Polarity on the Parameters of a Spall Cavity During Electric Pulsed Impact on Granite in a System of Electrodes Applied to One Surface**
S4-P-028002
Artem Yudin, Yibing Mao
National Research Tomsk Polytechnic University, Tomsk, Russia

43 **Electrical Breakdown in Polymer Materials Under 30-50 kV Pulses with Nanosecond Rise Times**

S4-P-030701

*Ivan Punanov, Rafail Emlin, Yevgeniy Shcherbakov,
Pavel Morozov*

Institute of Electrophysics UB RAS, Yekaterinburg, Russia

44 **Eptron Based High Pulse Repetition Frequency Generator for Self-terminating Lasers Excitation**

S4-P-037502

*Maxim Lavrukhin, Petr Bokhan, Pavel Gugin,
Gleb Shevchenko, Dmytry Zakrevsky*

*A.V. Rzhakov Institute of Semiconductor Physics SB RAS,
Novosibirsk, Russia*

45 **To Explore the Mechanism of Metal-organic Frameworks (MOFs) Synergistic Plasma-catalyzed CO₂ Conversion to C₂+ Oxygenates**

S4-P-045301-Y

Chong Qi^{1,2}, Pengchen He¹, Tao Shao^{1,2,3}

¹ *Institute of Electrical Engineering CAS, Beijing, China*

² *University of Chinese Academy of Sciences, Beijing, China*

³ *Wuhan University, Wuhan, China*

S5 – Discharges with runaway electrons

46 **Propagation of Streamer Channel in Gap with Large Gas Pressure Difference**

S5-P-026801-Y

Natalia Semeniuk, Andrey Kozyrev, Vasily Kozhevnikov

Institute of High Current Electronics SB RAS, Tomsk, Russia

- 47 **Determination of Volt- and Ampere-second Characteristics of the Initial Stage of a Self-sustained Subnanosecond Discharge in Nitrogen**

S5-P-017402

Stepan Ivanov, Vasiliy Lisenkov

Institute of Electrophysics UB RAS, Yekaterinburg, Russia

- 48 **Hydrophilicity Enhancement of Nitinol Surfaces by Cold Atmospheric Plasma**

S5-P-016801

Dmitry Beloplotov¹, Bogdan Zaytsev², Eduard Sosnin^{1,2},
Dmitry Sorokin^{1,2}

¹ *Institute of High Current Electronics SB RAS, Tomsk, Russia*

² *National Research Tomsk State University, Tomsk, Russia*

- 49 **Effect of Air Humidity on Emission of Diffuse Discharge in Point-to-point Gap**

S5-P-007401

Alexei Panchenko, Victor Tarasenko, Dmitry Beloplotov,
Dmitry Sorokin

Institute of High Current Electronics SB RAS, Tomsk, Russia

- 50 **Characteristics of the Broadband Continuum in Discharge in Moist Air at Low Pressures**

S5-P-007402

Alexei Panchenko¹, Nikolai Popov², Victor Tarasenko¹,
Evgenii Baksht¹

¹ *Institute of High Current Electronics SB RAS, Tomsk, Russia*

² *Skobeltsyn Research Institute of Nuclear Physics, Moscow, Russia*

51 **Table-top Pulse-periodic X-ray Source Based on Runaway Electron Generation in Prebreakdown Stage of Nanosecond Discharges in Air and Helium**

S5-P-000302

Dmitry Sorokin^{1,2}, Bogdan Zaytsev², Dmitry Beloplotov¹

¹ Institute of High Current Electronics SB RAS, Tomsk, Russia

² National Research Tomsk State University, Tomsk, Russia

52 **Applicability of Bethe-type Runaway Thresholds for Electrons**

S5-P-044901-Y

Shicheng Zhao^{1,2}, Bangdou Huang^{1,2}, Cheng Zhang^{1,2},
Tao Shao^{1,2,3}

¹ Institute of Electrical Engineering, Chinese Academy of Sciences, Beijing, China

² University of Chinese Academy of Sciences, Beijing, China

³ Wuhan University, Wuhan, China

53 **Spatial Scale of the Near-cathode Plasma Region, the Source of Runaway Electrons, in Weakly and Strongly Inhomogeneous Electric Fields**

S5-P-026501

Olga Zubareva¹, Mark Belyaev¹, Mikhail Gashkov¹,
Michael Yalandin^{1,2}, Nikolay Zubarev^{1,2}

¹ Institute of Electrophysics UB RAS, Yekaterinburg, Russia

² P.N. Lebedev Physical Institute RAS, Moscow, Russia

54 **High-voltage Nanosecond Discharge: Calculation of the Streamer Capacity at the Initial Stage of Breakdown in a Sharply Non-uniform Electric Field**

S5-P-006002

Mikhail Lomaev^{1,2}, Dmitry Beloplotov¹, Dmitry Pecheninin¹,
Dmitry Sorokin^{1,2}

¹ Institute of High Current Electronics SB RAS, Tomsk, Russia

² National Research Tomsk State University, Tomsk, Russia

55 **Spatial Characteristics of a Discharge with Inhomogeneous Preionization in Gases Mixtures with SF₆**

S5-P-027901

Arkadij Yastremskij, Sofia Yamplskaya, Yuri Panchenko

Institute of High Current Electronics SB RAS, Tomsk, Russia

56 **The Glow Region in Columnar Red Sprites: Experimental Simulation**

S5-P-019101

Evgenii Baksht, Viktor Tarasenko, Dmitry Sorokin,
Viktor Panarin, Viktor Skakun

Institute of High Current Electronics SB RAS, Tomsk, Russia

57 **Influence of Cathode Material on the Appearance of the Townsend Stage of Negative Corona Discharge**

S5-P-019102

Evgenii Baksht, Alexander Burachenko

Institute of High Current Electronics SB RAS, Tomsk, Russia

58 **Self-consistent Numerical Model of an Electron Avalanche Developing in a Homogeneous Electric Field Under High Overvoltage**

S5-P-023202-Y

Yuriy Mamontov

Institute of Electrophysics UB RAS, Yekaterinburg, Russia

59 **Volume Discharges of Superatmospheric Pressure in CO₂ Laser Mixtures in Gaps with Graphite Cathode**

S5-P-025501

Boris Kozlov¹, Evgeniy Kozlov¹, Dmitry Makhanko²

¹ Ryazan State Radio Engineering University named after V.F.Utkin, Ryazan, Russia

² JSC "PLASMA", Ryazan, Russia

60 **Mass-spectrometric Diagnostics of Current-voltage Characteristic Evolution During the Process of Degassation**

S5-P-014702-Y

Gleb Shevchenko, Petr Bokhan, Pavel Gugin, Maxim Lavrukhin, Dmitry Zakrevsky

A.V. Rzhhanov Institute of Semiconductor Physics SB RAS, Novosibirsk, Russia

61 **Influence of the Number and Frequency of Voltage Pulses on the Formation of a Runaway Electron Beam at Low Air Pressure**

S5-P-008002

Victor Tarasenko, Evgenii Baksht, Andrei Kozyrev, Alexandr Kokovin

Institute of High Current Electronics SB RAS, Tomsk, Russia

62 **Mechanisms of the Initial Stage of Formation of Spark Breakdown at Supercritical Pressures**

S5-P-014201-Y

Evgeny Kozlov¹, Boris Kozlov¹, Dmitry Makhanko²

¹ Ryazan State Radio Engineering University named after V.F.Utkin, Ryazan, Russia

² JSC "PLASMA", Ryazan, Russia

63 **Spatial Structure of Near-cathode Emission Regions of Runaway Electrons: Effects of Gas Pressure and Guiding Magnetic Field**

S5-P-026402

Nikolay Zubarev^{1,2}, Leonid Lobanov¹, Konstantin Sharypov¹, Sergey Shunailov¹, Michael Yalandin^{1,2}

¹ Institute of Electrophysics UB RAS, Yekaterinburg, Russia

² P.N. Lebedev Physical Institute RAS, Moscow, Russia

Poster Sessions of the

18th International Conference on Modification of Materials with Particle Beams and Plasma Flows (CMM)



Conference Topics:

- *C1 – Beam and plasma sources*
- *C2 – Fundamentals of modification processes*
- *C3 – Modification of material properties*
- *C4 – Coatings deposition*
- *C5 – Nanoscience and nanotechnology*
- *C6 – Synchrotron and neutron research in materials science*

September 14 | Monday

House of Scientists

C1 – Beam and plasma sources

- 84 **Atomic Structure, Phase Stability and Mechanical Properties of CuCrMn-FeCoNi High-entropy Alloy Coatings**

C1-P-009001

*Yuri Abzaev¹, Sergey Guda², Alexander Guda²,
Vladimir Kolesnikov³*

¹ Tomsk State University of Architecture and Building, Tomsk, Russia

² Southern Federal University, Rostov, Russia

³ Rostov State Transport University, Rostov, Russia

- 85 **Modes of Discharge Burning in Gas-filled Bubbles for Saline Solution with Negative Polarity of the Active Electrode**

C1-P-002201

*Nikolay Landl, Alexandr Bolotov, Yury Korolev, Oleg Frants,
Vladimir Geyman*

Institute of High Current Electronics SB RAS, Tomsk, Russia

- 86 **Positive Column Plasma Parameters of Low-pressure Glow Discharge with Hollow Cathode and Hollow Anode**
C1-P-002202
Nikolay Landl, Evgeniy Ostroverkhov, Sergey Kovalsky, Vladislav Krivshenko, Maksim Torba
Institute of High Current Electronics SB RAS, Tomsk, Russia
- 87 **Modeling of the Current Transfer in Low-temperature Atmospheric-pressure Plasma Jet in Air Based on Glow Discharge**
C1-P-022501-Y
Aleksandr Kokovin, Nikolay Landl, Yuri Korolev, Oleg Frants, Vitaly Nekhoroshev
Institute of High Current Electronics SB RAS, Tomsk, Russia
- 88 **Investigation of the Electric Field and Potential in a Glow Discharge-based Atmospheric Pressure Plasma Jet**
C1-P-022502-Y
Aleksandr Kokovin, Vitaly Nekhoroshev, Nikolay Landl, Yury Korolev, Oleg Frants
Institute of High Current Electronics SB RAS, Tomsk, Russia
- 89 **Numerical Modeling of Plasma Jet Dynamics Formed by an Explosive Generator**
C1-P-015901
Dmitry Boykov, Nikita Savenko, Egor Urvachev
Keldysh Institute of Applied Mathematics RAS, Moscow, Russia

- 90 **Ion Charge State Composition of Vacuum Arc Plasma with Copper-chromium Electrodes in a Magnetic Field**
C1-P-011201
Alexey Nikolaev, Valeria Frolova, Georgy Yushkov
Institute of High Current Electronics SB RAS, Tomsk, Russia
- 91 **Development of Duoplasmatron-based Compact Ion Source for Low-background Experiment Facilities**
C1-P-007002-Y
Andrey Oleinik¹, Alexander Chepurinov², Artemy Klenin¹, Maria Berezhnaya¹, Andrey Podoynitsyn¹
¹ *Belgorod State National Research University, Belgorod, Russia*
² *Skobeltsyn Research Institute of Nuclear Physics, Moscow, Russia*
- 92 **Pulsed Vacuum Arc with a Magnetic Cathode at the Moments of Plasma Formation and Decay**
C1-P-011501
Georgy Yushkov, Vadim Gridilev, Alexey Nikolaev, Efim Oks
Institute of High Current Electronics SB RAS, Tomsk, Russia
- 93 **High-frequency and Bimodal Atmospheric-pressure Plasma Jet**
C1-P-029001
Dmitry Zakrevsky^{1,2}, Pavel Gugin^{2,1}, Gleb Shevchenko^{2,1}, Irina Schweigert¹
¹ *Khristianovich Institute of Theoretical and Applied Mechanics SB RAS, Novosibirsk, Russia*
² *A.V. Rzhanov Institute of Semiconductor Physics SB RAS, Novosibirsk, Russia*

- 94 **Dependence of the Total Ion Current on the Arc Current in a Vacuum Arc Discharge on a W-FUZZ-coated Cathode at Sub-ampere Discharge Currents**

C1-P-023602

Ilya Muzyukin, Pavel Mikhailov

Institute of Electrophysics UB RAS, Yekaterinburg, Russia

- 95 **Temporal Dependence of the Plasma Ion Flux Composition in a Vacuum Arc with a Current of 15 - 80 A**

C1-P-024101-Y

Pavel Mikhailov, Ilya Muzyukin, Dmitriy Shmelev

Institute of Electrophysics UB RAS, Yekaterinburg, Russia

- 96 **Defining the Threshold Voltage for Vacuum Arc Ignition**

C1-P-024102-Y

Pavel Mikhailov, Ilya Muzyukin, Yuriy Zemskov, Igor Uimanov

Institute of Electrophysics UB RAS, Yekaterinburg, Russia

- 97 **The Effect of Ionization on the Interatomic Interaction in a Metal Using Aluminum as an Example**

C1-P-027701-Y

Kirill Berestov^{1,2}, Sergey Yanin^{1,2}

¹ *Joint Institute for Nuclear Research, Dubna, Russia*

² *Tomsk polytechnic university, Tomsk, Russia*

- 98 **High-transmission Energy Analyzer of Ion Fluxes**
C1-P-018002
Ivan Sorokin^{1,2}, Dobrynya Kolodko^{2,3}
¹ Fryazino Branch of Kotelnikov Institute of Radio Engineering and Electronics RAS, Fryazino, Russia
² National Research Nuclear University MEPhI, Moscow, Russia
³ Fryazino Branch of Kotelnikov Institute of Radio Engineering and Electronics RAS, Moscow, Russia
- 99 **Plasma Parameters of Magnetron Discharge with Electron Injection in Reactive Mode**
C1-P-038901-Y
Alexander Cherkasov, Maxim Shandrikov, Efim Oks, Alexey Bugaev, Vasily Gushenets, Maxim Azhgikhin
Institute of High Current Electronics SB RAS, Tomsk, Russia
- 100 **Modelling of ICP Discharge in a Helium-silane Mixture for Functional Nanostructure Synthesis**
C1-P-012602
Almaz Saifutdinov, Sergey Sysoev, Aliia Saifutdinova, Ruslan Fazulzyanov
A.N.Tupolev Kazan National Research Technical University, Kazan, Russia
- 101 **Generation of Beam-plasma Formations in a System Based on a Non-self-sustaining Glow Discharge with a Hollow Cathode and an Extended Hollow Cylindrical Mesh Electron Emitter**
C1-P-034501
Evgeniy Ostroverkhov, Vladimir Denisov, Sergey Kovalsky, Vladislav Krivshenko
Institute of High Current Electronics SB RAS, Tomsk, Russia

- 102 **Vacuum Electron-ion-plasma Stand "VEIPS" with the Electron-beam Source "SOLO"**
C1-P-019301-Y
Alexandr Nazarov, Anton Teresov, Vladimir Denisov, Artem Egorov, Evgenii Ostroverkhov
Institute of High Current Electronics SB RAS, Tomsk, Russia
- 103 **Systems for Generation of Gas and Gas-metal Beam-plasma Formations for Combined Ion-plasma Treatment of Steel Surfaces**
C1-P-033002
Vladimir Denisov, Nikolay Koval, Mikhail Savchuk, Evgeny Ostroverkhov, Danil Ignatov, Artem Egorov, Sergey Kovalsky, Tamara Koval, Ilya Podgorny, Vladislav Krivshenko, Vladislav Yakovlev, Yulia Denisova, Andrey Leonov, Daniil Zaitsev
Institute of High Current Electronics SB RAS, Tomsk, Russia
- 104 **Study of the Generation Processes of Beam-plasma Formations in an Extended Hollow Cathode of a Low-pressure Non-self-sustained Glow Discharge**
C1-O-042501-Y
Vladislav Krivshenko, Evgeniy Ostroverkhov, Ilya Podgorny, Vladimir Prokopyev, Sergey Kovalsky, Artem Egorov, Vladimir Denisov
Institute of High Current Electronics SB RAS, Tomsk, Russia

105 **Plasma and Beam Technologies for Surface Modification of Materials and Media: Experience and New Projects**

C1-O-020101

Dmitri Karpov, Aleksandr Ivanov, Sergey Kosogorov, Konstantin Tkachenko

JSC "D.V.Efremov Institute of Electrophysical Apparatus", Saint Petersburg, Russia

106 **Numerical Model of an Arc Gas Discharge at High Frequencies**

C1-O-000601

Alexander Popov, Anatolii Kokorin

Ural Federal University, Yekaterinburg, Russia

September 15 | Tuesday

House of Scientists

C2 – Fundamentals of modification processes

107 **Investigation of Incident Ion Flux Composition at the Linear Plasma Device BPD-PSI**

C2-P-026302-Y

Nikita Sergeev

National Research Nuclear University MEPhI, Moscow, Russia

108 **Spectrometric Characteristics of Plasma Generated by Arc Vaporizers with Metal Cathodes and a PINK Plasma Generator**

C2-P-027302-Y

Ivan Azhazha, *Nikita Prokopenko*, *Dmitry Beloplotov*,
Maxim Vorobyov, *Nikolay Koval*

Institute of High Current Electronics SB RAS, Tomsk, Russia

C3 – Modification of material properties

109 Plasma Modification of PCL/PVA Scaffolds to Regulate Drug Release Rate

C3-O-006501-Y

Anastasia Bryuzgina¹, Olesya Laput¹, Daniil Zuza²,
Vitaly Nekhoroshev², Irina Kurzina¹

¹ National Research Tomsk State University, Tomsk, Russia

² Institute of High Current Electronics SB RAS, Tomsk, Russia

110 Functionalization of 3D-scaffolds Based on Polycaprolactone by Methods of Plasma Treatment and Precipitation of Bioactive Substances

C3-P-038302-Y

Olesya Laput¹, Ulyana Khomutova^{1,2}, Daniil Zuza², Irina Kurzina¹

¹ National Research Tomsk State University, Tomsk, Russia

² Institute of High Current Electronics SB RAS, Tomsk, Russia

111 Plasma-chemical Hydrophilization of Polydimethylsiloxane: Effect of Atomic Oxygen Dose

C3-O-017301

Mikhail Isupov, Vadim Pinaev, Alexander Fedoseev,
Anna Petrova

Kutateladze Institute of Thermophysics SB RAS, Novosibirsk, Russia

112 Effect of Plasma Modification on the Adhesive Properties of Polyamide Surfaces

C3-O-028801-Y

*Stepan Agnaev^{1,2}, Kirill Demin^{1,2}, Saian Dondukov^{1,2},
Andrey Khagleev^{1,2}*

¹ *East Siberian State University of Technology and Management, Ulan-Ude, Russia*

² *Institute of Physical Material Science of the Siberian Branch of the Russian Academy of Sciences, Ulan-Ude, Russia*

113 Structure and Optical Properties of Silicon Super-doped with Indium and Arsenic by Implantation and Electron Beam Annealing

C3-P-007101-Y

*Ilya Chuprys¹, Fadei Komarov¹, Oleg Milchanin¹, Nilolay Koval²,
Anton Teresov², Irina Parkhomenko³, Olga Korolik³*

¹ *A.N. Sevchenko Institute of Applied Physical Problems of Belarusian State University, Minsk, Belarus*

² *Institute of High Current Electronics SB RAS, Tomsk, Russia*

³ *Belarusian State University, Minsk, Belarus*

114 Improvement of Operating Characteristics of EP823 Steel Tubular Samples in HLMC

C3-P-003701

*Konstantin Tkachenko¹, Sergei Kosogorov¹, Andrey Chikiriaka¹,
Nikolay Shchegolikhin¹, Georgy Birzhevoy²*

¹ *JSC "D.V.Efremov Institute of Electrophysical Apparatus", Saint Petersburg, Russia*

² *JSC "SSC RF-FEI", Obninsk, Russia*

115 Study of the Effect of an Electron Beam with Energy of 10 keV on the Surface of Carbon Foils

C3-P-014901-Y

Zahar Lyullin^{1,2}, Sergey Trifonov³, Sergey Grigorenko¹,
Dmitrii Kostrin², Ivan Goltyaev^{1,2}

¹ JSC "D.V.Efremov Institute of Electrophysical Apparatus", Saint Petersburg, Russia

² Saint Petersburg Electrotechnical University, Saint Petersburg, Russia

³ LLC "NIA Engineering", Saint Petersburg, Russia

116 Structure and Luminescent Properties of Ultrathin Crystalline Films of Tin Dioxide Formed on Silicon by Laser-plasma Method

C3-P-016101-Y

Irina Rogovaya¹, Fadey Komarov¹, Maxim Vorobyov²,
Irina Parkhomenko³, Mikhail Puzyrev¹, Oleg Milchanin¹

¹ A.N. Sevchenko Institute of Applied Physical Problems of Belarusian State University, Minsk, Belarus

² Institute of High Current Electronics SB RAS, Tomsk, Russia

³ Belarusian State University, Minsk, Belarus

117 Structure and Mechanical Properties of the Hypereutectic Silumin Surface Layer Alloyed with Chromium Atoms

C3-P-008601

Nikolai Cherenda¹, Stepan Tolkachev², Valentin Astashynski³,
Anton Kuzmitski³, Nikita Prokopenko⁴

¹ Belarusian State University, Minsk, Belarus

² Belarusian nuclear power plant, Minsk, Belarus

³ A.V. Luikov Heat and Mass Transfer Institute NASB, Minsk, Belarus

⁴ Institute of High Current Electronics SB RAS, Tomsk, Russia

- 118 **Formation of Corrosion Resistant and Catalytic Active Layers with Use of Ion Beam Assisted Deposition of Metals from Vacuum Arc Discharge Plasma**
C3-P-022301
Vasily Poplavsky, Oleg Bobrovich, Alexander Dorozhko, Vladimir Matys
Belarusian State Technological University, Minsk, Belarus
- 119 **The Effect of the Vacuum Ion Beam Plasma Treatment of Steel on Biofouling and Biocorrosion of the Material**
C3-P-022801-Y
Kirill Obuchov¹, Tamara Dorofeeva², Marina Fedorischeva², Viktor Sergeev²
¹ *National Research Tomsk Polytechnic University, Tomsk, Russia*
² *Institute of Strength Physics and Materials Sciences of Siberian Branch of Russian Academy of Sciences, Tomsk, Russia*
- 120 **The Effect of High-current Pulsed Electron Beam Irradiation on Crack Formation During Modification of Condensation-diffusion Ion-plasma Coatings**
C3-P-025602
Oxana Bytchenko¹, Alexander Shirokzhukhov², Alexey Gromov²
¹ *Moscow Aviation Institute (National Research University; Joint Stock Company United Engine Corporation, Branch UEC-SALUT, Moscow, Russia*
² *Joint Stock Company United Engine Corporation, Branch UEC-SALUT, Moscow, Russia*

121 Investigation of Ion Irradiation Effect on a Metal Alloy Atomic

C3-P-013101-Y

Efrem Makarov, Vladimir Semionkin

Institute of Electrophysics UB RAS, Yekaterinburg, Russia

122 Modification of Polyketone Surface Morphology Under the Action of Bremsstrahlung from Accelerated Electrons

C3-P-025701

Normamat Ismatov¹, Mannab Tashmetov¹,
Shermaxmat Maxkamov¹, Sadulla Allayarov²

¹ *Institute of Nuclear Physics, AS RU, Tashkent, Uzbekistan, Tashkent, Uzbekistan*

² *Federal Research Center for Problems of Chemical Physics and Medicinal Chemistry of Russian Academy of Sciences, Moscow, Russia*

123 Phase Composition and Structure of the "film (Ti-B)/(AISI 304 Steel) Substrate" System Formed by an Integrated Method

C3-P-016601

Yurii Ivanov¹, Vladimir Shugurov¹, Nikita Prokopenko¹,
Elizaveta Petrikova¹, Oleg Tolkachev¹, Olga Krysin¹, Nikolai Koval¹, Vladimir Astashinsky²

¹ *Institute of High Current Electronics SB RAS, Tomsk, Russia*

² *2A.V. Luikov Institute of Heat and Mass Transfer of the National Academy of Sciences of Belarus, Minsk, Belarus*

- 124 **Phase Composition and Microstructure of the Ti6Al4V Surface Layer After Nanosecond UV Laser Treatment**
C3-P-028401
Tatyana Sablina, Marina Kandaurova, Ilia Zyatikov, Yurii Panchenko
Institute of High Current Electronics SB RAS, Tomsk, Russia
- 125 **Comparative Surface Analysis of TiNi Treated by Wet Chemical Etching and UV Laser Radiation**
C3-P-028402
Tatyana Sablina, Marina Kandaurova, Ilia Zyatikov, Aleksey Puchikin, Yurii Panchenko
Institute of High Current Electronics SB RAS, Tomsk, Russia
- 126 **Modification of Metal-matrix Composites Based on a Titanium by a Pulsed Electron Beam**
C3-P-030601
Anton Teresov, Andrey Leonov, Anatoliy Skosyrskiy, Mikhail Savchuk, Elizaveta Petrikova
Institute of High Current Electronics SB RAS, Tomsk, Russia
- 127 **Modification of Al-20Si Alloy with a Pulsed Electron Beam**
C3-P-028101-Y
Maria Rygina¹, Yurii Ivanov¹, Alexander Prudnikov², Elizaveta Petrikova¹, Pavel Moskvina¹
¹ *Institute of High Current Electronics SB RAS, Tomsk, Russia*
² *Siberian State Industrial University, Novokuznetsk, Russia*

128 Modeling the Spatiotemporal Temperature Distribution in Complex-shaped Ceramics During Electron-beam Treatment in Forevacuum

C3-P-016401

Aleksandr Klimov¹, Ilya Bakeev¹, Anna Dolgova¹, Efim Oks^{1,2},
Aleksey Zenin¹

¹ Tomsk State University of Control Systems and Radioelectronics,
Tomsk, Russia

² Institute of High Current Electronics SB RAS, Tomsk, Russia

129 Modeling of Temperature Fields in Heat-resistant Alloys During High-intensity Ion Implantation

C3-P-032601

Anna Ivanova, Olga Korneva, Galina Bleykher

National Research Tomsk Polytechnic University, Tomsk, Russia

130 Modification of Silicon Surface Properties by High-intensity Implantation: Structural, Optical, and Electrophysical Aspects

C3-P-032602

Anna Ivanova¹, Olga Korneva¹, Sergey Dektyarev¹,
Alexey Lysenko²

¹ National Research Tomsk Polytechnic University, Tomsk, Russia

² National Research Tomsk State University, Tomsk, Russia

131 Surface Treatment of Glass and Polymers by a Pulsed Electron Beam in the Forevacuum Pressure Range

C3-P-004402

Andrey Kazakov, Valery Arkatov, Yuriy Burachevsky,
Nikolay Panchenko

Tomsk State University of Control Systems and Radioelectronics, Tomsk,
Russia

132 **Composition, Structure and Mechanical Properties of Ti-35Nb-2Ta-3Zr/Zn Composites Treated by Compression Plasma Flows**

C3-P-032301

Vladimir Uglov¹, Sergey Zlotski¹, Ruslana Paukova¹,
Liqiang Wang²

¹ Belarusian State University, Minsk, Belarus

² Shanghai Jiao Tong University, Shanghai, China

133 **Cleaning the Target Surface by an Arc Discharge Initiated by a Pulsed Electron Beam**

C3-P-038201-Y

Sergey Doroshkevich, Ruslan Kartavtsov, Maksim Vorobyov,
Pavel Moskvina, Nikolay Koval, Diana Mokeeva

Institute of High Current Electronics SB RAS, Tomsk, Russia

134 **Synthesis of TiN-Cu Composite Coatings on R18 High-speed Steel by Plasma-chemical Vacuum Deposition**

C3-P-039201

Dmitrii Tsyrenov¹, Alexander Semenov¹, Nikolay Ulakhanov^{1,2},
Irina Semenova¹

¹ Institute of Physical Materials Science SB RAS, Ulan-Ude, Russia

² East Siberia State University of Technology and Management, Ulan-Ude, Russia

135 Interactions of High Power Ion Beams with the Surface of Porous Materials

C3-P-031701

Alexander Ligachev¹, Valeriy Barinov², Gelii Potemkin³,
Gennady Remnev³, Vladislav Tarbokov³

¹ Prokhorov General Physics Institute RAS, Moscow, Russia

² Federal Research Center for Problems of Chemical Physics and
Medicinal Chemistry of Russian Academy of Sciences, Chernogolovka,
Russia

³ National Research Tomsk Polytechnic University, Tomsk, Russia

136 Corrosion Resistance of Magnesium Alloys MI5

C3-P-031702

Alexander Ligachev^{1,2}, Natalia Valko³, Kirill Zhuk³,
Boris Bobryshev⁴, Danila Bobryshev⁴, Denis Popkov²,
Victor Moiseev⁵

¹ Prokhorov General Physics Institute RAS, Moscow, Russia

² JSC AVANGARD-LIT, Moscow, Russia

³ Yanka Kupala State University of Grodno, Grodno, Belarus

⁴ MMZ AVANGARD, Moscow, Russia

⁵ Baikov Institute of Metallurgy and Materials Science, Russian Academy
of Sciences, (IMET RAN), Moscow, Russia

137 Evaluation of the Impact of Low-temperature Plasma on the Composition of Technical Hemp Fiber

C3-P-025801-Y

Saian Dondukov^{1,2}, Andrey Khagleev^{2,1}, Kirill Demin^{2,1},
Stepan Agnaev^{1,2}, Bazyr Sanzheev³

¹ East Siberian State University of Technology and Management, Ulan-
Ude, Russia

² Institute of Physical Materials Science SB RAS, Ulan-Ude, Russia

³ Buryat state agricultural academy by V.R. Philippov, Ulan-Ude, Russia

138 **Effect of Atmospheric Low-temperature Plasma on the Wettability of Printed Circuit Board Contact Pads**

C3-P-041402-Y

Artem Belev, Nikolay Sharapov

Bauman Moscow State Technical University, Moscow, Russia

139 **Copper-steel Contacts for Vacuum Circuit Breakers by Wire Electron Beam Additive Technology**

C3-P-002801

Anton Schneider¹, Sergey Popov¹, Elena Dubrovskaya¹,
Sergey Tarasov², Kseniya Osipovich²

¹ *Institute of High Current Electronics SB RAS, Tomsk, Russia*

² *Institute of Strength Physics and Materials Science SB RAS, Tomsk, Russia*

140 **Modification of the Microstructure and Mechanical Properties of the Surface Layer of Hard Alloys by High-power Pulsed Ion Beams**

C3-O-041301-Y

Zhengchuan Zhao, Vladislav Tarbokov, Olga Korneva,
Sergey Pavlov, Alexey Pirozhkov, Gennady Remnev

National Research Tomsk Polytechnic University, Tomsk, Russia

141 **Modeling of Field Distribution in Insulating Material**

C3-P-004801

Evgeniy Radzivilov, Artem Yudin

National Research Tomsk Polytechnic University, Tomsk, Russia

142 Ti-Si-B Coating Synthesized by Vacuum-arc Plasma-assisted Method

C3-P-034801

*Elizaveta Petrikova, Yuri Ivanov, Oleg Tolkachev,
Nikita Prokopenko, Olga Krysina, Anatoliy Klopotov,
Nikolay Koval*

Institute of High Current Electronics SB RAS, Tomsk, Russia

143 Properties of Aluminum Alloys Manufactured by Additive Method Subject to Electron Beam Processing

C3-P-034802

*Elizaveta Petrikova¹, Yuri Akhmadeev¹, Evgeniy Yakovlev²,
Pavel Moskvina¹*

¹ *Institute of High Current Electronics SB RAS, Tomsk, Russia*

² *Tomsk Scientific Center SB RAS, Tomsk, Russia*

C4 – Coatings deposition

144 Deposition of Silicon-carbon Films on Aluminum Using a Fore-vacuum Electron Beam Source

C4-P-002101-Y

Ilya Bakeev, Viktor Burdovitsin

*Tomsk State University of Control Systems and Radioelectronics, Tomsk,
Russia*

145 **Modification of the Surface of Nitinol Products Using Carbon-based Coatings**

C4-O-033401-Y

Nikita Madzhara¹, Alexander Grenadyorov¹,
Tomiris Dzhambulova¹, Olga Korneva², Konstantin Oskomov¹,
Andrey Solovyev¹

¹ Institute of High Current Electronics SB RAS, Tomsk, Russia

² National Research Tomsk Polytechnic University, Tomsk, Russia

146 **Deposition of CsPbBr₃ Films by Magnetron Sputtering of Mechanosynthesized Targets**

C4-P-017201-Y

Egor Katkov^{1,2}, Alexander Kamenetskikh^{1,2}, Ivan Zhidkov^{2,3},
Andrey Chukin², Sergey Zayats¹, Anna Makarova¹

¹ Institute of Electrophysics UB RAS, Yekaterinburg, Russia

² Ural Federal University, Yekaterinburg, Russia

³ M.N.Mikheev Institute of Metal Physics UB RAS, Yekaterinburg, Russia

147 **Control of Precursor Dissociation in the Synthesis of Lithium-ion Electrolyte Films by Anodic Evaporation in a Low-pressure Arc**

C4-P-019601

Alexander Kamenetskikh^{1,2}, Ilya Klunев¹

¹ Institute of Electrophysics UB RAS, Yekaterinburg, Russia

² Ural Federal University, Yekaterinburg, Russia

148 **Complex Electron-ion-plasma Method of Saturation of the Surface Layer of Steel with Boron**

C4-P-027301-Y

Ivan Azhazha, Yuri Ivanov, Vladimir Shugurov,
Elizaveta Petrikova, Nikita Prokopenko, Oleg Tolkachev,
Olga Krysina, Nikolay Koval

Institute of High Current Electronics SB RAS, Tomsk, Russia

149 Features of Ion-plasma Formation on the Aluminum, Titanium and Tantalum Alloys Surfaces of Metals-alloyed Layers

C4-P-022302

Vasily Poplavsky

Belarusian State Technological University, Minsk, Belarus

150 Effect of the Substrate Heating Temperature on the Coating Structure During Evaporation of the YSZ

C4-P-018901-Y

Sergey Salnikov

Tomsk State University of Control Systems and Radioelectronics, Tomsk, Russia

151 Physico-mechanical Properties of GZO Coatings in the Forevacuum Pressure Range

C4-P-018902-Y

Sergey Salnikov

Tomsk State University of Control Systems and Radioelectronics, Tomsk, Russia

152 Structural-phase Evolution and Performance of Al-based Surface Alloys on Austenitic Stainless Steel

C4-P-023402

Andrey Solovyev, Nikita Madzhara, Grigory Ozur, Pavel Kiziridi, Anna Shipilova

Institute of High Current Electronics SB RAS, Tomsk, Russia

- 153 **Al₂O₃ Powder Pretreatment Efficiency During Powder Interactions with an Electron Beam in a Forevacuum**
C4-P-031302
Aleksey Zenin, Anna Dolgova
Tomsk State University of Control Systems and Radioelectronics, Tomsk, Russia
- 154 **Formation of Ti₂AlC Max Phase in Magnetron Sputtered Coatings on Different Sublayers After Annealing**
C4-P-036001-Y
Alexey Maslov, Alexey Nikolaev, Kamil Ramazanov
Ufa University of Science and Technology, Ufa, Russia
- 155 **Diffusion Boronizing of Wear-resistant Cast Iron YChKh28 in Powder Mixtures Containing Boron and Copper**
C4-P-038001
Alexandr Milonov¹, Undrah Mishigdorzhii¹, Aleksandr Semenov¹, Stepan Lysykh¹, Vadim Pavlyuchenko²
¹ *Institute of Physical Materials Science SB RAS, Ulan-Ude, Russia*
² *Budker Institute of Nuclear Physics SB RAS, Novosibirsk, Russia*

156 **Investigation of the Combined Modification of the Surface of E110 Alloy Samples by Applying a Chromium Coating and Processing with a High-current Pulsed Electron Beam**

C4-O-003801-Y

Alexander Gavrilenko¹, Alexander Ivanov¹, Dmitri Karpov¹, Viktor Kudiiarov², Mark Kruglyakov², Konstantin Tkachenko¹, Andrei Chikiryaka¹, Nikolai Schegolihin¹, Michael Yurchenkov¹

¹ JSC "D.V.Efremov Institute of Electrophysical Apparatus", Saint Petersburg, Russia

² National Research Tomsk Polytechnic University, Tomsk, Russia

157 **Oxidation Resistance of Cr-Al-N-O Coatings**

C4-P-032302

Vladimir Uglov¹, Xiubo Tian^{2,3}, H. Geng², Sergey Zlotski¹, Dmitry Nikanchyk¹, Aleksandra Startsaeva¹, Dmitry Zemliakou¹

¹ Belarusian State University, Minsk, Belarus

² Harbin Institute of Technology, Harbin, China

³ Songshan Lake Materials Laboratory, Dongguan, China

158 **Oxidation Resistance of Multilayer Cr-Al-N/Ti-B-N Coatings Obtained by Dual Magnetron Sputtering**

C4-P-021202-Y

Elisaveta Kraynova, Alexander Grenadyorov, Alexander Zakharov, Konstantin Oskomov, Anna Shipilova, Andrey Solovyev

Institute of High Current Electronics SB RAS, Tomsk, Russia

159 **Thermally Activated Diffusion Between Cr-Al-O-N Coating and Substrate**

C4-P-032901-Y

Dzmitry Nikanchyk¹, Vladimir Uglov¹, Xiubo Tian^{2,3},
Huiyuan Geng²

¹ Belarusian State University, Minsk, Belarus

² Harbin Institute of Technology, Harbin, China

³ Songshan Lake Materials Laboratory, Dongguan, China

160 **Simulation of Ablation Target Evaporation Modes with a Submillisecond Electron Beam**

C4-P-020702-Y

Daniil Zaytsev, Dmitry Shpanov, Ruslan Kartavtsov,
Maxim Vorobyov, Tamara Koval, Vladislav Nedoshivin
Institute of High Current Electronics SB RAS, Tomsk, Russia

161 **Vacuum-arc Plasma Assisted Coating Formation of Titanium-based Oxide Coatings**

C4-P-034001-Y

Nikita Prokopenko, Elizaveta Petrikova, Yurii Ivanov,
Vladimir Shugurov, Maxim Vorobyov, Nikolay Koval
Institute of High Current Electronics SB RAS, Tomsk, Russia

162 **Modeling of Ion Fluxes in an Ar/D₂ Discharge at Different Substrate Bias Voltages**

C4-P-042401-Y

Daniil Butniakov, Stepan Krat
National Research Nuclear University MEPhI, Moscow, Russia

- 163 **Structure and Mechanical Properties of Coatings of Multicomponent Solid Solutions of Nitrides Based on Elements Cr, Ti, Zr, Al, Si Created by Simultaneous Vacuum-arc Synthesis**

C4-O-035101

Andrey Kuleshov, Dmitry Rusalsky

Belarusian State University, Minsk, Belarus

C5 – Nanoscience and nanotechnology

- 164 **Surface Modification of TiNi-based Alloys by High-current Low-energy Electron Beams**

C5-P-021401

Anatoliy Klopotov¹, Yuri Abzaev¹, Yuri Ivanov²,
Gennady Volokitin¹, Oleg Loskutov¹

1 Tomsk State University of Architecture and Building, Tomsk, Russia

2 Institute of High Current Electronics SB RAS, Tomsk, Russia

- 165 **Modification of the Optical Characteristics of SiGe Structures by Integrating Mie Resonators**

C5-P-018701-Y

Olzhas Kukenov, Vladimir Dirko, Kirill Lozovoy, Oleg Vorsin,
Konstantin Smorodin, Xeniya Maier, Nikita Plotnikov,
Vladislav Katrenko, Genrikh Shabanov, Andrey Kokhanenko

National Research Tomsk State University, Tomsk, Russia

- 166 **Application of the Llewellyn-Jones Equation to Interpreting Product Yield Data in the Production of Metal Nanopowders by Spark Discharge Method**

C5-P-008201-Y

Artem Maksimov¹, Evgeniy Azarkevich¹, Igor Beketov^{1,2}

¹ Institute of Electrophysics UB RAS, Yekaterinburg, Russia

² Ural Federal University, Yekaterinburg, Russia

167 Microspectroscopy of Luminescent Defects Induced in Lithium Fluoride Crystals by a Beam of Accelerated Silver Ions

C5-P-014002

Victor Paperny¹, Nastya Kovalenko¹, Vladimir Dresvyansky², Alex Chernykh¹

¹ *Irkutsk State University, Irkutsk, Russia*

² *Irkutsk Branch of Institute of Laser Physics SB RAS, Irkutsk, Russia*

168 Charge Induction at Sidewalls of Nanogroove Scanned by SEM and Its Influence on the Measured Linewidth

C5-P-042701

Yury Larionov

Prokhorov General Physics Institute RAS, Moscow, Russia

169 Highly Efficient Carbon Nanostructures Synthesized by Plasmadynamic Method for Electrocatalytic Hydrogen Evolution

C5-P-046501-Y

Yuliya Shanenkova, Dmitry Nikitin, Ivan Shanenkov, Artur Nassyrbayev, Vladimir Fedorov

National Research Tomsk Polytechnic University, Tomsk, Russia

213 Simulation of Field-induced Structuring of Lithium Niobate Particle Ensembles

C5-O-017601-Y

Andrei Podoinitsyn, Andrei Oleinik

Belgorod State National Research University, Belgorod, Russia

C6 – Synchrotron and neutron research in materials science

170 In Situ Kinetics of Neutron-induced Tritium and Helium Release from Li_2TiO_3 Under Reactor Irradiation

C6-P-021801

Yuriy Ponkratov¹, Yuriy Gordienko¹, Victor Baklanov¹,
Yevgrny Tulubayev¹, Kuanysh Samarkhanov¹, Yuriy Tyurin²

¹ Institute of Atomic Energy of National Nuclear Center of the Republic of Kazakhstan, Semey, Kazakhstan

² National Research Tomsk Polytechnic University, Tomsk, Russia

171 Understanding the Local Structure of Selenium in Se-derivative Amidoxime Composites Pre- and Post-uranium Sorption Via XAS

C6-P-041001-Y

Yaroslav Zernov, Savelii Pisarev, Natalia Fedorova,
Vasilii Nemtinov, Anton Shurygin

Far Eastern Federal University, Vladivostok, Russia

172 Correlation Between Thermochromism and Crystal Structure of the Tb^{3+} Complex Studied by Single-crystal Diffraction

C6-P-041501-Y

Savelii Pisarev, Alexey Lembikov, Yaroslav Zernov,
Vasilii Nemtinov, Ekaterina Ponomareva, Nikita Ogorodnikov,
Artur Drankov, Kirill Pervakov, Anton Shurygin

Far Eastern Federal University, Vladivostok, Russia

- 173 **In Situ Studies Using Synchrotron Radiation of Phase Formation and Lattice Distortion Formation in Multielement, Multilayer Coatings Based on Nitrides and Oxides Synthesized by the Vacuum-arc Method**

C6-P-003602-Y

Andrey Leonov¹, Vladimir Denisov¹, Anton Teresov¹,
Julia Denisova¹, Mikhail Savchuk¹, Artem Egorov¹,
Zakhar Vinokurov², Alexander Shmakov^{2,1}

¹ Institute of High Current Electronics SB RAS, Tomsk, Russia

² Budker Institute of Nuclear Physics SB RAS, Novosibirsk, Russia

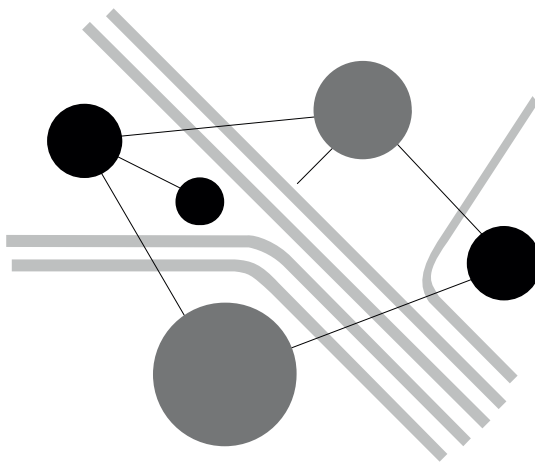
- 174 **Local Atomic Structure of Nanostructured ZnO:Eu from Synchrotron X-ray Absorption Spectroscopy**

C6-P-042001-Y

Olesya Kapustina, Yaroslav Zernov, Savelii Pisarev,
Natalya Fedorova, Tatyana Reznichenko, Anton Shurydin
Far Eastern Federal University, Vladivostok, Russia

Poster Sessions of the

22nd International Conference on Radiation Physics and Chemistry of Condensed Matter (RPC)



Conference Topics:

- *R1 – Physical and chemical processes in inorganic materials induced by energy beams*
- *R2 – Materials under extreme conditions: design, characterization and applications*
- *R3 – Modern research methods and instruments, modeling of the interaction of radiation with materials*
- *R4 – Radiation technologies: advantages and applications*

September 14 | Monday

House of Scientists

R1 – Physical and chemical processes in inorganic materials induced by energy beams

64 Criteria for the Ignition of Explosives in the Form of a Parallelepiped, a Finite-length Cylinder, and a Sphere

R1-P-007901

Alexander Khaneft

Kemerovo State University, Kemerovo, Russia

65 Numerical Simulation of the Ignition of an Ammonium Perchlorate-Aluminum Microparticle System by a Laser Pulse with a Duration of a Millisecond

R1-P-007902

Alexander Khaneft

Kemerovo State University, Kemerovo, Russia

66 Radiation-chemical Synthesis of Cerium Dioxide Nanoparticles from an Aqueous Solution of Cerium Nitrate with Polyvinylpyrrolidone

R1-P-002501

Vladislav Ilves, Mikhail Balezin, Sergey Sokovnin

Institute of Electrophysics UB RAS, Yekaterinburg, Russia

- 67 **Mean Charges of Ions Formed During Cascade Decays of Inner-shell Vacancies in High-Z Atoms**
R1-P-013501-Y
Alexander Chaynikov, Andrei Kochur, Alexey Dudenko
Rostov State Transport University, Rostov, Russia
- 68 **Increasing Surface Hydrophilicity of AISI 316L Stainless Steel Using Nanosecond UV Laser Irradiation**
R1-P-012002-Y
Marina Kandaurova, Tatyana Sablina, Ilya Zyatikov, Yurii Panchenko
Institute of High Current Electronics SB RAS, Tomsk, Russia
- 69 **Synthesis of YAG-Ce Ceramics in the GIN-600 Accelerator Diode by Self-focused Electron Beam Evaporation Method**
R1-P-029702
Vladimir Oleshko, Yichang Liu
National Research Tomsk Polytechnic University, Tomsk, Russia
- 70 **The Role of F^+ and F Centers in the Formation of OSL Properties of Thin Layers in Laser-treated Corundum Samples**
R1-P-013001-Y
Andrew Petrakovich, Alexander Surdo, Rinat Abashev
M.N. Mikheev Institute of Metal Physics UB RAS, Yekaterinburg, Russia

71 Pulsed Cathodoluminescence of YAG Ceramic Synthesized by Radiation Treatment

R1-O-030201-Y

Vitalii Vaganov¹, Abylai Kobey²

¹ National Research Tomsk Polytechnic University, Tomsk, Russia

² L.N.Gumilyov Eurasian National University, Astana, Kazakhstan

211 Influence of an Autocatalytic Reaction on the Ignition Delay Time of PETN Induced by a Laser Pulse

R1-P-018101

Evgeny Duginov¹, Evgeniya Nikolaeva¹, Alexander Khaneft²

¹ T.F. Gorbachev Kuzbass State Technical University, Kemerovo, Russia

² Kemerovo State University, Kemerovo, Russia

**R2 – Materials under extreme conditions:
design, characterization and applications**

72 Hydrogen Interaction with Nb/Zr Functionally Graded Materials: Sorption and Desorption Performance

R2-P-001101-Y

Stepan Korneev, Lomygin Anton, Mark Kruglyakov

National Research Tomsk Polytechnic University, Tomsk, Russia

- 73 **Determination of the Effects of High-temperature Gas-phase Hydrogenation on the Structure and Defect State of Zirconium E110 Alloy Using in Situ Positron Spectroscopy and Synchrotron X-ray Diffraction**

R2-P-001002-Y

Mark Kruglyakov, Viktor Kudiiarov, Roman Laptev

National Research Tomsk Polytechnic University, Tomsk, Russia

- 74 **Laser Initiation of Petn-sensitized with Bimetallic Core-shell Nanoparticles**

R2-P-025102

Anastasia Borovikova, Alexander Zvekov, Alexander Kalenskii, Alexey Ivanov, Pavel Vinodiktov

Kemerovo State University, Kemerovo, Russia

- 75 **The Strategies of Curcumine Derivation for Optics Applications**

R2-P-011802

Alexander Zvekov, Alexander Kalenskii, Alexey Ivanov, Vyacheslav Kachurin, Anna Tuboltseva

Kemerovo State University, Kemerovo, Russia

- 76 **Effects of Pre-existing Screw Dislocations on Elemental Segregation in a Refractory Complex Concentrated TiZrHfNb Alloy**

R2-P-035001-Y

Maksim Kovalenko, Igor Safronov, Nikolay Komarov, Vladimir Uglov

Belarusian State University, Minsk, Belarus

R3 – Modern research methods and instruments, modeling of the interaction of radiation with materials

- 77 **Development an Electron Beams Interaction Model for the Rapid Analysis Method for the Determination of C-14 Specific Activity in Irradiated Graphite**

R3-P-001701

Alexander Pavliuk, Ekaterina Zelenetskaya

National Research Tomsk Polytechnic University, Tomsk, Russia

- 78 **Effect of Dynamic Screening of Target Atoms in Ion Track Formation in GaN**

R3-P-036101-Y

Semion Moskalets¹, Ruslan Rymzhanov^{2,3}, Alexander Volkov¹

¹ *P.N. Lebedev Physical Institute RAS, Moscow, Russia*

² *Joint Institute for Nuclear Research, Dubna, Russia*

³ *Institute of Nuclear Physics, Almaty, Kazakhstan*

- 79 **XPS Fine Structure as a Probe for Electronic Effects in Organic Luminophores Based on Lanthanide Adducts**

R3-P-040801-Y

Anton Shurygin, Vasilii Nemtinov, Vladimir Korochentsev, Yaroslav Zernov

Far Eastern Federal University, Vladivostok, Russia

- 80 **The Cathodoluminescence of Petroleum Fractions**

R3-P-026602-Y

Nadezhda Bezlepkina^{1,2}, Alfia Spirina², Elena Bocharnikova^{1,2}, Olga Tchaikovskaya^{1,2}, Vladimir Solomonov², Irina Russkikh³, Natalya Krasnoyarova³, Natalya Tanykova⁴, Yuliya Petrova⁴

¹ *National Research Tomsk State University, Tomsk, Russia*

² *Institute of Electrophysics UB RAS, Yekaterinburg, Russia*

³ *Institute of Petroleum Chemistry SB RAS Tomsk, Tomsk, Russia*

⁴ *Surgut State University, Surgut, Russia*

R4 – Radiation technologies: advantages and applications

- 81 **Influence of UV-radiation on the Operational Properties of PTFE Vakofluvis-20**
R4-P-042102
Eugeniy Vinogradov, Alexander Voroncov, Natalia Valko
Yanka Kupala State University of Grodno, Grodno, Belarus
- 83 **Optimization of Electrophysical Parameters of Neutron-doped Monocrystalline Silicon by Heat Treatment**
R4-O-009601
Muzaffar Erdonov
Institute of Nuclear Physics, AS RU, Tashkent, Uzbekistan
- 212 **Electron Dynamics in a Pyroelectric Accelerator**
R4-O-007001-Y
Andrey Oleinik¹, Alexander Kubankin¹, Pavel Karataev², Pavel Shapovalov³
¹ *Belgorod State National Research University, Belgorod, Russia*
² *Royal Holloway College, University of London, London, United Kingdom*
³ *National Research Nuclear University MEPhI, Moscow, Russia*

Poster Sessions of the

7th International Conference on New Materials and High Technologies (NMHT)



Symposium Topics:

- *N1 – Inorganic materials and coatings*
- *N2 – Self-propagating high-temperature synthesis and advanced powder technologies*
- *N3 – Carbon materials for electronics and photonics*
- *N4 – Resource- and energy-saving technologies*
- *N5 – Synchrotron radiation detectors*

September 15 | Tuesday

House of Scientists

N1 – Inorganic materials and coatings

175 Mineral-based Protective and Decorative Coatings with Spinel-type

N1-P-002302

Nina Radishevskaya, Anna Nevmyvaka

Tomsk Scientific Center SB RAS, Tomsk, Russia

176 Optimization of Technology and Parameters of Synthesis of Yttrium-aluminum Garnet Powders by Co-deposition

N1-P-012501-Y

Daria Deulina, Vladimir Paygin, Ivan Shevchenko,

Daniil Stepichev, Edgar Dvilis, Oleg Khasanov

National Research Tomsk Polytechnic University, Tomsk, Russia

177 Application of Rational Powder Compaction Techniques for the Partially Stabilized Zirconia Ceramics Fabrication

N1-P-012502-Y

Daria Deulina, Vladimir Paygin, Edgar Dvilis,

Oleg Khasanov, Ivan Shevchenko, Oleg Tolkachev,

Daniil Stepichev

National Research Tomsk Polytechnic University, Tomsk, Russia

178 **Mullite Ceramics Doped with ZrO₂ Obtained in an Arc Plasma Environment**

N1-P-017001-Y

Valentin Shekhovtsov, Akhrorbek Ulmasov,

Anastasia Litovko

Tomsk State University of Architecture and Building, Tomsk, Russia

179 **Mechanisms of the Influence of MgO on the Formation of Crystalline Phases of SiAlON Under Nonequilibrium Conditions of Plasma Synthesis**

N1-P-017002-Y

Valentin Shekhovtsov, Aisulu Abyshova, Mark Semenovych

Tomsk State University of Architecture and Building, Tomsk, Russia

180 **Study of the Microstructure and Elemental Composition of the Surface of Carbon Stripper Foils**

N1-P-014902-Y

Zahar Lyullin^{1,2}, Sergey Trifonov³, Sergey Grigorenko¹,
Dmitrii Kostrin², Ivan Goltjaev^{1,2}

¹ JSC "D.V.Efremov Institute of Electrophysical Apparatus", Saint Petersburg, Russia

² Saint Petersburg Electrotechnical University, Saint Petersburg, Russia

³ LLC "NIA Engineering", Saint Petersburg, Russia

- 181 **Investigation of Plasma Synthesis Products in the CaO-Al₂O₃-SiO₂ System**
N1-P-018401-Y
*Akhrorbek Ulmasov, Mark Semenovkykh,
Roman Bakshanskiy*
*Tomsk State University of Architecture and Building, Tomsk,
Russia*
- 182 **Formation of Transition Layer in Mullite-SiC Ceramic Product During Plasma Melting**
N1-P-018402-Y
Akhrorbek Ulmasov, Valentin Shekhovtsov, Alina Kim
*Tomsk State University of Architecture and Building, Tomsk,
Russia*
- 183 **Synthesis of High-entropy Boride in an Open Atmosphere Using a Three-phase Electric Arc Plasma Reactor**
N1-P-019201-Y
*Zhanar Bolatova, Yulia Li, Yaroslav Shugontsov,
Yulia Neklya, Alexander Pak*
National Research Tomsk Polytechnic University, Tomsk, Russia
- 184 **Formation of Composites Based on Molybdenum Boride with the Addition of Molybdenum Disilicide by Spark Plasma Sintering**
N1-P-023001-Y
Yulia Neklya, Yuliya Vassilyeva, Alexander Pak
National Research Tomsk Polytechnic University, Tomsk, Russia

185 Enhancing the Wear Resistance of Titanium by Forming a Boron-containing Surface Alloy Via LEHCEB Treatment

N1-P-021001-Y

Evgeniy Pesterev, Evgeniy Yakovlev, Andey Solovyev,
Vsevolod Petrov, Alexey Markov

Tomsk Scientific Center SB RAS, Tomsk, Russia

186 Fabrication of Hardening Titanium Coatings by Dual Electron Beam Treatment

N1-P-010001

Tatyana Krylova, Evgeniy Yakovlev, Evgeniy Pesterev,
Vsevolod Petrov, Andrey Solovyov, Aleksey Markov

Tomsk Scientific Center SB RAS, Tomsk, Russia

187 Fabrication of Aluminum-matrix Coatings by Non-vacuum Electron Beam Cladding

N1-P-010002

Tatyana Krylova

Tomsk Scientific Center SB RAS, Tomsk, Russia

188 Computer Simulation of Thermal Fields for the Formation of a Boron-containing Surface Alloy on the Surface of a VT6 Titanium Alloy Using a Low-energy High-current Electron Beam

N1-P-031201

Andrey Solovyov, Evgeniy Yakovlev, Evgeniy Pesterev,
Vsevolod Petrov, Aleksey Markov

Tomsk Scientific Center SB RAS, Tomsk, Russia

189 Formation of a Boron-containing Surface Alloy on VT6 Titanium Alloy Using a Low-energy High-current Electron Beam

N1-P-031202

Andrey Solovyov, Evgeniy Yakovlev, Evgeniy Pesterev,
Vsevolod Petrov, Aleksey Markov

Tomsk Scientific Center SB RAS, Tomsk, Russia

190 Influence of Micro-arc Oxidation Voltage on Growth and Properties of Mn-Si-CaP and Sr-Si-CaP Coatings on Titanium

N1-P-033102-Y

Elizaveta Akimova, Ekaterina Komarova, Marina
Ostapenko, Tatiana Tolkacheva, Alexander Kashin,
Yurii Sharkeev

*Institute of Strength Physics and Materials Science SB RAS,
Tomsk, Russia*

191 Experimental Study of Corium Interaction with ALOSb Sacrificial Material Under Ex-vessel Retention Conditions

N1-P-033601

Maxat Bekmoldin, Kuanyshbek Toleubekov, Asan Akayev,
Ivan Kukushkin

*Institute of Atomic Energy of National Nuclear Center of the
Republic of Kazakhstan, Semey, Kazakhstan*

192 Zeolite-based Matrix for Radioactive Yttrium Immobilization: Structure and Surface Characteristics

N1-P-041201-Y

Natalia Fedorova, Yaroslav Zernov, Anton Belov
Far Eastern Federal University, Vladivostok, Russia

193 **Development of a Method for the Local Formation of MAO Coatings in a Short-pulse Mode in an Electrolyte Fow**

N1-P-045601-Y

Anton Kondratenko, Anton Bol'shanin, Svetlana Arbuzova,
Evgeny Khokhryakov, Pavel Butyagin
LLC "MANEL", Tomsk, Russia

194 **The Effect of Microarc Oxidation Anodic-cathodic Pulse Parameters on Coating Properties**

N1-P-046901

Svetlana Arbuzova, Anton Bol'shanin, Pavel Butyagin
MANEL, Tomsk, Russia

209 **Structural Features of Nanocrystalline Diamond Coating Formation**

N1-P-020602-Y

Alexander Mitulinsky, Alexander Gaydaychuk, Sergei Zenkin,
Stepan Linnik
National Research Tomsk Polytechnic University, Tomsk, Russia

210 **Mechanical Properties and Structural Design of Multilayer Cvd Diamond Coatings**

N1-P-050001

Alexander Gaydaychuk, Alexander Mitylinsky, Sergey Zenkin,
Stepan Linnik
National Research Tomsk Polytechnic University, Tomsk, Russia

N2 – Self-propagating high-temperature synthesis and advanced powder technologies

- 195 **Numerical Optimization of Shock-wave Synthesis in Reactive Al/S Mixtures Using Inverse-conical Ampoules**
N2-P-001902
Sergey Zelepugin, Oksana Ivanova
Tomsk Scientific Center SB RAS, Tomsk, Russia
- 196 **Physicomechanical Properties of the Ni₃Al Intermetallic Compound Depending on the Time of Low-energy Mechanical Activation and the Heating Mode of the Powder Mixture**
N2-P-002602
Evgeny Boyangin, Oleg Lapshin
Tomsk Scientific Center SB RAS, Tomsk, Russia
- 197 **Combustion Synthesis of a Silicon Nitride-based Iron-containing Composite**
N2-P-022902-Y
Tatyana Tatarinova, Olga Kryukova
Tomsk Scientific Center SB RAS, Tomsk, Russia
- 198 **Combustion Regularities of the Ti+W Mixture in Gaseous Nitrogen**
N2-P-007602
Olga Shkoda
Tomsk Scientific Center SB RAS, Tomsk, Russia

199 **On the Possibility of Obtaining Carbon Nitride C_xN_y by Self-propagating High-temperature Synthesis**

N2-P-012801

Olga Lepakova, Vladimir Kitler, Olga Shkoda

Tomsk Scientific Center SB RAS, Tomsk, Russia

200 **Preparation of Vanadium Carbonitride by Calciothermic Reduction of V_2O_5**

N2-P-031501

Boris Braverman, Aleksandr Avramchik

Tomsk Scientific Center SB RAS, Tomsk, Russia

N3 – Carbon materials for electronics and photonics

201 **Simulation of Cherenkov Radiation and Cathodoluminescence in Diamond Under the Action of Electrons with an Energy of Units MeV**

N3-P-040701

Alexander Burachenko¹, Konstantin Artyomov¹,
Vasilii Ripenko¹, Evgeniy Lipatov^{1,2}, Alexander Krylov²,
Artem Vukolov³

¹ *Institute of High Current Electronics SB RAS, Tomsk, Russia*

² *National Research Tomsk State University, Tomsk, Russia*

³ *National Research Tomsk Polytechnic University, Tomsk, Russia*

202 **Characterization of Intrinsic Stresses in Synthetic Diamond**

N3-P-000702-Y

Darya Peresedova^{1,2}, Vasilii Ripenko¹, Mikhail Shulepov¹,
Evgeniy Lipatov^{1,2}

¹ *Institute of High Current Electronics SB RAS, Tomsk, Russia*

² *National Research Tomsk State University, Tomsk, Russia*

203 **Dosimeters Based on Synthetic Diamonds
Containing NV Centers**

N3-P-000201-Y

Vasilii Ripenko¹, Daria Peresedova^{1,2},
Alexander Burachenko¹, Evgeny Lipatov^{1,2}

¹ Institute of High Current Electronics SB RAS, Tomsk, Russia

² National Research Tomsk State University, Tomsk, Russia

**N4 – Resource- and energy-saving
technologies**

204 **Optimal Design of the Combustion Chamber in
Cycloidal Rotary Engine**

N4-P-007701-Y

Dmitry Kasaev

Tomsk Scientific Center SB RAS, Tomsk, Russia

205 **Search for Green Inhibitors for St3 Steel for
Aggressive Environments**

N4-P-021302

Olga Golovanova

Dostoevsky Omsk State University, Omsk, Russia

206 **Production of High-entropy Carbide by the
Vacuum-free Electric Arc Method Using Carbon
from Biomass**

N4-P-027001-Y

Arseniy Kurdyukov, Yulia Neklya, Yuliya Vassilyeva,
Alexander Pak

National Research Tomsk Polytechnic University, Tomsk, Russia

N5 – Synchrotron radiation detectors

- 207 **Warm Magnets for the Proton Beam Medical Facility Luch-proton. Extensive Analysis of Simulation Results in Numerical Models**

N5-P-037101-Y

Artemiy Malyshev, Evgeny Tsyplakov, Alexander Kozlov, Nikolay Markov, Valentina Zamyshlyayeva, Timur Kulevoy
National Research Center "Kurchatov Institute", Moscow, Russia

- 208 **Ceramic and Composite Pixelated Scintillation Structures for X-rays and Neutron Detection Fabricated by a Digital Light Processing**

N5-P-005102

Petr Sokolov¹, Lydia Ermakova¹, Alexander Sergeev^{1,2}, Elizaveta Borisevich³, Ilya Komendo^{1,2}, Mikhail Murashov¹, Andrey Popov⁴, Dmitry Sosnov⁴, Vitaly Mechinsky^{1,3}, Mikhail Korzhik^{1,3}

¹ *National Research Centre "Kurchatov Institute", Moscow, Russia*

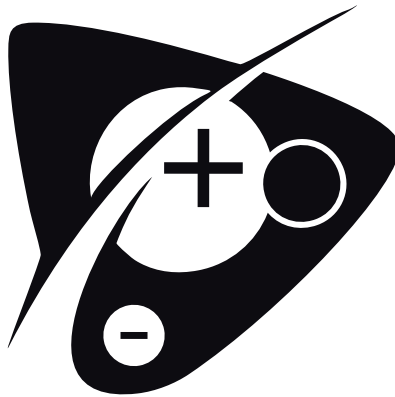
² *Mendeleev University of Chemical Technology of Russia, Moscow, Russia*

³ *Institute for Nuclear Problems Belarus State University, Minsk, Belarus*

⁴ *LLC Fabrika RTT, Moscow, Russia*

SCIENCE IN SIMPLE TERMS

Within the Framework of EFRE 2026



As a part of the Congress, leading scientists deliver accessible lectures for schoolchildren. The goal of this educational event is to spark curiosity and show that science can be engaging and accessible. Talks include "The History of Electric Lighting," "Plasma Medicine," and "A Brief Excursion to the Basics of Thermodynamics." Young audience will learn how discoveries shape our world—from light and medicine to energy.

September 16 | Wednesday

Large Conference Hall in the Rubin

15:30 **Registration**

–

16:00

16:00 **The History of Electric Lighting**

–

16:40 Andrey Kozyrev

Institute of High Current Electronics SB RAS, Tomsk, Russia

The lecture for schoolchildren focuses on the invention and development of light source technology: the electric arc, the Yablochkov candle, the incandescent lamp, the fluorescent lamp, and the semiconductor diode. It examines the electrical, chemical, and optical processes occurring in lighting devices. This material is intended for students in grades 9 and up.

16:40 **Plasma medicine**

—

17:20 Yuriy Mamontov

Institute of Electrophysics UB RAS, Yekaterinburg, Russia

This lecture is devoted to the use of plasma—the fourth state of matter—in medicine. It turns out that plasma, as an energy-rich medium, can be used in a wide variety of medical fields, from treating various types of wounds to cosmetology. For example, in surgery, plasma is used to make highly precise incisions, similar to those made with a Jedi Knight's sword. This also accelerates the healing of wounds and ulcers. Low-temperature plasma can also be used to disinfect instruments and even fight cancer! You'll learn about all this, as well as how you can touch a substance with a temperature of tens of thousands of degrees and recover from it, in this lecture.

17:20 **Coffe-break**

—

17:40

17:40 **A brief excursion to the basics of
thermodynamics**

–
18:20 S3-P-032702-Y

Massimiliano Bestetti

Politecnico di Milano, Milan, Italy

The lecture analyzes the birth of classical thermodynamics, highlighting its historically complex and nonlinear development. The evolution of the discipline reveals a chronological paradox: the conceptual core of the Second Law was first formulated by Sadi Carnot in 1824, effectively preceding the codification of the First Law. Carnot developed his fundamental theory of the maximum efficiency of heat engines by adopting the "caloric" model (heat conceived as a material fluid), despite the scientific community having long been divided between this established vision and the competing theory of heat as microscopic motion. Between 1840 and 1850, the independent studies of Julius Robert von Mayer and the painstaking experiments of James Prescott Joule put a definitive end to the First Law; by providing the exact quantitative measure of the equivalence between heat and mechanical work, they translated into a universal law the idea of conservation of energy (ἐν- (in, within) and ἔργον (work, action, labor)) that had already been in the air for several decades, decreeing the definitive collapse of the fluid model. The theoretical synthesis was finally accomplished by Rudolf Clausius and Lord Kelvin. This led to the dual and complementary formulation of the Second Law of Thermodynamics: Clausius's statement, based on the spontaneous direction of heat flow, and Kelvin's statement, focused on the limits of the conversion of heat into work. The conceptual framework will find its formal completion in 1865, when Clausius will unify these visions by introducing the state function entropy (ἐν, "inside") and tropé (τροπή, "transformation" or "upheaval") (content of transformation), thus providing the mathematical and conceptual key to explain the direction of spontaneous processes and sanctioning the definitive temporal asymmetry of macroscopic phenomena.

Notes

Notes

Notes

Print run: 500 copies