

2019

# PROGRAM OF THE CONFERENCE

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1 DAY

**NANOWIRES. NUCLEATION. NON-CLASSICAL GROWTH. WELCOME RECEPTION**

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2 DAY

**WIDE-BANDGAP SEMICONDUCTORS. SOLUTIONS. SILICON. THIN FILMS. DENDRITIC GROWTH.  
PHASE TRANSITIONS. POSTER SESSION 1**

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3 DAY

**NUCLEATION THEORY AND APPLICATIONS. LOW-DIMENSIONAL STRUCTURES. ELECTRONICS.  
GLASSES. THIN FILMS. ELECTROCRYSTALLIZATION. MELTS. BANQUET**

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4 DAY

**SIMULTANEOUS TRANSLATION SECTION (DIFFERENT TOPICS). STRESSES AND PHASE  
TRANSITIONS. COMPUTER SIMULATIONS. THIN FILMS. POSTER SESSION 2**

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5 DAY

**QUANTUM DOTS. NANOWIRES. DEFECTS IN CRYSTALS. CLOSING CEREMONY**

**1 DAY**

**1 JULY**

**GENERAL SCHEDULE**

	<i>Hall 1</i>	<i>Hall 2</i>
12:00–14:00	<b>REGISTRATION</b>	
14:00–14:40	<b>OPENING CEREMONY</b>	
14:40–18:15	MINI-SECTION <b>NANOWIRES</b>	MINI-SECTION <b>NUCLEATION.NON-CLASSICAL GROWTH.</b>
18:15–20:00	<b>WELCOME RECEPTION*</b>	

*\*for participants with "WR" letters on the badge*

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**12:00–14:00**      **REGISTRATION**

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**14:00–14:40**      **OPENING CEREMONY** ▶ *Hall 1*

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**14:40–15:15**      ★ **PLENARY LECTURE** ▶ *Hall 1*  
**ROLE OF NUCLEATION IN THE VAPOR-LIQUID-SOLID GROWTH OF III-V SEMICONDUCTOR NANOWIRES**  
Dubrovskii Vladimir *Russia*

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**15:15–15:50**      ★ **PLENARY LECTURE** ▶ *Hall 1*  
**NUCLEATION STATISTICS AND LENGTH DISTRIBUTIONS FOR WURTZITE AND ZINC BLENDE III-V NANOWIRES GROWING FROM LIQUID NANODROPLETS WITH VERY LOW GROUP V CONTENT**  
Glas Frank *France*

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**15:55–16:20**      ● **INVITED LECTURE** ▶ *Hall 1*  
**III-V NANOWIRES GROWN BY MBE ON Si AND SiC SUBSTRATES**  
Cirlin Georgii *Russia*

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● **INVITED LECTURE** ▶ *Hall 2*  
**THE CALCIUM CARBONATE CASE STUDY. FROM IONS TO THE AMORPHOUS PHASE. CLASSICAL OR NON-CLASSICAL NUCLEATION?**  
Testino Andrea *Switzerland*

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**16:20–16:40**      ○ **REPORT** ▶ *Hall 1*  
**CONSTITUENTS OF THE GROWTH OF GaN NANOWIRE ARRAYS: NUCLEATION, RADIUS SELF-REGULATION, HEIGHT SELF-EQUILIBRATION, BUNDLING, ELASTIC AND PLASTIC RELAXATION**  
Kaganer Vladimir *Germany*

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○ **REPORT** ▶ *Hall 2*  
**NON-CLASSICAL CRYSTAL GROWTH OF FLUORIDES AND OXIDES**  
Fedorov Pavel *Russia*

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**16:40–17:05**      **COFFEE BREAK**

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**17:05–17:30**      ● **INVITED LECTURE** ▶ *Hall 1*  
**IMPROVEMENT OF CRYSTALLINE QUALITY OF AlGaN BY NUCLEATION GROWTH AND ULTRAVIOLET LASER APPLICATION**  
Iwaya Motoaki *Japan*

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● **INVITED LECTURE** ▶ *Hall 2*  
**NUCLEATION EFFECTS IN RECEPTORS CLUSTERING ON A T-CELL'S SURFACE**  
Guria Georgii *Russia*

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**17:30–17:50**      ○ **REPORT** ▶ *Hall 1*  
**INFLUENCE OF INDIUM ADDITION ON NUCLEATION AND GROWTH OF WHISKERS FROM TIN FILMS IN ELECTRONICS**  
Dutta Indranath *USA*

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○ **REPORT** ▶ *Hall 2*  
**CRYSTALLIZATION OF HYDROXYAPATITE ON WATER-SOLUBLE POLYMER. A BIOMIMETIC APPROACH TO HYBRID MATERIALS**  
Mizutani Tadashi *Japan*

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17:50–18:10

○ REPORT ▶ *Hall 1*

**DYNAMICS OF ATOMIC STEPS AND SHAPE TRANSFORMATIONS OF NANOWIRES**

Hervieu Yury *Russia*

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○ REPORT ▶ *Hall 2*

**MICRO-CANONICAL DESCRIPTION OF GROWTH AND THERMAL DECOMPOSITION OF ALUMINA CLUSTERS**

Chemin Arsène *France*

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18:15–20:00

**WELCOME RECEPTION\***

**2 DAY**

# 2 JULY

## GENERAL SCHEDULE

	<i>Hall 1</i>	<i>Hall 2</i>
9:00–9:30	<b>REGISTRATION</b>	
9:30–13:05	MINI-SECTION <b>WIDE-BANDGAP SEMICONDUCTORS</b>	MINI-SECTION <b>GROWTH FROM SOLUTIONS</b>
13:05–14:30	<b>LUNCH</b>	
14:30–17:25	MINI-SECTION <b>SILICON.THIN FILMS</b>	MINI-SECTION <b>DENDRITES. PHASE TRANSITIONS</b>
17:25–19:00	<b>POSTER SESSION 1</b>	

Optional **WALKING OR SIGHTSEEING TOUR**  
10:30–13:30

9:00–9:30

## REGISTRATION

9:30–10:05

★ PLENARY LECTURE ▶ *Hall 1*

### **BIFURCATION THEORY OF PLASTICITY, DAMAGE AND FAILURE**

Umantsev Alexander *USA*

10:10–10:35

● INVITED LECTURE ▶ *Hall 1*

### **BULK GROWTH OF GaN. HOW TO OVERCOME THE EQUILIBRIUM CRYSTAL SHAPE?**

Bockowski Michal *Poland*

● INVITED LECTURE ▶ *Hall 2*

### **ATOMIC-SCALE TUNING OF QUANTUM DOT NUCLEATION AND GROWTH WITH ION-BEAM MATERIAL IRRADIATION**

Dvurechenskiy Anatoly *Russia*

10:35–10:55

○ REPORT ▶ *Hall 1*

### **MBE GROWTH, STRUCTURAL AND OPTICAL PROPERTIES OF GALLIUM ARSENIDE PHOSPHIDE NITRIDE HETEROSTRUCTURES ON SILICON**

Fedorov Vladimir *Russia*

○ REPORT ▶ *Hall 2*

### **GROWTH FROM SOLUTIONS, STRUCTURE AND PROPERTIES OF CRYSTALLINE FILMS OF LINEAR OLIGOPHENYLS AND THEIR DERIVATIVES WITH END SUBSTITUENTS**

Lyasnikova Maria *Russia*

10:55–11:15

○ REPORT ▶ *Hall 1*

### **DISLOCATION REACTIONS IN SEMI-POLAR GaN EPITAXIAL LAYERS GROWN ON Si(001) OFFCUT SUBSTRATE USING AlN AND 3C-SiC BUFFER LAYERS**

Sorokin Lev *Russia*

○ REPORT ▶ *Hall 2*

### **ANOMALIES OF PROPERTIES IN KCNSH MIXED CRYSTALS**

Rudneva Elena *Russia*

11:15–11:40

## COFFEE BREAK

11:40–12:05

● INVITED LECTURE ▶ *Hall 1*

### **FORMATION OF WIDE-BANDGAP SEMICONDUCTORS ON Al<sub>2</sub>O<sub>3</sub>**

Bouravleuv Alexei *Russia*

● INVITED LECTURE ▶ *Hall 2*

### **THE PROBLEM OF GROWING MIXED CRYSTALS AND HIGH-EFFICIENCY K<sub>2</sub>(Co, Ni) (SO<sub>4</sub>)<sub>2</sub> · 6H<sub>2</sub>O OPTICAL FILTERS**

Voloshin Alexey *Russia*

12:05–12:25

○ REPORT ▶ *Hall 1*

### **NUCLEATION AND GROWTH MECHANISM OF MOISSANITE - NATURAL SiC**

Shiryaev Andrey *Russia*

○ REPORT ▶ *Hall 2*

### **FEATURES OF KDP CRYSTAL GROWTH AT ULTRAHIGH SUPERSATURATION**

Manomenova Vera *Russia*

12:25–12:45

○ REPORT ▶ *Hall 1*

## LOW-TEMPERATURE SYNTHESIS OF $\alpha$ -SiC NANOCRYSTALS

Beisenkhanov Nurzhan *Kazakhstan*

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○ REPORT ▶ *Hall 2*

## CRYSTALS OF PI-CONJUGATED LINEAR CO-OLIGOMERS: NUCLEATION AND GROWTH FROM SOLUTIONS

Postnikov Valery *Russia*

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12:45–13:05

○ REPORT ▶ *Hall 1*

## NUCLEATION OF THE GRAPHENE-LIKE Si<sub>3</sub>N<sub>4</sub> LAYER ON THE SI (111) STUDIED BY STM

Mansurov Vladimir *Russia*

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○ REPORT ▶ *Hall 2*

## GROWTH OF HIGH-PERFECT MIXED COBALT NICKEL POTASSIUM SULFATE HEXAHYDRATE CRYSTALS BY THE TEMPERATURE DIFFERENCE TECHNIQUE WITH CONTINUOUS SOLUTION FEEDING

Vasilyeva Natalya *Russia*

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13:05–14:30

LUNCH

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14:30–15:05

★ PLENARY LECTURE ▶ *Hall 1*

## ADSORPTION INDUCED DEFORMATION AND PHASE TRANSFORMATIONS IN NANOPOROUS CRYSTALS

Neimark Alexander *USA*

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15:10–15:35

● INVITED LECTURE ▶ *Hall 1*

## LOW DIMENSIONAL NANOSTRUCTURE GROWTH ON ANISOTROPIC SILICON (110) RECONSTRUCTION SURFACE

Asaoka Hidehito *Japan*

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● INVITED LECTURE ▶ *Hall 2*

## SUPERFAST DOMAIN WALL MOTION AND GROWTH OF DENDRITE DOMAINS IN FERROELECTRICS. ANALOGY WITH CRYSTAL GROWTH

Shur Vladimir *Russia*

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15:35–15:55

○ REPORT ▶ *Hall 1*

## SILICON NANO-CRYSTALLITES FOR ADVANCED APPLICATION

Ivanda Mile *Croatia*

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○ REPORT ▶ *Hall 2*

## PARTITIONING AND SEGREGATION IN 12CR FE-BASE OXIDE DISPERSION STRENGTHENED STEEL

Jang Jinsung *Republic of Korea*

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15:55–16:20

● INVITED LECTURE ▶ *Hall 1*

## MECHANISMS OF SILICON ALLOTROPES' CRYSTALLIZATION IN CONDENSED MEDIA BY IN SITU DIFFRACTION OF SYNCHROTRON RADIATION.

Courac Alexandre *France*

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● INVITED LECTURE ▶ *Hall 2*

## NUCLEATION AND EQUILIBRIUM DENSITY OF MISFIT DISLOCATION LOOPS IN CORE-SHELL NANOWIRES

Gutkin Mikhail *Russia*

instead of **WAVE HEAT PROCESSES IN LOW-DIMENSIONAL MATERIALS** by Krivtsov Anton *Russia*



# CHANGED

**16:20–16:45****COFFEE BREAK****16:45–17:05**○ REPORT ▶ *Hall 1***THE INFLUENCE OF ARGON GAS FLUX AND DEPOSITION RATE ON OPTICAL AND PHYSICAL PROPERTIES OF DC MAGNETRON SPUTTERED ITO THIN FILM***Kadivar Erfan Iran*○ REPORT ▶ *Hall 2***THE FINGERPRINTS OF HOMOGENEOUS NUCLEATION AND CRYSTALLIZATION IN POLYAMID-66 AS STUDIED BY COMBINED INFRARED (IR) SPECTROSCOPY AND FAST SCANNING CHIP CALORIMETRY***Kremer Friedrich Germany***17:05–17:25**○ REPORT ▶ *Hall 1***DIAMOND NUCLEATION FROM ACTIVATED VAPOR PHASE***Spitsyn Boris Russia*○ REPORT ▶ *Hall 2***MATHEMATICAL MODELING OF DENDRITIC CRYSTAL GROWTH IN MUSHY ZONE OF METALLIC ALLOYS***Ivanova Anna Ukraine***CANCELED****17:25–19:00****POSTER SESSION 1**



**3 DAY**

# 3 JULY

## GENERAL SCHEDULE

	<i>Hall 1</i>	<i>Hall 2</i>
9:00–9:30	<b>REGISTRATION</b>	
9:30–13:05	MINI-SECTION <b>NUCLEATION THEORY AND APPLICATIONS</b>	MINI-SECTION <b>LOW-DIMENSIONAL STRUCTURES. ELECTRONICS</b>
13:05–14:20	<b>LUNCH</b>	
14:20–14:30	<b>JOINT PHOTOGRAPHY (AT THE ENTRANCE OF THE BUILDING)</b>	
14:35–18:30	MINI-SECTION <b>GLASSES. THIN FILMS</b>	MINI-SECTION <b>ELECTROCRYSTALLIZATION. GROWTH FROM MELTS</b>
Optional 19:00–22:00	<b>BANQUET (INCLUDING NEVA RIVER CRUISE)</b>	

9:00–9:30

## REGISTRATION

9:30–10:05

★ PLENARY LECTURE ▶ *Hall 1*

### **MOLECULAR COMPONENT OF THE DISJOINING PRESSURE IN DROPLETS AT HETEROGENEOUS NUCLEATION**

Shchekin Alexander *Russia*

10:10–10:35

● INVITED LECTURE ▶ *Hall 1*

### **WATER CONDENSATION AND ATMOSPHERIC PHENOMENA**

Smirnov Boris *Russia*

● INVITED LECTURE ▶ *Hall 2*

### **GROWTH AND PROPERTIES OF NOVEL GRAPHENE-BASED MAGNETIC HETEROSTRUCTURES FOR SPINTRONIC DEVICE APPLICATIONS**

Sakai Seiji *Japan*

10:35–10:55

○ REPORT ▶ *Hall 1*

### **THERMODYNAMICS OF NANOSIZED SESSILE DROPLETS ON SOLID SUBSTRATE — CONTACT ANGLE, ADSORPTIONS AND LINE TENSION**

Tatyanenko Dmitry *Russia*

○ REPORT ▶ *Hall 2*

### **2D MESOSCALE COLLOIDAL CRYSTAL PATTERNS COMPOSED BY MICROSPHERES ON SUBSTRATES**

Bredikhin Vladimir *Russia*

10:55–11:15

○ REPORT ▶ *Hall 1*

### **A MODEL OF SHAPES OF LIQUID CYLINDRICAL INCLUSIONS MIGRATING THROUGH A CRYSTAL, AND ITS APPLICATIONS FOR STUDYING KINETICS OF CRYSTALLIZATION (DISSOLUTION)**

Garmashov Sergey *Russia*

○ REPORT ▶ *Hall 2*

### **CLUSTERING AND MELTING IN 2D CUPRATE-LIKE LAYERS**

Chetverikov Alexandr *Russia*

11:15–11:40

## COFFEE BREAK

11:40–12:05

● INVITED LECTURE ▶ *Hall 1*

### **KINETIC MODEL FOR CONDENSATION-INDUCED RESTRUCTURING OF ATMOSPHERIC SOOT AGGREGATES**

Gor Gennady *USA*

● INVITED LECTURE ▶ *Hall 2*

### **THE SCALING OF SUBNANOMETER EOT GATE DIELECTRICS FOR ULTIMATE NANO CMOS TECHNOLOGY**

Iwai Hiroshi *Japan*

12:05–12:25

○ REPORT ▶ *Hall 1*

### **THE FLUCTUATION STAGE OF PHASE TRANSITION: NON-EQUILIBRIUM KINETICS**

Zmievskaia Galina *Russia*

○ REPORT ▶ *Hall 2*

### **TWO DIMENSIONAL ELECTRON GAS FORMATION AT AlGaN/GaN INTERFACES**

Popok Vladimir *Denmark*

12:25–12:45

○ REPORT ▶ *Hall 1*

**DETERMINATION OF THE CRITICAL NUCLEI SIZE OF POLYMER FOLDED CHAIN CRYSTALS VIA A MICROSCOPIC KINETICS MODEL**

*Xu Jun China*

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○ REPORT ▶ *Hall 2*

**HIGH RESOLUTION ANALYSIS ON Ni/Au/Ni/Au OHMIC CONTACT TO P-AlGaN/GaN SEMICONDUCTOR**

*Hu Zhengfei China*

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12:45–13:05

○ REPORT ▶ *Hall 1*

**NON-STATIONARY NUCLEATION IN LAYERS OF GAS-SATURATED AMORPHOUS ICE IN THE PRESENCE OF ARTIFICIALLY INTRODUCED CRYSTAL CENTERS**

*Tomin Andrey Russia*

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○ REPORT ▶ *Hall 2*

**PHASE FIELD SIMULATION OF LITHIUM DIFFUSION AND DIFFUSION-INDUCED STRESSES IN BATTERY ELECTRODES WITH CONSIDERATION OF PHASE SEPARATION**

*Zhang Junqian China*

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13:05–14:20

**LUNCH**

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14:20–14:30

**JOINT PHOTOGRAPHY** ▶ *At the entrance of the building*

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14:35–15:10

★ PLENARY LECTURE ▶ *Hall 1*

**CRYSTALLIZATION OF GLASS-FORMING MELTS: NEW ANSWERS TO OLD QUESTIONS**

*Schmelzer J.W.P. Germany*

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15:10–15:15

● INVITED LECTURE ▶ *Hall 1*

**SPONSOR PRESENTATION**

*Alexey Dergachev (TESCAN Ltd)*

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15:20–15:45

● INVITED LECTURE ▶ *Hall 1*

**CRYSTAL NUCLEATION- AND CRYSTAL GROWTH-CONTROLLED FORMATION OF BULK METALLIC GLASSES**

*Louzguine Dmitri Japan*

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● INVITED LECTURE ▶ *Hall 2*

**NON-LINEAR EFFECTS IN ELECTRODEPOSITION OF SEMICONDUCTOR NANOSTRUCTURES IN IONIC LIQUIDS**

*Borisenko Natalia Germany*

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15:45–16:05

○ REPORT ▶ *Hall 1*

**AMENDING CRYSTALLISATION DRIVING FORCE TO ASSESS THE GLASS FORMING ABILITY OF MELTED METALLIC GLASSES**

*Roula Abdelmalek Algeria*

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○ REPORT ▶ *Hall 2*

**NANOSCALE ELECTROLESS SILVER PLATING WITH CONTROLLED NUCLEATION AND GROWTH CHARACTERISTICS**

*Munch Falk Germany*

16:05–16:25

○ REPORT ▶ *Hall 1*

**SURFACE ENERGY AT THE CRYSTAL NUCLEUS-GLASS INTERFACE, THE SIZE OF THE CRITICAL NUCLEUS OF CRYSTALS AND THE ENERGY BARRIER FOR THE FORMATION OF A STABLE CRYSTALLINE NUCLEUS IN ALKALI SILICATE GLASSES**

Sycheva Galina *Russia*

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○ REPORT ▶ *Hall 2*

**THE PROCESSES OF CRYSTALLIZATION AND DEGASSING OF METAL MELTS, QUENCHING FROM THE LIQUID STATE**

Chernov Andrey *Russia*

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16:25–16:45

○ REPORT ▶ *Hall 1*

**NUCLEATION AND GROWTH OF CRYSTALS IN SODA-LIME-SILICA GLASSES**

Yuritsyn Nikolay *Russia*

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○ REPORT ▶ *Hall 2*

**DYNAMICS OF CRYSTAL NUCLEATION IN DEEPLY SUPERCOOLED METALLIC MELT**

Pisarev Vasily *Russia*

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16:45–17:10

**COFFEE BREAK**

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17:10–17:30

○ REPORT ▶ *Hall 1*

**DIFFUSE  $\alpha$ - $\beta$  PHASE TRANSITION IN THE SURFACE LAYERS OF QUARTZ**

Vettegren Victor *Russia*

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○ REPORT ▶ *Hall 2*

**IN SITU RECONSTRUCTION OF CRYSTAL SHAPE GROWN IN AN AXISYMMETRIC KYROPOULOS SYSTEM**

Duffar Thierry Vincent *France*

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17:30–17:50

○ REPORT ▶ *Hall 1*

**TWO APPROACHES TO FORMATION OF THIN  $Mg_2Si$  FILMS ON Si SURFACE: ULTRA-FAST DEPOSITION AT 400 C AND ROOM TEMPERATURE DEPOSITION ON AMORPHOUS Si**

Gouralnik Alexander *Russia*

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○ REPORT ▶ *Hall 2*

**CRYSTAL GROWTH OF LARGE CZTS SINGLE CRYSTAL BY VERTICAL GRADIENT FREEZE**

Tablaoui Meftah *Algeria*

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17:50–18:10

○ REPORT ▶ *Hall 1*

**PREPARATION AND FORMATION MECHANISM OF NANO-Mg MATERIALS PREPARED BY PHYSICAL VAPOR DEPOSITION**

Song Xiping *China*

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○ REPORT ▶ *Hall 2*

**CRYSTAL GROWTH OF LARGE ANISOTROPIC  $La_2NiO_{4+\delta}$  PLATELETS VIA MOLTEN-FLUX**

Hinterding Richard *Germany*

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18:10–18:30

○ REPORT ▶ *Hall 1*

**EFFECTS OF AMORPHOUS STRUCTURES ON EXPLOSIVE CRYSTALLIZATION OF SPUTTER-DEPOSITED AMORPHOUS GERMANIUM THIN FILMS**

Okugawa Masayuki *Japan*

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**18:10–18:30**

○ REPORT ▶ *Hall 2*

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**FORMATION AND COMPOSITION FEATURES OF SELF-SCROLLING HYDROSILICATE  
CRYSTALS**

*Krasilin Andrey Russia*

**Moved to Posters 4 July**

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**19:00–22:00**

**BANQUET**

**4 DAY**

# 4 JULY

## GENERAL SCHEDULE

*Hall 1*

*Hall 2*

9:30–13:25

MINI-SECTION  
**MIXED SECTION (WITH  
SIMULTANEOUS TRANSLATION)**

MINI-SECTION  
**STRESSES AND PHASE TRANSITIONS**

13:25–14:45

**LUNCH**

14:45–17:15

MINI-SECTION  
**COMPUTER SIMULATION**

MINI-SECTION  
**THIN FILMS**

17:15–18:40

**POSTER SESSION 2**

Optional  
10:00–14:00

**EXCURSION TO HERMITAGE**

9:30–10:05

★ PLENARY LECTURE ▶ *Hall 1*

🎧 **RELAXED STRUCTURE OF INTERPHASE BOUNDARIES IN TWO-LAYER METAL FILMS: MOLECULAR DYNAMICS**

Ievlev V.M. *Russia*

10:10–10:30

○ REPORT ▶ *Hall 1*

🎧 **THE CRYSTALLIZATION PROCESS IN THE PRESENCE OF A FLOW**

Eydelman Evgeny *Russia*

○ REPORT ▶ *Hall 2*

**SHEAR INDUCED MARTENSITIC TRANSFORMATIONS IN CRYSTALLINE POLYETHYLENE: DIRECT MD SIMULATION**

Zubova Elena *Russia*

10:30–10:50

○ REPORT ▶ *Hall 1*

🎧 **DYNAMICS OF NON-STATIONARY GROWTH OF BUBBLES AT DEGASSING OF LIQUID SOLUTION WITH CAPILLARY AND VISCOUS EFFECTS**

Kuchma Anatoly *Russia*

○ REPORT ▶ *Hall 2*

**ANISOTROPY IN THE ELASTICITY OF CRYSTALS: FUNDAMENTAL SOLUTION, DEFECTS, NONLINEARITIES, HARDNESS, HETEROSTRUCTURES – APPROXIMATIONS, AB INITIO AND FINITE-ELEMENT STUDIES**

Telyatnik Rodion *Russia*

10:50–11:10

○ REPORT ▶ *Hall 1*

🎧 **NUCLEATION AND GROWTH OF NEW PHASE NUCLEI IN HETEROGENEOUS REACTIONS**

Kortsenshteyn Naum *Russia*

○ REPORT ▶ *Hall 2*

**STRAIN-DRIVEN SELF-ASSEMBLY OF PLASMONIC NANO-VOIDS AND DOTS IN SiGeSn/Si MULTILAYERS**

Gaiduk Piotr *Belarus*

11:10–11:30

○ REPORT ▶ *Hall 1*

🎧 **METHOD OF CHEMICAL SUBSTITUTION OF ATOMS IS A NEW METHOD OF GROWING LOW-DEFECTIVE EPITAXIAL FILMS. NANOSCALED SILICON CARBIDE ON SILICON: A NEW BANDGAP MATERIAL FOR MICRO- AND OPTOELECTRONICS**

Kukushkin Sergey *Russia*

○ REPORT ▶ *Hall 2*

**CRYSTALLINE NUCLEATION IN AMORPHOUS MATERIALS UNDER SHEAR DEFORMATION**

Mokshin Anatoly *Russia*

11:30–11:35

○ REPORT ▶ *Hall 1*

🎧 **ON A NEW METHOD OF GROWTH OF NANO-SiC ON Si**

Lukyanov Andrey (Organizer, New Silicon Technologies Ltd.) *Russia*

11:35–12:00

**COFFEE BREAK**

12:00–12:25

● INVITED LECTURE ▶ *Hall 1*

🎧 **THE FASTEST CRYSTAL FORMATION MECHANISM**

Kaschenko Mikhail *Russia*

12:00–12:25

- INVITED LECTURE ▶ *Hall 2*  
**STRESS-ASSISTED PHASE AND CHEMICAL TRANSFORMATIONS IN SOLIDS VIA CHEMICAL AFFINITY TENSOR**  
Freidin Alexander *Russia*

12:25–12:45

- REPORT ▶ *Hall 1*  
🎧 **PHENOMENOLOGICAL MODELS OF NUCLEATION AND GROWTH OF METAL ON A SEMICONDUCTOR**  
Plusnin Nikolay *Russia*

- REPORT ▶ *Hall 2*  
**PHOTOPOLYMERIZATION PRODUCTS OF NEW DIACETYLENE ALCOHOL DERIVATIVES**  
Alekseev Alexander *Russia*

12:45–13:05

- REPORT ▶ *Hall 1*  
🎧 **GROWTH OF AlN AND GaN BULK CRYSTALS BY SUBLIMATION SANDWICH- METHOD**  
Mokhov Evgeny *Russia*

- REPORT ▶ *Hall 2*  
**MODEL OF NUCLEATION LIMITED BY ANOMALOUS GRAIN-BOUNDARY DIFFUSION**  
Sibatov Renat *Russia*

13:05–13:25

- REPORT ▶ *Hall 1*  
🎧 **SITE-SPECIFIC MICRO CROSS SECTIONING BY A FIB-SEM. ADVANTAGES FOR INVESTIGATION OF THIN FILMS**  
Lukashova Maria (TESCAN Ltd. - General Sponsor)

- REPORT ▶ *Hall 2*  
**ION BEAM AND X-RAY METHODS OF THIN FILM COATING DIAGNOSTICS**  
Egorov Vladimir *Russia*

13:25–14:45

**LUNCH**

14:45–15:15

- ★ PLENARY LECTURE ▶ *Hall 1*  
**V. V. SLYOZOV: SOME PERSONAL REFLECTIONS**  
Juern Schmelzer *Germany*, Davydov Leonid *Ukraine*

15:20–15:45

- INVITED LECTURE ▶ *Hall 1*  
**AB INITIO METHODS IN THE DESCRIPTION OF PHASE TRANSFORMATIONS AND INTERMEDIATE AND TRANSITION STATES**  
Osipov Andrey *Russia*
- INVITED LECTURE ▶ *Hall 2*  
**FINITE SIZE AND PROXIMITY EFFECTS IN ULTRA THIN EPITAXIAL TRANSITION METAL SUPERLATTICES**  
Wolff Maximilian *Sweden*

15:45–16:05

- REPORT ▶ *Hall 1*  
**SIMULATION OF NUCLEATION BY FREE ENERGY DENSITY FUNCTIONAL METHOD**  
Lvov Pavel *Russia*
- REPORT ▶ *Hall 2*  
**NUCLEATION OF  $Sb_2S_3$  IN THIN FILM Ge-Sb-S**  
Shanelova Jana *Czech Republic*



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16:05–16:35

**COFFEE BREAK**

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16:35–16:55

○ REPORT ▶ *Hall 1*

**"ATOMISTIC MODELING OF SOLID-STATE PHASE TRANSITIONS IN POLY (3-ALKYLTHIOPHENES): FROM FORM II TO FORM I POLYMORPHS**

Casalegno Mose' *Italy*

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○ REPORT ▶ *Hall 2*

**SURFACE MORPHOLOGY, MICROSTRUCTURE AND PIEZOELECTRIC RESPONSE OF PEROVSKITE ISLANDS DURING THE PYROCHLORE TO PEROVSKITE PHASE TRANSFORMATION IN THIN PZT FILMS**

Pronin Igor *Russia*

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16:55–17:15

○ REPORT ▶ *Hall 1*

**MOLECULAR DYNAMICS SIMULATION OF TI CRYSTAL GROWTH PROCESS WITH CRYSTAL-LIQUID CONFIGURATION METHOD**

Yang Xinhua *China*

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○ REPORT ▶ *Hall 2*

**EFFECT OF GAMMA IRRADIATION ON CONDUCTIVITY OF CdFeTe**

Mehrabova Matanat *Azerbaijan*

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17:15–18:40

**POSTER SESSION 2**

**5 DAY**

# 5 JULY

## **GENERAL SCHEDULE**

*Hall 1*

*Hall 2*

9:30–13:20 MINI-SECTION  
**QUANTUM DOTS. NANOWIRES**

9:30–13:20 MINI-SECTION  
**DEFECTS IN CRYSTALS**

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13:20–13:40 **CLOSING CEREMONY**

9:30–10:05

★ PLENARY LECTURE ▶ *Hall 1*

**ON THE PROBABILITY-FREE MECHANISM OF MACROSCOPIC IRREVERSIBILITY AND MICROSCOPIC FOUNDATION OF THERMODYNAMICS**

Zakharov Anatoly *Russia*

10:10–10:35

● INVITED LECTURE ▶ *Hall 1*

**SYNTHESIS AND ASSEMBLY OF COLLOIDAL NANOMATERIALS TOWARDS ADVANCED FUNCTIONALITIES**

Striccoli Marinella *Italy*

● INVITED LECTURE ▶ *Hall 2*

**VAPORIZATION AND THERMODYNAMIC PROPERTIES OF OXIDE SYSTEMS AND MATERIALS: FROM BORATE TO HAFNATE**

Stolyarova Valentina *Russia*

10:35–10:55

○ REPORT ▶ *Hall 1*

**ON THE THEORY OF NUCLEATION AND GROWTH IN HIGH-TEMPERATURE SYNTHESIS OF COLLOIDAL QUANTUM DOTS**

Tovstun Sergey *Russia*

○ REPORT ▶ *Hall 2*

**THREE-CATION SCANDOBORATES: SYNTHESIS, STRUCTURE, PROPERTIES AND CRYSTAL GROWTH**

Kokh Alexander *Russia*

10:55–11:15

○ REPORT ▶ *Hall 1*

**FORMATION MECHANISMS OF HEMATITE CONCAVE NANOCUBES**

Wang Zhoucheng *China*

○ REPORT ▶ *Hall 2*

**PHASE COMPOSITION AND ELECTRICAL TRANSPORT IN THIN FILMS SYNTHESIZED BY EVAPORATION OF BI<sub>2</sub>SE<sub>3</sub> ON MICA**

Kokh Konstantin *Russia*

11:15–11:35

**COFFEE BREAK**

11:35–12:00

● INVITED LECTURE ▶ *Hall 1*

**QUANTITATIVE STRAIN DISTRIBUTION IN ELECTROMECHANICALLY COUPLED IV-IV AND III-V SEMICONDUCTOR QUANTUM DOTS**

Cherkashin Nickolay *France*

● INVITED LECTURE ▶ *Hall 2*

**CHARACTERISTICS OF THE COMPOSITION, PURITY AND HOMOGENEITY OF SUBSTANCES IN THE MATERIAL SCIENCE**

Zlomanov Vladimir *Russia*

12:00–12:20

○ REPORT ▶ *Hall 1*

**DOPING LIMIT IN GaAs:Te AS A DISORDER TO (PARTIAL LOCAL) CHEMICAL SHORT-RANGE ORDER TRANSITION IN CRYSTALLINE ALLOY - ELECTRICAL AND DIFFUSE X-RAY SCATTERING STUDIES USING ANNEALING**

Slupinski Tomasz *Poland*

12:00–12:20

○ REPORT ▶ *Hall 2*

**THEORETICAL MODELLING OF OXYGEN VACANCY CHARACTERISTICS IN LEAD ZIRCONATE TITANATE  $\text{PbZr}_{1-x}\text{Ti}_x\text{O}_3$  (PZT). EFFECTS ON STRUCTURAL AND FERROELECTRIC PROPERTIES**

Bogdanov Alexander *Russia*

12:20–12:40

○ REPORT ▶ *Hall 1*

**GROWTH AND STUDY OF ALLOYED GaP NANOWIRE HETEROSTRUCTURES**

Bolshakov Alexey *Russia*

○ REPORT ▶ *Hall 2*

**INFLUENCE OF DISLOCATIONS AND TOPOLOGICAL DEFECTS IN THIN SMECTIC FILMS ON STRUCTURE AND POLAR CHARACTERISTICS**

Dolganov Pavel *Russia*

12:40–13:00

○ REPORT ▶ *Hall 1*

**VAPOR–SOLID–SOLID MECHANISM OF Au-CATALYZED III-V NANOWIRE GROWTH**

Koryakin Alexandr *Russia*

○ REPORT ▶ *Hall 2*

**NUCLEATION AND EQUILIBRIUM DENSITY OF MISFIT DISLOCATION LOOPS IN CORE-SHELL NANOWIRES**

Gutkin Mikhail *Russia*

13:00–13:20

○ REPORT ▶ *Hall 1*

**MBE GROWTH AND PROPERTIES OF III-V AND NITRIDE NANOWIRES ON HYBRID SiC/Si SUBSTRATES. Si DIFFUSION INTO GaN NANOWIRES**

Reznik Rodion *Russia*

○ REPORT ▶ *Hall 2*

**EFFECT OF DIFFUSION ON NUCLEATION OF DISLOCATION LOOPS**

Sorokin Mikhail *Russia*

13:20–13:40

**CLOSING CEREMONY**

**2 JULY** 17:25–19:00

# POSTER SESSION 1

Index number near report corresponds to poster number at Poster Session

## MECHANISMS OF FORMATION OF CRYSTALS AND THIN FILMS (THEORY AND EXPERIMENT)

**1. Crystallisation of layers in PZT/LNO/Si heterostructures**

Atanova A.V. *Russia*

**2. Theoretical studies of the structural peculiarities in III/V semiconductors**

Baranovskii S.D. *Germany*

**3. The model for in-plane and out-of-plane growth regimes of III-V nanowires**

Berdnikov Y. *Russia*

**4. The origin of phase transition and the usual evolutions of the unit-cell constants of the Nasicon structures of the solid solution  $\text{LiTi}_{2-x}\text{Ge}_x(\text{PO}_4)_3$**

Boumar N. *Algeria*

**5. Effect of Growth Conditions on Surface Morphology and Concentration of Growth Defects of CdTe/GaAs (100) Epitaxial Layers in the MOCVD Process**

Chilyasov A.V. *Russia*

**6. Effect of double solid-phase epitaxial recrystallization on the defect density in ultrathin silicon-on-sapphire layers**

Fedotov S.D. *Russia*

**7. Cellular nano-structuring in SiGe(Sn) alloy after fast crystallization: a platform for heteroepitaxy**

Gaiduk Peter *Belarus*

**8. On growth of SbSI films by the quasi-closed volume technique and their properties**

Garmashov S. *Russia*

**9. Determination of crystallisation temperature of mullite by luminescence spectra of europium and chromium ions**

Igo A.V. *Russia*

**10. Crystal growth at spontaneous crystallization in non-inertial systems in space station and Earth conditions by the example of synthesis and growth of crystals from solution-melt**

Kalashnikov E.V. *Russia*

**11. Optical properties of spatially indirect excitons in Zinc blende GaSb/GaAs QD structure**

Kang H.-K. *Republic of Korea*

**12. Proton-conducting composite materials based on superprotonic crystals**

Komornikov V.A. *Russia*

**13. Study of Phase Equilibria in the  $\text{CSHSO}_4\text{-CSH}_2\text{PO}_4\text{-NH}_4\text{H}_2\text{PO}_4\text{-H}_2\text{O}$  System**

Komornikov V.A. *Russia*

**14. Reversible 2D-3D transition in thin GaN layer formed on the AlN (0001) surface**

Konfederatova K.A. *Russia*

**15. Formation of  $\text{AgInS}_2\text{ZnS}$  colloidal nanocrystals and their photoluminescence properties**

Korepanov O.A. *Russia*

**16. On the formation of axial heterostructures in catalytic ternary III-V nanowires**

Koryakin A.A. *Russia*

**17. The growth and properties of guanylurea(1+) hydrogen phosphate (guh<sub>p</sub>) crystal**

Kozlova N.N. *Russia*

**18. Highly-luminescent crystals of a novel linear pi-conjugated thiophene-phenylene co-oligomer with benzothiadiazole fragment**

Kulishov A.A. *Russia*

**19. Investigation of thermoelectric properties of thin-film nanostructures MnSi**

Kuznetsov Y. *Russia*

**20. In situ investigations of the growth kinetics of the prism and pyramid faces of KDP crystal at ultrahigh supersaturations**

Lyasnikova M.S. *Russia*

**21. Thin films of bismuth: preparation methods and structural changes under the influence of laser radiation**

Makarova E.S. *Russia*

**22. Porous Carbon Nanomaterials Produced as Inverse or Direct Replica of Ion-Track Etched Polymer Membranes**

Muench F. *Germany*

**23. Synthesis of TiN, Ti and  $\text{TiSi}_2$  thin films for the contact system of solar cells**

Nussupov K.Kh. *Kazakhstan*

**24. 2D island nucleation controlled by nanocluster diffusion during Si and Ge epitaxy on  $\text{Si}(111)\text{-(7}\times\text{7)}$  surface at elevated temperatures**

Petrov A. *Russia*

**25. Crystal growth and unique morphology of heterostructured Aluminum hydroxide film formed on Aluminum alloys using steam**

Serizawa A. *Japan*

**2 JULY** 17:25–19:00

## POSTER SESSION 1

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### MECHANISMS OF FORMATION OF CRYSTALS AND THIN FILMS (THEORY AND EXPERIMENT)

- 27. Growth and characterization of alkali-earth halide scintillator crystals**  
Shalaev A. *Russia*
- 28. Morphology Evolution During Early Stage of Single Crystal Diamond Homoepitaxial Growth by Microwave Plasma Chemical Vapor Deposition**  
Shu G. *China*
- 29. Microstructure of barium-strontium titanate based glass ceramics**  
Shur V.Ya. *Russia*
- 30. Influence of elastic stress on crystal phase of GaP nanowires**  
Sibirev N.V. *Russia*
- 31. formation of steps at the three-phase line of contact under the growth vapor-liquid-solid nanowires**  
Swaikat N. *Russia*
- 32. Glass formation and nucleation kinetics in the MeO-B<sub>2</sub>O<sub>3</sub>-P<sub>2</sub>O<sub>5</sub> system, where Me=Ca, Sr, Ba**  
Sycheva G.A. *Russia*
- 33. Synthesis of complex hydrosulphates of singly charged cations**  
Timakov I.S. *Russia*
- 34. Different morphologies of silicoaluminophosphate SAPO-11: experiment and theory**  
Tiuliukova I.A. *Russia*
- 35. Oriented growth of BaSrTiO<sub>3</sub> thin films on semi-insulating silicon carbide**  
Tumarkin A. *Russia*
- 36. Glycine-nitrate synthesis of crystal solid solutions of barium-strontium titanate T**  
Tumarkin A. *Russia*
- 37. A mathematical model of finite-size effects in thin film crystallization**  
Vorobyov Y. *Russia*
- 38. Relationship of Mg<sub>2</sub>Si phase-content and thermal expansion properties of Mg-Si and Mg-Si-Ca alloys**  
Wu Sh. *China*
- 39. Influence of preformed nuclei on crystal nucleation kinetics in soda-lime-silica glass**  
Yuritsyn N.S. *Russia*
- 40. Preparation and study of water-soluble cobalt and nickel salts**  
Zainullin O.B. *Russia*
- 41. A flow effect on distribution of supercritical nucleation centers during the crystallization process illustrated by the example of boron carbide-reinforced aluminum**  
Durnev M.A. *Russia*
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### FUNDAMENTAL PROBLEMS (NUCLEATION THEORY, PHASE TRANSITIONS ETC.)

- 42. Striation in melt-grown crystals as a self-oscillating process**  
Fedorov P.P. *Russia*
- 43. Crystal structures and phase transitions of alumina at nanoscale: a theoretical study based on a benchmarking of empirical potentials**  
Laurens G. *France*
- 44. Unusual temperature induced shortening of C(sp<sup>3</sup>)-C(sp<sup>3</sup>) bond length in bibenzyl compounds in crystal state: observation and explanation**  
Smirnov A. *Russia*
- 45. Self-assembly processes of arrays of CdS nanocrystals synthesized using the Langmuir-Blodgett method**  
Svit K. *Russia*
- 46. Unified temperature scale for description of crystallization kinetics in supercooled liquids and glasses**  
Yarullin D.T. *Russia*
- 47. Phase diagram calculation in the generalized lattice model**  
Zakharov M.A. *Russia*

**4 JULY** 17:15–18:40

## POSTER SESSION 2

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### PHYSICS, CHEMISTRY AND MECHANICS OF CRYSTALLINE SURFACE

**48. Gaussian beam sphere optics in condensed matter research**

Bredikhin V. *Russia*

**49. Two Step Annealing NiOx Promote the Growth of Perovskite Crystal Toward High Performance Ambient Stable Perovskite Solar Cell**

Chen Ch.-P. *Taiwan*

**50. The evolution of post-critical nucleation centers of the crystallization process at the centrifugal-casting method for design of gradient composites of Aluminum and Graphite**

Eydelman E.D. *Russia*

**51. Investigation of elastic properties of nano-SiC grown on Si by atomic substitution**

Grashchenko A.S. *Russia*

**52. Using recovered silicon nanoparticles from silicon wire sawing to modify the surface of graphene nanosheets for Li-ion batteries anode application**

Hecini M. *Algeria*

**53. Surface oxidation effect on photo-reactivity of topological insulator Bi<sub>2</sub>Se<sub>3</sub> thin films as a function of air exposure time**

Hong S.-B. *Republic of Korea*

**54. Chemical characteristics of steam-induced hydroxide composite film surface formed on Mg alloys**

Ishizaki T. *Japan*

**55. High-speed formation of sintered bond-line by addition of 350 nm Cu or Cu@Ag particles between micron Cu@Ag particles**

Jong-Hyun L. *Republic of Korea*

**56. Energy band diagram analysis of TiO<sub>2</sub>/electrolyte interface in photoelectrochemical cell**

Kim D. *Republic of Korea*

**57. A Study on Recovery of High Purity Valuable Materials from End-of-Life Thin Film Photovoltaic Panels**

Kim T.Y. *Republic of Korea*

**58. The tensile strength of SiC fibers with thin zirconia coatings derived by different methods**

Prokip V.E. *Russia*

**59. Peculiarities of growth of a non-Kossel crystal via Chernov's mechanism**

Redkov A.V. *Russia*

**60. Growth of a faceted pore in crystalline media via Burton-Cabrera-Frank mechanism**

Redkov A.V. *Russia*

**61. Dependence of properties of variable gradient porous structure of silicon on the method of formation**

Rubtsova K. *Russia*

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### GROWTH AND INVESTIGATION OF WIDE-BANDGAP SEMICONDUCTORS (III-NITRIDES, SiC, ETC.)

**62. Aromatic-like carbon nanostructures created on the vicinal SiC surfaces**

Benemanskaya G. *Russia*

**63. Boron Nitride epilayers grown on AlO<sub>x</sub>N<sub>y</sub> and Al<sub>2</sub>O<sub>3</sub> buffer layer**

Caban P.A. *Poland*

**64. Formation and study of the properties of InGaN polytype structures grown by low-temperature molecular-beam epitaxy**

Kotlyar K. *Russia*

**65. GaN nanocrystals formation on the graphene-like g-AlN and g-Si<sub>3</sub>N<sub>3</sub> surfaces**

Milakhin D.S. *Russia*

**66. Control of the polarity of GaN epitaxial layers grown on SiC/Si templates**

Mizerov A. *Russia*

**67. Growth of high purity 3 inch SiC crystals with high structural perfection**

Nagalyuk S. *Russia*

**68. Impurity effects on nucleation and growth of SiC clusters and layers on Si(100) and Si(111)**

Pezoldt J. *Germany*

**4 JULY** 17:15–18:40

## POSTER SESSION 2

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### GROWTH AND INVESTIGATION OF WIDE-BANDGAP SEMICONDUCTORS (III-NITRIDES, SiC, ETC.)

**69. Semipolar GaN on a nanostructured Si(100) substrate: the technology and the properties**

Rodin S.N. *Russia*

**70. GaN selective epitaxy in sub-micron windows formed by ion beam nanolithography**

Rodin S.N. *Russia*

**71. The influence of silicon substrate orientation with a buffer sublayer of silicon carbide on the growth and polar properties of thin aluminum nitride films**

Sergeeva O.N. *Russia*

**72. Bulk layers of polar and semipolar AlN, GaN and AlGaIn grown by the HVPE method on Si plates 2 'in diameter with a buffer layer of nano-SiC synthesized by the atomic substitution method**

Sharofidinov Sh.Sh. *Russia*

**73. Synchrotron-based photoemission study of electronic structure of GaN grown by plasma assisted molecular beam epitaxy**

Timoshnev S. *Russia*

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### LATTICE DEFECTS AND THEIR INFLUENCE ON GROWTH AND PROPERTIES OF THE CRYSTAL

**74. The correlation study of the crystal structure with optical properties of ammonium hydrogen phosphate single crystals doped by chromium and titanium**

Bolshakova N. *Russia*

**75. Transformation of lattice point defects under influence of light pulses in irradiated LiF crystals**

Bryukvina L.I. *Russia*

**76. Growth of  $\text{Ho}_{0.9}\text{Er}_{0.1}\text{Fe}_3(\text{BO}_3)_4$  from solutions based on  $\text{Bi}_2\text{Mo}_3\text{O}_{12}$  and  $\text{Li}_2\text{WO}_4$**

Gudim I. *Russia*

**77. Effect of doping with rare-earth oxides on the structural and mechanical characteristics of zirconia crystals partially stabilized by yttria**

Kulebyakin A.V. *Russia*

**78. Growth and structural study of the new lithium barium borate  $\text{Li}_3\text{Ba}_4\text{Sc}_3\text{B}_5\text{O}_{22}$**

Kuznetsov A. *Russia*

**79. Optical properties of defective CdMnSe epitaxial films**

Mehrabova M. *Azerbaijan*

**80. Low-temperature thermocycling as a new method of expulsion of quenching defects from the Peierls conductor orthorhombic tantalum trisulfide**

Minakova V.E. *Russia*

**81. Structure, thermophysical and electrophysical properties of single crystals of solid solutions based on zirconium dioxide, co-doped with scandium, yttrium and cerium**

Popov P.A. *Russia*

**82. Synthesis, growth and structural features of new rare earth borate  $\text{KCaNd}(\text{BO}_3)_2$**

Shevchenko V.S. *Russia*

**83. Perspective materials for photonics based on  $\text{LiBa}_{12}(\text{BO}_3)_7\text{F}_4$  fluoride borates crystals grown in the Li, Ba, B // O, F quaternary reciprocal system**

Simonova E. *Russia*

**84. Effective charge in LiNbO3 films fabricated by radio-frequency magnetron sputtering method**

Sumets M. *Russia*

**85. Structural and optical research of a GaAs layer grown on a Si/Al<sub>2</sub>O<sub>3</sub> substrate**

Sushkov A.A. *Russia*

**86. Cross-sectional studies of hexagonal Ge inclusions in the Ge/Si (001) structure**

Sushkov A.A. *Russia*


**87. Influence mechanism of temperature on the lattice misfit and elastic module in Mo-rich Ni3Al based single crystal superalloy**

Zeng X. *China*

**88. Travelling wave solutions for the Penrose-Fife phase field model**

L.N. Davydov *Ukraine*





**MECHANISMS AND NON-LINEAR  
PROBLEMS OF NUCLEATION AND  
GROWTH OF CRYSTALS AND  
THIN FILMS**  
2019