



7th International Fall School on Organic Electronics

School program



September 13-16, 2021

Moscow, Russia

ISPM RAS

<http://www.ifsoe.ru>

7th INTERNATIONAL FALL SCHOOL ON ORGANIC ELECTRONICS – 2021 (IFSOE-2021)

Organizers

Division of Chemistry and Material Science of Russian Academy of Sciences

The Ministry of Science and Education of Russia

Enikolopov Institute of Synthetic Polymeric Materials of Russian Academy of Sciences (ISPM RAS)

Lomonosov Moscow State University (MSU)

Printed Electronics Technologies Limited Liability Company (PrintElTech LLC)

Eklogit Limited Liability Company (Eklogit LLC)

Scientific program

- 1) **Fundamentals of organic electronics:** charge transport, modeling, photophysics, etc.
- 2) **Design and synthesis of materials for organic electronics:** organic conductors and semiconductors, dielectrics, substrates, etc.
- 3) **Organic field-effect transistors:** single crystal, polymer and monolayer OFETs, integrated circuits and related devices.
- 4) **Organic light-emitting devices:** OLEDs and OLETs, white light-emitting devices, TADF devices, organic lasers.
- 5) **Organic and hybrid solar cells:** small molecules and polymer photovoltaics, tandem cells, perovskites-based photovoltaics, etc.
- 6) **Organic sensors:** physical (pressure, temperature, photo, etc.) sensors, chemo- and biosensors.
- 7) **Characterization techniques:** various spectroscopy, microscopy, and x-ray scattering techniques, charge mobility measurements, thermal and surface analysis, HOMO and LUMO evaluation, biomedical applications, etc.
- 8) **Technologies of organic electronics:** printing of organic materials and devices, roll-to-roll techniques, ink formulations, encapsulation, etc.

School-conference Chairs

Prof. Sergey Ponomarenko (Enikolopov Institute of Synthetic Polymeric Materials of RAS, Russia)

Prof. Dmitry Paraschuk (Lomonosov Moscow State University, Russia)

International Advisory Board

Prof. Vladimir Agranovich (Institute for Spectroscopy RAS, Russia)

Prof. Mikhail Alfimov (Photochemistry Center of RAS, Russia)

Prof. Paul Berger (Ohio State University, USA)

Prof. Christoph Brabec (University Erlangen-Nürnberg, Germany)

Prof. Sergei Chvalun (National Research Center “Kurchatov Institute”, Russia)

Prof. Vladimir Dyakonov (University of Würzburg, Germany)

Prof. Antonio Facchetti (Northwestern University, USA)

Prof. Sir Richard Friend (University of Cambridge, UK)

Prof. Marcus Halik (University Erlangen-Nürnberg, Germany)

Dr. Stephan Kirchmeyer (Heraeus Precious Metals GmbH, Germany)

Prof. Alexei Khokhlov (Lomonosov Moscow State University, Russia)

Prof. Guglielmo Lanzani (Politecnico di Milano, Italy)

Prof. Maxim Pshenichnikov (University of Groningen, the Netherlands)

Dr. Abderrahim Yassar (Ecole Polytechnique, France)

Local Organizing Committee

Dr. Elena Agina – *Vice Chairman*

Victoria Chekusova – *workshop secretary*

Dr. Askold Trul

Daniil Anisimov

Polina Shaposhnik

***The 7th International Fall School
on Organic Electronics – 2021 Time Schedule***
Moscow, Russia (GMT+3)

	Monday <i>September 13th</i>	Tuesday <i>September 14th</i>	Wednesday <i>September 15th</i>	Thursday <i>September 16th</i>
	School			
9:45-10:00	School opening			
10:00	Paul Blom	Magnus Berggren	Ronald Resel	Paolo Samori
11:00	Dmitry Paraschuk	Luisa Torsi	Sergey Ponomarenko	Deiter Neher
12:00	Coffee-break			
	Valentina Utochnikova	Alexandra Freidzon	Sandrine Heutz	Ivan Scheblykin
13:00	<u>Oral talks 1</u>	<u>Oral talks 2</u>	Jie Min	<u>Oral talks 5</u>
14:00			<u>Oral talks 4</u>	
15:00	Lunch			School closing
16:00	<u>Poster session 1</u>	<u>Oral talks 3</u>	<u>Poster session 3</u>	
		<u>Poster session 2</u>		
17:00	Welcome-party		Conference Dinner	

Monday, September 13th

	Chair: <i>Sergey Ponomarenko</i>
9:45 – 10:00	School opening
10:00 – 11:00	T-1. <i>Paul Blom.</i> Electron and Hole Transport in Organic Semiconductors
11:00 – 12:00	T-2. <i>Dmitry Paraschuk.</i> Organic Light Emitting Transistors

12:00 – 12:30	Coffee-break
	Chair: <i>Paul Blom</i>
12:30 – 13:00	I-1. Valentina Utochnikova. Lanthanide Complexes as OLED Emission Layers
	<u>Oral talks 1.</u>
13:00 – 13:15	O-1. Maxim Kazantsev. Selectively Fluorinated Furan-Phenylene Co-Oligomers for Light-Emitting Transistors
13:15 – 13:30	O-2. Koskin Igor. Furan-Phenylene Co-Oligomers: Theoretical Modelling Paves Way for the Molecular Smart-Design
13:30 – 13:45	O-3. Makarii Kozlov. Methods for Reducing the Lifetime of the Excited State to Increase the Efficiency of Lanthanide-Based OLEDs
13:45 – 14:00	O-4. Kostas Daoulas. Mesoscopic Modeling of Disordered Morphologies of Blends and Block-Copolymers for Application in Light Emitting Diodes
14:00 – 14:15	O-5. Sergey Tokarev. Modification of the Carrier Mobility of Conducting PF-EP Polymer by Doping with Thiophene Derivatives
14:15 – 14:30	O-6. Andrey Kornikov. Ytterbium-Europium Dibenzoylmethanates with Bathophenanthroline in OLEDs
14:30 – 15:30	Lunch
	Chair: <i>Yuriy Luponosov</i>
15:30 – 16:40	<u>Poster session 1 (P-1 – P-14)</u>
16:40 – 17:00	Discussion regarding to <u>Poster session 1</u>
17:00 – 18:00	Welcome-party

Tuesday, September 14th

	Chair: <i>Elena Agina</i>
10:00 – 11:00	T-3. Magnus Berggren. P- and n-type Conducting Polymers for Bioelectronic and Internet-of-Things Applications
11:00 – 12:00	T-4. Luisa Torsi. Bioelectronic Single-Molecule Label-Free Sensing with Large-Area Transducing Interfaces
12:00 – 12:30	Coffee-break
	Chair: <i>Luisa Torsi</i>
12:30 – 13:00	I-2. Alexandra Freidzon. Theoretical Prediction of Charge Mobility in Molecular Organic Semiconductors
	<u>Oral talks 2.</u>
13:00 – 13:15	O-7. Oleg Kharlanov. Spectroscopic Assessment of Charge-Carrier Mobility in Organic Semiconductors

13:15 – 13:30	O-8. <i>Konstantin Ivanov.</i> Spiroconjugation Effect on Optoelectronic Properties of Spirobi[indene]-1,1'(3H,3'H)-diones with Extended Conjugation
13:30 – 13:45	O-9. <i>Sergey Novikov.</i> Density of States in Locally Ordered Amorphous Organic Semiconductors: Emergence of the Exponential Tails
13:45 – 14:00	O-10. <i>Vladimir Nikitenko.</i> Off-Diagonal Disorder and Field-Assisted Diffusion in Disordered Organic Semiconductors
14:00 – 14:15	O-11. <i>Roman Peshkov.</i> DFT Benchmark of Geometry and Excited States of Spiro[4,4]nona-1,3,6,8-tetraene
14:15 – 14:30	O-12. <i>Rishabh Saxena.</i> Role of the Reorganization Energy for Charge Transport in Disordered Semiconductors
14:30 – 15:30	Lunch
	Oral talks 3. Chair: <i>Oleg Borshchev</i>
15:30 – 15:45	O-13. <i>Daniil Anisimov.</i> The Mechanism for Changing the Organic Field-Effect Transistors (OFETs) Electrical Properties of under Toxic Gases Exposure
15:45 – 16:00	O-14. <i>Alexandra Zvyagina.</i> Self-Assembly of Recyclable Supramolecular 1D Semiconductors from bis-Phthalocyanines on Solid Surfaces
16:00 – 16:15	O-15. <i>Yuriy Luponosov.</i> Liquid Luminophores Based on Organic π -conjugated Oligomers with Alkylsilyl Solubilizing Groups
16:15 – 16:30	O-16. <i>Alexey Kuevda.</i> Enhancement of Light-Emitting Properties of 2D Organic Semiconductors via Molecular Doping
16:30 – 17:15	Poster session 2 (P-15 – P-23)
17:15 – 17:30	Discussion regarding to Poster session 2

Wednesday, September 15th

	Chair: <i>Dieter Neher</i>
10:00 – 11:00	T-5. <i>Roland Resel.</i> Thin Film Structure by X-ray Scattering Methods: The Example of an Asymmetric BTBT Derivative
11:00 – 12:00	T-6. <i>Sergey Ponomarenko.</i> Gas Sensing with Organic Electronics: from Single Sensors to Electronic Nose
12:00 – 12:30	Coffee-break
	Chair: <i>Roland Resel</i>
12:30 – 13:30	T-7. <i>Sandrine Heutz.</i> Molecular Magnetic Semiconductor Thin Films for Spintronic Applications
13:30 – 14:00	I-3. <i>Jie Min.</i> Balancing the Efficiency, Stability, and Cost Potential for Organic Solar Cells via a New Figure of Merit
	Oral talks 4.

14:00 – 14:15	O-17. <i>Rinat Salikov.</i> Cascade Reactions in Seven-Membered Systems: Towards Innovative Functional Materials
14:15 – 14:30	Sponsor talk. <i>Michael Trusov.</i> Imaging Ellipsometry and Near-field Microscopy Techniques for Organic Electronics Applications
14:30 – 15:30	Lunch
	Chair: <i>Andrey Sosorev</i>
15:30 – 17:05	Poster session 3 (P-24 – P-41)
17:05 – 17:30	Discussion regarding to Poster session 3
17:30 – 21:00	Conference Dinner

Thursday, September 16th

	Chair: <i>Ivan Scheblykin</i>
10:00 – 11:00	T-8. <i>Paolo Samori.</i> Multifunctional Organic Electronics
11:00 – 12:00	T-9. <i>Dieter Neher.</i> Organic Solar Cells – On the Generation and Fate of Free Carriers
12:00 – 12:30	Coffee-break
	Chair: <i>Dmitry Paraschuk</i>
12:30 – 13:00	I-4. <i>Ivan Scheblykin.</i> Luminescence Spectroscopy and Microscopy for Conjugated Polymers
	Oral talks 5.
13:00 – 13:15	O-18. <i>Alexei Komolov.</i> Conduction Band Energy Profile and Surface Work Function of Vacuum Evaporated Molecular Films on Binary Semiconductor Surfaces
13:15 – 13:30	O-19. <i>Artur Mannanov.</i> Effect of Oligothiophene π -bridge Length in D- π -A Star-Shaped Oligomers on Photophysics and Photovoltaic Performance in Organic Solar Cells
13:30 – 13:45	O-20. <i>Pavel Komarov.</i> Mesoscale Simulations of Photovoltaic Polymer Nanocomposites
13:45 – 14:00	O-21. <i>Maxim Skorotetcky.</i> Synthesis and Properties of Thienoacenes for Organic Electronics
14:00 – 14:15	O-22. <i>Elizaveta Gusarova.</i> Ultrathin Hybrid Surface Coatings from Graphene Oxide and Polydiacetylenes for Fabricating Organic Photodiodes
14:15 – 14:30	O-23. <i>Ben Carwithen.</i> Hot Carrier Cooling Dynamics in Lead Halide Perovskite Nanocrystals Revealed by Ultrafast Multi-Pulse Spectroscopy
14:30 – 15:00	School closing

Poster session 1

Monday, September 13th, 15:30

Abramov, Anton A.	P1	Compact Hardware Platform for Multiple Electrochemical and Metal-Oxide Sensors Evaluation
Balakirev, Dmitry O.	P2	Novel Thiophene-Containing Donor Small Molecules With Various Topology: Synthesis, Properties and Application in Organic Solar Cells
Borshchev, Oleg V.	P3	New Organic Luminophores for Optoelectronics
Bujaldon, Roger	P4	Tuning the Optoelectronic Properties of Sulfurated Carbazole Derivatives: the Case of the Bisbenzothienocarbazole Core
Burdakov, Yaroslav V.	P5	Modelling of Charge Transport in Polymers with Imbedded High-Ordered Nanoscale Regions
Chukhlantseva, Anna N.	P6	Novel Chalcones Containing 4-bis(2-hydroxyethyl)aminophenyl Moiety: Synthesis and Optical Properties.
Chuyko, Irina A.	P7	Novel Donor-Acceptor Triphenylamine-Based Polymer for Organic and Hybrid Electronics
Dyadishchev, Ivan V.	P8	Synthesis and Properties of Novel Liquid Luminescent Chromophores Based on Organic π -Conjugated Oligomers
Fedorenko, Roman S.	P9	Effect of Molecular Doping on Charge Transport and Electroluminescence of 2D Organic Semiconductors
Kuklin, Konstantin N.	P10	Impact of the Chemical Purity on the Semiconductor Properties of 2D Single Crystals
Kalinichenko, Nadezhda K.	P11	Synthesis of Novel Donor-Acceptor Triazatruxene-Based Isomers End-Capped with Alkyldicyanovinyl or Cyanoacetate Groups
Khmelnitskaya, Alina G.	P12	A New Approach for Obtaining Functional Dimethylsiloxane Matrices for Dielectric Elastomer Actuators
Kleymyuk, Elena A.	P13	Copolymers Based on Polyvinylidene Fluoride and Chlorotrifluoroethylene with Grafted Polyacrylonitrile or Poly (Ethyl Methacrylate) Chains for Ferroelectric Organic Field-Effect Transistors
Kobeleva, Elena S.	P14	Origin of Poor Photovoltaic Performance of Bis(tetracyanoantrathiophene) Non-Fullerene Acceptor

Poster session 2

Tuesday, September 14th, 16:30

Kuimov, Anatolii	P15	Optical Properties of Selectively Fluorinated Furan-Phenylene Co-Oligomers
Martynov, Ilya V.	P16	Towards Understanding the Chemical Structure - Oxidation Stability Relationships for Conjugated Polymers used in Organic Solar Cells
Moshkina, Tatiana N.	P17	V-Shaped Chromophores Based on Quinoxaline and Cyclopenta[c] pyridine: Synthesis and Perspective Applications
Poimanova, Elena Yu.	P18	A New Approach for Fabrication of Biorecognition Layer in Electrolyte-Gated Organic Field-Effect Transistors

Polinskaya, Marina S.	P19	Synthesis and Properties of New Organosilicon Derivatives of [1] benzotieno[3,2-b][1] - benzothiophene with Different Length of Terminal Aliphatic Substituents
Sachkov, Yuri I.	P20	Conductivity of Solution-Processed Thin Films of Chlorophyll Derivatives: Drop-Casting vs. Spin Coating
Koshelev, Daniil S.	P21	Lanthanide Complexes with 2-(tosylamino)-benzylidene-N-(aryloyl)-hydrazones in NIR OLEDs
Kuznetsov, Kirill M.	P22	Europium β -Diketonates with Dipyrido [3,2-a:2',3'-c] Phenazine in OLED
Obukhov, Alexandr E.	P23	Organic Electronic and the Orbital Properties Singlets, Triplets, Duplets, Quartets Electronic Excited States in the Series Multiatomic Compounds of Fluorescence and Generation of Dye-Lasers

Poster session 3

Wednesday, September 15th, 15:30

Bezsudnov, Igor V.	P24	Rejuvenation of Two-Phase Composite Employing Liquid-Gas Phase Transition Using Different Solvents
Chekusova, Victoria P.	P25	Fabrication of the Patterned Polymer Substrates for Fully Printed Polymer OFETs Creation
Samburskiy, Denis E.	P26	Carbazole-Decorated Spiroconjugated Pure Organic Phosphorescent Materials Based on 2,2'-spirobi[indene] and 5,5'-spirobi[cyclopenta[b]thiophene] Linkers
Saunina, Anna Yu.	P27	Physical Modeling of the Charge and Excitation Transport in QD-Based and Hybrid Photovoltaic Cells
Konstantinov, Vladislav G.	P28	Method for Estimating the Photoluminescence Quantum Yield of Extremely Thin Organic Crystals
Saxena, Rishabh	P29	Role of the reorganization energy for charge transport in disordered semiconductors
Shaposhnik, Polina A.	P30	A Study on Stability of Electrolyte-Gated Transistor Based on 2,7-dioctyl[1]benzothieno[3,2-b][1]benzothiophene Blends with Polystyrene
Shumilov, Nikita A.	P31	Charge Transport in Single Crystals of 1,4-bis(5-phenylfuran-2-yl) Benzene and its Fluorinated Derivatives
Solodukhin, Aleksandr N.	P32	Triphenylamine-Based Small Molecules for Pixelated Full-Colour Semiconductor Devices Towards Artificial Retinas
Sonina, Alina A.	P33	Crystal Structure of Selectively Fluorinated Furan-Phenylene Co-Oligomers
Sosorev, Andrey Yu.	P34	Charge Transport Highways Within Ribosomal Small Subunit
Titova, Yaroslava O.	P35	Inkjet Printing of Organic Electrochemical Transistors with PEDOT:PSS Ink
Trainov, Konstantin P.	P36	Synthesis of Chromophores Based on the Hydrazinylidene Cyclic Acceptor Moieties via the Reaction of Organolithium Reagents with Diazo Compounds
Trukhanov, Vasiliy A.	P37	Electroluminescence Polarization Anisotropy in Organic Semiconductor Crystals

Trul, Askold A.	P38	Ethanethiol Detection with Operationally Stable Ultrathin BTBT-Dimers-Based OFETs
Yang, Wenchao	P39	Kinetic Monte Carlo Simulation of Exciton Dynamics in Non-Fullerene Acceptor Solar Cells
Zaborin, Evgeniy A.	P40	Synthesis and Properties of the New Linear Polymers Based on Annelated Structures
Ghosh, Sanjay S.	P41	Application of Solvents and Solvent Mixtures to Control the Bulk-Heterojunction Morphology
Shepovalov, Kirill M.	P42	Optoelectronic Properties of Spiro[4.4]nonatetraen Based Hydrocarbons

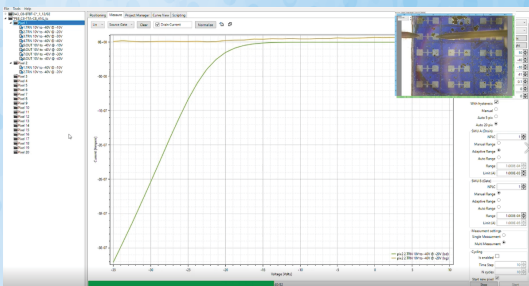
ProbeStation 100

Fully-automated low-cost probe-station designed for laboratory use and perfectly suited for semiconductors studies



Key features

- Compact design for glove-box installation
- Fully automated sample holder for fast characterization
- High accuracy current measurements with fully triaxial connectors
- Multiple-sample testing in continuous mode
- One-click measurements with user-defined scripts of the devices array
- Up to 4 semi-automated probes
- Digital microscope with LED lighting
- External LCD for probes positioning
- Keithley compatible software
- 2D sample positioning with trackball
- Software for measurement automatization
- Automatic FET parameter extraction (mobility, threshold voltage, etc.)



Additional options

- Extra probes (4-wire sense)
- Custom sample holders
- Glove-box installation
- Keithley semiconductor analyzer
- Software extension for other semiconductor analyzers

ProbeStation software

PRINTELTECH
PRINTED ELECTRONICS TECHNOLOGIES



+7 (495) 332-58-88

<http://www.printeltech.com>

sales@printeltech.com

Profsoyuznaya st. 70,

bld.1, office 410

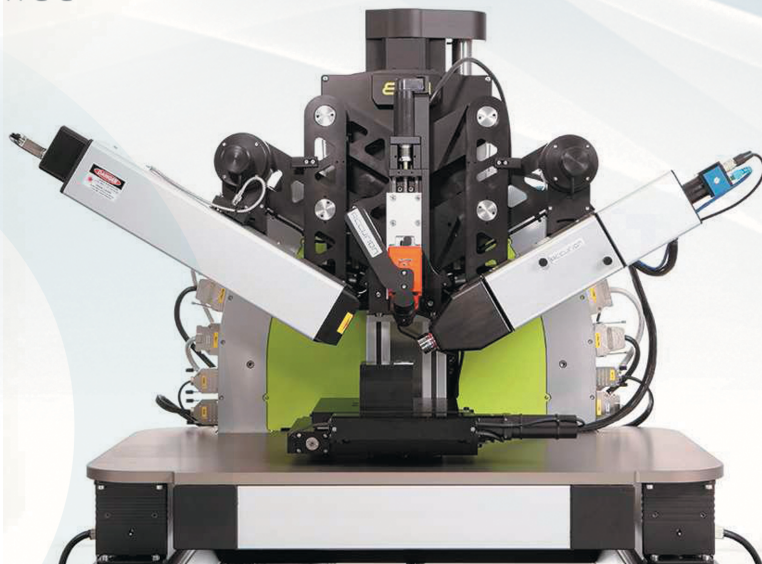
117393 Moscow, Russia



Баварская команда **NeaSpec** (принадлежит компании Attocube systems AG) является ведущим производителем оборудования для ближнепольной микроскопии и спектроскопии. NeaSpec владеет рядом передовых запатентованных технологий в ближнепольной оптике, позволяющих достигать в микроскопических исследованиях рекордного латерального разрешения в очень широком спектре длин волн излучения VIS-NIR-THz. Удобная модульная конструкция позволяет с легкостью интегрировать в приборы NeaSpec дополнительные технические средства, такие как криостаты, боксы для контроля атмосферы, блоки активной виброзащиты. Инструменты NeaSpec успешно работают не только в множестве лабораторных экспериментов, но и на ряде современных синхротронных станций.

ACCURION

solutions for science



Немецкая компания Accurion – производитель уникального по своим характеристикам оборудования для измерений в тонких пленках – спектральных визуализирующих эллипсометров, микроскопов угла Брюстера, рефлектометров. В визуализирующих эллипсометрах Accurion одновременно используются технологии классической эллипсометрии и оптической микроскопии, что позволяет измерять свойства поверхностей и границ раздела сред с высокой точностью и исключительным латеральным разрешением.

Модульная конструкция эллипсометра Accurion позволяет легко интегрировать в прибор дополнительные средства локального анализа поверхности, такие как рамановский спектрометр и атомно-силовой микроскоп.

ООО «Группа Ай-Эм-Си»
Россия, г. Москва,
ул. Криворожская, д. 23, корп. 3

Тел.: +7 495 374 04 01
E-mail: sales@imc-systems.ru
www.imc-systems.ru



RSF

Russian
Science
Foundation



PRINTELTech

PRINTED ELECTRONICS TECHNOLOGIES



Printed Electronics Technologies LLC
117393 Moscow, Russia
Profsoyuznaya st. 70, bld.1, office 410

☎ Phone: +7 (495) 332-58-47
🌐 <http://www.printeltech.com>
✉ sales@printeltech.com