Dedicated to the 300th Anniversary of the Russian Academy of Sciences

Saratov Fall Meeting
SFM'22

10th International Symposium "Optics and Biophotonics"

26th International School for Junior Scientists and Students on Optics, Laser Physics & Biophotonics

Chinese-Russian workshop on biophotonics and biomedical optics-2022

10th International Symposium on Optics and Biophotonics

Conference on Optical Technologies in Biophysics & Medicine XXIV

Chairs:
Elina A. Genina, Saratov State University; Tomsk State University**,**
Polina A. Dyachenko, Saratov State University; Tomsk State University**,**
Valery V. Tuchin, Saratov State University, Institute of Precision Mechanics and Control RAS, Tomsk State University

Secretary: **Isabella A. Serebryakova,** Saratov State University, Tomsk State University

International Program Committee: **Heidi Abrahamse,** University of Johannesburg, RSA, **Vanderlei Salvador Bagnato,** University of São Paulo, Brazil**, Walter Blondel,** University of Lorraine (France)**, Wei Chen,** University of Central Oklahoma (USA), **Santhosh Chidangil,** Manipal Academy of Higher Education (India), **Kishan Dholakia,** University of St. Andrews (UK), **Maria Farsari,** FORTH-IESL (Greece), **Paul M.W. French,** Imperial College of Science, Technology and Medicine (UK), **Mikhail Yu. Kirillin,** Institute of Applied Physics RAS, Nizhny Novgorod (Russia), **Yury V. Kistenev,** Tomsk State University (Russia), **Kirill V. Larin,** University of Houston (USA), **Qingming Luo,** Hainan University (China), **Luís M. Oliveira,** Polytechnic of Porto – School of Engineering (Porto, Portugal), **Roberto Pini,** National Research Council of Italy (CNR) (Italy), **Juergen Popp,** Inst. of Photonic Technology, Jena (Germany), **Alexander V. Priezzhev,** Moscow State Univ. (Russia)**, Lihong Wang,** Caltech (USA), **Ruikang K. Wang,** University of Washington (USA), **Valery P. Zakharov,** Samara State University (Russia), **Zeev Zalevsky,** Bar Ilan University, Tel Aviv (Israel).

September 28, Wednesday

INVITED LECTURE/ORAL/
ON-LINE SESSION
BIOPHYSICS I/ MICROSCOPY AND LOW-COHERENCE METHODS I
Zoom link:
https://osachapter.zoom.us/j/97105128804
ID 971 0512 8804
(Building 8, Hall 420)
Chair: **Yury Kistenev,** Tomsk State University, Russia
Moderator: **Isabella Serebryakova,** Saratov State University, Russia
Saratov time/Moscow time/ Speaker country time

10.00-10.20/9.00-9.20
Invited
Wearable devices of multimodal optical diagnostics microcirculatory-tissue systems: experience of application in the clinic and in space
Andrey Dunaev, Orel State University, Russia

10.20-10.40/9.20-9.40
Invited
Compression OCE for combined assessment of linear and nonlinear tissue elasticity in application to fine differentiation of breast-cancer tissues
Ekaterina V. Gubarkova[1], Aleksander A. Sovetsky[2], Lev A. Matveev[2], Aleksander L. Matveyev[2], Dmitry A. Vorontsov[3], Anton A. Plekhanov[1], Sergey S. Kuznetsov[1,3], Sergey V. Gamayunov[3], Alexey Y. Vorontsov[3], Marina A. Sirotkina[1], Natalia D. Gladkova[1], and Vladimir Y. Zaitsev[2]; [1]Privolzhsky Research Medical University, [2]Institute of Applied Physics of the Russian Academy of Sciences, [3]Nizhny Novgorod Regional Oncologic Hospital, Nizhny Novgorod, Russia

10.40-11.00/9.40-10.00
ZOOM Invited (prerecorded)
Strain evolution in porous biological tissues and phantoms during optical clearing
Yulia A. Alexandrovskaya[1], O.I. Baum[1], E.M. Kasianenko[1], A.A. Sovetsky[2], V.Yu. Zaitsev[2]; [1]Institute of Photon Technologies, Federal Scientific Research Center “Crystallography and Photonics”, Russian Academy of Sciences, Troitsk, Moscow, Russia; [2]Institute of Applied Physics of the Russian Academy of Sciences, Nizhny Novgorod, Russia

11.00-11.15/10.00-10.15
Oral
The use of combined non-invasive optical medical express-technologies in the diagnosis and treatment of ENT-diseases (head and neck diseases)
Alina B. Timurzieva[1,2]; [1]State Scientific Center of Laser Medicine named after O.K. Skobelkin of the

FMBA of Russia; [2]National Research Institute of Public Health named after N.A. Semashko, Moscow, Russia

11.15-11.30/10.15-10.30
Oral
Application of photodynamic inactivation against urinary tract bacteria
Nadezhda I. Ignatova, Vadim V. Elagin, Ivan A. Budruev, Artem E. Antonyan, Olga S. Streltsova, Vladislav A. Kamensky; Privolzhsky Research Medical University, Nizhny Novgorod, Russia

11.30-11.45/10.30-10.45
Oral
Comparative study of soft tissue surgery by visible and infrared laser radiation
Ksenia V. Shatilova, Ilia D. Samoilov, MeLSyTech Ltd, Russia

11.45-12.00/10.45-11.00
Oral
In vivo simultaneous probing of metabolism and oxygenation of tumors using FLIM and PLIM microscopy
Anastasia D. Komarova[1,2], Yulia P. Parshina[3], Anton A. Plekhanov[1], Artem M. Mozherov[1], Marina A. Sirotkina[1], Leonid N. Bochkarev[3], Vladislav I. Shcheslavskiy[1], Marina V. Shirmanova[1]; [1]Privolzhskiy Research Medical University, [2]Lobachevsky State University of Nizhny Novgorod, [3]Razuvaev Institute of Organometallic Chemistry of the Russian Academy of Sciences, Nizhny Novgorod, Russia

12.00-12.15/11.00-11.15
Oral
Application of machine learning classification algorithm for identification of cells state and line based on holographic data
Anna A. Zhikhoreva[1], Andrey V. Belashov[1], Tatiana N. Belyaeva[2], Anna V. Salova[2], Elena S. Kornilova[2], Irina V. Semenova[1], Oleg S. Vasyutinskii[1], [1]Ioffe Institute, [2]Institute of Cytology of RAS, St. Petersburg, Russia

12.15-12.30/11.15-11.30
Oral
Application of the RGB data obtained by the bright-field optical microscopy for the efficient control of the planar surface cleanness of thin films and for the estimation of their thickness
Anton A. Kozyrev[1,2,3], Oksana A. Lapshina[1], Julia A. Eliseeva[1], [1]INJECT RME LLC, Saratov, Russia [2]National Research Nuclear University MEPhI, Moscow, Russia [3]Saratov State University, Saratov, Russia

12.30-12.45/11.30-11.45
Oral
The study of liver tissues state in obstructive jaundice by optical spectroscopic methods
Ksenia Y. Kandurova[1], Dmitry S. Sumin[1,2], Andrian V. Mamoshin[1,2], Elena V. Potapova[1]; [1]Orel State University, Orel, Russia; [2]Orel Regional Clinical Hospital, Orel, Russia

12.45-13.00/11.45-12.00
Oral
Structural and optical coherence tomography angiography in laparoscopic operations on the abdominal organs
Elena B. Kiseleva[1], Maxim G. Ryabkov[1], Polina A. Zarubenko[1], Mikhail A. Sizov[2], Alexander N. Vorobyov[2], Sergei Ksenifontov[3], Pavel A. Shilyagin[3], Grigory V. Gelikonov[3], Natalia D. Gladkova[1]; [1]Privolzhsky Research Medical University,[3]Institute of Applied Physics of the Russian Academy of Sciences, Nizhny Novgorod, Russia

13.00-13.15/12.00-12.15
ZOOM Oral Report
Photophysical properties of Radachlorin photosensitizer in solutions and cells obtained using FLIM and digital holography
Irina V. Semenova, Andrey V. Belashov, Anna A. Zhikhoreva, Oleg S. Vasyutinskii; Ioffe Institute, St. Petersburg, Russia

13.15-13.30/12.15-12.30
ZOOM Oral Report
Intraoperative video-fluorescence navigation and tissue saturation control of gastric malignant tumor
Daniil M. Kustov[1], D.V. Yakovlev[1,2], A.S. Moskalev[1], E.I. Kozlikina[1,3], M.V. Loshchenov[1,3], N.A. Kalyagina[1,3], W. Blondel[4], C. Daul[4], M. Amouroux[4], V.V. Levkin[5], S.S. Kharnas[5], A.A. Shiryaev[5], V.B. Loschenov[1,3]; [1]Prokhorov General Physics Institute of the Russian Academy of Sciences, Moscow, Russia, [2]Shemyakin-Ovchinnikov Institute of Bioorganic Chemistry of the Russian Academy of Science, IBCh RAS, Moscow, Russia, [3]National Research Nuclear University MEPhI, Moscow, Russia, [4]Université de Lorraine, Lorraine, France, [5]I.M. Sechenov First Moscow State Medical University, Moscow, Russia

13.30-13.45/12.30-12.45
ZOOM Oral Report
Intraoperative OCT diagnosis of brain gliomas
Polina V. Aleksandrova[1,2], Irina N. Dolganova[2,3], Kirill I. Zaytsev[1,3], Pavel V. Nikitin[4], Anna I. Alekseeva[5], Igor V. Reshetov[6],[1]Prokhorov General Physics Institute RAS; [2]Institute of Solid State Physics RAS, Chernogolovka, Russia; [3]Bauman Moscow State Technical University; [4]Skolkovo Institute of Science and Technology; [5]Research Institute of Human Morphology; [6]Institute for Cluster Oncology, Sechenov University, Moscow, Russia

14.00 -14.30
Coffee break

ON-LINE INVITED LECTURE / ON-LINE SESSIONS BIOPHYSICS II/ INTERNET BIOPHOTONICS I/ BIOMEDICAL SPECTROSCOPY I

https://osachapter.zoom.us/j/97105128804

ID 971 0512 8804

(Building 8, Hall 420)

Chair: **Vladimir Y. Zaitsev**, Institute of Applied Physics of the RAS, Nizhny Novgorod, Russia

Moderator: **Isabella Serebryakova,** Saratov State University, Russia

14.30-14.50/13.30-13.50
ZOOM Invited
Chlorine-containing drug laser delivery and photodynamic activation
Andrey V. Belikov[1,2] , Yulia V. Fedorova[1], Sergey N. Smirnov[1], Anastasia D. Kozlova[1], [1]ITMO University, Saint Petersburg, Russia; [2]The First Pavlov State Medical University of St. Petersburg, Saint Petersburg, Russia

14.50-15.10/13.50-14.10/18.50-19.05
ZOOM Invited
Optical clearing of Raman-LIBS spectroscopy towards to tissue and cells
Qingyu Lin, Sichuan University, Chengdu, China

15.10-15.30/14.10-14.30/16.40-17.00
ZOOM Invited
Evaluation of the optical characteristics and optical clearing potential of chemicals and oils for comparison
Daniela Teixeira[1], Hugo Silva[2], Maria Rosário Pinheiro[1], Valery V. Tuchin[3,4,5], Luís M. Oliveira[1]; [1]Physics Department, Polytechnic of Porto – School of Engineering, Porto, Portugal; [2]Center of Innovation in Engineering and Industrial Technology, Porto, Portugal; [3]Science Medical Center, Saratov State University, Saratov,[4]Tomsk State University, Tomsk, [5]Institute of Precision Mechanics and Control RAS, Saratov, Russia

15.30-15.50/14.30-14.50/15.00-15.20
ZOOM Invited
Measurement of the optical properties' variation of mouse brain during optical clearing treatment
Mohammad Ali Ansari, S. Ziaei, Laser and Plasma Research Institute, Shahid Beheshti University, Tehran, Iran

15.50-16.05/14.50-15.05
ZOOM Oral Report
E2F1 acetylation regulates apoptosis of perifocal region cells after photothrombotic stroke
Valeria V. Guzenko, Yuliya N. Kalyuzhnaya, Svetlana V. Demyanenko; Southern Federal University, Rostov-on-Don, Russia

16.05-16.20/15.05-15.20
ZOOM Oral Report
Laser biotissue bonding by 980 nm laser radiation
Vladislav M. Ermolaev[1], Yulia V. Fedorova[1], Andrey V. Belikov[1,2]; [1]ITMO University; [2]The First Pavlov State Medical University of St. Petersburg, Saint Petersburg, Russia

16.20-16.35/15.20-15.35
ZOOM Oral Report
Assessment of the nitroglycerine influence on intracranial blood flow by imaging photoplethysmography in rats
Anastasiia V. Potapenko[1,2], Maxim A. Volynsky[3,4], Denis A. Seleznev[3], Polina M. Iurkova[4], Valery V. Zaytsev[5,6], Alexey Y. Sokolov[1,7], Alexei A. Kamshilin[5]; [1]Department of Neuropharmacology, Valdman Institute of Pharmacology, Pavlov First Saint Petersburg State Medical University, St. Petersburg, Russia; [2]Laboratory of Biochemistry, Medical Genetic Cent., St. Petersburg, Russia; [3]School of Physics and Engineering, ITMO University, St. Petersburg, Russia; [4]Faculty of General Therapy, Saint Petersburg State Pediatric Medical University, St. Petersburg, Russia; [5]Laboratory of New Functional Materials and Photonics Systems, Institute of Automation & Control Processes of the Far East Branch of the Russian Academy of Sciences, Vladivostok, Russia; [6]Department of Circulation Physiology, Almazov National Medical Research Centre, St. Petersburg, Russia; [7]Laboratory of Cortico-Visceral Physiology, Pavlov Institute of Physiology of the Russian Academy of Sciences, St. Petersburg, Russia

16.35-16.50/15.35-15.50
ZOOM Oral Report
Porphyrin conjugates with terpyridine moieties: complexation with metals and photodynamic activity
K.A. Zhdanova[1], A.V. Ivantsova[1], F.Yu. Vyal'ba[1], M.A. Gradova[2], N.Yu. Karpechenko[3], N.A. Bragina[1]; [1]MIREA - Russian Technological University, Institute of Fine Chemical Technology, Moscow, Russia; [2]N.N. Semenov Federal Research Center for Chemical Physics, Russian Academy of Sciences, Moscow, Russia; [3]N.N. Blokhin National Medical Research Center of Oncology, Ministry of Health of Russia, Moscow, Russia

16.50-17.05/15.50-16.05/16.20-16.35
ZOOM Oral Report
Introducing the automated software for skin image processing and diagnosing melanoma
A. Meisamy, M.A. Ansari; Optical Bio-Optical Imaging Lab, Laser and Plasma Research Institute, Shahid Beheshti University, Tehran, Iran

17.05-17.20/16.05-16.20
ZOOM Oral Report
Characteristics of photosensitizers from cyanoarylporphyrazines group: from viscosity sensitivity to immunogenic properties in photodynamic therapy of cancer

Tatiana A. Mishchenko[1], Victoria D. Turubanova[1], Maria Savyuk[1], Irina V. Balalaeva[1], Natalia Yu. Shilyagina[1], Larisa G. Klapshina[2], Svetlana A. Lermontova[2], Maria V. Vedunova[1] and Dmitri V. Krysko[1,3,4]; [1]Institute of Biology and Biomedicine, National Research Lobachevsky State University of Nizhny Novgorod, Nizhny Novgorod, Russian Federation; [2]G.A. Razuvaev Institute of Organometallic Chemistry of the Russian Academy of Sciences, Nizhny Novgorod, Russian Federation; [3]Cell Death Investigation and Therapy Laboratory, Department of Human Structure and Repair, Ghent University, Ghent, Belgium; [4]Cancer Research Institute Ghent, Ghent, Belgium

17.20-17.35/16.20-16.35/15.20-15.35
ZOOM Oral Report
Longitudinal analysis of long and short term-survivors with glioblastoma after interstitial photodynamic therapy
Marco Foglar[1], M. Aumiller[1,2], K. Bochmann[4]; A. Buchner[2]; M. El Fahim[1], R. Forbrig[4], S. Quach[3], R. Sroka[1,2], H. Stepp[1,2], N. Thon[3], A. Rühm[1,2]; [1]Laser-Forschungslabor, LIFE Center, University Hospital, LMU Munich, Munich, Germany; [2]Department of Urology, University Hospital of Munich LMU, Munich, Germany; [3]Department of Neurosurgery, University Hospital of Munich LMU, Munich, Germany; [4]Department of Neuroradiology, University Hospital of Munich LMU, Munich, Germany

17.35-17.50/16.35-16.50/15.35-15.55
ZOOM Oral Report
Influence of specific supplements on urine flourescence spectrum
Praveen Chalissery, Max Eisel, Herbert Stepp, Adrian Rühm, Christian Homann, Ronald Sroka, Laser-Forschungslabor, LIFE Center, University Hospital, LMU Munich, Munich, Germany, Department of Urology, University Hospital, LMU Munich, Munich, Germany.

September 29, Thursday

ZOOM ORAL REPORT
BIOPHYSICS II
Zoom link:
https://osachapter.zoom.us/j/97105128804
ID 971 0512 8804
(Building 8, Hall 420)

Chair: **Mikhail Kirillin,** Institute of Applied Physics RAS, Russia, **Andrei Lugovtsov**, Faculty of Physics, Lomonosov Moscow State University, Moscow, Russia

10.00-10.20/09.00-09.20
Invited
Multimodal optical assessing of blood microrheology and microcirculation in socially important diseases
Alexander Priezzhev[1], Andrei Lugovtsov[1], Petr Ermolinskiy[1], Sergey Nikitin[1],Yuri Gurfinkel[2], Larisa Dyachuk[2] ,[1]Department of Physics, Lomonosov Moscow State University,[2]Medical Research and Educational Center, Lomonosov Moscow State University, Moscow, Russia

10.20-10.40/09.20-09.40
Invited
Blood microrheologic parameters measured before and after therapeutic plasmapheresis
Andrei Lugovtsov[1], Petr Ermolinskiy[1], Nikolay Kalinin[2], Irina Tauson[2], Maria Rudnitskaya[2], Alexander Priezzhev[1],[1]Department of Physics, Lomonosov Moscow State University, [2]Medical Research and Educational Center, Lomonosov Moscow State University, Moscow, Russia

10.40-11.00/09.40-10.00
ZOOM Invited
Carotenoids without hydroxyl groups provide the formation of an orthorhombic organisation of lipids in the human stratum corneum
Maxim E. Darvin[1], Jin-Song Ri[2], Se-Hyok Choe[2], Kwang-Hyok Jong[2], Song-Nam Hong[2], Johannes Schleusener[1], Juergen Lademann[1], Chun-Sik Choe[2] [1]Charité – Universitätsmedizin Berlin, corporate member of Freie Universität Berlin and Humboldt-Universität zu Berlin, Germany, Kim Il Sung University, Pyongyang, DPR Korea

11.00-11.20/10.00-10.20
ZOOM Invited
Agent based modelling of COVID-19 spreading: from simple to refined models
Mikhail Kirillin[1], Aleksandr Khilov[1], Valeriya Perekatova[1], Ekaterina Sergeeva[1], Daria Kurakina[1], Ilya Fiks[1], Nikolay Saperkin[2], Ming Tang[3], Yong Zou[3], Elbert Macau[4], and Efim Pelinovsky[1,5]; [1]Institute of Applied Physics RAS, Nizhny Novgorod, Russia; [2]Privolzhsky Research Medical University, Nizhny Novgorod, Russia; [3]School of Physics and Electronic Science, East China Normal University, Shanghai, China; [4]Instituto de Ciências e Tecnologia, Universidade Federal de São Paulo, São Paulo, Brasil; [5]National Research University –

Higher School of Economics, Nizhny Novgorod, Russia

11.20-11.40/10.20-10.40/9.20-9.40
ZOOM Invited (prerecorded)
Multifunctional Photosensitizer based Agents for Theranostic Approaches in Photodynamic Therapy
Heidi Abrahamse; Laser Research Centre, Faculty of Health Sciences, University of Johannesburg, SAR

11.40-11.55/10.40-10.55
Oral
A method for discriminating hepatocellular carcinoma based on fluorescence lifetime parameters
Valery V. Shupletsov[1], Elena V. Potapova[1], Evgeny A. Zherebtsov[1], Victor V. Dremin[1,2], Ksenia Y. Kandurova[1], Dmitry S. Sumin[1,3], Andrian V. Mamoshin[1,3], Andrey V. Dunaev[1]; [1]Research & Development Center of Biomedical Photonics, Orel State University, Orel, Russia; [2]College of Engineering and Physical Sciences, Aston University, Birmingham, UK; [3]Orel Regional Clinical Hospital, Orel, Russia

11.55-12.10/10.55-11.10
Oral
Monte Carlo simulation of optical radiation propagation in laser Doppler flowmetry and fluorescence spectroscopy channels of a wearable diagnostic device
Elena V. Zharkikh[1], Viktor V. Dremin[1,2], Andrey V. Dunaev[1]; [1]Orel State University, Orel, Russia; [2]Aston University, Birmingham, UK

12.10-12.25/11.10-11.25
Oral
Wearable laser Doppler flowmetry devices for assessing the effect of hyper- and hypoventilation respiratory yoga exercises on peripheral blood flow parameters
Yulia I. Loktionova[1], A.V. Frolov[2], E.V. Zharkikh[1], V.V. Sidorov[3], A.V. Tankanag[4], A.V. Dunaev[1]; [1]Orel State University named after I.S. Turgenev, Russia, Orel; [2]Ltd. St. Petersburg Institute of Oriental Methods of Rehabilitation, Russia, St. Petersburg; [3] SPE «LAZMA» Ltd, Russia, Moscow; [4]Institute of Cell Biophysics of the Russian Academy of Sciences, Pushchino, Russia

12.25-12.40/11.25-11.40
Oral
Nanocomposites of gold and gallium-doped CFO nanoparticles for photothermal therapy
S.E. Pshenichnikov[1], A.V. Motorzhina[1], V.V. Malashchenko[2], S. Jovanović[3,4], L.S. Litvinova[2], L.V. Panina[1,5], V.V. Rodionova[1], K.V. Levada[1]
[1]Research & Education Center "Smart Materials & Biomedical Applications", Immanuel Kant Baltic Federal University, Kaliningrad, Russia; [2]Center for Immunology and Cellular Biotechnology, Immanuel Kant Baltic Federal University, Kaliningrad, Russia; [3]Department of Physics, Vinča Institute of Nuclear Sciences – National Institute of the Republic of Serbia, University of Belgrade, Belgrade, Serbia; [4]Advanced Materials Department, Jožef Stefan Institute, Ljubljana, Slovenia; [5]National University of Science and Technology «MISIS», Moscow, Russia

12.40-12.55/11.40-11.55
Oral
Hyperspectral imaging of hemangioma
Sergei A. Perkov[1], Viktor A. Vorobev[1], Sergey Y. Gorodkov[2], Dmitry A. Gorin[1]; [1]Skolkovo Institute of Science and Technology, Moscow, Russia; [2]Saratov State Medical University named after V. I. Razumovsky, Saratov, Russia

12.55-13.10/11.55-12.10
Oral
Morphological substantiation of stiffness changes of breast cancer tissue during neoadjuvant therapy
Anton A. Plekhanov[1], Ekaterina V. Gubarkova[1], Marina A. Sirotkina,[1] Vadim V. Elagin,[1] Alexander A. Sovetsky[2], Dmitry A. Vorontsov[1], Alexandra Y. Bogomolova[1], Alexey Y. Vorontsov[3], Sergey V. Gamayunov[3], Vladimir Y. Zaitsev[2], and Natalia D. Gladkova[1]; [1]Privolzhsky Research Medical University, Nizhny Novgorod, Russia; [2]Institute of Applied Physics RAS, Nizhny Novgorod, Russia; [3]Nizhny Novgorod Regional Oncologic Hospital, Nizhny Novgorod, Russia

13.10-13.25/12.10-12.25
ZOOM Oral
Incoherent optical fluctuation flowmetry method in foot tissue perfusion assessment
Polina A. Glazkova[1], Alexey A. Glazkov[1], Dmitry A. Kulikov[2,3], Sergei S. Zagarov[1], Yulia A. Kovaleva[4], Alina Yu. Babenko[4], Elena A. Kitaeva[4], Yulia A. Kononova[4], Timur A. Britvin[1], Natalia N. Mazur[1], Roman N. Larkov[1], and Dmitry A. Rogatkin[1]; [1]Moscow Regional Research and Clinical Institute ("MONIKI"), Moscow, Russia; [2]Moscow Region State University, Mytishchi, Moscow Region, Russia; [3]N.A. Semashko National Research Institute of Public Health, Moscow, Russia; [4]Almazov National Medical Research Centre, St. Petersburg, Russia

13.25-13.40/12.25-12.40
Oral
The problem of reproducibility of diffraction patterns in laser diffractometry of erythrocytes.
Mariia S. Lebedeva, Evgeny G. Tsybrov, Sergey Yu. Nikitin, Lomonosov Moscow State University, Moscow, Russia

13.40-13.55/12.40-12.55
Zoom Oral Report
Study of the metrological characteristics of the spatial-frequency domain imaging system for biotissue structure visualization
Zakharov Maxim, Anastasia S. Semenova, Moscow, Russia, Alexander V. Kolpakov, Bauman Moscow State Technical University (BMSTU), Moscow, Russia.

13.55-14.10/12.55-13.10
Oral Report
Analysis of biomarkers concentrations in human exhaled breath for the primary diagnosis of type 1 diabetes mellitus
Anastasiya V. Scherbakova[1], P.V. Berezhanskiy[2], I.S. Golyak[1], D.R. Anfimov[1], P.P. Demkin[1], O.A. Nebritova[1], A.N. Morozov[1], I.L. Fufurin[1], [1]Bauman Moscow State Technical University, Moscow; [2]Morozov Children's Clinical Hospital, State Budgetary Healthcare Institution, Moscow Healthcare Pulmonology Department, Moscow, Russia

ON-LINE INVITED LECTURE/ ON-LINE SESSIONS BIOPHYSICS IV/ INTERNET BIOPHOTONICS II
Zoom link:
https://osachapter.zoom.us/j/97105128804
ID 971 0512 8804
(**Building 8, Hall 420**)
Chair: **Alexander Priezzhev, Andrei Lugovtsov**
Lomonosov Moscow State University, Moscow, Russia
Moderator: Isabella Serebryakova, Saratov State University, Russia

15.40-16.00/14.40-15.00/ 14.40-15.00
ZOOM INTERNET Invited (prerecorded)
Wearable fNIRS on studies of neurohydrodynamics
Teemu Myllylä[1,2], Sadegh Moradi[2], Martti Ilvesmäki[1], Vesa Korhonen[1], Hany Ferdinando[1], Vesa Kiviniemi[1]; [1]University of Oulu, Research Unit of Health Sciences and Technology, Oulu, Finland; [2]University of Oulu, Optoelectronics and Measurement Techniques Unit, Oulu, Finland

16.00-16.20/15.00-15.20
ZOOM INTERNET Invited (prerecorded)
Raman spectroscopy investigations of functional state of unicellular organisms
Elena Perevedentseva[1], Elena Muronets[2], Artashes Karmenyan[3], Chia-Liang Cheng[3], Irina Elanskaya[2], Nikolai Melnik[1]; [1]P.N. Lebedev Physical Institute Rus. Acad. Sci., Moscow, Russia;[2]Biological Dept of Moscow State University, Moscow, Russia; [3]Department of Physics, National Dong Hwa University, Hualien, Taiwan

16.20-16.35/15.20-15.35
Zoom Oral Report
Investigation of the algorithms for assessing the degree of hemoglobin oxygen saturation in breast tissues
Daniil M. Kustov[1], Tatiana A. Savelieva[1,2], Anna A. Krivetskaya[2], Andrey S. Gorbunov[3], Ekaterina P. Kashirina[3], Sergey S. Kharnas[3], Vladimir V. Levkin[3], Ekaterina Yu. Anosova[3], Daria V. Momatiuk[3], Ramin S. Ibragimov[3] and Victor B. Loschenov[1,2]; [1]Prokhorov General Physics Institute of the Russian Academy of Sciences, Moscow, Russia; [2]National Research Nuclear University MEPhI, Institute of Engineering Physics for Biomedicine, Moscow, Russia; [3]I.M. Sechenov First Moscow State Medical University, Moscow, Russia

16.35-16.50/15.35-15.50
Zoom Oral Report
Detailed assessment of donor xenomaterial by Raman spectroscopy
Pavel E. Timchenko[1], Elena V. Timchenko[1], Elena.V. Pisareva[1], Michae. Y. Vlasov[2], Oleg O. Frolov[1], Larisa T. Volova[2], R.T. Samigullin[2], A.A. Gnedova[1]; [1]Samara National Research University named after Academician S.P. Korolev, Samara, Russia; [2]Samara State Medical University, Samara, Russia

16.50-17.05/15.50-16.05
Zoom Oral Report
Application of Raman spectroscopy for evaluation of bone condition in periodontitis
Artem Y. Ionov[1], Pavel E. Timchenko[1], Elena V. Timchenko[2], Irina V. Bazhutova[2], Larisa T. Volova[1], Oleg O. Frolov, [1]Samara National Research University, Samara, Russia; [2]Samara State Medical University, Samara, Russia

17.05-17.20/16.05-16.20
Zoom Oral Report
Development of a set of methods for assessing the biodegradation of copolymer composite materials in vivo
Natalia I. Kazachkina[1], Viktoriya V. Deeva[1], Daria K. Tuchina[1,2], Ilya D.Soloviev[1], Alexander P. Savitsky[1], Valery V. Tuchin[1,2,3], Viktoriya V. Zherdeva[1]; [1]Bach Institute of Biochemistry, Research Center of Biotechnology of the Russian Academy of Sciences; [2]Saratov State University, [3]Saratov State Medical University, [4]Institute of Precision Mechanics and Control RAS, Saratov, Russia

17.20-17.35/16.20-16.35
Zoom Oral Report
Development of dual mode visualization of dCas9/fluorescent protein sensors in tumor xenografts on mice using optical clearing
Victoria Zherdeva[1], Natalia Kazachkina[1], Gerel Abushinova[1,2], Lylia Maloshenok[1,2] [1]Bach Institute of Biochemistry, Research Center of Biotechnology of the of the RAS, Moscow;[2]Vavilov Institute of General Genetics of the RAS, Moscow

17.35-17.55/16.35-16.55/08.35-08.55
ZOOM Invited
Recent advances in optical coherence elastography
Kirill V. Larin**,** Department of Biomedical Engineering, University of Houston, Houston, USA

17.55-18.15/16.55-17.15/08.55-09.15
ZOOM Invited
Research biophotonic investigation of early development

Irina V. Larina**,** Baylor College of Medicine, Houston, USA

18.15-18.30/17.15-17.30
ZOOM Oral Report

SERS substrates based on rose petals imprints for erythrocyte analysis Natalia Doroshina, Marie Barshutina, Moscow Institute of Physics and Technology, Moscow, Russia, Nadezda Brazhe, Evelina Nikelshparg, M.V. Lomonosov Moscow State University, Moscow, Russia, Dmitry Yakubovsky, Aleksey Arsenin, Valentyn Volkov, Sergey Novikov, Moscow Institute of Physics and Technology, Moscow, Russia.

JOINT INTERNET/POSTER SESSION BIOPHYSICS (B)
(Building 3, 3rd floor Hall)

Chairs (B): **Ivan V. Fedosov**, **Oleg Grishin**, Saratov State Univ., Russia

18.00-20.00

1B. Determination of the FSH level using microstructural waveguides Yuliya D. Gudova[1], Julia S. Skibina[2], Alexey Yu. Gryaznov[2], Dmitry E. Gluhov[2]; [1]Saratov State University, Saratov, Russia; 2LLC SPE Nanostructured Glass Technology, Saratov, Russia

2B. Laser Doppler flowmetry in assessing the effect of liraglutide on microcirculation in rats with diet-induced obesity Era B. Popyhova, Timofey E. Pylaev, Anton M. Abramov, Yuriy Yu. Vasil'ev, Lev I. Vysotsky, AnastasiyaV. Nazarova, Elina K. Poghosyan; Saratov State Medical University n.a. V.I. Razumovsky, Saratov, Russia

3B. Study of the features of microcirculation of uterine tissues during myomectomy using laser Doppler flowmetry and fluorescence spectroscopy Valentina Yu. Krutikova[1], Nikolay I. Polenov[2], Karina A. Zakuraeva[2], Nadezhda V. Golubova[1] Maria I. Yarmolinskaya[2], Igor Yu. Kogan[2], Elena V. Potapova[1]; [1]Research and Development Center of Biomedical Photonics, Orel State University, Orel, Russia, [2]The Research Institute of Obstetrics,Gynecology and Reproductology named after D.O. Ott, Saint Petersburg, Russia

4B. Study of rat blood plasma after prolonged exposure to OCA-aerosol by Raman spectroscopy Arina A. Sokova[1], Ekaterina N. Lazareva[1,2], Alexander E. Polozhenkov[3], Artem M. Mylnikov[3], Alla B. Bucharskaya[1,2,3], Valery V. Tuchin[1,2,4]. [1] Saratov State University, Saratov, Russia; [2]Tomsk State University, Tomsk, Russia; [3]Saratov State Medical University; Saratov, Russia; [4]Institute of Precision Mechanics and Control RAS, Saratov, Russia

5B. Metabolic imaging as a tool for the analysis of regenerative potential and liver pathology Vadim V. Elagin[1], Svetlana A. Rodimova[1,2], Nikolay V. Bobrov[1,3], Ilya D. Shchechkin[1,2], Dmitry P. Krylov[1,2], Dmitry S. Kozlov[1,2], Maria M. Karabut[1], Artem M. Mozherov[1], Vladimir E. Zagainov[1,4], Elena V. Zagaynova[1,2], Daria S. Kuznetsova[1,2] [1]Privolzhsky research medical university, Nizhny Novgorod, Russia; [2]Lobachevsky Nizhny Novgorod National Research State University, Nizhny Novgorod, Russia; The Volga District Medical Centre of Federal Medical and Biological Agency, Nizhny Novgorod, Russia; [4]Nizhny Novgorod Regional Clinical Oncologic Dispensary, Nizhny Novgorod, Russia

6B. Fluorescence of chlorosomal bacteriochlorophylls in organic solvents A.A. Zhiltsova[1], O.A. Filippova[1], E.D. Krasnova[2], D.A. Voronov[3], S.V. Patsaeva[1], [1]Lomonosov Moscow State University, Faculty of Physics, Moscow, Russia; [2]Lomonosov Moscow State University, Faculty of Biology, Moscow, Russia; [3]Kharkevich Institute for Information Transmission Problems, Russian Academy of Sciences, Moscow, Russia

7B. OCT detection of cervical carcinoma response to therapy Maria M. Loginova[1,2], Arseniy L. Potapov[1], Ekaterina V. Gubarkova[1,2], Ksenia A. Achkasova[1], Alexandra Yu. Bogomolova[1,2], Stefka G. Radenska-Lopovok[3], Nadezhda V. Kanishcheva[4], Sergey V. Gamayunov[4], Vladimir Y. Zaitsev[5], Natalia D. Gladkova[1], Marina A. Sirotkina[1,2] [1]Privolzhsky Research Medical University, Nizhny Novgorod, Russia; [2]Lobachevsky State University of Nizhny Novgorod, Nizhny Novgorod, Russia; [3]I.M. Sechenov First Moscow State Medical University (Sechenov University), Moscow, Russia; [4]Nizhny Novgorod Regional Oncologic Hospital, Nizhny Novgorod, Russia; [5]Institute of Applied Physics of the Russian Academy of Sciences, Nizhny Novgorod, Russia

8B. Study of the optical properties of laser propagation in brain tissue. Alaa Sabeeh,[1] Valery V. Tuchin[1,2,3] [1]Saratov State University, Saratov, Russia; [2]Tomsk State University, Tomsk, Russia; [3]Institute of Precision Mechanics and Control RAS, Saratov, Russia

9B. Optical and thermal response of nanoparticle-augmented laser-irradiated tissue Khashayar Khorsand[1], Valery V. Tuchin[2]; [1]University of Isfahan, Isfahan, Iran; [2]Saratov State University, Saratov, Russia

10B. Quantitative multimodal OCT analysis to identify histological patterns in vulvar dermatoses A. Potapov[1], A. Bychkova[2], A. Saidova[2] M. Karabut[1], A. Moiseev[3], I. Kuznetsova[4], S. Radenska-Lopovok[5] I. Apolikhina[2], N. Gladkova[1] and M. Sirotkina[1]; [1]Privolzhsky Research Medical University,Nizhny Novgorod, Russia; [2]National Medical Research Center for Obstetrics, Gynecology and Perinatology named after Academician V.I.Kulakov, Moscow, Russia; [3]Institute of Applied Physics RAS, [4]N.A. Semashko Nizhny Novgorod Regional Clinical Hospital, Nizhny Novgorod, Russia; [5]I.M. Sechenov First Moscow State Medical University, Moscow, Russia.

11B. Study of the effect of a potential neuroprotective drug on the dynamics of the cerebral circulation in laboratory animals by laser speckle contrast imaging Nadezhda V. Golubova[1], Evgeniya S. Seryogina[1], Elena F. Shevtsova[2], Viktor V. Dremin[1,3], Elena V. Potapova[1]; [1]Research and Development Center of Biomedical Photonics, Orel State University, Russia; [2]IPAC RAS, Biomolecular Screening Laboratory, Russia; [3]College of Engineering and Physical Sciences, Aston University, United Kingdom

12B. Visualisation of vascular changes and assessment of blood flow variations by direct optical generation of singlet oxygen Lyubov V. Eratova[1], Denis I. Myalitsin[2], Mikhail V. Volkov[2], Viktor V. Dremin[1], Irina N. Novikova[1]; [1]Orel State University, Orel, Russia; [2]University ITMO, Saint-Petersburg, Russia

13B. Development of optical methods for analyzing the quality of food products using microstructural waveguides Pavel A. Lepilin[1,2], Yulia S. Skibina[2], Valery V. Tuchin[1], Andrei A. Shuvalov[2], Svetlana S. Konnova[1,2], Anastasia A. Zanishhevskaya[1,2]; [1]Saratov State University, Saratov, Russia; [2]LLC SPE "Nanostructed Glass Technology", International Research and Education Center "Structural Nanobiophotonics", Russia

14B. Possibilities of hyperspectral imaging to assess the intestinal ischemia degree Ilya A. Goryunov[1], Valery V. Shupletsov[1], Nikita A. Adamenkov[2], Andrian V. Mamoshin[1,3], Elena V. Potapova[1], Viktor V. Dremin[1]; [1]Orel State University named after I.S. Turgenev, Orel, Russia; [2]N.A. Semashko Emergency Medical Care Hospital, Orel, Russia; [3]Orel Regional Clinical Hospital, Orel, Russia

15B. Assessment of haemodynamic parameters in the rehabilitation period after COVID-[1]9 using wearable blood microcirculation analyzers Ivan Yu. Vlasov[1], Elena V. Zharkikh[1], Yulia I. Loktionova[1], Elena V. Shuraeva[2], Andrey A. Fedorovich[3], Andrey V. Dunaev[1]; [1]Orel State University named after I.S. Turgenev, Orel, Russia; [2]«Alsaria» Ltd., Orel, Russia; [3]National Medical Research Center for Therapy and Preventive Medicine of the Ministry of Healthcare of the Russian Federation, Moscow, Russia

16B. The study of bile composition by Raman spectroscopy in patients with obstructive jaundice Vadim N. Prizemin[1], Nadezhda V. Golubova[1], Dmitry S. Sumin[2], Ksenia Y. Kandurova[1], Andrian V. Mamoshin[1,2], Elena V. Potapova[1]; [1]Orel State University named after I.S. Turgenev, Orel, Russia [2]Orel Regional Clinical Hospital, Orel, Russia

17B. Development of methods for the determination of allergens using microstructural waveguides Daria V. Shumarina[1], Julia S. Skibina[2], Yuliya D. Gudova[1,2], Pavel A. Lepilin[1,2], Svetlana S. Konnova[2]; [1]Saratov State University, [2]LLC SPE "Nanostructured Glass Technology", Saratov, Russia

18B. Development of a combined method for express diagnostics of pigmented skin neoplasms for the purpose of early detection of skin melanoma Elena N. Rimskaya[1], Sergey I. Kudryashov[1], Alina B. Timurzieva[2], Konstantin G. Kudrin[3]; [1]Lebedev Physical Institute of the Russian Academy of Sciences, Moscow, Russia; [2]N.A. Semashko National Research Institute of Public Health, Moscow, Russia; [3]First Sechenov Moscow State Medical University, Moscow, Russia

19B. Effect of different nanoparticles on the parameters of pair red blood cells interaction in vitro: study by laser tweezers K.N. Korneev, D.A. Umerenkov, A.E. Lugovtsov, P.B. Ermolinskiy, A.V. Priezzhev Faculty of Physics, M.V. Lomonosov Moscow State University, Moscow, Russia

20B. Effect of various nanoparticles on aggregation of human red blood cells in vitro retrieved by diffuse light scattering technique D.A. Umerenkov, K.N. Korneev, P.B. Ermolinskiy, A.E. Lugovtsov, A.V. Priezzhev;Lomonosov Moscow State University, Moscow, Russia

21B. Development of a multimodal approach to the diagnosis and postoperative monitoring of the basal cell skin cancer Isabella A. Serebryakova[1,2], Yury I. Surkov[1,2], Ekaterina N. Lazareva[1,2], Yana K. Kuzinova[3], Olga M. Konopatskova[3], Valery V. Tuchin[1,2,4] Elina A. Genina[1,2]; [1]Saratov State University, [2]Tomsk State University, [3]Saratov State Medical University, [4]Institute of Precision Mechanics and Control RAS, Saratov, Russia;

22B. Detection of deviations in the composition of blood serum using microstructural fibers Yulia S. Skibina[2], Svetlana S. Konnova[1,2], Aleksey Yu. Gryaznov[2], Pavel A. Lepilin[1,2], Anastasia A. Zanishhevskaya[1,2], Andrei A. Shuvalov[2], Valery V. Tuchin[1]; [1]Saratov State University, Russia; [2]LLC SPE "Nanostructed Glass Technology", International Research and Education Center "Structural Nanobiophotonics", Russia

23B. State-of-the-Art detection of laser-induced singlet oxygen Elena Zharkikh, Irina Novikova, Andrey Vinokurov, Elena Potapova, Viktor Dremin; Research and Development Center of Biomedical Photonics, Orel State University, Orel, Russia

24B. Development of a method for measuring the volume fraction of water using a combination of optical coherence tomography and high-frequency ultrasound Yu.I. Surkov[1,2], I.A. Serebryakova[1,2], E.A. Genina[1,2]; [1]Saratov State University, Saratov, [2]Tomsk State University, Tomsk, Russia

25B. NIR-induced polymerization triggered by upconversion nanoparticles Polina A. Demina[1,2], Kirill V. Khaydukov[1], Roman A. Akasov[1,2], Natalia A. Arkharova[1], Vasilina V. Rocheva[1], Alla N. Generalova[1,2], Evgeny V. Khaydukov[1,2]; [1]Federal Scientific Research Center «Crystallography and Photonics» of RAS, Moscow, Russia; [2]Shemyakin-Ovchinnikov Institute of Bioorganic Chemistry RAS, Moscow, Russia

26B. Optical clearing imaging reveals the transcranial photobiomodulation-induced clearance effects of β-amyloid in Alzheimer's disease mouse model Silin Sun, Dongyu Li, Yuening He, Hao Lin, Xiaomei Liu, Yating Deng, Dan Zhu,Tingting Yu; Huazhong University of Science and Technology, Hubei, China

27B. Photoplethysmographic imaging of the low-frequency hemodynamics in peripheral vessels: comparison with infrared thermal imaging Volkov I.U., Fomin A.V., Tsoi M.O., Skripal A.V. and Sagaidachnyi A.A.; Saratov State University, Saratov, Russia

28B. Interaction of red blood cells and endothelium at single cell level *in vitro* P.B. Ermolinskiy[1], O.N. Scheglovitova[2], M.K. Maksimov[1], A.A. Kapkov[1], A.E. Lugovtsov[1], A.V. Priezzhev[1]; [1]Faculty of Physics, Lomonosov Moscow State University, Moscow, Russia; [2]N.F. Gamaleya National Research Center for Epidemiology and Microbiology, Russia

29B. Portable laser doppler flowmetry devices to explore the relationship between skin blood perfusion and newly diagnosed arterial hypertension Y.I. Loktionova[1], A.A. Fedorovich[2,3], E.V. Zharkikh[1], A.Yu. Gorshkov[2], A.I. Korolev[2], V.A. Dadaeva[2], O.M. Drapkina[2], E.A. Zherebtsov[1]; [1]Research & Development Center of Biomedical Photonics, Orel State University, Orel, Russia; [2]FSBI "National Health and Research Center of Preventive Healthcare" of the Ministry of Health of Russia, Moscow, Russia; [3]FSBI SRC RF "Institute of Biomedical Problems" RAS, Moscow, Russia

30B. Integrated mapping of sweat glands activity via infrared thermal imaging Mayskov D.I., Fomin A.V., Volkov I.U., Skripal A.V., Sagaidachnyi A.A.; Saratov State University, Saratov, Russia

31B. Biocompatible optical clearing of murine melanoma *ex vivo* and *in vivo* Sergey M. Zaytsev[1], Natalya A. Shushunova[1] Isabella A. Serebryakova[1,2], Yu. I. Surkov[1,2], Elina A. Genina[1,2]; [1]Saratov State University, Saratov, [2]Tomsk State University, Tomsk, Russia

32B. Femtosecond laser texturing of the surface of polymer products for wettability control Maria A. Dzus, Artemiy V. Aborkin, Alexey I. Elkin, Kirill S. Khorkov Vladimir State University, Russia

INTERNET POSTER

1. **HDAC1 mediates p53 cytoplasmic translocation in dorsal root ganglia after sciatic nerve transection** Valentina A. Dzreyan; Laboratory of Molecular Neurobiology, Academy of Biology and Biotechnology, Southern Federal University, prospect Stachki 194/1, Rostov-on-Don, Russia
2. **Non-invasive optical sensor for liver state accessment** Elina K. Nepomnyashchaya, Ilya N. Kolokolnikov, Ekaterina A. Savchenko; Peter the Great St. Petersburg Polytechnic University, Saint Petersburg, Russia
3. **Comparative analysis of experimental models of light desynchronosis on platelet aggregation activity** Vyacheslav F. Kirichuk[1], Olga V. Zlobina[1], Alexey N. Ivanov[1,2], Svetlana S. Pakhomy[1], Elena S. Terekhina[1], Nikita V. Shlyapnikov[1], Irina O. Bugaeva[1]; [1]Saratov State Medical University, Saratov, Russia; [2]Scientific Research Institute of Traumatology, Orthopedics and Neurosurgery of Saratov State Medical University, Saratov, Russia
4. **Laser modification of the titanium surface covered with a tantalum film** Shumilin Aleksandr Ivanovich, Fomin Aleksandr Aleksandrovich; Yuri Gagarin; State Technical University of Saratov, Russia
5. **Inactivation of pathogenic bacteria by mid-infrared laser pulses** Svetlana N.

Shelygina[1], Yuri M. Klimachev[1], Eteri R. Tolordava[1,2], Sergey I. Kudryashov[1], Yulia K. Yushina[4]; [1]Lebedev Physical Institute, Moscow, Russia; [2]National Research Center for Epidemiology and Microbiology. N.F. Gamalei, Moscow, Russia; [3]V.M. Gorbatov Federal Scientific Center for Food Systems, Russian Academy of Sciences, Moscow, Russia

6. **Excitation-dependent fluorescence as a tool to monitor fungal contamination of aquatic environments** Elena Fedoseeva[1], Svetlana Patsaeva[2], Vera Terekhova[2]; [1]Severtsov Institute of Ecology and Evolution, Russian Academy of Sciences, [2]Lomonosov Moscow State University, Moscow, Russia;
7. **Analyzing fluorescence lifetime parameters to calculate MAO enzyme activity in biological tissue** Olga A. Stelmashchuk, Valery V. Shupletsov, Evgeny A. Zherebtsov; Cell Physiology and Pathology Laboratory, Orel State University named after I.S. Turgenev, Orel
8. **Application of convolutional neural networks for the determination of maxillary sinus pathologies in digital diaphanoscopy** E.O. Bryanskaya[1], A.V. Kornaev[1], V.V. Dremin[1,2], Yu.O. Nikolaeva[3], V.G. Pil'nikov[3], A.V. Bakotina[3], A.V. Dunaev[1]; [1]Orel State University named after I.S. Turgenev, Orel, Russia; [2]College of Engineering and Physical Sciences, Aston University, Birmingham—UK; [3]A.I. Yevdokimov Moscow State University of Medicine and Dentistry, Moscow, Russia
9. **Asymmetry analysis for automated diagnostics of maxillary sinus pathologies in digital diaphanoscopy** E.O. Bryanskaya[1], M.Yu. Kirillin[2], V.V. Dremin[1,3], A.V. Dunaev[1]; [1]Orel State University named after I.S. Turgenev, Orel, Russia; [2]Institute of Applied Physics RAS, Nizhny Novgorod, Russia; [3]College of Engineering and Physical Sciences, Aston University, Birmingham, UK
10. **Hyaluronic acid glycidyl methacrylate hydrogel gelation in turbid medium of biotissue** Alexander G. Savelyev[1,2], Anastasia V. Sochilina[1,3], Roman A. Akasov[1,2,3], Mariya E. Nikolaeva[4], Nikita A. Durandin[5], Lijo George[5], Alexander Efimov[5], Vladimir A. Semchishen[1], Alla N. Generalova[1,3], Evgeny V. Khaydukov[1,2,3]; [1]Federal Scientific Research Centre "Crystallography and Photonics" of Russian Academy of Sciences, Moscow, Russia; [2]Sechenov First Moscow State Medical University, Moscow, Russia; [3]Shemyakin-Ovchinnikov Institute of Bioorganic Chemistry of the Russian Academy of Sciences, Moscow, Russia; [4]MIREA — Russian Technological University, Moscow, Russia; [5]Tampere University of Technology, Tampere, Finland
11. **Determination of tetracycline in enamel and dentin of human teeth by fluorescence spectroscopy: in vitro study** Alexey A. Selifonov[1], Tatiana Yu. Rusanova[1], Ekaterina I. Selifonova[1], Nikolay A. Yurasov[1], Julia S. Skibina[1], Valery V. Tuchin[1,2,3,4]; [1]Saratov State University, [2]Tomsk State University, Tomsk; [3]Institute of Precision Mechanics and Control, FRC "Saratov Scientific Centre of the Russian Academy of Sciences," Saratov; [4]A.N. Bach Institute of Biochemistry, FRC "Biotechnology of the Russian Academy of Sciences," Moscow 119071, Russian Federation
12. **An ex vivo study of the kinetics of the optical properties of ovarian tissues under the influence of glycerol** Alexey A. Selifonov[1], Andrey S. Rykhlov[2], E.I. Selifonova[1], Galina N. Varlamova[1], V.V. Tuchin[3,4,5]; [1]Education and Research Institute of Nanostructures and Biosystems; Saratov State University, Saratov 410012, Russia; [2]Clinic "Veterinary Hospital" , Saratov State University of Genetics, Biotechnology and Engineering named after N.I. Vavilov, Russia; [3]Science Medical Center, Saratov State University, [4]Laboratory of laser molecular imaging and machine learning,Tomsk State University, Tomsk; [5]Institute of Precision Mechanics and Control, FRC "Saratov Scientific Centre of the Russian Academy of Sciences," Saratov, Russia
13. **Modeling of Thermo-Optical Properties of Ferromagnetic Plasmon Nanocomposides for Laser Local Hyperthermia** A.N. Yakunin[1], S.V. Zarkov[1], Yu.A. Avetisyan[1], G.G. Akchurin[1,2], V.K. Belyaev[3], V.V. Rodionova[3], V.V. Tuchin[1,2,4,5]; [1]Institute of Precision Mechanics and Control, FRC "Saratov Scientific Centre of the Russian Academy of Sciences",[2]Saratov State University, Saratov, Russia; [3]Immanuel Kant Baltic Federal University, Kaliningrad, Russia; [4]Tomsk State University, Tomsk, Russia; [5]Bach Institute of Biochemistry, FRC "Fundamentals of Biotechnology of the Russian Academy of Sciences", Moscow, Russia
14. **The effect of clustering of gold plasmonic nanoparticle–protein complexes as a factor in increasing the fluorescence intensity** A.N. Yakunin[1], S.V. Zarkov[1], Yu.A. Avetisyan[1], I.G. Meerovich[2], V.V. Tuchin[1,2,3,4], A.P. Savitsky[2]; [1]Institute of Precision Mechanics and Control, FRC "Saratov Scientific Centre of the Russian Academy of Sciences", Saratov, Russia; [2]Bach Institute of Biochemistry, FRC "Fundamentals of Biotechnology of the Russian Academy of Sciences", Moscow, Russia; [3]Saratov State

University, Saratov, Russia; [4]Tomsk State University, Tomsk, Russia

15. **Antibacterial effect of nanoparticles on foodborne bacterial biofilms by nanosecond laser-induced forward transfer** Alena A. Nastulyavichus[1], Sergey I. Kudryashov[1], Etery R. Tolordava[1,2], Yulia K. Yushina[3], Anastasia A. Semenova[3], Andrey A. Ionin[1]; [1]Lebedev Physical Institute,Moscow, Russia; [2]N. F. Gamaleya Federal Research Centre of Epidemiology and Microbiology,Moscow, Russia; [3]Federal State Budgetary Scientific Institution "Federal Scientific Center for Food Systems named after V.M. Gorbatov "Russian Academy of Sciences, Moscow, Russia

Workshop on
Laser Physics and Photonics XXIV

Workshop Chair: **Vladimir L. Derbov,** Saratov State University (Russia)

*Secretary:***Svetlana V. Churochkina,** Saratov State University (Russia)

International Program Committee **Vladimir L. Derbov** (Chair), Saratov State University (Russia), **Alexander V. Gorokhov**, Samara University (Russia), **Bogos B. Joulakian**, University of Metz (France), **Alexander P. Kuznetsov**, Institute of Radio-Engineering of RAS (Russia), **Marian Marciniak**, National Institute of Telecommunications (Poland), **Leonid A. Melnikov**, Yuri Gagarin State Technical University of Saratov (Russia), **Yuri V. Popov**, Lomonosov Moscow State University (Russia), **Vladimir P. Ryabukho**, Saratov State University, IPM&C RAS (Russia), **Alexander P. Nizovtsev**, Institute of Physics of NASB (Belarus), **Sergue I. Vinitsky**, Joint Institute for Nuclear Research (Russia), **Aleksey M. Zheltikov**, Lomonosov Moscow State University (Russia), **Ivan A. Shcherbakov**, Prokhorov General Physics Institute of RAS (Russia)

September 28, Wednesday

ORAL SESSION PHOTONICS
(Building 10, Hall 503)

Chair: **Vladimir L. Derbov**, Saratov State University, Russia

14.30-14.50
Pulse mode of two-frequency resonance in lambda-scheme of degenerate quantum transitions
Oleg M. Parshkov; Yuri Gagarin State Technical University of Saratov, Saratov, Russia

14.50-15.10
Intensification of multiwavelength picosecond oscillation of synchronously pumped Raman lasers based on SrMoO4 and Sr(MoO4)0.8(WO4)0.2 crystals
Dmitry P. Tereshchenko[1], Sergei N. Smetanin[1], Alexander G. Papashvili[1], Ksenia A. Gubina[2], Sergei A. Solokhin[3], Mikhail N. Ershkov[3], Evgeny V. Shashkov[1], Vladislav E. Shukshin[1], Lyudmila I. Ivleva[1], Elizaveta E. Dunaeva[1], Irina S. Voronina[1]; [1]Prokhorov General Physics Institute of RAS, Moscow, Russia; [2]National University of Science and Technology MISiS, Moscow, Russia; [3]Degtyarev Kovrov State Technological Academy, Kovrov, Russia

15.10-15.30
Structured light for laser processing of azopolymers and chalcogenide glasses
Alexey P. Porfirev[1], Svetlana N. Khonina[1], Nikolay A. Ivliev[1], Sergey A. Fomchenkov[1], Denis P. Porfiriev[1,2]; [1]Image Processing Systems Institute of RAS-Branch of the FSRC "Crystallography and Photonics" RAS, Samara, Russia; [2]Lebedev Physical Institute, Samara, Russia

15.30-15.50
Multi-range characterization of microwave-to-terahertz supercontinuum driven by high-power ultrashort laser pulses in the mid-infrared
Mikhail V. Rozhko[1,2], Aleksandr V. Mitrofanov[1,2,3,4], Dmitrii A. Sidorov-Biryukov[1,2,3], Aleksandr A. Voronin[1,2], Maksim M. Nazarov[3], Andrey B. Fedotov[1,2], Aleksei M. Zheltikov[1,2,5]; [1]M.V. Lomonosov Moscow State University, Moscow, Russia; [2]Russian Quantum Center, Skolkovo, Russia; [3]Kurchatov Institute National Research Center, Moscow, Russia; [4]Institute on Laser and Information Technologies of Russian Academy of Sciences - Branch of Federal Scientific Research Center "Crystallography and Photonics" of Russian Academy of Sciences, Shatura, Russia; [5]Texas A&M University, College Station, Texas, USA

16.00-16.30
Coffee Break

16.30-16.50
Laser micro- and nanostructuring of the Ti implants by nanosecond pulses
Vadim P. Veiko, Yulia Yu. Karlagina, Dmitry S. Polyakov, Andrey A. Samokhvalov; ITMO University, Saint-Petersburg, Russia

16.50-17.10
Laser ablative synthesis of ZnS nanomaterials in an air atmosphere using an electrostatic field and liquid media
Anton S. Chernikov, Dmitriy A. Kochuev, Ruslan V. Chkalov, Kirill S. Khorkov; Vladimir State University, Vladimir, Russia

17.10-17.30

High power pulsed semiconductor laser for biomedical applications

Dmitry A. Avtaykin, Anton V. Kozyrev, Aleksey I. Kunitsky, Vadim A. Panarin, Sergey N. Sokolov, Mikhail Yu. Starynin, Larisa I. Shestak; INJECT RME LLC, Saratov, Russia

17.30-17.50

Polymer-free carbon nanotube saturable absorber for fiber laser ultrashort pulse generation

Yuriy G. Gladush[1], Aram A. Mkrtchyan[1], Diana I. Galiakhmetova[1], Ayvaz Davletkhanov[1], Dmitry V. Krasnikov[1], Albert G. Nasibulin[1,2]; [1]Skolkovo Institute of Science and Technology, Moscow, Russia; [2]Aalto University, Department of Applied Physics, Aalto, Finland

September 29, Thursday

JOINT POSTER/INTERNET SESSION

Chair (P): **Alexander O. Kashichkin,** Saratov State University, Russia

18.00-20.00

INTERNET POSTERS

1P. **Thermal action on photo-integrated anisotropic micro-lattices** Liubov I. Vostrikova[1,2], Vitaly A. Smirnov[1]; [1]Rzhanov Institute of Semiconductor Physics SB RAS, Novosibirsk, Russia; [2]Departments of Mathematics and Natural Sciences and Informational Technologies of NSUEM, Novosibirsk, Russia

2P. **Investigation of the influence of alpha factor on the dynamics of wide-aperture semiconductor lasers** Elizaveta A. Yarunova[1,2], Anton A. Krents[1,2], Nonna E. Molevich[1,2]; [1]Lebedev Physical Institute, Samara, Russia; [2]Samara National Research University, Samara, Russia

3P. **Green light stimulation of photo-integrated micro-lattices** Liubov I. Vostrikova[1,2], Vitaly A. Smirnov[1]; [1]Rzhanov Institute of Semiconductor Physics SB RAS, Novosibirsk, Russia; [2]Departments of Mathematics and Natural Sciences and Informational Technologies of NSUEM, Novosibirsk, Russia

4P. **Interaction of N-level atoms with photon states in cavities** Alexander V. Gorokhov; Samara University, Samara, Russia

5P. **Entanglement between isolated two-level atom and Jaynes-Cummings atom in a cavity with nonlinearity** Eugene K. Bashkirov, Rodion K. Zakharov; Samara University, Samara, Russia

6P. **Dynamics of three qubits not-resonantly interacting with one-mode cavity field** Eugene K. Bashkirov, Alexander R. Bagrov, Ilya V. Vasiliev; Samara University, Samara, Russia

7P. **On the dynamics of the generalized Tavis-Cummings Model with nonlinearities** Eugene K. Bashkirov; Samara University, Samara, Russia

8P. **Analysis of the effect of amplified spontaneous radiation on a phase-conjugated YAG:Nd laser oscillation at a wavelength of 1.34 um at electro-optical and passive Q-switching of an open multi-loop cavity** Mikhail N. Ershkov[1], Sergei A. Solokhin[1], Alexander E. Shepelev[2], Alexander A. Antipov[2]; [1]Degtyarev Kovrov State Technological Academy, Kovrov, Russia; [2]Institute on Laser and Information Technologies of Russian Academy of Sciences - Branch of Federal Scientific Research Center “Crystallography and Photonics” of Russian Academy of Sciences, Shatura, Russia

9P. **Geometrization of Maxwell's Equations in Extended Riemannian Geometry** Anna V. Korolkova[1], Dmitry S. Kulyabov[1,2], Leonid A. Sevastianov[1,2]; [1]Peoples' Friendship University of Russia (RUDN University), Moscow, Russia; [2]Joint Institute for Nuclear Research, Dubna, Russia

10P. **Chaotic laser for separating weak signal from strong chaotic background** Anton A. Krents[1,2], Elizaveta A. Yarunova[1,2]; [1]Samara National Research University, Samara, Russia; [2]Lebedev Physical Institute, Samara, Russia

11P. **Modeling of speckle interferometer of lateral micro-displacements of a scattering object with Gaussian illuminating beams and digital recording of interference measuring signal** Lyudmila A. Maksimova[1], Natalya Yu. Mysina[1], Bogdan A. Patrushev[1,2], Vladimir P. Ryabukho[1,2]; [1]IPTMU RAS - Separate structural subdivision of FRC "Saratov Scientific Center of the Russian Academy of Sciences", Saratov, Russia; [2]Saratov State University, Saratov, Russia

12P. **Threshold effect under high-power laser limiting for flat top pulse shape** Mikhail S. Savelyev[1,2,3], Pavel N. Vasilevsky[1,3], Artem V. Kuksin[1,3], Alexander Yu. Gerasimenko[1,2,3]; [1]National Research University of Electronic Technology, Zelenograd, Moscow, Russia; [2]I.M. Sechenov First Moscow State Medical University, Moscow, Russia; [3]Institute of Nanotechnology of Microelectronics of the Russian Academy of Sciences, Moscow, Russia

POSTER SESSION
(Building 3, 3rd floor Hall)

1P. **Kinetics of Tb3+ and Dy3+ levels populations in chalcogenide glasses pumped near the fundamental absorption band edge** Yulia S. Kuzyutkina[1], Nina D. Parshina[1], Elena A. Romanova[1], Vyacheslav I. Kochubey[1], Maksim

V. Sukhanov[2], Vladimir S. Shiryaev[2]; [1]Saratov State University, Saratov, Russia; [2]Institute of Chemistry of High Purity Substances of RAS, Nizhny Novgorod, Russia

2P. **High-precision mirror diffractive optical elements manufacturing method for hyperspectral equipment** Sergey A. Fomchenkov; Image Processing Systems Institute of the RAS - Branch of the FSRC "Crystallography and Photonics" RAS, Samara, Russia

3P. **Multi-plane photophoretic trapping of airborne light-absorbing particles** Sergey A. Fomchenkov[1,2], Alexey P. Porfirev[1,2], Denis P. Porfiriev[1,3], Svetlana N. Khonina[1,2], Sergey V. Karpeev[1,2]; [1]Samara National Research University, Samara, Russia; [2]Image Processing Systems Institute of RAS-Branch of the FSRC “Crystallography and Photonics” RAS, Samara, Russia; [3]Lebedev Physical Institute, Samara, Russia

4P. **Interferometry of absolute distance at harmonic modulation of semiconductor laser with external optical feedback** Sergey Yu. Dobdin, Aleksey V. Dzhafarov, Maksim G. Inkin, Anatoly V.Skripal; Saratov State University, Saratov, Russia

5P. **Adiabatic waveguide propagation of polarized light in a smooth transition of a planar waveguide** Dmitriy V. Divakov[1,2], Konstantin P. Lovetskiy[1], Anton L. Sevastianov[3], Anastasiya A. Tyutyunnik[1,2]; [1]Peoples' Friendship University of Russia (RUDN University), Moscow, Russia; [2]Joint Institute for Nuclear Research, Dubna, Moscow, Russia; [3]Higher School of Economics, Moscow, Russia

6P. **Femtosecond laser synthesis and fragmentation of molybdenum disulfide nanoparticles in liquid** Anton S. Chernikov, Dmitriy A. Kochuev, Ruslan V. Chkalov, Kirill S. Khorkov; Vladimir State University, Vladimir, Russia

7P. **Femtosecond laser texturing of the surface of polymer products for wettability control** Maria A. Dzus, Artemiy V. Aborkin, Alexey I. Elkin, Kirill S. Khorkov; Vladimir State University, Vladimir, Russia

8P. **Full-size mock-ups of a meander-line slow-wave structure made by laser micromachining for a miniaturized millimeter-wave TWT** Dmitrii A. Nozhkin[2], Roman A. Torgashov[1,2], Alexey A. Serdobintsev[2], Ivan O. Kozhevnikov[2], Victor V. Galushka[1,2], Anton A. Kozyrev[2,3], Andrey V. Starodubov[1,2], Nikita M. Ryskin[1,2]; [1]Saratov Branch, Kotelnikov Institute of Radio Engineering and Electronics RAS, Saratov, Russia; [2]Saratov State University, Saratov, Russia; [3]National Research Nuclear University MEPHI, Moscow, Russia

9P. **Distance measurement by the maximum frequency of interference signal variation with harmonic deviation of the wavelength of a semiconductor laser** Maksim G. Inkin, Sergey Yu. Dobdin, Aleksey V. Dzhafarov, Anatoly V. Skripal; Saratov State University, Saratov, Russia

10P. **Features of laser-mediated photoconductivity of nanoporous anatase near the percolation threshold: computer simulation** Angelica A. Klimova, Dmitry A. Zimnyakov; Yuri Gagarin State Technical University of Saratov, Saratov, Russia

11P. **Statistical modeling of radiative transfer for non-diffusion propagation modes: application to the speckle-correlation analysis of coarse-grained dynamic systems** Anastasiya M. Schukina, Dmitry A. Zimnykov; Yuri Gagarin State Technical University of Saratov, Saratov Russia

12P. **Femtosecond laser synthesis and fragmentation of molybdenum disulfide nanoparticles in liquid** Maria A. Dzus, Artemiy V. Aborkin, Alexey I. Elkin, Kirill S. Khorkov; Vladimir State University, Vladimir, Russia

13P. **Development of a laser technology for modifying the structure and properties of the jaw membrane surface using machine learning** Vadim P. Veiko, Anastasia S. Zavyalova, Yulia Yu. Karlagina, Elisavata M. Lovyshkina, Valeriy V. Romanov, Galina V. Odintsova; ITMO University, Saint-Petersburg, Russia

14P. **Concerning the potential of 3D printing technologies for microfabrication of next-generation communication system components** Kristina S. Chernozubkina[1], Andrey V. Starodubov[1,2], Nikita M. Ryskin[1,2]; [1]Saratov State University, Saratov, Russia; [2]Saratov Branch, Institute of Radio Engineering and Electronics RAS, Saratov, Russia

Conference on Spectroscopy and Molecular Modeling XXIII

Workshop Chairs: **Lev M. Babkov, Kirill V. Berezin,** Saratov State University (Russia)

Secretary: **Inna L. Plastun,** Saratov State Technical University (Russia)

International Program Committee: **Lev M. Babkov**, Saratov State University (Russia), **Dmitry S. Umreiko**, Belarus State University (Minsk, Belorussia), **Nadezda A. Davydova**, Institute of Physics, NAS of Ukraine, **Tatiana G. Bourova**, Saratov State Pedagogical Institute (Russia), **Alexander V. Burenin**, Institute of Applied Physics RAS (Moscow, Russia), **Victor L. Furer**, Kazan Civil Engineer Academy (Russia), **Alexander V. Gorohov**, Samara State University (Russia)

September 28, Wednesday

ON-LINE INVITED LECTRURE/ORAL SESSION SPECTROSCOPY I

Zoom link:
https://us02web.zoom.us/j/9297707272?pwd=QVhzMDdOL2hUbUJKM3BvRks1WWRBdz09
Conference ID: 929 770 7272, Code 6311
(Building 3, Room 34)
Chair: **Lev M. Babkov,**
Saratov State University, Russia

15.30-15.45
INTERMOLECULAR COMPLEXES OF OLEIC ACID TRIGLYCERIDE WITH WATER MOLECULES
Kirill V. Berezin[1], Vladimir V. Nechaev[2], Konstantin N. Dvoretskiy[3], E.M. Antonova[4], Elmira T. Shagautdinova[4] , E.V. Grabarchuk[4], A.M. Likhter[4]
[1]Saratov State University, Saratov, Russia;
[2]Saratov State Technical University, Saratov, Russia
[3]Saratov State Medical University, Saratov, Russia;
[4]Astrakhan State University, Astrakhan, Russia

15.45 - 16.00
Internet Report
INVESTIGATION OF THE REACTION OF COMPLEXATION BETWEEN 4,7-DICHLORO-N2,N9-DIPHENYL-1,10-PHENANTHROLINE-2,9-DICARBOXAMIDE AND LANTHANUM NITRATE
Tsagana B. Sumyanova, Nataliya E. Borisova, Roman Pankov, Victoria R. Prizhilevskaya
Lomonosov Moscow State University, Faculty of Chemistry, Moscow, Russia

16.00–16.15
Internet Report
THE EFFECT OF TEMPERATURE ON THE LUMINESCENT PROPERTIES OF TERBIUM-EUROPIUM COMPLEXES WITH N-HETEROCYCLIC LIGANDS
Alena A. Bozhko, Anastasiia V. Kharcheva, Nataliya E. Borisova, Alexey V. Ivanov, Svetlana V. Patsaeva
Lomonosov Moscow State University, Faculty of Chemistry, Moscow, Russia

16.15–16.30
Coffee break
Building 8, 4th floor

16.30– 17.00
Internet Invited
TIME-RESOLVED POLARIZED FLUORESCENCE OF NADH AND FAD IN SOLUTIONS: PICOSECOND RELAXATION DYNAMICS
Oleg S. Vasyutinskii
Ioffe Institute Russian Academy of Sciences St.Petersburg, Russia

17.00- 17.15
Internet Report
TRAINING WITH NOISE ADDITION IN NEURAL NETWORK SOLUTION OF INVERSE PROBLEM BASED ON INTEGRATION OF OPTICAL SPECTROSCOPIC METHODS
Artem A. Guskov[1], Igor V. Isaev[2,3], Olga E. Sarmanova[1,2], Sergey A. Burikov[1,2], Tatiana A. Dolenko[1], Kirill A. Laptinskiy[2], Sergey A. Dolenko[2]
[1]Faculty of Physics, Moscow State University, Moscow, Russia,
[2]D.V. Skobeltsyn Institute of Nuclear Physics, M.V. Lomonosov Moscow State University, Moscow, Russia
[3]Kotelnikov Institute of Radioengineering and Electronics, Russian Academy of Sciences, Moscow, Russia

17.15- 17.30
EFFECT OF H-BONDING ON THE STRUCTURE AND IR SPECTRUM OF 2-BENZYLPHENOL
Irina V. Peretokina (Ivlieva)[1], Lev.M. Babkov[1], Jane Baran[2], Nadegda A. Davydova[3]

[1]Saratov State University, Saratov, Russia
[2]Institute of Low Temperatures and Structure Research, PAN, Wroclaw, Poland
[3]Institute of Physics, NAS of Ukraine, Kyiv, Ukraine

17.30 - 17.45
EFFECT OF HYDROGEN BONDING ON THE STRUCTURE AND VIBRATIONAL SPECTRA OF HYDROXYBENZOIC ACIDS
Denis S. Finashkin, Lev M. Babkov
Saratov State University, Saratov, Russia

17.45 - 18.00
IR SPECTRA AND STRUCTURAL DYNAMIC ANHARMONIC MODEL OF 2-BENZYLPHENOL CONFORMERS
Mikhail D. Moskvitin[1], Lev M. Babkov[2], Nadegda A. Davydova[3], Jane Baran[4]
[1]Saratov State Technical University, Russia,
[2]Saratov State University, Saratov, Russia,
[3]Institute of Physics, NAS of Ukraine, Kyiv, Ukraine,
[4]Institute of Low Temperatures and Structure Research, PAN, Wroclaw, Poland

19.00-21.00
Evening boat trip - the lights of Saratov

September 29, Thursday

ORAL SESSION SPECTROSCOPY II

Zoom link:
https://us02web.zoom.us/j/9297707272?pwd=QVhzMDdOL2hUbUJKM3BvRks1WWRBdz09
Conference ID: 929 770 7272, Code 6311
(Building 3, Room 34)
Chair: **Lev M. Babkov,**
Saratov State University, Russia

14.30-14.45
THE PROGRAM FOR CALCULATING THE THERMODYNAMIC PARAMETERS OF INTERMOLECULAR COMPLEXES ACCORDING TO THE DATA OF QUANTUM MECHANICAL CALCULATIONS
Kirill V. Berezin[1], Vladimir V. Nechaev[2], Konstantin N. Dvoretskiy[3], E.M. Antonova[4], Elmira T. Shagautdinova[4] , E.V. Grabarchuk[4], A.M. Likhter[4]
[1]Saratov State University, Saratov, Russia;
[2]Saratov State Technical University, Saratov, Russia
[3]Saratov State Medical University, Saratov, Russia;
[4]Astrakhan State University, Astrakhan, Russia

14.45 - 15.00
EFFECT OF THE BASIS SUPERPOSITION ERROR IN CALCULATING THE THERMODYNAMIC CHARACTERISTICS OF INTERMOLECULAR SYSTEMS
Kirill V. Berezin[1], Vladimir V. Nechaev[2], Konstantin N. Dvoretskiy[3], E.M. Antonova[4], Elmira T. Shagautdinova[4] , E.V. Grabarchuk[4], A.M. Likhter[4]
[1]Saratov State University, Saratov, Russia;
[2]Saratov State Technical University, Saratov, Russia
[3]Saratov State Medical University, Saratov, Russia;
[4]Astrakhan State University, Astrakhan, Russia

15.00–15.15
GENETIC ALGORITHMS FOR ESTIMATING THE CONTRIBUTIONS OF INTRAMOLECULAR RESONANCES OF WATER-ETHANOL SOLUTIONS TO THE FORMATION OF THEIR RAMAN SPECTRA
Gavriil A. Kupriyanov[1], Igor V. Isaev[2,3] , Ivan V. Plastinin[2], Tatiana A. Dolenko[1], Sergey A. Dolenko[2]
[1]Faculty of Physics, M.V.Lomonosov Moscow State University, Moscow, Russia;
[2]D.V.Skobeltsyn Institute of Nuclear Physics, M.V.Lomonosov Moscow State University, Moscow, Russia;
[3]Kotelnikov Institute of Radio Engineering and Electronics, Russian Academy of Sciences

15.15–15.30
ITERATIVE FEATURE SELECTION WITH REDUNDANCY ACCOUNTING FOR THE NEURAL NETWORK SOLUTION OF INVERSE PROBLEMS OF SPECTROSCOPY
Nickolay O. Shchurov[1], Igor V. Isaev[2,3], Olga E. Sarmanova[1,2], Sergey A. Burikov[1,2], Tatiana A. Dolenko[1], Kirill A. Laptinskiy[2], Sergey A. Dolenko[2]
[1]Faculty of Physics, M.V. Lomonosov Moscow State University, Moscow, Russia
[2]D.V. Skobeltsyn Institute of Nuclear Physics, M.V. Lomonosov Moscow State University, Moscow, Russia
[3]Kotelnikov Institute of Radioengineering and Electronics, Russian Academy of Sciences, Moscow, Russia

15.30-15.45
SYNTHESIS OF CATIONIC PORPHYRINS AND THEIR METAL COMPLEXES AS PHOTOSENSITIZING AGENTS FOR APDT
Inga O. Savelyeva[1], Alexey U. Usanyov[1], Kseniya A. Zhdanova[1], Natalia A. Bragina[1], Margarita A. Gradova[2], Tatiana A. Shmigol[3]
[1]MIREA- Russian Technological University, Moscow, Russia
[2]Semenov Institute of Chemical Physics, Russian Academy of Sciences, Moscow, Russia
[3]Pirogov Russian National Research Medical University, Moscow, Russia

15.45 - 16.00
EFFECT OF HYDROGEN BONDING ON INTERMOLECULAR INTERACTION IN THERANOSTIC PROBLEMS
Inna L. Plastun, Alexander A. Zaharov, Anatoly A. Naumov, Pavel A. Julidin, Pavel D. Filin, Kirill A. Bryxin
Saratov State Technical University, Saratov, Russia

16.00–16.15
IDENTIFICATION OF CYANINE 7 DOCKING SITE ON PROTEIN ETANERCEPT SUBUNITS USING AUTODOCK4 SCRIPT
Anastasia A. Simanova[1], Olga S. Knyazeva[2], Irina V. Dokukina[1], Inna L. Plastun[3]
[1]Sarov Physics and Technology Institute, National Research Nuclear University MEPhI, Sarov, Russia,
[2]Physics department, Lomonosov Moscow State University, Moscow, Russia,
[3]Saratov State Technical University, Saratov, Russia

16.15–16.30
INVESTIGATION OF THE INTERMOLECULAR INTERACTION OF IMMUNOGLOBULIN AND TNF DURING MARKING WITH CYANIN 7
Anatoly A. Naumov[1], Inna L. Plastun[1], Vyacheslav S. Grinev[2]
[1]Saratov State Technical University, Saratov, Russia
[2]Saratov State University, Saratov, Russia;

16.30–16.45
AQUEOUS ENVIRONMENT AND POLYMORPHISM INFLUENCE ON THE PHYSICOCHEMICAL PROPERTIES OF MODIFIED SUCCINIC ACID
Alexander. A. Zakharov[1], Inna L. Plastun[1], Lev M. Babkov[2], Ruslan. Yu. Yakovlev[3]
[1]Saratov State Technical University, Saratov, Russia
[2] Saratov State University, Saratov, Russia
[3]Smart Polymorph Technologies, Moscow, Russia

16.45–17.00
INFLUENCE OF WATER ENVIRONMENT ON MODIFIED GLYCINE PHYSICOCHEMICAL PROPERTIES
Pavel A. Zhulidin[1], Pavel D. Filin[1], Inna L. Plastun[1], Ruslan Yu. Yakovlev[2]
[1]Saratov State Technical University, Saratov, Russia
[2]Smart Polymorph Technologies, Moscow, Russia

17.00- 17.15
ANALYSIS OF THE HYDROGEN BINDING OF AMINO ACIDS FROM THE COMPOSITION OF WHEY PROTEIN ISOLATE WITH HYALURONIC ACID
Kirill A. Bryxin, Inna L. Plastun
Saratov State Technical University, Saratov, Russia

17.15–17.40
Coffee break
Building 8, 4th floor

JOINT POSTER/INTERNET SESSION SPECTROSCOPY (S)
(Building 3, 3rd floor Hall)
Co-chairs: **Lev M. Babkov, Kirill V. Berezin**
Saratov State University, Russia

18.00-20.00

1S. **SPECTROSCOPIC STRUCTURAL STUDIES OF ISOMERS AND TAUTOMERS OF NEW POLYSUBSTITUTED HYDROQUINOLINES, QUINAZOLINES AND CHROMENOPYRIDINES**
Anna A. Meshcheryakova, Anna V. Sklyar, Alexandr V. Nikulin, Daniil A. Puzanov, Natalya O. Vasil'kova, Alexandra A. Khrustaleva, Vitaly V. Sorokin, Adel' P. Kriven'ko,
Saratov State University, Saratov, Russia

2S. **THE APPLICATION OF SPECTROSCOPIC METHODS IN ANALYSIS OF DIASTEREOMERIC MIXTURE OF REACTION PRODUCTS OF 1,3-DIPOLAR CYCLOADDITION OF AZOMETHINE YLIDES**
Andrey S. Kochukov, Vitaly V. Sorokin,
Saratov State University, Saratov, Russia

3S. **MATHEMATICAL MODELING OF VIBRATION SPECTRA OF OPTICALLY ACTIVE AMINO ACIDS FOR THE PURPOSES OF ANTI-PLATELET THERAPY**
Anna A.Kundalevich[1,2], Anastasia I. Kapitunova[2], Andrey Y. Zyubin[2], Ilya G. Samusev[2]
[1]Saratov State University, Saratov, Russia
[2]Immanuel Kant Baltic Federal University, Kaliningrad, Russia

4S. **DIAGNOSTICS OF HARMFUL IMPURITIES IN AQUEOUS MEDIA USING SPECTROSCOPIC METHODS AND MACHINE LEARNING ALGORITHMS**
Kirill A. Laptinskiy[1,2], Sergey A. Burikov[1], Olga E. Sarmanova[1], Alexey M. Vervald[1], Luiza S. Utegenova[1], Ivan V. Plastinin[1,2], Tatiana A. Dolenko[1]
[1]Faculty of Physics, Lomonosov Moscow State University, Russia
[2]Skobeltsyn Institute of Nuclear Physics, Lomonosov Moscow State University, Russia

5S. **INTERPRETATION OF RAMAN SPECTRA OF BIOLOGICAL MEDIA BASED ON DEEP LEARNING**

Lyudmila A. Bratchenko[1], Elena N. Tupikova[2], Sahar Al-Sammarraie[1], Valery P. Zakharov[1], Ivan A. Bratchenko[1]
[1]Department of Laser and Biotechnical Systems, Samara University, Samara, Russia
[2]Department of Chemistry, Samara University, Samara, Russia

6S. **INFLUENCE OF POLARIZATION OF SERS-ACTIVE SURFACE ON SERS SPECTRA OF CREATININE**

Natalia E. Markina, Alexey V. Markin
Saratov State University, Saratov, Russia

7S. **AMPLIFICATION OF SERS-BASED DETECTION OF SOME ANTIBIOTICS USING CYCLODEXTRIN MODIFIED SILVER NANOPARTICLES**

Natalia E. Markina, Andrey M. Zakharevich, Alexey V. Markin
Saratov State University, Saratov, Russia

8S. **INTERPRETATION OF IR SPECTRA OF PYRIDO[1,2-A] PYRIMIDINE SYSTEMS**

Anna A. Mecheryakova, Lev M. Babkov, Vitaly V. Sorokin, Irina V. Peretokina
Saratov State University, Saratov, Russia

9S. **STRUCTURE AND ELECTRON-VIBRATIONAL SPECTRA OF FULLERENE C60 IN THE FIRST ELECTRONICALLY EXCITED STATES**

Galina N. Ten, Mikhail M. Slepchenkov, Olga E Glukhova, Maxim K. Berezin
Saratov State University, Saratov, Russia

10S. **THE ELECTRONIC SPECTRUM OF THE GREEN FLUORESCENT PROTEIN CHROMOPHORE**

Galina N. Ten, Mikhail M. Slepchenkov, Olga E Glukhova, Maxim K. Berezin
Saratov State University, Saratov, Russia

11S. **ANALYSIS OF VIBRATIONAL SPECTRA AND GEOMETRICAL PARAMETERS OF FLAVONE**

Viktor F. Pulin, E.V. Ryzhova, T.Yu. Surinskaya, O.V. Pulin, P.M. Elkin
Saratov State Vavilov Agrarian University, Russia

INTERNET SESSION

1SI. **APPLICATION OF POLARIZED RAMAN SPECTROSCOPY FOR DETERMINATION OF CRYSTALLOGRAPHIC ORIENTATION OF METAL-ORGANIC FRAMEWORKS**

Nina V. Slyusarenko[1], Evgenia A. Slyusareva[1], Irina D. Yushina[2], Aleksander S. Krylov[3],
[1]Siberian Federal University, Krasnoyarsk, Russia
[2]South Ural State University, Chelyabinsk, Russia
[3]Kirensky Institute of Physics, Federal Research Center KSC SB RAS, Krasnoyarsk, Russia

2SI. **CHANGES IN THE STRUCTURE AND SPECTRA OF IR ABSORPTION AND RAMAN SCATTERING OF AQUEOUS SOLUTIONS OF ASCORBIC ACID DURING THEIR DEGRADATION**

Svetlana A. Kutsenko
Volgograd State University, Volgograd, Russia

Conference on Nanobiophotonics XVII

Workshop Chair: **Nikolai G. Khlebtsov**, Institute of Biochemistry and Physiology of Plants and Microorganisms of the RAS, Saratov State University

Secretary: **Timofey E. Pylaev***,* Institute of Biochemistry and Physiology of Plants and Microorganisms of the RAS, Saratov State Medical University

International Program Committee: **Roberto Pini**, Institute of Applied Physics (IFAC-CNR) National Research Council of Italy; **Jian Ye**, School of Biomedical Engineering & Med-X Research Institute Shanghai Jiao Tong University, China; **Dmitry Gorin**, Scoltech, Saratov State University (Russia); **Irina Goryacheva**, Saratov State University (Russia); **Lev Dykman**, Institute of Biochemistry and Physiology of Plants and Microorganisms, RAS, Saratov (Russia); **Alexey Yashchenok**, Scoltech, Russia; **Vitaly Khanadeev**, Institute of Biochemistry and Physiology of Plants and Microorganisms, RAS, Saratov State University (Russia); **Boris Khlebtsov**, Institute of Biochemistry and Physiology of Plants and Microorganisms, RAS, Saratov (Russia)

September 28, Wednesday

ORAL/INVITED SESSION NANOBIOPHOTONICS

Zoom link: https://us06web.zoom.us/j/82452500876
(Building 9, Conference Hall)

Chair: **Nikolai G. Khlebtsov,** IBPPM RAS, Saratov State University, Russia

10.00 – 10.20
Invited
Photothermal stimulation of neurons by plasmonic nanomaterials promotes neuromodulation and accelerated regeneration of damaged
Olga Yu. Antonova, Olga Yu. Kochetkova, Elena V. Raikhman, Igor L. Kanev Institute of Theoretical and Experimental Biophysics, RAS, Pushchino, Russia

10.20 – 10.35
Zoom Oral
Rapid isolation of small extracellular vesicles by oligonucleotide functionalized magnetic beads and detection their surface proteins using DARPin probe
Alexey M. Yashchenok[1], Vasiliy S. Chernyshev[1], Elena V. Konovalova[2], Roman Kholodenko[2], Ekaterina Tsydenzhapova[3], Viktoria O. Shipunova[3], Alexey A. Schulga[2], Sergey M. Deyev[2], Dmitry A. Gorin[1] [1]Center for Photonic Science and Engineering, Skolkovo Institute of Science and Technology, Moscow, Russia [2]Shemyakin-Ovchinnikov Institute of Bioorganic Chemistry, Russian Academy of Sciences, Moscow, Russia [3]Moscow Institute of Physics and Technology, Moscow Region, Russia

10.35 – 10.50
Zoom Oral
Nanostructured biosilica exoskeletons functionalized by gold nanoparticles as SERS-active materials
Julijana Cvjetinovic,[1] Anastasiia A. Merdalimova,[1] Maria A. Kirsanova,[1] Pavel A. Somov,[1] Daniil V. Nozdriukhin,[1] Alexey I. Salimon,[1] Alexander M. Korsunsky,[2] Dmitry A. Gorin[1] [1]Skolkovo Institute of Science and Technology, Bolshoy Boulevard 30, bld. 1, Moscow, 121205, Russia [2]Department of Engineering Science, University of Oxford, Oxford, OX1 3PJ, United Kingdom

10.50 – 11.05
Zoom Oral
Spectrophotometric and electrokinetic studies of interaction of ciprofloxacin with humic substances and silica magnetite nanoparticles
Artur Dzeranov,[1] Lyubov Bondarenko,[1] Gulzhian Dzhardimalieva,[1,3] Elena Kelbysheva,[4] Daniil Zmeev,[2] Svetlana Patsaeva,[2] Kamila Kydralieva,[1] [1]Moscow Aviation Institute (National Research University), Moscow, Russia [2]Physics Faculty, Lomonosov Moscow State University, Moscow, 119992, Russia [3]Institute of Problems of Chemical Physics, RAS, Chernogolovka, Moscow region, Russia [4]Nesmeyanov Institute of Organoelement Compounds, RAS, Moscow region, RussiaMordovia State University, Saransk, Russia

11.05 – 11.20
Oral
Vaterite-loaded cellular spheroids for bone tissue engineering application
Anatolii A. Abalymov Saratov State University

11.20 – 11.35
Oral
Glutathione-stabilized fluorescent gold nanoclusters show label-free high binding affinity for the bacterial biofilms but not for the planktonic bacteria
Daniil S. Chumakov,[1] Stella S. Evstigneeva,[1] Roman S. Tumskiy,[1] Andrey M. Burov,[1] Nikolai G. Khlebtsov,[1,2] [1]Institute of Biochemistry and Physiology of Plants and Microorganisms, Russian Academy of Sciences (IBPPM RAS), Saratov, Russia [2]Saratov State University, Saratov, Russia

11.35 – 11.50

Oral

Photo-thermal effect in strongly coupled gold plasmonic nanoparticles and Au/VO_2 composites probed by surface acoustic waves

Vladimir E. Kaydashev,[1] Boris N. Khlebtsov,[2] Andrey Miakonkikh,[3] Maxim Kutepov,[1] Roman Kirtaev,[4] Gevork Y. Karapetyan,[1] Evgeni M. Kaidashev[1], [1]Laboratory of Nanomaterials, Southern Federal University, Rostov-on-Don, Russia [2]Institute of Biochemistry and Physiology of Plants and microorganisms RAS, Saratov, Russia [3]Valiev Institute of Physics and Technology RAS, Moscow, Russia [4]Moscow Institute of Physics and Technology, Dolgoprudny, Russia

11.50 – 12.05

Oral

Using of T-lymphocytes as a courier for composite polymer/MNPs nanocapsules

Maxim A. Kurochkin,[1] Anatolii Abalymov,[1,2] Sergei German,[1] Aleksei Komlev,[3], Marina Novoselova,[1] Dmitry Gorin,[1,2] [1]Skolkovo institute of science and technology, Moscow, Russia [2]Saratov State University, Saratov, Russia [3]Lomonosov Moscow State University, Moscow, Russia

12.05 – 12.20

Oral

Nanodiamond based magnetic nano-vectors for multimodal imaging and magnetic drug targeting

Rajakar Selvam,[1] Artashes V. Karmenyan,[1] Elena Perevedentseva,[1,2] Chia-Liang Cheng,[1*] [1]Department of Physics, National Dong Hwa University, Hualien 97401, Taiwan [2]P.N. Lebedev Physics Institute of Russian Academy of Sciences, Moscow, 119991, Russia

12.20 – 12.35

Oral

Gold nanostars loaded erythrocyte ghost membrane as biomimetic nanotheranostic agent for homotypic targeting and hypoxic tumor treatment

Wrenit Gem Pearl,[1] Rajakar Selvam,[1] Artashes V. Karmenyan,[1] Elena V. Perevedentseva,[2] Shih-Che Hung,[3] Hsin-Hou Chang,[3] Chia-Liang Cheng,[1] [1]Department of Physics, National Dong Hwa University, Hualien 97401, Taiwan [2]P. N. Lebedev Physics Institute of Russian Academy of Sciences, Moscow, 119991, Russia [3]Department of Molecular Biology and Human Genetics, Tzu-Chi University, Hualien 97004, Taiwan

12.35 – 12.50

Oral

Aqueous synthesis of AgInS/ZnS quantum dots covered with 3-mercaptopropionic acid

Vera V. Olomskaya, Arina V. Dushankova, Tatiana S. Ponomaryova, Anastasia S. Novikova, Irina Yu.Goryacheva. Saratov State University, Saratov, Russia

12.50 – 13.05

Oral

Magnetic labeling of platelets for targeted drug delivery in the personalized therapy field

Oksana A. Mayorova, Olga I. Gusliakova, Ekaterina S. Prikhozhdenko, Daniil N. Bratashov Saratov State University, Saratov, Russia

13.05 – 13.20

Oral

Applying of the alloyed quantum dots in biosensing development

Daniil D. Drozd, Alexander S. Moshkov, Svetlana A. Mescheryakova, Danila A. Kornilov, Olga A. Goryacheva, Irina Yu. Goryacheva Saratov State University, Saratov, Russia

13.20 – 13.35

Oral

Emulsion microgels with mucoadhesive properties for intravesical drug delivery

Mariia Saveleva, Mikhail Lobanov, Ekaterina Prikhozhdenko, Valentina Plastun, and Oksana Mayorova Saratov State University, 410012, 83 Astrakhanskaya Street, Saratov, Russia

14.00-14.30

Coffee Break

(Building 8, 4th floor)

14.30 – 14.45

Oral

Hybrid plasmonic materials based on gold nanobones and bovine serum albumin for application in pharmacology and medicine

Aleksei Smirnov, Vasilisa Svinko, Elena Solovyeva Saint Petersburg State University, St Petersburg, Russia

14.45 – 15.00

Oral

Separation of magnetic microcapsules from the flow

Roman Verkhovskii[1], Alexey Ermakov[1,2], Oleg Grishin[1], Mikhail Makarkin[1], Ilya Kozhevnikov[1], Mikhail Makhortov[1], Anastasiia Kozlova[1], Samia F. Salem[1,3], Valery V. Tuchin[1,2,3,4], Daniil N. Bratashov[1] [1]Saratov State University, Saratov, Russia [2]I. M. Sechenov First Moscow State Medical University, Moscow, Russia [3]Tomsk State University, Tomsk, Russia [4]Institute of Precision Mechanics and Control RAS, Saratov, Russia

15.00 – 15.15

Oral

Calibration System Based on Carbon Nanotube Fibers for Multispectral Optoacoustic Imaging

Margarita R. Chetyrkina,[1] Julijana Cvjetinovic,[1] Fedor S. Fedorov,[1] Stanislav V. Perevoschikov,[1] Ekaterina S. Prikhozhdenko,[2] Bjørn F. Mikladal,[3] Yuri G. Gladush,[1] Albert G. Nasibulin[1,4] and Dmitry A. Gorin[1] [1]Skolkovo Institute of Science and Technology, 3 Nobel St, Moscow, 121205, Russian Federation [2]Saratov State University, 83

Astrakhanskaya str., Saratov 410012, Russian Federation [3]Canatu Ltd, Tiilenlyöjänkuja 9 A, 01720 Vantaa, Finland [4]Aalto University, 00076 Espoo, Finland

15.15 – 15.30
Oral
Photoconvertible fluorescent capsules as a new approach to the study of cell migration processes, their behavior and functions in fundamental biomedicine
Olga A. Sindeeva,[1], Polina A. Demina,[2], Anastasia Yu. Sapach,[1,3], Zhanna V. Kozyreva,[1,3], Ekaterina S. Prikhozhdenko,[2], Anna M. Abramova,[1], Irina Yu. Goryacheva,[1], Gleb B. Sukhorukov[1,4] [1]Skolkovo Institute of Science and Technology, Skolkovo Innovation Center, 143025, Moscow, Russia [2]Sechenov First State Medical University, 8/2 Trubetskaya Str., 119991 Moscow, Russia [3]Saratov State University, Saratov 410012, Russia [4]Queen Mary University of London, London E1 4NS, U.K.

15.30 – 15.45
Oral
Artificial Opal/Photonic Crystal-based Gas Sensor Enabling Exhaled Breath Analysis and Alcohol Intoxication Detection
Valeriy Zaytsev,[1] Timur I. Ermatov,[1] Fedor S. Fedorov,[1] Nikita Balabin,[1] Pavel O. Kapralov,[2] Julia V. Bondareva,[1] Daria O. Ignatyeva,[2,5] Boris N. Khlebtsov,[3,4] Sergey S. Kosolobov,[1] Vladimir I. Belotelov,[2,5] Albert G. Nasibulin[1,6] and Dmitry A. Gorin[1] [1]Skolkovo Institute of Science and Technology, Moscow, Russia [2]Russian Quantum Centre, Moscow, Russia [3]Institute of Biochemistry and Physiology of Plants and Microorganisms, Saratov, Russia [4]Saratov State University, Saratov, Russia [5]Lomonosov Moscow State University, Faculty of Physics, Moscow, Russia. [6]Aalto University, Aalto, Finland

15.45 – 16.00
Oral
In vivo macrophage tracking using anchored fluorescent microcapsules
Anastasia Yu. Sapach[1,2], Olga A. Sindeeva[1], Mikhail V. Nesterchuk[1,3], Alexandra A. Tsitrina[3], Ekaterina S. Prikhozhdenko[4], Roman A. Verkhovskii[4], Arsen S. Mikaelyan[3], Yuri V. Kotelevtsev[1], Gleb B. Sukhorukov[1,5,6] [1]Skolkovo Institute of Science and Technology, Skolkovo Innovation Center, 143025, Moscow, Russia [2]Sechenov First State Medical University, 8/2 Trubetskaya Str., 119991 Moscow, Russia [3]Koltzov Institute of Developmental Biology of Russian Academy of Sciences, Moscow, 119334, Russia [4]Saratov State University, Saratov 410012, Russia [5]Siberian State Medical University, 2 Moskovskiy Trakt, Tomsk 634050, Russia [6]Queen Mary University of London, London E1 4NS, U.K.

16.00 – 16.15
Oral
Photonic integrated circuits and superconducting nanowire single photon detectors for enhanced biomedical sensing
Vadim Kovalyuk,[1,2] Aleksei Kuzin,[3,4] Vasiliy Chernyshev,[3] Pavel An,[1,2] Alexander Golikov,[1,5] Dmitry Gorin,[3] Gregory Goltsman,[2,4] [1]Department of Physics, Moscow State Pedagogical University, Russia, 119992 [2]Russian Quantum Center, Skolkovo, Russia, 143025 [3]Skolkovo Institute of Science and Technology, Russia, 121205 [4]National Research University Higher School of Economics, Russia, 101000 [5]NTI Center for Quantum Communications, National University of Science and Technology MISiS, Russia, 119049

16.15 – 16.30
Oral
Hybrid Nanophotonic-Microfluidic Sensor For Highly Sensitive Surface Modification, Liquids And Gases Analyses
Aleksei Kuzin,[1,2] Vasiliy Chernyshev,[1] Vadim Kovalyuk,[3,4] Pavel An,[2,4,5] Alexander Golikov,[2] Gregory Goltsman,[3,5] and Dmitry Gorin[1] [1]Skolkovo Institute of Science and Technology, Russia [2]Department of Physics, Moscow State Pedagogical University, Russia [3]National Research University Higher School of Economics, Russia [4]NTI Center for Quantum Communications, National University of Science and Technology MISiS, Russia [5]Russian Quantum Center, Skolkovo, Russia

16.30 – 16.45
Oral
Hybrid nanophotonic-microfluidic sensor for highly sensitive surface modification, liquids and gases analyses
Aleksei Kuzin,[1,2] Vasiliy Chernyshev,[1] Vadim Kovalyuk,[3,4] Pavel An,[2,4,5] Alexander Golikov,[2] Gregory Goltsman,[3,5] and Dmitry Gorin[1] [1]Skolkovo Institute of Science and Technology, Russia [2]Department of Physics, Moscow State Pedagogical University, Russia [3]National Research University Higher School of Economics, Russia [4]NTI Center for Quantum Communications, National University of Science and Technology MISiS, Russia [5]Russian Quantum Center, Skolkovo, Russia

16.45 – 17.00
Oral
The role of the QDs semiconducture surface on the silica coating efficiency
Goryacheva O.A., Sobolev A.M., Goryacheva I.Yu. Saratov State University named after N.G. Chernyshevskii, 410012

17.00 – 17.15
Oral
Influence of the concentration of magnetic nanoparticles in polyelectrolyte shells on the resonant frequency of the magnetic field

triggered the release of the encapsulated substance
Ivan A. Burmistrov,[1] Maxim M. Veselov,[2] Alexander V. Mikheev,[1] Tatiana N. Pallaeva,[1] Tatiana V. Bukreeva,[1] Natalia L. Klyachko,[2] Daria B. Trushina,[1] [1]Shubnikov Institute of Crystallography of Federal Scientific Research Centre ‘‘Crystallography and Photonics” of Russian Academy of Sciences, Russia [2]Lomonosov Moscow State University, Russia

September 29, Thursday

JOINT POSTER/INTERNET SESSION AND INTERNET DISCUSSION
(Building 3, 3rd floor Hall)

Chair (N): **Timofey E. Pylaev**, IBPPM RAS, Saratov, Russia

18.00-20.00

1NB. Flexible membrane-based substrate for SERS detection of malathion Kseniya V. Serebrennikova,1 Arseniy V. Aybush, 2 Nadezhda S. Komova,1 Anatoly V. Zherdev, 1 Boris B. Dzantiev, 1 1 A.N. Bach Institute of Biochemistry, Research Center of Biotechnology of the Russian Academy of Sciences, Moscow, Russia 2 N.N. Semenov Federal Research Center for Chemical Physics, Russian Academy of Sciences, Moscow, Russia

2NB. Plasmon-enhanced fluorescence spectroscopy of aromatic amino acids using rhodium nanoparticles Elizaveta. A. Demishkevich,1,2 Andrey Y. Zyubin,1 Ilya. G. Samusev,1 Denis O. Evtifeev,1 1 Baltic Federal University, Kaliningrad, Russia 2 Saratov State University, Saratov, Russia

3NB. Surface-enhanced Raman spectroscopy for human blood analysis Sahar Z. Al-Sammarraie,1 Lyudmila A. Bratchenko,1 Elena N. Typikova,1 Peter A. Lebedev,2 Valery P. Zakharov,1 Ivan A. Bratchenko,1 1 Samara University, Samara, Russia 2 Samara State Medical University, Samara, Russia

4NB. Characterization of supramolecular particles in solutions of bacterial lipopolysaccharides by dynamic light scattering and spectrofluorometry Evgeniya V. Kuznetsova, 1 Natalya S. Velichko, 2 Gennady L. Burygin 1, 2, 3 1 Saratov State University, Saratov, Russia 2 Institute of Biochemistry and Physiology of Plants and Microorganisms FSC RAS, Saratov, Russia 3 Vavilov Saratov State University of Genetics, Biotechnology and Engineering, Saratov, Russia

5NB. Novel type of photoconvertible cell markers for individual cell labeling Artem Bakal, Saratov State University Anastasia Kovyrshina, Saratov State University Irina Goryacheva, Saratov State University Polina Demina, Saratov State University

6NB. Laser plasmon photothermal therapy of model tumors with optical clearing Vadim D. Genin 1,2; Alla B. Bucharskaya 1,2,3; Georgy S. Terentyuk 1,3; Nikolai G. Khlebtsov 4; Nikita A. Navolokin 1,3; Valery V. Tuchin 1,2,5; Elina A. Genina 1,2; 1 - Saratov State University, Saratov, Russia; 2 - Tomsk State University, Tomsk, Russia; 3 - Saratov State Medical University, Saratov, Russia; 4 - Institute of Biochemistry and Physiology of Plants and Microorganisms RAS, Saratov, Russia; 5 - Institute of Precision Mechanics and Control RAS, Saratov, Russia

7NB. Synthesis of molecularly imprinted polymers for detection glucose oxidase Kirill Y. Presnyakov,1 Ilnur R. Biryukov, 1 Polina M. Soboleva, 1 Daniil D. Drozd, 1 Natalia A. Burmistrova 1 1 Institute of Chemistry, Saratov State University, Saratov, Russia

8NB. Synthesis of metal nanoclusters and study of their influence on the bacterial copper resistance Roman S. Tumskiy,1, Margarita V. Filippova,2, Gennady L. Burygin,1,2,3 1 Institute of Biochemistry and Physiology of Plants and Microorganisms FSC RAS, Saratov, Russia 2 Saratov State University, Saratov, Russia 3 Vavilov Saratov State University of Genetics, Biotechnology and Engineering, Saratov, Russia

9NB. Determination of methotrexate in micromolar concentrations using glasses with a modified nanostars surface Evtifeev Denis.O.1, Zozulya Alexander.S.1, Demishkivich Elizaveta.A. 1,2, Kundalevich Anna.A 1,2, Zubin Andrey.Y. 1 Samusev Ilya.G. 1 1. Immanuel Kant Baltic Federal University, Kaliningrad, Russia 2. Saratov National Research State University named after N.G. Chernyshevskogo, Saratov, Russia

10NB. The study of water-insoluble drug release from the novel particulate intradermal delivery system Mariia Saveleva,1, Ekaterina Lengert,1, Roman Verkhovskii,1, Anatolii Abalymov,1, Anton Pavlov,1, Sergei Shtykov,1, and Yulia Svenskaya,1 1 Saratov State University, 410012, 83 Astrakhanskaya Street, Saratov, Russia

11NB.Core-shell carriers in a nonheating alternating magnetic field Veronika A. Kildisheva, Roman A. Anisimov, Alexandra E. Kalinova, Ludmila I. Kuznetsova, Maria V. Lomova, Saratov State University, Saratov, Russia

12NB.Osteogenic capability of vaterite-coated nonwoven polycaprolactone scaffolds for *in vivo* bone tissue regeneration Mariia Saveleva1, Alexey Ivanov2, Anatolii Abalymov3, Roman Surmenev4, Bogdan Parakhonskiy5, Maria Lomova1 1Saratov State University, 410012, 83 Astrakhanskaya Street, Saratov, Russia 2 Saratov State Medical University, 410012, 112 Bolshaya Kazachia Street, Saratov, Russia 3 Skolkovo Institute of Science and Technology, 121205, Bolshoy Boulevard 30, Moscow, Russia 4 Tomsk Polytechnic University, 634050, 30 Lenina Avenue, Tomsk, Russia 5 Ghent University, 9000, 653 Coupure links, Ghent, Belgium

13NB.Obtaining optimization and application of multifunctional conjugates of gold nanoparticles with antibodies and peroxidase for the detection of bacterial lipopolysaccharides Alina A. Matora,1, Anastasia S. Astankova,1, Gennady L. Burygin ,1,2,3, 1 2 Institute of Biochemistry and Physiology of Plants and Microorganisms FSC RAS 3 Saratov State University of Genetics, Biotechnology and Engineering named after N.I. Vavilov

14NB.WPI hydrogels with prolonged antimicrobial effect for biomedical application Valentina O. Plastun1, Ekaterina S. Prikhozhdenko 1, Olga I. Gusliakova 1, Svetlana V. Raikova 2,3, Olga A. Sindeeva 4 and Oksana A. Mayorova 1,5 1 Saratov State University, Saratov, Russia; 2 Saratov State Medical University Saratov, Russia; 3 FSC Medical and Preventive Health Risk Management Technologies, Saratov, Russia 4 Skolkovo Institute of Science and Technology, Moscow, Russia; 5 Saratov State Vavilov Agrarian University, Saratov, Russia

15NB.Photothermy of the composite nanoparticles intended for the use in cancer treatment Anikin A.A.,1, Belyaev V.K.,1, Shumskaya A.,2, Kozlov A.G.,3, Ognev A.V.,3, Panina L.V.,1,4, Rodionova V.V.,1 1 Immanuel Kant Baltic Federal University, 236004, Kaliningrad, Russia, 2 Far Eastern Federal University, 690922, Vladivostok, Russia, 3 Institute of Chemistry of New Materials, 220141 Minsk, Belarus, 4 National University of Science and Technology (MISIS), 119049, Moscow, Russia

16NB.Possibility of Passage of Polymeric Micro- and Nanocapsules to Metastatic Cells in Lymph Node-On-Chip Anatolii Abalymov, 1,2, Sergey German, 1, Maksim Kurochkin, 1, Marina Novoselova, 1 1 Skolkovo Institute of Science and Technologies 2 Saratov State University

17NB.Tuning the plasmon resonance and SERS properties of silver nanospheres, nanostars and nanotriangles Vitaly A. Khanadeev,1,2 Andrey V. Simonenko,1,3 Nikolai G. Khlebtsov,1,3 1 Institute of Biochemistry and Physiology of Plants and Microorganisms – Subdivision of the Federal State Budgetary Research Institution Saratov Federal Scientific Centre of the Russian Academy of Sciences (IBPPM RAS), Saratov, Russia; 2 Saratov State Vavilov Agrarian University, Saratov, Russia; 3 Saratov State University, Saratov, Russia

18NB.Comparison of methods for the synthesis of anisotropic silver nanoparticles using wet chemistry Kirill V. Lobanov,1 Andrey V. Simonenko,1,2 Vitaly A. Khanadeev,2,3 1 Saratov State University, Saratov, Russia; 2 Institute of Biochemistry and Physiology of Plants and Microorganisms Subdivision of the Federal State Budgetary Research Institution Saratov Federal Scientific Centre of the Russian Academy of Sciences (IBPPM RAS), Saratov, Russia; 3 Saratov State Vavilov Agrarian University, Saratov, Russia

19NB. Application of hybrid Fe_3O_4-Au nanoparticles in the diagnosis of Crohn's disease Zoja .A. Grigoreva,1, Christina A. Gritsenko, 1, Ekaterina V. Levada,1, Victor K. Belyaev,1, Dmitriy V. Murzin ,1, Valeria V. Rodionova,1 Immanuel Kant Baltic Federal University, Kaliningrad, Russia

20NB.Ultrasound-triggerable polylactic acid films with ceftriaxone loaded microchamber arrays Ekaterina A. Mordovina,1, Valentina O. Plastun,1, Arkady S. Abdurashitov,2, Pavel I. Proshin,2, Svetlana V. Raikova,3,4, Daniil N. Bratashov,1, Olga A. Inozemtseva,1, Irina Yu. Goryacheva,1, Gleb B. Sukhorukov,2,5, Olga A. Sindeeva,2 1 Saratov State University, Saratov 410012, Russia 2 Skolkovo Institute of Science and Technology, Skolkovo Innovation Center, 143025, Moscow, Russia 3 Saratov Hygiene Medical Research Center of the FBSI «FSC Medical and Preventive Health Risk Management Technologies», Saratov 410022, Russia 4 Department of Microbiology, Virology, and Immunology, Saratov State Medical University, Saratov 410012, Russia 5 Queen Mary University of London, London E1 4NS, U.K.

21NB. Topical influenza vaccine formulation based on vaterite particles Yulia I. Svenskaya[1], Ekaterina V. Lengert[1], Yana V. Tarakanchikova[2], Albert R. Muslimov[3], Mariia S. Saveleva[1], Elina A. Genina[1], Igor L. Radchenko[4], Liudmila A. Stepanova[5], Andrey V. Vasin[4], Gleb B. Sukhorukov[6], Liudmila M. Tsybalova[5] [1]Science Medical Center, Saratov State University, Saratov 410012, Russia [2]Saint Petersburg Academic University, Saint-Petersburg 194021, Russia [3]Sirius University of Science and Technology, Sochi 354340, Russia [4]Peter the Great St. Petersburg Polytechnic University, Saint-Petersburg 195251, Russia [5]Smorodintsev Research Institute of Influenza, Saint-Petersburg 197376, Russia [6]Queen Mary University of London, London E1 4NS, United Kingdom

Internet poster reports

1NI. Color detection of hydrogen peroxide on nitrocellulose membrane with Au@Ag nanorods Andrey M. Burov,1 Nikolai G. Khlebtsov,1,2 Boris N. Khlebtsov,1 1 Institute of Biochemistry and Physiology of Plants and Microorganisms, “Saratov Scientific Centre of the Russian Academy of Sciences”, Saratov, Russia 2 Saratov State University, Saratov, Russia

2NI. Evaluation of the photodynamic activity of upconversion nanoparticles coated with photosensitizers under infrared excitation *in vitro* and *in vivo* Daria V. Pominova1,2, Vera Y. Proydakova1, Igor D. Romanishkin1, Anastasia V. Ryabova1,2 1 Prokhorov General Physics Institute of the Russian Academy of Sciences, Moscow, Russia 2 National research nuclear university MEPHI, Moscow, Russia

Workshop on Microscopy and Low-Coherence Methods XX

Co-chairs: **Kirill V. Larin**, Department of Biomedical Engineering, University of Houston, Houston, USA.

Secretary: **Georgy G. Akchurin,** Saratov State University (Russia), Institute of Precision Mechanics and Control of the RAS, Saratov, Russia.

International Program Committee: **Shoude Chang**, National Research Council (Canada); **Mary Dickinson**, Baylor College of Medicine (USA); **Christoph K. Hitzenberger**, University of Vienna (Austria); **Valery V. Tuchin**, Saratov State University (Russia).

September 28, Wednesday

INVITED LECTURE/ ORAL SESSION BIOPHYSICS I / MICROSCOPY AND LOW-COHERENCE METHODS I

Chair: Yury Kistenev, Tomsk State Univ., Russia

12.20-12.35
Oral report
Application of machine learning classification algorithm for identification of cells state and line
Anna Zhikhoreva, Andrey Belashov, Tatiana Belyaeva, Anna Salova, Elena Kornilova, Irina Semenova, Oleg Vasyutinskii. Ioffe Institute, St. Petersburg, Russia, Institute of Cytology of RAS, St. Petersburg, Russia

12.35-12.50
Oral report
Application of the RGB data obtained by the bright-field optical microscopy for the efficient control of the planar surface cleanness of thin films and for the estimation of their thickness
Anton Kozyrev, Oksana Lapshina, Julia Eliseeva INJECT RME LLC, Saratov, Russia, National Research Nuclear University MEPhI, Moscow, Saratov State University, Saratov, Russia

September 29, Thursday

JOINT POSTER/INTERNET SESSION

Chair (M): **Georgy G. Akchurin**; Saratov State University (Russia), Institute of Precision Mechanics and Control of the RAS

19.00-20.00

1M. **Quantitative phase imaging of transparent biological samples using off-axis digital holographic microscopy, TIE and SLIM** **Anna Zhikhoreva,** Andrey Belashov, Tatiana Belyaeva, Anna Salova, Elena Kornilova, Irina Semenova, Oleg Vasyutinskii, Ioffe Institute, St. Petersburg, Russia, Institute of Cytology of RAS, St. Petersburg, Russia

2M. **Creation Of Individual Intraosseous Structures Using Additive Technologies** Olga Markelova, Aleksandr Fomin, Yuri Gagarin State Technical University of Saratov, Saratov, Russia

3M. **The effect of induction heat treatment on the surface structure and modulus of elasticity of 3D medical blocks** **Marina Fomina,** Vladimir Koshuro, Aleksandr Fomin, Yuri Gagarin State Technical University of Saratov, Russia

4M. Research of the morphology and microhardness of titanium plasma-sprayed coatings after thermal modification at different pressures of the working medium **Elena Osipova,** Olga Markelova, Pavel Palkanov, Vladimir Koshuro, Aleksandr Fomin, Yuri Gagarin State Technical University of Saratov, Saratov, Russia

5M. Effects of wave fields decoherence in Linnik equal-arm interferometer
Daria Klychkova, Vladimir Ryabukho, Saratov State University, Institute of Precision Mechanics and Control of the RAS, Saratov, Russia.

Conference on Internet Biophotonics XV

Chairs: **Daria K. Tuchina,** Saratov State University, Saratov, Russia; Tomsk State University, Tomsk, Russia **Ivan V. Fedosov**, Saratov State University, Saratov, Russia.

Secretary: **Sofia V. Atzigeida,** Saratov State University, Saratov, Russia; Tomsk State University, Tomsk, Russia

International Program Committee: **Heidi Abrahamse**, University of Johannesburg (RSA*)*; **Vanderlei Salvador Bagnato,** University of São Paulo (Brazil)**; Walter Blondel**, University of Lorraine (France); **Wei Chen**, University of Central Oklahoma (USA)**; Santhosh Chidangil,** Manipal Academy of Higher Education (India); **Cornelia Denz**, Physikalisch-Technische Bundesanstalt (PTB) (Germany); **Kishan Dholakia**, University of St. Andrews (UK); **Maria Farsari**, FORTH-IESL (Greece); **Paul M.W. French**, Imperial College of Science, Technology and Medicine (UK); **Elina A. Genina**, Saratov State University (Russia); **Mikhail Yu. Kirillin**, Institute of Applied Physics RAS, Nizhny Novgorod (Russia)**; Yury V. Kistenev**, Tomsk State University; **Kirill V. Larin**, University of Houston (USA); **Andrew L. Lopez**, **III**, University of Houston (USA); **Qingyu Lin**, Sichuan University (China); **Qingming Luo**, Hainan University (China); **Luís M. Oliveira**, Polytechnic of Porto – School of Engineering (Porto, Portugal); **Roberto Pini**, National Research Council of Italy (CNR) (Italy); **Juergen Popp**, Inst. of Photonic Technology, Jena (Germany); **Alexander V. Priezzhev**, Moscow State University (Russia); **Edik Rafailov**, Aston University (UK); **Valery V. Tuchin**, Saratov State University; Institute of Precision Mechanics and Control, FRC SSC RAS; Tomsk State University (Russia); **Lihong Wang**, Caltech (USA); **Ruikang K. Wang**, University of Washington (USA); **Valery P. Zakharov**, Samara State University (Russia); **Zeev Zalevsky**, Bar Ilan University (Tel Aviv, Israel).

September 29, Thursday

INTERNET PLENARY SESSION

15.00-15.40 (Saratov time UTC+4)
14.00-14.40 (Moscow time UTC+3)
Mechanisms of recovery functions of sleep
Thomas Penzel, Interdisciplinary Sleep Medicine Center, Charite University Hospital, Berlin, Germany

INTERNET INVITED SESSION

15.40-16.00 (Saratov time UTC+4)
14.40-15.00 (Moscow time UTC+3)
Wearable fNIRS on studies of neurohydrodynamics
Teemu Myllylä[1,2], Sadegh Moradi[2], Martti Ilvesmäki[1], Vesa Korhonen[1], Hany Ferdinando[1], Vesa Kiviniemi[1]; [1]University of Oulu, Research Unit of Health Sciences and Technology, Oulu, Finland; [2]University of Oulu, Optoelectronics and Measurement Techniques Unit, Oulu, Finland

Internet Invited Lectures
(Available during the conference)
https://sfmconference.org/sfm/sfm22/conferences_workshops/internet-biophotonics-xv/preliminary/

1.Polarized light methods for probing sub-wavelength scale structural anisotropy
Nirmalya Ghosh, Nishkarsh, Jeeban K Nayak, Shubham Chandel, Subir Kumar Ray Indian Institute of Science Education and Research (IISER) Kolkata, India

2.Testing Nanodiamond as an Antibacterial and Antifungal Agent
Vera Sadykova[1], Anastasia Kuvarina[1], Elena Perevedentseva[2], Tatiana Limonova[2], Vladimir Sychev[2], Oleg Streletskiy[3], Ilya Zavidovskiy[3], Artashes Karmenyan[4], Chia-Liang Cheng[4], Nikolai Melnik[2]; [1]Laboratory of Taxonomic Study adCollection of Cultures of Microorganisms, Gause Institute of New Antibiotics, Moscow, Russia;[2]P. N. Lebedev Physical Institute of Rus Acad Sci, Moscow, Russia; [3]Faculty of Physics, M.V. Lomonosov Moscow State University, Moscow, Russia; [4]Department of Physics, National Dong Hwa University, Hualien, Taiwan

3. Effect of annealing on the Cytotoxicity of Upconversion Nanoparticles in Different Cell Lines
Roman A. Verkhovskii[1], Roman A. Anisimov[1], Jamal R. Kilichev[2], Farid K. Kurbanaliev[2], Roman A. Suldinsky[2], Maria V. Lomova[1], Nikita A. Navolokin[2,3,4],Vyacheslav I. Kochubey[5,6], Irina Yu. Yanina[5,6];[1] Education and Research Institution of Nanostructures and Biosystems, Saratov State University (National Research), Russian Federation; [2]Department of Pathological Anatomy, Saratov State Medical University, Saratov, Russian Federation; [3]Research-Scientific Institute of Fundamental and Clinic Uronephrology, Saratov State Medical University, Saratov, Russian Federation; [4]Pathological Department, State Healthcare Institution "Saratov City Clinical Hospital No. 1 named after Yu. Ya. Gordeev" st. them. Kholzunova A.I., Saratov, Russian Federation; [5]Department of Optics and Biophotonics, Saratov State University (National Research), Saratov, Russian Federation; [6]Laboratory of laser molecular imaging and machine learning, Tomsk State University (National Research), Russian Federation

4. Thermo-mechanical effect of biological tissues laser modification
Olga I. Baum, Institute of Photon Technologies, Federal Scientific Research Centre 'Crystallography and Photonics' of Russian Academy of Sciences

ON-LINE INTERNET BIOPHOTONICS

Zoom Oral Presentations
Zoom link:
https://osachapter.zoom.us/j/97105128804
ID 971 0512 8804
(Building 8, Hall 420)

16.35-15.50 (Saratov time UTC+4)
15.35-15.50 (Moscow time UTC+3)
Detailed assessment of donor xenomaterial by Raman spectroscopy
Pavel E. Timchenko[1], Elena V. Timchenko[1], Elena.V. Pisareva[1], Michae. Y. Vlasov[2], Oleg O. Frolov[1], Larisa T. Volova[2], R.T. Samigullin[2], A.A. Gnedova[1]; [1]Samara National Research University named after Academician S.P. Korolev, Samara, Russia; [2]Samara State Medical University, Institute of Experimental Medicine and Biotechnology, Samara, Russia

16.50-17.05 (Saratov time UTC+4)
15.50-16.05 (Moscow time UTC+3)
Application of Raman spectroscopy for evaluation of bone condition in periodontitis
Artem Y. Ionov[1], Pavel E. Timchenko[1], Elena V. Timchenko[2], Irina V. Bazhutova[2], Larisa T. Volova[1], Oleg O. Frolov, [1]Samara National Research University, Samara, Russia; [2]Samara State Medical University, Samara, Russia

17.05-17.20(Saratov time UTC+4)
16.05-16.20 (Moscow time UTC+3)
Development of a set of methods for assessing the biodegradation of copolymer composite materials in vivo
Natalia I. Kazachkina[1], Viktoriya V. Deeva[1], Daria K. Tuchina[1,2], Ilya D.Soloviev[1], Alexander P. Savitsky[1], Valery V. Tuchin[1,2,3], Viktoriya V. Zherdeva[1]; [1]Bach Institute of Biochemistry, Research Center of Biotechnology of the Russian Academy of Sciences; [2]Saratov State University, Saratov, Russia; [3]Saratov State Medical University, Saratov, Russia; [4]Institute of Precision Mechanics and Control RAS, Saratov, Russia

17.20-17.35 (Saratov time UTC+4)
16.20-16.35 (Moscow time UTC+3)
Development of dual mode visualization of dCas9/fluorescent protein sensors in tumor xenografts on mice using optical clearing
Victoria Zherdeva[1], Natalia Kazachkina[1], Gerel Abushinova[1,2], Lylia Maloshenok[1,2] [1]Bach Institute of Biochemistry, Research Center of Biotechnology of the of the RAS, Moscow;[2]Vavilov Institute of General Genetics of the RAS, Moscow

INTERNET POSTERS
(Available during the conference)
https://sfmconference.org/sfm/sfm22/conferences_workshops/internet-biophotonics-xv/preliminary/

1. Features of L-menthol crystallization in optically active medium based on L- and D-asparaginate chitosan
Gegel N.O., Shipovskaya A.B., Shipenok X.M., Saratov State University

2. Investigation of Live White Blood Cells using Raman Tweezers spectroscopy
Yamini Paliwal[1], Mithun N[2], Gokul Krishnan[3], Sindhura Lakshmi[4], Jijo Lukose[2],Santhosh Chidangil[2];[1]National Institute of Technology, Warangal, Telangana;[2]Centre of Excellence for Biophotonics, Department of Atomic and Molecular Physics, Manipal Academy of Higher Education, Manipal, Karnataka, India; [3]Department of Internal Medicine, Kasturba Medical College, Manipal, Manipal Academy of Higher Education, Manipal, Karnataka, India;[4]Department of Pathology, Kasturba Medical College, Manipal, Manipal Academy of Higher Education, Manipal, Karnataka, India

3. Spectral evaluation of biomaterials from juvenile dentin of various degrees of demineralization using Raman spectroscopy
Elena V. Timchenko[1], Pavel E. Timchenko[1], Larisa T. Volova[2], Maksim A. Zybin[3], Mikhail Y. Vlasov[2], Oleg O. Frolov[1], Svetlana S. Shipko[1];[1]Samara National Research University, Samara, Russia;[2]Samara State Medical University, Samara, Russia

4. Fluorescent indices of bean and tagetes plants treated with heavy metals salts
Olesya A. Kalmackaya[1], Ekaterina I. Gunar[2], Anna V. Malozemova[1], Vladimir A. Karavaev[1]; [1]Lomonosov Moscow State University, Faculty of Physics, Moscow, Russia;[2]Institute of Horticulture and Landscape Architecture, Russian State Agrarian University – Moscow Timiryazev Agricultural Academy, Moscow, Russia

5. Spectral assemessment of oral fluid afterin-of fice teethwhitening procedure
E.V. Timchenko[1], P.E. Timchenko[1], O.O. Frolov[1], O.A. Magsumova[2], L.T. Volova[2], V.A. Polkanova[2], N.V. Dzhalilova, S.S. Shipko, T.V. Kozlova[1]; [1]Samara National Research University, Samara, Russia; [2]Samara State Medical University, Institute of Experimental Medicine and Biotechnology, Samara, Russia

6. Study of the cytotoxic properties of polyester-based copolymers for the bioresorbable triboelectric nanogenerator (TENG) development
V. V Deeva, N. I. Kazachkina, V. V. Zherdeva Bach Institute of Biochemistry, Research Center of Biotechnology of the Russian Academy of Sciences, Moscow, Russia

7. Raman spectroscopic investigation of blood components for probing hematological diseases
Jijo Lukose[1], Mithun N[1], Ganesh Mohan[2], Shamee Shastry[2], Santhosh Chidangil[1]; [1]Centre of Excellence for Biophotonics, Department of Atomic and Molecular Physics, Manipal Academy of Higher Education,India; [2]Department of Immunohematology and Blood Transfusion, Kasturba Medical College, Manipal, Manipal Academy of Higher Education, India

8. Permeability of mouse skin for propylene glycol
Daria K. Tuchina,[1,2,3] Natalia A. Shushunova,[1] Valery V. Tuchin[1,2,3,4]; [1]Saratov State University, Saratov, Russian Federation, [2]Tomsk State University, Tomsk, Russian Federation, [3]A.N. Bach Institute of Biochemistry, Research Center of Biotechnology of the Russian Academy of Sciences, Moscow, Russian Federation
[4]Institute of Precision Mechanics and Control of the Russian Academy of Sciences, Saratov, Russian Federation

9. Optical clearing of ex vivo porcine dura mater by mannitol studied by confocal Raman micro-spectroscopy
Ali Jaafar[1,3], Maxim E. Darvin[4], Ágnes N. Szokol[1], Valery V. Tuchin[5,7], Miklos Veres[1]; [1]Institute for Solid State Physics and Optics, Wigner Research Center for Physics, Budapest,Hungary; [2]Institute of Physics, University of Szeged,Szeged, Hungary; [3]Ministry of Higher Education and Scientific Research, Baghdad, Iraq; [4]Department of Dermatology, Venerology and Allergology, Center of Experimental and Applied Cutaneous Physiology, Charité Universitäts medizin Berlin, corporate member of Freie Universität Berlin and Humboldt-Universität zu Berlin, Berlin, Germany; [5]Science Medical Center, Saratov State University, Saratov, Russia; [6]Laboratory of Laser Diagnostics of Technical and Living Systems, Institute of Precision Mechanics and Control, FRC “Saratov Scientific Centre of the Russian Academy of Sciences” Saratov, Russia; [7]N. Bach Institute of Biochemistry, FRC “Biotechnology of the Russian Academy of Sciences” Moscow, Russia

10. Multimodal study of the optical parameters of the murine mammary gland and a model mammary tumor ex vivo
Yury I. Surkov[1,2], Isabella A. Serebryakova[1,2], Ekaterina N. Lazareva[1,2], Mohammad Ali Ansari[3], Elina A. Genina[1,2]; [1]Saratov State University, Saratov, Russia; [2]Tomsk State University, Tomsk, Russia;[3]Shahid Beheshti University, Tehran, Iran

11. Optical clearing of the rat skin *ex vivo* by glycerol-DMSO solution in the spectral range of 350-2500 nm

Daria K. Tuchina[1,2], Nikita A. Navolokin[1,3], Valery V. Tuchin[1,2,4]; [1]Saratov State University, Saratov, Russia; [2]Tomsk State University, Tomsk, Russia; [3]Saratov State Medical University, Saratov, Russia; [4]Institute of Precision Mechanics and Control RAS, Saratov, Russia

12. Design of CRISPR/Cas9 system components for visualization of specific genomic editing sites in tumor cell lines

Lilia G. Maloshenok[1,2], Gerel A. Abushinova[1,2], Victoria V. Zherdeva[1]; [1]The Federal State Institution "Federal Research Centre "Fundamentals of Biotechnology" of the Russian Academy of Sciences", Moscow; [2]Vavilov Institute of General Genetics, Russian Academy of Sciences, Moscow

Conference on Low-Dimensional Structures XII

Workshop Chair: **Olga E. Glukhova***,* Saratov State University (Russia)

Secretaries: **Pavel V. Barkov,** Saratov State University (Russia), **Dmitry A. Kolosov,** Saratov State University (Russia)

International Program Committee: **Ming-Fa Lin**, National Cheng Kung University, Tainan, Taiwan, **Albert G. Nasibulin**, Skolkovo Institute of Science and Technology, Russia, **Zhang Gang**, Institute of High Performance Computing, Agency for Science, Technology and Research, Singapore, **Tatiana R. Prytkova**, Cloud Pharmaceuticals, USA, **Irina V. Zaporotskova**, Volgograd State University, Volgograd, Russia, **Galina N. Maslyakova**, Saratov State Medical University named after V.I. Razumovsky, Saratov, Russia, **Igor S. Nefedov**, Aalto University, Espoo, Finland

September 28, Wednesday

ORAL SESSION
(Building 8, Room 318)
Chair: **Olga E. Glukhova**,
Saratov State University
Russia

12.00-12.15

Synthesis Of High-Quality Graphene Using Boudouard Reaction

D. Krasnikov[1], A. Grebenko[1,2], K. Laasonen[3], E. Gilshtein[1,4], Z. Bedran[2], L. Alyabieva[2], R. Mozhchil[5,6], A. Ionov[5], B. Gorshunov[2], A.Nasibulin[1,3]
[1]Skolkovo Institute of Science and Technology, Moscow, Russia; [2]Moscow Institute of Physics and Technology, Dolgoprudny, Russia; [3]Aalto University, Espoo, Finland; [4]Empa, Duebendorf, Switzerland; [5]Insitute of Solid State Physics, Chernogolovka, Russia; [6]National Research Nuclear University, Moscow, Russia

12.15-12.30

Epitaxial lift-off GaAs/AlGaAs solar cells for flexible devices

Dmitry M. Mitin[1,2], Alexander S. Goltaev[1], Alexander V. Vorobyev[1], Alexey M. Mozharov[1]
[1]Alferov University, St. Petersburg, Russia
[2]Peter the Great St.Petersburg Polytechnic University, St. Petersburg, Russia

12.30-12.45

Nanoscale aluminum doped ZnO synthesized by programmed co-precipitation as a functional material for VOCs detection

Fedor S. Fedorov[1], Nikolay P. Simonenko[2], Pavel V. Arsenov[3], Valeriy Zaytsev[1], Tatiana L. Simonenko[2], Boris V. Goikhman[1], Ivan A. Volkov[3], Elizaveta P. Simonenko[2], Albert G. Nasibulin[1,4]
[1]Skolkovo Institute of Science and Technology, Moscow, Russia; [2]Kurnakov Institute of General and Inorganic Chemistry of the Russian Academy of Sciences, Moscow, Russia; [3]Moscow Institute of Physics and Technology (National Research University), Dolgoprudny, Russia, [4]Aalto University, Espoo, Finland

12.45-13.00

Surface Passivation for Efficient Bifacial HTL-free Perovskite Solar Cells with SWCNT Top Electrodes

Aly Elakshar[1], Sergey Tsarev[1], Pramod Mulbagal Rajanna[1], Marina Tepliakova[1], Lyubov Frolova[3], Yuriy G. Gladush[1], Sergey M. Aldoshin[3], Pavel A. Troshin[3], Albert G. Nasibulin[1,2]
[1]Skolkovo Institute of Science and Technology, Moscow, Russia; [2]Aalto University, School of Chemical Engineering, Espoo, Finland; [3]The Institute for Problems of Chemical Physics of the Russian Academy of Sciences (IPCP RAS), Chernogolovka, Russia

13.00-13.15

Renewable single-walled carbon nanotube membranes for extreme ultraviolet pellicle applications

Javier A. Ramirez B.[1], Dmitry V. Krasnikov[1], Vladimir V. Gubarev[2,3], Ilya V. Novikov[1,4], Vladislav A. Kondrashov[1], Andrei V. Starkov[1], Mikhail S. Krivokorytov[3], Vyacheslav V. Medvedev[2,3], Yuriy G. Gladush[1], Albert G. Nasibulin[1,4]
[1]Skolkovo Institute of Science and Technology, Moscow, Russia; [2]Moscow Institute of Physics and Technology (State University), Dolgoprudny, Moscow Region, Russia; [3]Institute for Spectroscopy of the Russian Academy of Science, Moscow, Troitsk, Russia; [4]Aalto University School of Chemical Engineering, Espoo, Finland

13.15-13.30

Drug delivery system based on polyelectrolyte complexes and zinc phthalocyanine for image guided photodynamic therapy

Alexey Ermakov, Artur Volovecky, Artem Zvyagintsev, Ekaterina Lengert, Roman Akasov, Daria Trushina

Institute of Molecular Theranostics First Moscow State University (Sechenov University), Moscow, Russia

13.30-13.45

Acoustic wave in a black phosphorene under longitudinal compression

Igor A. Shepelev[1], Ivan D. Kolesnikov[1], Sergey V. Dmitriev[2]
[1]Saratov State University, Saratov, Russia; [2]Institute of Molecule and Crystal Physics, Ufa Federal Research Center, Russia

13.45-14.00

Simulation of Co3O4 nanocubes adhesion on graphene surface

Vladislav V. Shunaev[1], Olga E. Glukhova[1,2]
[1]Saratov State University, Saratov, Russia; [2]I.M. Sechenov First Moscow State Medical University, Moscow, Russia

14.00-14.15

Effect of Functionalization with Potassium Atoms on the Electronic Properties of a 3D Glass-like Nanomaterial Reinforced with Carbon Nanotubes: In Silico Study

Alexander A. Petrunin[1], Michael M. Slepchenkov[1], Olga E. Glukhova[1,2]
[1]Saratov State University, Saratov, Russia; [2]I.M. Sechenov First Moscow State Medical University, Moscow, Russia

September 30, Thursday

ORAL SESSION/ INTERNET REPORTS

(Building 8, Room 318)

Chair: **Olga E. Glukhova**,
Saratov State University
Russia
Ссылка на Google Meet:
https://meet.google.com/gww-tbbm-two

12.00-12.15

Discrete breathers in low-dimensional systems

Sergey V. Dmitriev, Institute of Molecule and Crystal Physics, Ufa Federal Research Center, Russia

12.15-12.30

Type of structural element (graphene flake) on the mechanical properties of crumpled graphene: insight from molecular dynamics

Polina V. Polyakova[1,2], Julia A. Baimova[2] [1]Ufa State Petroleum Technological University, Ufa, Russia; [2]Institute for Metals Superplasticity Problems of the Russian Academy of Sciences, Ufa, Russia

12.30-12.45

Molecular dynamics study of the Cu/graphene and Ni/graphene composite under tension

Liliya R. Safina, Ramil T. Murzaev, Karina A. Krylova, Julia A. Baimova, Institute for Metals Superplasticity Problems of the Russian Academy of Sciences, Ufa, Russia

12.45-13.00

Study of the sorption capacity of a flake of crumpled graphene with different lengths and diameters

Apkadirova N.G.[1], Krylova K.A.[1,2], Shirmaeva A.A.[2,3]
[1]Ufa State Petroleum Technological University, Ufa, Russia; [2]Institute for Metals Superplasticity Problems, Russian Academy of Sciences, Ufa, Russia; [3]Bashkir State University, Ufa, Russia

13.00-13.15

Electrophysical properties of composites Li3V2(PO4)3/graphene and Li3V2(PO4)3/CNT

Alexander A. Petrunin[1], Pavel V. Barkov[1], Vladislav V. Shunaev[1], Olga E. Glukhova[1,2]
[1]Saratov State University, Saratov, Russia;
[2]I.M. Sechenov First Moscow State Medical University, Moscow, Russia

13.15-13.30

Regularities of electron transport in thin films of graphene nanomesh modified with carboxyl groups

Pavel V. Barkov, Olga E. Glukhova, Saratov State University, Saratov, Russia

13.30-13.45

Electronic and Optical Properties of Borophene/GaN and Borophene/Zinc Oxide Van der Waals Heterostructures

Michael M. Slepchenkov, Dmitry A. Kolosov, Olga E. Glukhova
Saratov State University, Saratov, Russia

JOINT POSTER/INTERNET SESSION AND INTERNET DISCUSSION

(Building 3, 3d floor Hall)

Chair (L): **Olga E. Glukhova**, Saratov State University Russia

18.00-20.00

1L. **Influence of glucose oxidase adsorption on stability of mixed Langmuir monolayers of fatty acids and lipid molecules** Gorbachev I.A., Smirnov A.V., Kolesov V.V. Institute of Radioengineering and Electronics RAS, Moscow, Russia

2L. **DC magnetic field topography by the magnetoplasmonic crystal** V.K. Belyaev[1], D.V Murzin[1], A.A. Grunin[2], A.A. Fedyanin[2], V.V. Rodionova[1];[1]Immanuel Kant Baltic Federal University, Kaliningrad, Russia; [2]Lomonosov Moscow State University, Moscow, 119991, Russia

3L. **Calculation of electronic and transport properties of single-walled boron nanotubes** Dmitry A. Kolosov[1], Olga E. Glukhova[1,2] [1]Saratov State University, Saratov, Russia; [2]I.M. Sechenov First Moscow State Medical University, Moscow, Russia

4L. **Optical properties of thin film of CdSe/CdS/ZnS quantum dots capped with oleic acid** A.J. Al-Alwani[1,2], V.N. Mironyuk[1], O.A.H Hassoon[1], E.G. Glukhovskoy[1] [1]Saratov State University, Saratov, Russia [2]Ibn Khaldun University College, Baghdad, Iraq

5L. **Graphene-Nanotube Composite with an Island Structure for flexible stretchable electronics: Ab Initio Study** M.M. Slepchenkov, O.E. Glukhova, Pavel V. Barkov, Sararov State University, Russia

Conference on Biomedical Spectroscopy IX

Conference Chairs: **Vyacheslav I. Kochubey**, **Alexander B. Pravdin**, Saratov State University (Russia)

Secretaries: **Anna A. Doronkina,** Saratov State University (Russia)

International Program Committee: **Dmitry A. Gorin**,Saratov State University (Russia), **Gennady V. Melnikov**, Yuri Gagarin State Technical University of Saratov (Russia),**Alexander M. Saletsky**, Lomonosov Moscow State University (Russia), **Dzmitry Shcharbin**, Institute of Biophysics and Cell Engineering of NASB (Belarus), **Andre Skirtach**, Ghent University (Belgium)

September 28, Wednesday

ON-LINE INVITED LECTURE / ON-LINE SESSIONS BIOPHYSICS II/ INTERNET BIOPHOTONICS I/ BIOMEDICAL SPECTROSCOPY I

https://osachapter.zoom.us/j/97105128804

ID 971 0512 8804

(Building 8, Hall 420)

Chair: **Mikhail Kirillin,** Institute of Applied Physics RAS, Russia

Moderator: **Isabella Serebryakova,** Saratov State University, Russia

17.35-17.50/16.35-16.50/15.35-15.55

ZOOM Oral Report

Influence of specific supplements on urine flourescence spectrum

Praveen Chalissery, Max Eisel, Herbert Stepp, Adrian Rühm, Christian Homann, Ronald Sroka, Laser-Forschungslabor, LIFE Center, University Hospital, LMU Munich, Munich, Germany, Department of Urology, University Hospital, LMU Munich, Munich, Germany.

September 29, Thursday

ORAL SESSION/INTERNET SESSION

(Building 3, Room 8)

Chairs: **Vyacheslav I. Kochubey,** Saratov State University, Russia

Alexander B. Pravdin, Saratov State University, Russia

15.00-15.15

Study of the Precancerous Lesions Early Detection Possibility in the Oral Mucosa in vivo using Diffuse Reflectance Spectroscopy Alexander V. Kolpakov Bauman Moscow State Technical University, Moscow, Russia**,** Ekaterina V. Melikhova, Bauman Moscow State Technical University, Moscow, Russia, Natalya P. Muravskaya, Bauman Moscow State Technical University, Moscow, Russia**,** Andrey V. Samorodov, Bauman Moscow State Technical University, Moscow, Russia, Nina O. Kopaneva, Moscow State University of Medicine and Dentistry, Moscow, Russia, Galina I. Lukina, Moscow State University of Medicine and Dentistry, Moscow, Russia, Marina Ya. Abramova, Moscow State University of Medicine and Dentistry, Moscow, Russia.

15.15-15.30

Time-resolved fluorescence anisotropy of Radachlorin and Chlorin e6 in aqueous and organic solutions under one- and two-photon excitation Ioanna Gorbunova, Ioffe Institute, Saint-Petersburg, Russia, Maxim E. Sasin, Ioffe Institute, Saint-Petersburg, Russia, Anna A. Zhikhoreva, Ioffe Institute, Saint-Petersburg, Russia, Andrey V. Belashov, Ioffe Institute, Saint-Petersburg, Russia, Dina M.Beltukova, Ioffe Institute, Saint-Petersburg, Russia, Irina V. Semenova, Ioffe Institute, Saint-Petersburg, Russia, Oleg S. Vasyutinskii, Ioffe Institute, Saint-Petersburg, Russia.

15.30-15.45

Quantitative analysis of Radachlorin fluorescence lifetime images using phasor plot Andrey Belashov, Ioffe Institute, Saint-Petersburg, Russia, Anna A. Zhikhoreva, Ioffe Institute, St. Petersburg, Russia, Tatiana N.Belyaeva, Institute of Cytology of RAS, St. Petersburg, Russia, Ilya K. Litvinov, Institute of Cytology of RAS, St. Petersburg, Russia, Anna V. Salova, Institute of Cytology of RAS, St. Petersburg, Russia, Elena S. Kornilova, Institute of Cytology of RAS, St. Petersburg, Russia, Irina V. Semenova, Ioffe Institute, St. Petersburg, Russia, Oleg S. Vasyutinskii, Ioffe Institute, St. Petersburg, Russia.

15.45-16.00

Proton transfer in organic dyes: study and application Evgenia Slyusareva, Siberian Federal Universuty, Krasnoyarsk, Russia, Marina A. Gerasimova, Siberian Federal University, Krasnoyarsk, Russia, Darya P. Surzhikova, Siberian Federal University, Krasnoyarsk, Russia.

16.00-16.15
Optical and liquid biopsy of patients with chronic kidney diseases and heart failure Ivan Bratchenko, Samara National Research University, Samara, Russia, S. Al-Sammarrae, Samara National Research University, Samara, Russia, D. Konovalova, Samara state medical university, Samara, Russia, E. Typikova, Samara National Research University, Samara, Russia, P. Lebedev, Samara state medical university, Samara, Russia, M. Skuratova, Samara regional clinical hospital named after VD Seredavin, Samara, Russia, V. Zakharov, Samara National Research University, Samara, Russia, I. Bratchenko, Samara National Research University, Samara, Russia.

16.15-16.30
Up-conversion luminophores based on calcium fluoride, strontium fluoride, barium fluoride and lead fluoride doped with ytterbium and erbium/thulium/holmium Sergey Kuznetsov, Prokhorov General Physics Institute of the Russian Academy of Sciences, Moscow, Russia, V.A. Konyushkin, Prokhorov General Physics Institute of the Russian Academy of Sciences, Moscow, Russia, A.N. Nakladov, Prokhorov General Physics Institute of the Russian Academy of Sciences, Moscow, Russia, A.A. Alexandrov, Prokhorov General Physics Institute of the Russian Academy of Sciences, Moscow, Russia.

16.30-16.45
Luminescent diamond composites with embedded $Y_3Al_5O_{12}$ doped cerium and SrF_2 doped europium particle for radiation-resistant imaging of high power x-ray beams Sergey Kuznetsov, Prokhorov General Physics Institute of the Russian Academy of Sciences, Moscow, Russia, V.S. Sedov, Prokhorov General Physics Institute of the Russian Academy of Sciences, Moscow, Russia, A.R. Drobysheva, Prokhorov General Physics Institute of the Russian Academy of Sciences, Moscow, Russia, A.K. Martyanov, Prokhorov General Physics Institute of the Russian Academy of Sciences, Moscow, Russia, S.Ch. Batygov, Prokhorov General Physics Institute of the Russian Academy of Sciences, Moscow, Russia, Yu. A. Ermakova, Prokhorov General Physics Institute of the Russian Academy of Sciences, Moscow, Russia, A.A. Alexandrov, Prokhorov General Physics Institute of the Russian Academy of Sciences, Moscow, Russia, A.D. Rezaeva, Prokhorov General Physics Institute of the Russian Academy of Sciences, Moscow, Russia, V.V. Voronov, Prokhorov General Physics Institute of the Russian Academy of Sciences, Moscow, Russia, I.A. Tiazhelov, Prokhorov General Physics Institute of the Russian Academy of Sciences, Moscow, Russia, V.A. Tarala, Scientific and Laboratory Complex Clean Room, North Caucasus Federal University, Stavropol', Russia, D.S. Vakalov, Scientific and Laboratory Complex Clean Room, North Caucasus Federal University, Stavropol', Russia, K.N. Boldyrev, Institute of Spectroscopy of the Russian Academy of Sciences, Moscow, Russia.

16.45-17.00
Examination of Collagen by IR spectroscopy Ludmila V. Plotnikova, St. Petersburg State University, St. Petersburg, Russia, Marina I. Kremenevskay, ITMO University, St. Petersburg, Russia, Olga Vezo, St. Petersburg State University, St. Petersburg, Russia, Alexander Polyanichko, St. Petersburg State University, St. Petersburg, Russia, Institute of Cytology RAS, St. Petersburg, Russia.

September 29, Thursday

JOINT POSTER/INTERNET/ INTERNET POSTER SESSION AND INTERNET DISCUSSION
(Building 3)

Chair (BS): **Anna Doronkina,** Saratov State University, Russia

18.00-20.00

1BS Raman spectroscopy for surface evaluation of titanium alloys Oleg Frolov, Samara National Research University Samara, Russia, P.E. Timchenko, Samara National Research University, Samara, Russia, E.V. Timchenko, Samara National Research University, Samara, Russia, Volova L.T., Samara State Medical University, Institute of Experimental Medicine and Biotechnology, Samara, Russia, Dolgushkin D.A., Samara State Medical University, Institute of Experimental Medicine and Biotechnology, Samara, Russia, Nikolaenko A.N., Samara State Medical University, Institute of Experimental Medicine and Biotechnology, Samara, Russia, Ivanov V.V., Samara State Medical University, Institute of Experimental Medicine and Biotechnology, Samara, Russia, Ionov A. Y., Samara National Research University, Samara, Russia, Samigullin R.T., Samara National Research University, Samara, Russia.

2BS Phosphorescent probe methods in studying the interaction of glycated and non-glycated human serum

albumins Melnikov Andrey.G., Saratov State Technical University named after Yu.A.Gagarin, Melnikov G.V., Saratov State Technical University named after Yu.A.Gagarin, Kochubey V.I., Saratov State University**,** Pravdin A.B, Saratov State University, Bykov D.A., Saratov State Technical University, Saratov, Russia Baranov D. Saratov State Technical University, Saratov, Russia.

3BS Raman spectroscopy and chemometrics for the detection of chronic heart disease and kidney failure Yulia Khristoforova, Samara National Research University, Ivan A. Bratchenko, Samara University, Russia, Lyudmila A. Bratchenko, Samara University, Russia, Petr A. Lebedev, Samara State Medical University, Russia, Maria A. Skuratova, Samara City Clinical Hospital №1 named N.I. Pirogova, Russia, Elena A. Lebedeva, Samara City Clinical Hospital №1 named N.I. Pirogova, Russia, Valery P. Zakharov, Samara University, Russia.

4BS Optical diagnostics of the evolution of fluorescent composite systems in the process of SCF foaming Sergey S. Volchkov, Yuri Gagarin Saratov State Technical University, Saratov, Russia, Marina V. Alonova, Yuri Gagarin Saratov State Technical University, Saratov, Russia, Ekaterina V. Ushakova, Yuri Gagarin Saratov State Technical University, Saratov, Russia, Dmitry A. Vereshagin, Yuri Gagarin Saratov State Technical University, Saratov, Russia, Dmitry A. Zimnyakov, Yuri Gagarin Saratov State Technical University, Saratov, Russia, Institute of Precision Mechanics and Control RAS, Saratov, Russia.

5BS Supression of stimulated emission in random lasing systems due to the matrix absorbtion Alexander Fedorovich Dorogov, Yuri Gagarin Saratov State Technical University, Saratov, Russia, Leonid A. Kochkurov, Yuri Gagarin Saratov State Technical University, Saratov, Russia, Sergey S. Volchkov, Yuri Gagarin Saratov State Technical University, Saratov, Russia, Dmitry A. Zimnyakov, Yuri Gagarin Saratov State Technical University, Saratov, Russia, Institute of Precise Mechanics and Control RAS, Saratov, Russia.

6BS Temperature caused vary of the optical properties of rat tissues E.A. Gamayunova (Kozlova), Saratov State University, Saratov, Russia, A.A. Doronkina, Saratov State University, Saratov, Russia, E.N. Lazareva, Saratov State University, Saratov, Russia, D.K. Tuchina, Saratov State University, Saratov, Russia, V.I. Kochubey, Saratov State University, Saratov, Russia, I.Yu. Yanina, Saratov State University, Saratov, Russia.

INTERNET POSTERS

1. **Characteristic Features of IR Spectra of Serum in Multiple Myeloma Patients,** Daniil Chernyshev St. Petersburg State University, St. Petersburg, Russia, Elina S. Mikhailets, St. Petersburg State University, St. Petersburg, Russia, Liudmila V. Plotnikova, St. Petersburg State University, St. Petersburg, Russia, Andrey D. Garifullin, St. Petersburg State University, St. Petersburg, Russia, Russian Scientific Research Institute of Hematology and Transfusiology, St. Petersburg, Russia, Alexey Y. Kuvshinov, Russian Scientific Research Institute of Hematology and Transfusiology, St. Petersburg, Russia, Sergey V. Voloshin, Russian Scientific Research Institute of Hematology and Transfusiology, St. Petersburg, Russia, S.M. Kirov Military Medical Academy, Ministry of Defense of Russia, St. Petersburg, Russia, Alexander Polyanichko, St. Petersburg State University, St. Petersburg, Russia, Institute of Cytology RAS, St. Petersburg, Russia.
2. **Effect Antimicrobial Agents on Structure of Nucleic Acids,** Daria Osinnikova, St. Petersburg State University, St. Petersburg, Russia, Kristina I PavlovaSt. Petersburg State University, St. Petersburg, Russia, Alexander M. Polyanichko, St. Petersburg State University, St. Petersburg, Russia, Evgenia B. Moroshkina, St. Petersburg State University, St. Petersburg, Russia
3. **Polarized fluorescence parameters of FAD excited at 355 and 450 nm in water-propylene glycol solutions,** Beltukova Dina Mikhailovna, Ioffe Institute, Polytekhnicheskaya, 26, St. Petersburg, Russia, Marina K. Danilova, Ioffe Institute, St. Petersburg, Russia, Ilya. A. Gradusov, Ioffe Institute, St. Petersburg, Russia, Peter the Great St.Petersburg Polytechnic University, St. Petersburg, Russia, Victor. P. Belik, Ioffe Institute, St. Petersburg, Russia, Irina. V. Semenova, Ioffe Institute, St. Petersburg, Russia, Oleg S. Vasyutinskii, Ioffe Institute, St. Petersburg, Russia.

4. **Effect of methylene blue on oxygenation level in mice with Ehrlich solid tumors,** Daria Pominova, Prokhorov General Physics Institute of the Russian Academy of Sciences, Moscow, Russia, National research nuclear university MEPHI, Moscow, Russia, Anastasia V. Ryabova, Prokhorov General Physics Institute of the Russian Academy of Sciences, Moscow, Russia, National research nuclear university MEPHI, Moscow, Russia, Elizaveta I. Kozlikina Prokhorov General Physics Institute of the Russian Academy of Sciences, Moscow, Russia, National research nuclear university MEPHI, Moscow, Russia, Alexey S. Skobeltsin, Prokhorov General Physics Institute of the Russian Academy of Sciences, Moscow, Russia, National research nuclear university MEPHI, Moscow, Russia, Igor D. Romanishkin, Prokhorov General Physics Institute of the Russian Academy of Sciences, Moscow, Russia.
5. **Investigation of the dependence of the fluorescence lifetime of photosensitizers on the pH values,** Kulichenko Ansatasia, Prokhorov General Physics Institute of the Russian Academy of Sciences, Moscow, Russia, National Research Nuclear University MEPhI (Moscow Engineering Physics Institute), Mosvow, Russia, Andrey M. Udeneev, National Research Nuclear University MEPhI (Moscow Engineering Physics Institute), Mosvow, Russia, Igor D. Romanishkin, Prokhorov General Physics Institute of the Russian Academy of Sciences, Moscow, Russia, Anastasia V. Ryabova, Prokhorov General Physics Institute of the Russian Academy of Sciences, Moscow, Russia, Yulia S. Maklygina, Prokhorov General Physics Institute of the Russian Academy of Sciences, Moscow, Russia, Victor B. Loschenov, Prokhorov General Physics Institute of the Russian Academy of Sciences, Moscow, Russia.
6. **Spectral-Luminescent Characteristics of CDOM in Stratified Water Bodies of the Kandalaksha Coast of the White Sea,** Yulia G. Sokolovskaya, Lomonosov Moscow State University, Moscow, Russia, Anna A. Zhiltsova, Lomonosov Moscow State University, Moscow, Russia, Elena D. Krasnova, Moscow State University, Moscow, Russia, Dmitri A. Voronov, Institute for Information Transmission Problems, Russian Academy of Sciences, Moscow, Russia, Svetlana V. Patsaeva, Lomonosov Moscow State University, Moscow, Russia.
7. **Correlation of metabolic syndrome markers and parameters of UVA-induced skin autofluorescence in children with type 1 diabetes mellitus** Vladimir V. Salmin, National Research Nuclear University MEPHI, Moscow, Russia, Margarita V Proskurina, Krasnoyarsk State Medical University, Krasnoyarsk, Russia, Yuriy A. Chernomorets, Krasnoyarsk State Medical University, Krasnoyarsk, Russia, Anastasia V. Kulgaeva, Krasnoyarsk State Medical University, Krasnoyarsk, Russia, Tatyana E. Taranushenko, Krasnoyarsk State Medical University, Krasnoyarsk, Russia, Alla B. Salmina, Krasnoyarsk State Medical University, Krasnoyarsk, Russia, Research Center of Neurology, Moscow, Russia.

Conference on Computation Biophysics and Analysis of Biomedical Data IX

Workshop Chair: **Dmitry E. Postnov**, Saratov State University (Russia)

Secretary: **Elena S. Litvinenko**, Saratov State University (Russia)

International Program Committee: **Alexaner B. Neiman,** Ohio University, USA, **Olga V. Sosnovtseva,** University of Copenhagen, Denmark, **Oxana V. Semyachkina-Glushkovskaya,** Saratov State University, Russia, **Anatoly V. Skripal,** Saratov State University, Russia, **Boris P. Bezruchko,** Saratov State University, Russia

September 28, Wednesday

ORAL SESSION I
(Building 3, Hall 64)
Chair: **Dmitry E. Postnov, Saratov State University, Russia**

11:30-11:40
Opening remarks
Dmitry E. Postnov, Saratov State University, Russia

11:40-11:55
Extended detrended cross-correlation analysis of physiological data
Alexander A. Koronovskii Jr., A.N. Pavlov, Saratov State University, Saratov, Russia

11:55-12:10
Multiresolution wavelet analysis of noisy signals
German A. Guyo, O.N. Pavlova, A.N. Pavlov, Saratov State University, Saratov, Russia

12:10-12:25
Influence of the light profile on the state of "sleep-wakefulness"
Ksenia O. Merkulova, D.E. Postnov, Saratov State University, Saratov, Russia

12:25-12:40
Quantitative analysis of spike-wave discharge patterns in pentylenetetrazole rat model
Anastasia S. Ershova[1], E.M. Suleymanova[2], A.A. Grishchenko[1], L.V. Vinogradova[2], I.V. Sysoev[3], [1]Saratov State University, Saratov; [2]Institute of Higher Nervous Activity and Neurophysiology of the RAS, Moscow; [3]Institute of Higher Nervous Activity and Neurophysiology, Saratov, Russia

12:40-12:55
Mathematical modeling of cell signaling regulators dynamics
Arina V. Martyshina[1], I.V. Dokukina[1], E.A. Grachev[2], [1]Sarov Physics and Technology Institute, National Research Nuclear University MEPhI, Sarov; [2]Lomonosov Moscow State University, Moscow, Russia

12:55-13:10
Internet
A model of norepinephrine influence on nervous system activity
Pavel O. Lukin[1], A.R. Brazhe[2], A.Yu. Verisokin[1], D.E. Postnov[3], D.V. Verveyko[1], [1]Kursk State University, Kursk; [2]Institute of Bioorganic Chemistry RAS; [3]Saratov State University, Saratov, Russia

13:10-13:25
Internet
Spatially realistic model of neuron-glia communication
Artem V. Kirsanov[1], D.V. Verveyko[2], A.R. Brazhe[3], A.Yu. Verisokin[2], [1]Lomonosov Moscow State University, Moscow; [2]Kursk State University, Kursk; [3]Institute of Bioorganic Chemistry RAS, Russia

13:25-13:40
Internet
Comparative analysis of photoplethysmograms of the finger and toe of a human
R.Sh. Zatrudina[1], Igor B. Isupov[2], V.Yu. Gribkov[1], [1]Volgograd State University, Volgograd, Russia 2 Volgograd State Medical University, Volgograd, Russia

14:00 – 14:30
Coffee break

ORAL SESSION II
(Building 3, Hall 64)
Chair: **Dmitry E. Postnov, Saratov State University, Russia**

14:40-14:55
Experimental Setup based on Infrared quantum-cascade laser spectroscopy for analysis of microcomponents in human exhaled breath
Olga A. Nebritova, I.L. Fufurin, A.A. Esakov, A.N. Morozov, Bauman Moscow State Technical University, Moscow, Russia

14:55-15:10
Analysis of biomarkers concentrations in human exhaled breath for the primary diagnosis of type 1 diabetes mellitus
Anastasiya V. Scherbakova[1], P.V. Berezhanskiy[2],
I.S. Golyak[1], D.R. Anfimov[1], P.P. Demkin[1], O.A. Nebritova[1], A.N. Morozov[1], I.L. Fufurin[1], [1]Bauman Moscow State Technical University, Moscow; [2]Morozov Children's Clinical Hospital, State Budgetary Healthcare Institution, Moscow Healthcare Pulmonology Department, Moscow, Russia

15:10-15:25
Diffuse reflectance spectroscopy for biomedical applications
Dmitriy R. Anfimov, I.L. Fufurin, S.V. Bashkin, A.N. Morozov, Bauman Moscow State Technical University, Russia

15:25-15:40
Computational experiment on laser diffractometry of erythrocytes
Evgeniy G. Tsybrov, M.S. Lebedeva, S.Yu. Nikitin, Lomonosov Moscow State University, Moscow, Russia

15:40-15:55
Comparative analysis of methods of laser doppler flowmetry and doppler ultrasound measurement of blood flow during the procedure of intermittent pneumatic compression
K.V. Mashkov[1], A.D. Usanov[1], R.G. Chubbarov[2],
A.V. Skripal[1], [1]Saratov State University; [2]OOO "Omega clinic", Saratov

15:55-16:10
Internet
Brain activity functional analysis of the FMRI in MDD patients between Stroop and emotion tests
Vladimir S. Khorev[1,2], S.A. Kurkin[2,3], R. Paunova[4], D. Semionova[4], S. Kandilarova[4], D.S. Stoyanov[4], [1]Innopolis University, Innopolis; [2]Immanuel Kant Baltic Federal University, Kaliningrad; [3]Samara State Medical University, Samara, Russia; [4]Plovdiv Medical University, Plovdiv, Bulgaria

16:10-16:25
Internet
The application of feature selection techniques analysis for human electroencephalograms in epilepsy
Valentin A. Yunusov[1,2], S.A. Demin[1], A.V. Minkin[3],
[1]Institute of Physics, Kazan Federal University, Kazan; [2]Institute of Computational Mathematics and Information Technologies, Kazan Federal University, Kazan; [3]Yelabuga Institute, Kazan Federal University, Yelabuga, Russia

16:25-16:40
Internet
One-Class SVM for outliers detection in epileptic EEG
Matvey Khoymov[1], V. Grubov[1,2], V. Maksimenko[1,2], N. Utashev[3], D. Andrikov[4], S. Kurkin[1,2], [1]Immanuel Kant Baltic Federal University, Kaliningrad, Russia; [2]Innopolis University, Kazan, Russia; [3]National Medical and Surgical Center named after N. I. Pirogov, Ministry of Healthcare of the Russian Federation, Moscow, Russia; [4]Research and Production Company "Immersmed", Moscow, Russia

September 29, Thursday

JOINT INTERNET POSTER SESSION AND INTERNET DISCUSSION

Chair (BC): **Dmitry E. Postnov,** Saratov State University, Russia

1BC. **Changes in the dynamics of the recurrent indicator of somnological records in slowly progressive chronic neurodegenerative disease** Anton O. Selskii[1,2], M.O. Zhuravlev[1,2], A.E. Runnova[2], A.R. Kiselev[3], T. Penzel[1], [1]Saratov State University, Saratov; [2]Saratov State Medical University, Saratov; [3]"National Medical Research Center for Therapy and Preventive Medicine" of the Ministry of Health of Russia, Moscow, Russia

2BC. **Changes in the dynamics of the recurrent indicator of somnological records in cases of sleep apnea** Anton O. Selskii[1,2], M.O. Zhuravlev[1,2], A.E. Runnova[2], A.R. Kiselev[3], T. Penzel[1], [1]Saratov State University, Saratov; [2]Saratov State Medical University, Saratov; [3]"National Medical Research Center for Therapy and Preventive Medicine" of the Ministry of Health of Russia, Moscow, Russia

3BC. **Dynamics of similarity of brain cortical areas revealed from MEG data with seizures using mutual information function** Daria A. Lachinova[1], G. Luijtelaar[2], P. Ossenblok[3], I.V. Sysoev[1], [1]Institute of Higher Nervous Activity and Neurophysiology of RAS, Moscow, Russia; [2]Centre of Cognition, Radboud University Nijmegen, Nijmegen, The Netherlands; [3]Stichting

Epilepsy Instellingen Nederland, Zwolle, The Netherlands

4BC. **Features of recognition of visual images by patients with different types of headache**s Vyacheslav Yu. Musatov[1], A.E. Runnova[2], R.R. Parsamyan[2], M.Yu. Novikov[2], [1]Yuri Gagarin State Technical University of Saratov, Saratov; [2]Saratov State Medical University, Saratov, Russia

5BC. **Application of wavelet bicoherence for diagnosing obstructive sleep apnea syndrome** Maksim O. Zhuravlev[1,2], A.E. Runnova[1,3], A.R. Kiselev[1], C.S. Samatova[3], [1]National Medical Research Center for Therapy and Preventive Medicine of the Ministry of Health of Russia, Moscow; [2]Saratov State University, Saratov; [3]Saratov State Medical University, Saratov, Russia

6BC. **Application of time-frequency signal analysis to detect different stages of sleep** Maksim O. Zhuravlev[1,2], A.E. Runnova[1,3], A.R. Kiselev[1], A.S. Akimova[2], [1]National Medical Research Center for Therapy and Preventive Medicine of the Ministry of Health of Russia, Moscow; [2]Saratov State University, Saratov; [3]Saratov State Medical University, Saratov, Russia

7BC. **Search for the beginning of the diastolic rise of the photoplethysmogram using a multilayer recurrent neural network** Vladislav Yu. Gribkov[1], R.Sh. Zatrudina[1], I.B. Isupov[2], [1]Volgograd State University, Volgograd; [2]Volgograd State Medical University, Volgograd, Russia

8BC. **Artificial neural network predicts erroneous responses in the task of classifying visual stimuli** Alexander Kuc[1], A. Batmanova[2], V. Maksimenko[1,3], [1]Immanuel Kant Baltic Federal University, Kaliningrad; [2]Financial University Under the Government of the Russian Federation, Moscow; [3]Innopolis University, Innopolis, Russia

9BC. **A graph neural network for brain functional connectivity analysis** Elena N. Pitsik[1], S.A. Kurkin[1], A.E. Hramov[2], R. Paunova[3], D. Simeonova[3], S. Kandilarova[3], D. Stoyanov[3], [1]Samara State Medical University, Samara; [2]Institute of Cardiological Research, Saratov State Medical University, Saratov, Russia; [3]Plovdiv Medical University, Plovdiv, Bulgaria

10BC. **Detecting sleep episodes in rats ECoG using simple artificial neural network** Nadezhda I. Semenova, K.S. Sergeev, A.V. Slepnev, Saratov State University, Russia

11BC. **Features of the local polarization structure of gene-based speckle patterns** Maxim S. Lavrukhin[1], M.G. Inkin[1], O.V. Ulianova[1], M.V. Alonova[2], D.A. Zimnyakov[2], A.V. Skripal[1], [1]Saratov State University; [2]Yury Gagarin State Technical University of Saratov, Russia.

INTERNET POSTERS

1. **TMS-related evolution of brain functional networks emerging during motor imagery** Semen A. Kurkin[1,2], [1]Immanuel Kant Baltic Federal University, Kaliningrad; [2]Samara State Medical University, Samara, Russia
2. **Machine learning approach for marking seizures on epileptic EEG** Vadim Grubov[1,2], S. Afinogenov[3], V. Maksimenko[1,2], N. Utyashev[4], [1]Center for Neurotechnology and Machine Learning, Immanuel Kant Baltic Federal University, Kaliningrad; [2]Neuroscience and Cognitive Technology Laboratory, Center for Technologies in Robotics and Mechatronics Components, Innopolis University, Innopolis; [3]Financial University under the Government of the Russian Federation, Moscow; [4]National Medical and Surgical Center named after N. I. Pirogov, Ministry of Healthcare of the Russian Federation, Moscow, Russia
3. **Identification and analysis of statistical patterns in human electroencephalogram signals at different degrees of obsessive-compulsive disorde**r Alexander A. Elenev,1 Sergey A. Demin,1 Valentin A. Yunusov,1,2 Oleg Y. Panischev,1 1. Institute of Physics, Kazan Federal University, Kazan, Russia 2. Institute of Computational Mathematics and Information Technologies, Kazan Federal University, Kazan, Russia
4. **The application of the normalized range method in the analysis of self-similar properties of complex living systems biomedical data** Valentin A. Yunusov[1,2], S.A. Demin[1], A.A. Elenev[1], [1]Institute of Physics, Kazan Federal University, Kazan; [2]Institute of Computational Mathematics and Information Technologies, Kazan Federal University, Kazan, Russia

5. **Prediction of macroscopic dynamics by reservoir computing** Andrey V. Andreev, Immanuel Kant Baltic Federal University, Kaliningrad, Russia
6. **Study of brain activity during multimodal stimulus presentation** Vladimir M. Antipov, A.A. Badarin, V.V. Grubov, Baltic Center for Artificial Intelligence and Neurotechnology Immanuel Kant Baltic Federal University Kaliningrad, Russia
7. **A study of the brain's adaptive mechanisms during solving prolonged cognitive task based on fNIRS and Eyetracker** Artem A. Badarin, V.M. Antipov, V.V. Grubov Neuroscience and Cognitive Technology Laboratory, Innopolis University, Kazan, Russia
8. **Study of eye movement in the Sternberg memory task** Nikita A. Brusinskii[1], A.A. Badarin[1,2], V.V. Grubov[1,2], A.E. Hramov[1,2], [1]Baltic Center for Artificial Intelligence and Neurotechnology, Immanuil Kant Baltic Federal University; [2]Neuroscience and Cognitive Technology Laboratory Center for Technologies in Robotics and Mechatronics Components, Innopolis University

Workshop on Nonlinear Dynamics XIII

Workshop Co-Chairs: **Galina I. Strelkova***,* Saratov State University (Russia), **Andrei V. Slepnev,** Saratov State University (Russia)
Secretary: **Andrei V. Slepnev,** Saratov State University (Russia)
International Program Committee: ***Jürgen Kurths****, Humboldt University, Berlin, Germany;* ***Alexander Neiman****, Ohio University, USA;* ***Igor Khovanov****, Warwick University, UK;* ***Olga Sosnovtseva****, University of Copenhagen, Denmark;* ***Alexander P. Chetverikov****, Saratov State University, Russia;* ***Alexey N. Pavlov****, Saratov State University, Russia;* ***Tatiana E. Vadivasova****, Saratov State University, Russia;* ***Alexey V. Shabunin****, Saratov State University, Russia;* ***Dmitry E. Postnov****, Saratov State University, Russia*

September 28, Wednesday

ORAL SESSION NONLINEAR DYNAMICS I
(Building 3, Room 38)
Co-Chairs: ***Galina I. Strelkova***, Saratov State University (Russia)***,*** **Andrei V. Slepnev**, Saratov State University (Russia)

16.00-16.12
Dynamics of two coupled electronic neuron-like generators
M.A. Mishchenko[1], D.I. Bolshakov[1], V.V. Matrosov[1], I.V. Sysoev[1,2]
[1]National Research Lobachevsky State University, Nizhniy Novgorod, Russia
[2]Saratov State University, Saratov, Russia

16.15-16.27
Simple model with critical velocity for the onset of Fermi acceleration
Dmitry Lubchenko[1], Alexey Savin[1]
[1]Saratov State University, Saratov, Russia

16.30-16.42
The impact of noise in analog deep and echo state neural networks
Nadezhda Semenova[1]
[1]Saratov State University, Saratov, Russia

16.45-16.57
Trainable neural network consisting of FitzHugh-Nagumo systems
Nadezhda Semenova[1], Konstantin Sergeev[1], Andrei Slepnev[1]
[1]Saratov State University, Saratov, Russia

17.00-17.12
A hybrid SIRS+V model of infection spread
Alexey Shabunin[1]
[1]Saratov State University, Saratov, Russia

17.15-17.27
Universal approach for coarsening control on an example of an optically-addressed spatial light modulator
Vladimir V. Semenov[1]
[1]Saratov State University, Saratov, Russia

17.30-17.42
Complex wave regimes in a network of Hindmarsh-Rose neurons
Igor A. Shepelev[1], Galina I. Strelkova[1]
[1]Saratov State University, Saratov, Russia

September 29, Thursday

ORAL SESSION NONLINEAR DYNAMICS II
(Building 3, Room 38)
Co-Chairs: ***Galina I. Strelkova***, Saratov State University (Russia)***,*** **Andrei V. Slepnev**, Saratov State University (Russia)

10.00-10.12
Highly efficient energy and mass transfer in bcc metals by supersonic 2-crowdions
Igor A. Shepelev[1], Ivan D. Kolesnikov[1], Elena A. Korznikova[2]
[1]Saratov State University, Saratov, Russia
[2]Ufa State Aviation Technical University, Ufa, Russia

10.15-10.27
Synchronization of traveling waves in a two-layer network of FitzHugh-Nagumo excitable neurons with a noisy intensity of interlayer interaction
Ibadulla R. Ramazanov[1], Ivan A. Korneev[1], Andrei V. Slepnev[1], Tatiana E. Vadivasova[1]
[1]Saratov State University, Saratov, Russia

10.30-10.42
Transitional chimeras and solitary states in a ring of nonlocally coupled discrete van der Pol oscillators
Elena Rybalova[1], Galina Strelkova[1],
[1]Saratov State University, Saratov, Russia

10.45-10.57
Effect of additive noise on the probability of observing chimera states
Vasilij A. Nechaev[1], Elena V. Rybalova[1], Galina I. Strelkova[1]
[1]Saratov State University, Saratov, Russia

11.00-11.12
The impact of the delay in coupling on the behaviour of dynamical systems
A.V. Bukh[1], E.M. Elizarov[1], I.A. Shepelev[1], G.I. Strelkova[1]
[1]Saratov State University, Saratov, Russia

11.15-11.27

Features of the interaction of breathers, solitons and bubbles in a nonlinear chain with transverse displacement
Evgenii I. Geraskin[1], Alexander P. Chetverikov[1]
[1]Saratov State University, Saratov, Russia

11.30-11.42
Extended version of detrended cross-correlation analysis
Alexander A. Koronovskii Jr.[1], Alexey N. Pavlov[1]
[1]Saratov State University, Saratov, Russia

September 29, Thursday

JOINT POSTER/INTERNET SESSION
Chair (ND): **Andrei V. Slepnev**, Saratov State University, Russia

18.00-20.00

1ND. **Dynamics of two coupled van der Pol-Mathieu oscillators**
Ibadulla Ramazanov[1], Ivan Korneev[1], Tatiana Vadivasova[1], Andrei Slepnev[1]
[1]Saratov State University, Saratov, Russia

2ND. **Complex behavior of trajectories of the autooscillatory system, demonstrating the stochastic web in the conservative limit**
Alexandr V. Golokolenov[1], Dmitry V. Savin[1]
[1]Saratov State University, Saratov, Russia

3ND. **3D PIC simulation of interaction of an electromagnetic wave with a counterpropagating electron beam under condition of cyclotron resonance**
Alena A. Rostuntsova[1,2], Roman A. Torgashov[1,2], Nikita M. Ryskin[1,2]
[1]Saratov Branch, Institute of Radio Engineering and Electronics RAS, Saratov, Russia
[2]Saratov State University, Saratov, Russia

4ND. **Robust synchronization of the systems with robust strange attractors and its application for communication**
Olga B. Isaeva[1,2], Dmitry O. Lubchenko[1,2]
[1]Kotel'nikov's Institute of Radio-Engineering and Electronics of RAS, Saratov branch, Saratov, Russia
[2]Saratov State University, Saratov, Russia

5ND. **Strange invariant sets and multistability in implicit discrete dynamical system**
Olga B. Isaeva[1,2], Dmitry V. Savin[2], Andrei A. Elistratov[1,2], Maxim A. Obychev[2]
[1]Kotel'nikov Institute of Radio-Engineering and Electronics of RAS, Saratov branch, Saratov, Russia
[2]Saratov State University, Saratov, Russia

6ND. **Self-organized criticality in a neural network with the Watts-Strogatz topology**
Illarion V. Ushakov[1], Mikhail A. Mishchenko[1], Valery V. Matrosov[1]
[1]N.I. Lobachevsky State University of Nizhny Novgorod, Nizhny Novgorod, Russia

7ND. **Dynamics of ensembles of coupled logistic and cubic maps with noise modulation of coupled parameters**
Natalia N. Nikishina[1], Tatiana E. Vadivasova[1]
[1]Saratov State University, Saratov, Russia

8ND. **Dynamics of ensemble of nonlocally coupled Henon-Lozi maps**
Elena Rybalova[1], Vladislav Averianov[1]
[1]Saratov State University, Saratov, Russia

9ND. **Influence of delayed coupling on the behavior of discrete maps**
V.A. Novichkova[1], E.M. Elizarov[1], G.I. Strelkova[1]
[1]Saratov State University, Saratov, Russia

Workshop on Advanced Polarization and Correlation Technologies in Biomedicine and Material Science IX

Workshop Co-chairs: Dmitry A. Zimnyakov, Yuri Gagarin Saratov State Technical University, Russia, Institute of Precise Mechanics and Control RAS, Russia

*Secretaries:***Elena A. Isaeva, Anna A. Isaeva***,* Yuri Gagarin Saratov State Technical University, Russia

International Program Committee:
Robert R. Alfano, CCNY, USA; **Stefan Andersson-Engels**, Tyndall National Institute, Cork, Ireland; **Oleg V. Angelsky**, Chernivtsi National University, Ukraine; **Victor N. Bagratashvili**, Inst. of Laser and Information Technologies RAS, Russia); **Claude Boccara**, ESPCI, France; **Alexander V. Bykov**, Univ. of Oulu, Finland; **Alexander V. Doronin**, Yale University, New Haven, CT, USA; **Steven L. Jacques**, Oregon Health Sciences Univ., USA ;**Alexey P. Popov**, Univ. of Oulu, Finland; **Alexander P. Sviridov**, Inst. of Laser and Information Technologies RAS, Russia; **Valery V. Tuchin**, Saratov National Research State University, Institute of Precision Mechanics and Control RAS, National Research Tomsk State University, Russia; **Olga V. Ushakova** Yuri Gagarin Saratov State Technical University of Saratov, Russia; **Alexander G. Ushenko** Chernivtsi National University, Ukraine; **Lihong Wang**, California Institute of Technology, CA, USA

September 30, Friday

ON-LINE JOINT ORAL SESSION Advanced Polarization and Correlation Technologies in Biomedicine and Material Science
Link: https://meet.google.com/oav-oyzc-txk
Chairs (P): Dmitry A. Zimnyakov, Yuri Gagarin Saratov State Technical, Russia

11.30-11.45 Polarization resolved second harmonic generation microscopy for investigating biomacromolecules
Nirmal Mazumder, Manipal School of Life Sciences, Manipal Academy of Higher Education, India
11.45-12.00 Characterization of gene diversity using polarization encoding Dmitry A. Zimnyakov, Yuri Gagarin State Technical University of Saratov, Russia, M.V. Alonova, Yuri Gagarin State Technical University of Saratov, Russia, Skripal A.V., Saratov State University, Russia
12.00-12.15 The speckle history map method for diagnostics of the microscopic dynamics in foamed polymerspolymers Marina V. Alonova, Yuri Gagarin State Technical University of Saratov, Russia, E.V. Ushakova, Yuri Gagarin State Technical University of Saratov, Russia, Dmitry A. Zimnyakov, Yuri Gagarin State Technical University of Saratov, Russia
12.15-12.30 Speckle correlometry approach with acoustic modulation in application to multi-phase media structure characterization
Anna Isaeva, Yuri Gagarin State Technical University of Saratov, Russia, Elena Isaeva, Yuri Gagarin State Technical University of Saratov, Russia, Dmitry Zimnyakov, Yuri Gagarin State Technical University of Saratov, Russia
12.30-12.45 Refractive index technique using supercritical fluid Olga V. Ushakova, Yury Gagarin State Technical University of Saratov, Russia, Dmitry A. Zimnyakov, Yury Gagarin State Technical University of Saratov, Russia

September 29, Thursday

JOINT POSTER/INTERNET SESSION
JOINT POSTER/INTERNET SESSION AND INTERNET DISCUSSION
Chairs (P): **Dmitry A. Zimnyakov**, Yuri Gagarin Saratov State Technical, Russia
September 29, Thursday

18.00-19.30

1P. Radiative transfer simulations in a foam like system
Pantyukov A.V., Yuri Gagarin State Technical University of Saratov, Russia, Anna Isaeva, Yuri Gagarin State Technical University of Saratov, Russia, Elena Isaeva, Yuri Gagarin State Technical University of Saratov, Russia, Dmitry Zimnyakov, Yuri Gagarin State Technical University of Saratov, Russia

2P. Anisotropic optical fiber in distributed acoustic sensing
Artem T. Turov, Perm National Research Polytec, Russia,
Yuri A. Konstantinov, Perm Federal Research Center of the Ural Branch of the Russian Academy

of Sciences, Russia, Victor V. Krishtop, Perm National Research Polytechnical University, Russia

3P. Statistical modeling of local polarization states of laser light multiple scattered: fundamentals of the speckle-polarization correlometry

Ekaterina V. Ushakova, Yuri Gagarin State Technical University of Saratov, Russia, Marina. V. Alonova, Yuri Gagarin State Technical University of Saratov, Russia, Dmitry A. Zimnyakov, Yuri Gagarin State Technical University of Saratov, Russia.

4P. Studies of complexes consisting of glycated and native human serum albumin proteins by polarization spectroscopy

Denis A. Bykov, Sararov State Technical University, Russia, Vyacheslav Kochubey, Saratov State University, Russia, Alexander Pravdin, Saratov State University, Russia, Andrey G. Melnikov, Sararov State Technical University, Russia, Gennady V. Melnikov, Sararov State Technical University, Russia

Workshop on Electromagnetics of Microwaves, Submillimeter and Optical Waves XXII

Workshop Chair: Michael V. Davidovich, Saratov State University, Russia

Secretaries: **Alexander N. Savin***,* Istok, Fryazino. (Russia), **Dmitry A. Kolosov**, Saratov State University (Russia), **Kirill A. Sayapin,** Saratov State University (Russia)

International Program Committee:
Nikita M. Ryskin, Saratov State University (Russia); **Igor S. Nefedov,** Aalto University, Espoo (Finland); **Georgi N. Georgiev,** "Sts. Cyril and Methodius" University, Veliko Tirnovo, (Bulgaria); **Andrei D. Grigoriev,** St. Petersburg Electrotechnical University LETI (Russia); **Josef Modelsky,** Warsaw University of Technology (Poland); **Alexander M. Lerer**, South Federal University, Rostov-Don (Russia)

Thursday September 28

JOINT POSTER/INTERNET SESSION
(Building 3, 3rd floor Hall)
Chair (EM): **Michael V. Davidovich**, Saratov State University, Russia

18.00-20.00

1EM Modified structure of coaxial-to-waveguide transition Kirill A. Sayapin[1,2], Michael V. Davidovich[1], Valery P. Meshchanov[2], 1 - Saratov State University, 2- Nika-Microwave, Ltd.

2**EM Analysis of THz plasmon waveguides by the method of integral equations**
Kirill A. Sayapin[1,2], Michael V. Davidovich[1], 1 - Saratov State University, 2 - Nika-Microwave, Ltd.

Thursday September 29

ORAL SESSION
ELECTROMAGNETICS
(Building 8, Room 318, SSU)
Chair: **Michael V. Davidovich**, Saratov State University, Russia

11.00-11.15
Correction to Casimir Force (Коррекция формулы для силы Казимира)
Michael V. Davidovich, Saratov State University, Russia.

11.15-11.30
Study of mode competition processes in a high power multimode gyrotron (Исследование процессов конкуренции мод в мощном многомодовом гиротроне)
Grigorieva N.V.[1,2], Adilova A.B.[1,2], Rozhnev A.G.[1,2], Ryskin N.M.[1,2] . 1 – Kotelnikov Institute of Radio-Engineering of RAS, Saratov Branch; 2 – Saratov State University

11.30-11.45
Sub terahertz imaging and generation technologies
Molchanov S.Yu, Muravev V.M., Kukushkin I. V.
ООО "МВЭЙВ", Chernogolovka, Russia

GoogleMeat ORAL Reports

(https://meet.google.com/hzz-vmdy-hwy***)***
Chair: **Michael V. Davidovich**, Saratov State University, Russia

15.00-15.15
The optical vortices structure controlling by changing the height of silicon ring gratings using high-performance computer systems
Dmitry A. Savelyev[1,2], 1 – Samara National Research University, Samara, Russia, 2 – Image Processing Systems Institute of RAS – Branch of the FSRC "Crystallography and Photonics" RAS, Samara, Russia

15.15-15.30
Diffraction of electromagnetic waves on one-dimensional diffraction gratings formed by slits in an absolutely absorbing screen (Дифракция электромагнитных волн на одномерных дифракционных решетках, образованных щелями в абсолютно поглощающем экране)
Alexander M. Lerer, Victoria V. Makhno, Southern Federal University, Rostov-on-Don, Russia.

15.30-15.45

A study on the recognition of normal and cancer cells by a sub-terahertz signal using COMSOL multiphysics

Aayushi Sinha[1], Andrey Starodubov[2,3], Sheetal Shridhokar[1], Niraj Kumar[4,1], 1- Amity University, Noida, India 2 - Saratov Branch, Institute of Radio Engineering and Electronics RAS, Saratov, Russia 3 – Saratov State University, Saratov, Russia, 4 – CSIR-CEERI, Pilani, India

15.45-16.00

Electromagnetic screen for IR and THz ranges (Электромагнитные экраны ИК и ТГц диапазонов)

Michael V. Davidovich, Saratov State University

Conference on
Terahertz Optics & Biophotonics V

Conference Chair: **Igor V. Reshetov**, Sechenov University (Russia); **Vladimir N. Kurlov**, Institute of Solid State Physics of RAS (Russia); **Irina N. Dolganova**, Institute of Solid State Physics of RAS (Russia), Bauman Moscow State Technical University (Russia); **Kirill I. Zaytsev**, Prokhorov General Physics Institute of RAS (Russia), Bauman Moscow State Technical University (Russia)

Secretary: **Arseniy A. Gavdush**, Prokhorov General Physics Institute of RAS; Bauman Moscow State Technical University (Russia), E-mail: arsenii.a.gavdush@gmail.com

International Program Committee: **Olga P. Cherkasova**, Institute of Laser Physics of SB RAS (Russia); Pavel A. Karalkin, Institute for Cluster Oncology, Sechenov Unviersity (Russia); **Gleb M. Katyba**, Institute of Solid State Physics of RAS (Russia); Rustam A. Khabibullin, Institute of Ultra High Frequency Semiconductor Electronics of RAS (Russia**); Gennady A. Komandin**, Prokhorov General Physics Institute of RAS (Russia); **Vladimir N. Kurlov**, Institute of Solid State Physics of RAS;; Igor E. Spector, Prokhorov General Physics Institute of RAS (Russia)

September 29, 10:00-12:00

TELEMOST.YANDEX:

https://telemost.yandex.ru/j/02219871422545

10.00-10.20 (9.00-9.20 Moscow local)

Invited

THz solid immersion microscopy: Recent achievements and challenges

Nikita V. Chernomyrdin (Prokhorov General Physics Institute of the Russian Academy of Sciences, Russia; Bauman Moscow State Technical University, Russia), Vladislav A. Zhelnov, Maksim Skorobogatiy, Kirill I. Zaytsev

10.20-10.40 (9.20-9.40 Moscow local)

Invited

Broadband (THz-IR) dielectric spectroscopy of astrophysical ice analogues: Recent achievements and challenges

Arsenii A. Gavdush (Prokhorov General Physics Institute of the Russian Academy of Sciences, Russia; Bauman Moscow State Technical University, Russia), Franciele Kruczkiewicz, Barbara M. Giuliano, Birgitta Müller, Gennady A. Komandin, Kirill I. Zaytsev, Aleksei V. Ivlev, Paola Caselli

10.40-10.55 (9.40-9.55 Moscow local)

A review of intraoperative THz neurodiagnosis technologies

Guzel R. Musina (Prokhorov General Physics Institute of the Russian Academy of Sciences, Russia), Nikita V. Chernomyrdin, Arsenii A. Gavdush, Irina N. Dolganova, Anna S. Kucheryavenko, Pavel V. Nikitin, Anna I. Alekseeva, Gennady A. Komandin, Kirill I. Zaytsev, Valery V. Tuchin

10.55-11.10 (9.55-10.10 Moscow local)

Fingerprints of THz-wave scattering in biological tissues: Pilot theoretical and experimental studies

Anna S. Kucheryavenko (Prokhorov General Physics Institute of the Russian Academy of Sciences, Russia; Institute of Solid State Physics of the Russian Academy of Sciences, Russia), Guzel R. Musina, Nikita V. Chernomyrdin, Arsen K. Zotov, Vladimir M. Masalov, Irina N. Dolganova, Kirill I. Zaytsev

11.10-11.25 (10.10-10.25 Moscow local)

Boosting the THz solid immersion microscopy performance using high-refractive index rutile (TiO2) lens

Vladislav A. Zhelnov (Prokhorov General Physics Institute of the Russian Academy of Sciences, Russia; Bauman Moscow State Technical University, Russia), Nikita V. Chernomyrdin, Anna S. Kucheryavenko, Gleb M. Katyba, Maksim Skorobogatiy, Kirill I. Zaytsev

11.25-11.40 (10.25-10.40 Moscow local)

Boosting the THz solid immersion microscopy performance using high-refractive index rutile (TiO2) lens

Vladislav E. Ulitko (Institute of Solid State Physics of RAS, Russia), Gleb M. Katyba, Gennady A. Komandin, Igor E. Spector, Gennadi A. Emelchenko, Vladimir N. Kurlov, Vladimir M. Masalov, Kirill I. Zaytsev

11.40-11.55 (10.40-10.55 Moscow local)

Investigation of stretchable carbon nanotube films under under ultra-fast pump-probe spectroscopy

M. Paukov (Moscow Institute of Physics and Technology (National Research University), Russia), A. Goldt, A. Nasibulin, James Lloyd-Hughes, A. Arsenin, V. Volkov, M. Burdanova

11.55-12.10 (10.55-11.10 Moscow local)

Artificially-strained photoconductive heterostructure for efficient THz-waves detection

Denis V. Lavrukhin (Institute of Ultra High Frequency Semiconductor Electronics of the Russian Academy of Sciences, Russia), Alexander E. Yachmenev, Yurii G. Goncharov, Kirill I. Zaytsev, Rustam A. Khabibullin, Dmitry S. Ponomarev

Conference on
Advanced Materials for Optics &Biophotonics V

Conference Chair: **Vladimir N. Kurlov**, ISSP RAS (Russia); **Mikhail S. Kovalev**, Lebedev Physical Institute RAS, (Russia); **Irina N. Dolganova**, ISSP RAS (Russia); **Kirill I. Zaytsev**, Prokhorov GPI RAS

Secretary: Gleb M. Katyba, ISSP RAS (Russia), E-mail: katyba_gm@issp.ac.ru

Program Committee: **Nikita V. Chernomyrdin**, Prokhorov General Physics Institute of the RAS (Russia); Alexei K. Fedorov, Russian Quantum Center (Russia); **Arseniy A. Gavdush**, Prokhorov General Physics Institute of RAS; Bauman Moscow State Technical University (Russia); **Pavel A. Karalkin**, Institute for Cluster Oncology, SechenovUnviersity (Russia); **Rustam A. Khabibullin**, Institute of Ultra High Frequency Semiconductor Electronics of RAS (Russia); **Sergey I. Kudryashov**, Lebedev Physical Institute of RAS (Russia); **Sergey V. Kuznetsov**, Prokhorov General Physics Institute of RAS (Russia); **Gennady A. Komandin**, Prokhorov General Physics Institute of RAS (Russia); **Dmitry S. Ponomarev**, Institute of Ultra High Frequency Semiconductor Electronics of RAS (Russian); **Igor E. Spector**, Prokhorov General Physics Institute of RAS (Russia); **Stanislav O. Yurchenko**, Bauman Moscow State Technical University (Russia)

September 29
TELEMOST.YANDEX:
https://telemost.yandex.ru/j/04623800098707

14.30-14.50 (13.30-13.50 Moscow local)
Invited
Topological darkness in van der Waals materials
Georgy Ermolaev (Center of Photonics and 2D Materials, Moscow Institute of Physics and Technology, Dolgoprudny, Russia), Kirill Voronin, Denis Baranov, Gleb Tselikov, Dmitry Yakubovsky, Sergey Novikov, Andrey Vyshnevyy, Arslan Mazitov, Ivan Kruglov, Aleksey Arsenin, Valentyn Volkov

14.50-15.10 (13.50-14.10 Moscow local)
Invited
Broadband Optical and Terahertz Properties of Atomically Thin 1D van der Waals Heterostructures
Maria Burdanova, (Center of Photonics and 2D Materials, Moscow Institute of Physics and Technology, Dolgoprudny, Russia)

15.10-15.30 (14.10-14.30 Moscow local)
Internet Invited
Superresolution imaging based on high-refractive-index optical fiber bundles
Gleb Katyba, (Institute of Solid State Physics Russian Academy of Sciences (ISSP RAS), Russia), M. Skorobogatiy, N.V. Chernomyrdin, A.N. Perov, I.N. Dolganova, D.G. Melikyants, K. I. Zaytsev and V. N. Kurlov

15.30-15.50 (14.30-14.50 Moscow local)
Internet Invited
Anomalous optical response of graphene on hexagonal boron nitride substrates Davit Ghazaryan, (Center for Photonics and 2D Materials, Moscow Institute of Physics and Technology), A. N. Toksumakov, G. A. Ermolaev, M. K. Tatmyshevskiy, Yu. A. Klishin, A. S. Slavich, I. V. Begichev, D. Stosic, D. I. Yakubovsky, D. G. Kvashnin, A. A. Vyshnevyy, A. V. Arsenin, V. S. Volkov

15.50-16.05 (14.50-15.05 Moscow local)
Control of the ice ball formation during tissue cryosurgery using sapphire shaped crystals
Arsen Zotov (Institute of Solid State Physics of the RAS, Bauman Moscow State Technical University), Dolganova I.N., Shikunova I.A. and Kurlov V.N.

16.05-16.20 (15.05-15.20 Moscow local)
The influence of pH on the photoluminescence of carbon dots with different surface functionalization
Maria Khmeleva, (Lomonosov Moscow State University, Russia), K.A. Laptinskiy, T.A. Dolenko

16.20-16.35 (15.20-15.35 Moscow local) – coffee break

JOINT INTERNET POSTER SESSION

Advanced Materials for Optics and Biophotonics V

Investigation of the composition, structure and hardness of titanium after induction nitriding Pavel Palkanov (Yuri Gagarin State Technical University of Saratov, Saratov, Russia), Vladimir A. Koshuro, Aleksandr A. Fomin

Workshop on Medical Applications of Laser Molecular Imaging and Machine Learning II

Co-chairs: **Igor K. Lednev**, University at Albany, USA; Tomsk State University, Russian Federation, **Yury V. Kistenev**, Tomsk State University, Russian Federation, **Walter Blondel**, Université de Lorraine, France

Secretary: **Sergey M. Zaytsev**, Saratov State University, Russian Federation

International Program Committee: Arnaud Coussiet, Université du Littoral Côte d'Opale, France, **Vladimir L. Vaks**, Institute of Applied Physics of RAS, Nizhny Novgorod, Russian Federation, **Olga P. Cherkasova**, Institute of Laser Physics of SB of RAS, Russian Federation, **Denis A. Vrazhnov**, Tomsk State University, Russian Federation, **Alexey V. Borisov**, Tomsk State University, Russian Federation

September 28, Wednesday
ON-LINE JOINT INVITED LECTURE/ORAL SESSION
MACHINE LEARNING I
(On-line)
Microsoft Teams link:
https://teams.microsoft.com/l/meetup-join/19:GuDbade7SuWBI42V9R0XdTRwVwV3SXluUJXENfgwJbE1@thread.tacv2/1663072308697?context=%7B%22Tid%22:%22158716cf-46b9-48ca-8c49-c7bb67e575f3%22,%22Oid%22:%226d160075-9e77-4a77-bd00-9a335195c879%22%7D

Chair: Yuri Kistenev
Moderator: Sergey Zaytsev

15.00-15.20 (São Paulo time 8.00-8.20)
Invited
Disease Diagnosis using multimodal FTIR spectroscopy
Denise M. Zezell[1]; [1]Center for Lasers and Applications, Nuclear and Energy Research Institute IPEN-CNEN, São Paulo-SP, Brazil

15.20-15.40 (Tomsk time 18.20-18.40)
Super-resolution reconstruction of noisy gas-mixture absorption spectra using deep learning
Yuri. V. Kistenev[1], Viktor. E. Skiba[1], Vladimir V. Prischepa[1], Denis A. Vrazhnov[1], Alexey V. Borisov[1]; [1]Tomsk State University, Tomsk, Russia

15.40-16.00 (Manipal time 17.10-17.30)
Machine learning aided classification and grading of biopsy sample
Sindhoora K. M.[1], Spandana K. U.[1], Raghavendra U.[2], Sharada Rai[3], K. K. Mahato[1], Nirmal Mazumder[1]; [1]Department of Biophysics, Manipal School of Life Sciences, Manipal Academy of Higher Education, Manipal, India, [2]Department of Instrumentation and Control Engineering, Manipal Institute of Technology, Manipal Academy of Higher Education, Manipal, Karnataka, India, [3]Department of Pathology, Kasturba Medical College, Mangalore, Karnataka, India

16.00-16.20 (Paris time 14.00-14.20)
Diagnosis of benign and precancerous skin conditions using bimodal spectroscopy, machine learning and Data Fusion methods
Valentin Kupriyanov[1,2], Walter Blondel[1], Christian Daul[1], Marine Amouroux[1], Yury Kistenev[2]; [1]The Research Center for Automatic Control (CRAN), University of Lorraine, Nancy, France, [2]Laboratory of Laser Molecular Imaging and Machine Learning, Tomsk State University, Tomsk, Russia

16.20-16.40 (Tomsk time 19.20-19.40)
Analysis of mouse blood serum in the dynamics of U87 glioblastoma by Terahertz spectroscopy and Machine learning
Denis Vrazhnov[1,2], Anastasia Knyazkova[1,2], Maria Konnikova[3,4], Yury Kistenev[1,2], Alexander Shkurinov[3,4], Olga Cherkasova[4,5,6]; [1]Laboratory of Biophotonics, Tomsk State University, Tomsk, Russia, [2]V.E. Zuev Institute of Atmospheric Optics SB RAS, Tomsk, Russia, [3]Faculty of Physics, Lomonosov Moscow State University, Moscow, Russia, [4]Institute on Laser and Information Technologies, Branch of the Federal Scientific Research Centre "Crystallography and Photonics" of RAS, Shatura, Russia, [5]Institute of Laser Physics, Siberian Branch of the RAS, Novosibirsk, Russia, [6]Novosibirsk State Technical University, 630073 Novosibirsk, Russia

September 29, Thursday
JOINT INVITED LECTURE/ORAL SESSION
MACHINE LEARNING II
(Building 9, Conference Hall)
Chair: Yuri Kistenev

10.00-10.20
Invited
Wide-band laser photo-acoustic spectroscopy and machine learning for breath air analysis
Yury V. Kistenev[1], Alexey V. Borisov[1], Vladimir V.Prishepa[1], Igor K. Lednev[2], Han Jin[3,4]; [1]Tomsk State University, Tomsk 634050, Russian Federation, [2]University at Albany, SUNY, Albany, NY 12222, USA, [3]Institute of Micro-Nano Science and Technology, School of Electronic Information and Electrical Engineering, Shanghai Jiao Tong University, Shanghai 200240, P. R. China, [4]National Engineering Research Center for Nanotechnology, Shanghai, 200241, P. R. China

10.20-10.40
Deep learning for human breath research using infrared quantum cascade laser spectroscopy
Igor L. Fufurin[1], Pavel V. Berezhanskiy[2], Igor S. Golyak[1], Dmitriy R. Anfimov[1], Anastasiya V. Scherbakova[1], Pavel P. Demkin[1], Olga A. Nebritova[1], Andrey N. Morozov[1]; [1]Bauman Moscow State Technical University, Moscow, Russia, [2]Morozov Children's Clinical Hospital, State Budgetary Healthcare Institution, Moscow Healthcare Pulmonology Department, Moscow, Russia

10.40-11.00
Investigation of medicine quality by Raman spectroscopy and machine learning methods
Igor S. Golyak[1], Igor L. Fufurin[1], Dmitriy R. Anfimov[1], Anastasiya V. Scherbakova[1], Andrey Morozov[1]; [1]Bauman Moscow State University

POSTER SESSION
MACHINE LEARNING III
Chair (ML): Sergey Zaytsev

18.00-20.00

ML1. **Hybrid protein-polymer shelled microbubbles based on albumin and N-vinyl-2-pyrrolidone copolymer as advanced ultrasound contrast agents** Tatyana M. Estifeeva[1], Roman A. Barmin[2], Polina G. Rudakovskaya[2], Anna M. Nechaeva[1], Anna L. Luss[1], Yaroslav O. Mezhuev[1], Vasiliy S. Chernyshev[2], Mikhail I. Shtilman[1], Dmitry A. Gorin[2]; [1]Department of Biomaterials, Dmitry Mendeleev University of Chemical Technology of Russia, Miusskaya sq. 9, 125047 Moscow, Russia, [2]Center for Photonic Science and Engineering, Skolkovo Institute of Science and Technology, Nobel str. 3, 121205 Moscow, Russia

ML2. **Statistical approaches for Raman spectra classifications for patients with cardiovascular deceases** Andrey Y. Zyubin[1], Yana A. Bychkova[1], Ilia G. Samusev[1]; [1]Immanuel Kant Baltic Federal University, Kaliningrad, Russia

ML3. **Carbon-based optical multimodal nanosensor of heavy metal ions in liquid media** L.S. Utegenova, O.E. Sarmanova, K.A. Laptinskiy, S.A. Burikov, T.A. Dolenko; Lomonosov Moscow State University, Department of Physics, Moscow, Russia

ML4. **Biodistribution of albumin microbubbles functionalized with Photosens photodynamic dye** Daria A. Terentyeva[1,2], Polina G. Rudakovskaya[2], Roman A. Barmin[2], Olga A. Sindeeva[2,3], Olga I. Gusliakova[3], Dmitry A. Gorin[2,3]; [1]D. I. Mendeleev University of Chemical Technology of Russia, Moscow, Russia, [2]Skolkovo Institute of Science and Technology, Moscow, Russia, [3]Saratov State University, Saratov, Russia

ML5. **Dermatoscopic image classification using the neural network model** V. A. Derugina, I. A. Matveeva, I. A. Bratchenko; Samara National Research University

ML6. **Distinguishing skin neoplasms using the multivariate curve resolution analysis of Raman spectra** Irina A. Matveeva[1], Ivan A. Bratchenko[1]; [1] Samara National Research University, Sarama, Russia

INTERNET POSTERS

1. **The effect of photodynamic therapy on wound healing in diabetes using Raman Spectroscopy in vivo** H. Zuhayri, A. A. Samarinova, D. A. Lopez Guardado, N. A. Krivova, Yu. V. Kistenev; National Research Tomsk State University, Tomsk, Russia

2.

Conference on Endogenous Biophotonics: Ultra-Weak Luminescence From Biological Systems (dedicated to the centenary of A.G. Gurwitsch's discovery)

Co-chairs: **Ilya V. Volodyaev,** Moscow State University, European Medical Center, **Elena V. Naumova**, Rzhanov Institute of Semiconductor Physics, Siberian Branch of Russian Academy of Sciences

International Program Committee: Yury A. Vladimirov, Moscow State University (Russia), **Alexander A. Krasnovsky,** Federal Research Center of Biotechnology, A.N. Bach Institute of Biochemistry, RAS (Russia), **Vladimir L. Voeikov,** Moscow State University (Russia), **Cristiano de Mello Gallep**, University of Campinas (Brazil), **Ilya V. Volodyaev,** Moscow State University (Russia); European Medical Center (Russia), **Elena V. Naumova**, Rzhanov Institute of Semiconductor Physics SB RAS (Russia)

September 28, Wednesday

ON-LINE INVITED LECTRURE/ORAL SESSION
ENDOGENOUS BIOPHOTONICS: ULTRA-WEAK LUMINESCENCE FROM BIOLOGICAL SYSTEMS (dedicated to the centenary of A.G. Gurwitsch's discovery)

Zoom link:
https://us06web.zoom.us/j/9869890181
ID 986 989 0181

Co-chairs: **Ilya V. Volodyaev**, Moscow State University, European Medical Center, Russia, **Elena V. Naumova**, Rzhanov Institute of Semiconductor Physics*, Siberian* B*ranch of Russian Academy of Sciences*
Moderator: **Elena V. Naumova**, Rzhanov Institute of Semiconductor Physics*, Siberian* B*ranch of Russian Academy of Sciences*

13.00-13.30 Saratov time
12.00-12.30 Moscow time (local time of the speaker)

Introduction and Internet Report
Mitogentic effect and ultraweak photon emission: a brief history of the epoch
Ilya V. Volodyaev,[1] Elena V. Naumova,[2] [1]Faculty of Biology, Moscow State University, Moscow, Russia, [2]Rzhanov Institute of Semiconductor Physics, Siberian Branch of Russian Academy of Sciences, Novosibirsk, Russia

13.30-13.55 Saratov time
12.30-12.55 Moscow time (local time of the speaker)
Internet Invited

Chemiluminescence and photoluminescence of singlet oxygen dimers
Alexander A. Krasnovsky Jr., Federal Center for Biotechnology, Moscow, Russia

13.55-14.15 Saratov time
12.55-13.15 Moscow time (local time of the speaker)
Internet Invited
Chemiluminescence in studying the conventional and alternative nicotine-delivery tools
Nadezda G. Berdnikova,[1] Galina F. Fedorova,[2] Valerii A. Menshov,[2] Vladimir V. Naumov,[2] Aleksei V. Trofimov,[2] Yurii B. Tsaplev,[2] Rostislav F. Vasil'ev,[2] Timur L. Veprintsev,[2] Olga I. Yablonskaya, [2] [1]I.M. Sechenov First Moscow State Medical University, Moscow, Russia, [2]Emanuel Institute of Biochemical

Physics, Russian Academy of Sciences, Moscow, Russia

14.15-14.35 Saratov time
13.15-13.35 Moscow time (local time of the speaker)
Internet Invited
Enhancement of cytochrome c dependent lipid peroxidation in the presence of phosphatidic acid as a mechanism for triggering apo- and ferroptotic molecular processes
German O. Stepanov,[1] Vitaly V. Volkov,[1] Anna V. Blagova,[1] Sofia P. Konuhova,[1] Maxim Yu. Suchkov,[1] Yury A. Vladimirov,[1,2] Anatoly N. Osipov,[1] [1]Pirogov Russian National Research Medical University, Moscow, Russia, [2]Lomonosov Moscow State University, Moscow, Russia

14.35 -14.45 Saratov time
13.35-13.45 Moscow time
Coffee break

14.45-15.00 Saratov time
13.45-14.00 Moscow time (local time of the speaker)
Internet Report
Freshwater flatworms as a promising biological model for biophotonics
Kharlampy P. Tiras,[1,2] Kirill N. Novikov,[3] Vladimir L. Voeikov,[3] Vladimir V. Apyari,[4] Olga V. Burlakova,[3] Alexander N. Velikanov,[3] [1]Institute of Theoretical and Experimental Biophysics, RAS, Pushchino, [2]Pushchino State Institute of Natural Science, [3]Lomonosov Moscow State University, Faculty of Biology, [4]Lomonosov Moscow State University, Faculty of Chemistry

Internet Report
15.00-15.15 Saratov time
14.00-14.15 Moscow time (local time of the speaker)
Internet Report
On Circahoralian Periods Spectrum In Time Series Of Planarian Ultra-Weak Luminescence Fluctuations
Victor A. Panchelyuga,[1] Kharlampiy P. Tiras,[1] Mariya S. Panchelyuga,[1] Kirill N. Novikov,[2] [1]Institute of Theoretical and Experimental Biophysics RAS, Pushchino, Russia [2]Lomonosov Moscow State University, Biological Faculty, Moscow, Russia

Internet Report
15.15-15.30 Saratov time
14.15-14.30 Moscow time (local time of the speaker)
Internet Report
Induction of radiation hormesis with different kinds of ionizing and non- ionizing radiation in mice *in vivo*
Alsu R. Dyukina,[1] Svetlana I. Zaichkina,[1] Olga M. Rozanova,[1] Svetlana S .Sorokina,[1] Helena N. Smirnova,[1] Aleksandr E. Shemyakov,[1] Vladimir I Yusupov,[2] [1]Institute of Theoretical and Experimental Biophysics of RAS, Pushchino, Russia, [2]Institute of Phonon Technologies, FSRC "Crystallography and Photonics" of RAS, Troitsk, Moscow, Russia

Internet Report
15.30-15.50 Saratov time
14.30-14.50 Moscow time (local time of the speaker)
Internet Report
Bioluminescence stimulation by ionizing radiation
Sergey N. Mayburov, Lebedev institute of Physics, Moscow, Russia

15.50-16.10 Saratov time
14.50-15.10 Moscow time
8.50-9.10 Campinas time (local time of the speaker)
Internet Invited
Ultra-weak luminescence in seedlings: applications
Cristiano de Mello Gallep, FT UNICAMP, Brazil

16.10 -16.20 Saratov time
15.10-15.20 Moscow time
Coffee break

16.20-16.50 Saratov time
15.20-15.50 Moscow time (local time of the speaker)
Internet Invited
Photonic emission from blood: a signature of vital activity
Vladimir Voeikov, Kirill Novikov, Ekaterina Buravleva. Lomonosov Moscow State University, Faculty of Biology, Moscow, Russia

16.50-17.10 Saratov time
15.50-16.10 Moscow time (local time of the speaker)
Internet Invited
Lower vertebrate embryos as a model for studying wave communication of biological systems
Alexandr B. Burlakov, Olga V. Burlakova, Lomonosov State University, Faculty of Biology, Moscow, Russia

17.10-17.25 Saratov time
16.10-16.25 Moscow time

15.10-15.25 Basel time (local time of the speaker)
Internet Invited
More than mitogenetic
Daniel Fels, Independent Researcher, Switzerland

17.25-17.40 Saratov time
16.25-16.40 Moscow time
20.25-20.40 Novosibirsk time (local time of the speaker)
Internet Report
Medical aspects of UPE research in the middle ultraviolet range (mitogenetic radiation)
Elena V. Naumova,[1] Mayra V. Aristanbekova,[2] Ilya V. Volodyaev,[3] [1]Rzhanov Institute of Semiconductor Physics, Siberian Branch of Russian Academy of Sciences, Novosibirsk, Russia, [2]Saratov Regional Center for the Prevention and Control of AIDS, Saratov, Russia [3]Faculty of Biology, Moscow State University, Moscow, Russia

17.40-17.55 Saratov time
16.40-16.55 Moscow time
6.40-6.55 San Diego time (local time of the speaker)
Internet Report
Colocalization of repetitive proton wire patterns with transcription starts supports the DNA resonance hypothesis
Ivan Savelev,[1] Lev Shishkin,[1] Liliya Yulmetova,[1] Oksana Polesskaya,[2] Alexander Vetcher,[1,3,4] Richard Alan Miller,[5] Max Myakishev-Rempel,[1] [1]DNA Resonance Research Foundation, San Diego, CA, USA, [2]University of California, San Diego, USA, [3]Nanotechnology Scientific and Educational Center, Institute of Biochemical Technology and Nanotechnology, Peoples Friendship University of Russia, Moscow, Russian Federation, [4]Shishonin Complementary and Integrative Health Clinic, Moscow, Russian Federation, [5]OAK, Inc., Grants Pass, OR, USA

17.55 -18.10 Saratov time
17.55-17.10 Moscow time
Coffee break

18.10-19.00 Saratov time
17.10-18.00 Moscow time
Roundtable discussion
Mitogenetic radiation and related phenomena

INTERNET POSTER SESSION

INTERNET POSTER

1. **Electron-optical converters for ultra-weak fluorescence detection of biological objects: experience of scientific laboratory of functional electronics at Vyatka State University** Vladimir I. Zhavoronkov, Ivan O. Ryasik. Vyatka State University, Kirov
2.

26th International School for Junior Scientists and Students on Optics, Laser Physics & Biophotonics

Workshop on Modern Optics XXII

Lectures on Optics for University Students, Postgraduate Students and High School Students

Chair: **Georgy V. Simonenko**, Saratov State University

Secretary: **Ekaterina N. Lazareva**, Saratov State University, Tomsk State University

Moderator: **Isabella Serebryakova**,Saratov State University

International Program Committee: **Valery V. Tuchin**, **Vladimir P. Ryabukho**, **Vladimir L. Derbov**, **Alexander B. Pravdin**,**Boris A. Medvedev**, **Mikhail A. Starshov**, Saratov State University, **Alexander V. Priezzhev**, Moscow State University

September 29, Thursday

PUBLIC LECTURE SESSION MODERN OPTICS
(Building 3, Big Physical Hall)

Chairs: **Georgy V. Simonenko**, Saratov State University, **Anton Dyachenko**, Saratov State University, Boarding school 64

14.00-14.45

Wearable devices for the study of blood microcirculation in the human body: on Earth and in space
Dr. Sc. Andrey Dunaev
Leading Researcher of Research & Development Center of Biomedical Photonics, Orel State University, Orel, Russia

Workshop English as a Communicative Tool in the Scientific Community XXI

Co-chairs: **Svetlana V. Eremina,** Saratov State University (Russia)
Alexander B. Pravdin,Saratov State University (Russia)

Advising Chair: **Vladimir L. Derbov,** Saratov State University (Russia)

Secretary: **Kseniya O. Merkulova,** Saratov State University (Russia)

Program Committee: **Vladimir L. Derbov,** Saratov State University (Russia), **Igor V. Meglinski**, University of Oulu, (Finland); Saratov State University(Russia), **Valery V. Tuchin**, Saratov State University (Russia), **Dmitry A. Zimnyakov,** Saratov State Technical University (Russia)

September 29, Thursday

ROUND TABLE DICUSSION
(The venue will be announced)

11.00-13.00
Moderators: **Svetlana V. Eremina, Alexander B. Pravdin**, Saratov State University (Russia)

1. **Video Presentation as a Method of International Scientific Communication** *Keynote speakers:* Matvey I. Nikelshparg, Tatiana S. Bots, Saratov State University, Saratov, Russia
2. **Multilingual practices in scientific communication** *Keynote speaker:* Darya N. Tselovalnikova, Saratov State University, Saratov, Russia
3. **When You Are Eager (or Forced) to Prepare a Journal Paper on Nonlinear Dynamics** *Keynote speaker:* Tat'yana R. Bogatenko, Saratov State University, Saratov, Russia
4. **Integration of the laws of physics and English grammar** *Keynote speaker:* Arina O. Shelyugina, Saratov State University, Saratov, Russia
5. **Abstract Writing at English Lessons** *Keynote speakers:* Svetlana V. Eremina, Alexander B. Pravdin, Saratov State University, Saratov, Russia

Workshop on History, Methodology and Philosophy of the Optical Education XV

Workshop Chairs: **Boris A. Medvedev, Alexander A. Skaptsov**, Saratov State University, Russia
Secretary: **Alexey V. Markin**, Saratov State University, Russia

International Program Committee **Vladimir L. Derbov**, Saratov State University, Russia; **Alexander V. Priezzhev**, M.V. Lomonosov Moscow State University, Russia; **Alexander V. Gorokhov**, Samara State University, Russia; **Valery V. Tuchin**, Saratov State University, Russia; **Alex Vitkin**, University of Toronto, Canada

September 28, Wednesday

LECTURE/ORAL SESSION I
(Scientific Library Conf. Hall)
Co-chairs: **Boris A. Medvedev, Alexander A. Skaptsov**,
Saratov State University, Russia

14.30-14.45
Stochastic microstructure and coherence of light
Vladimir P. Ryabukho, Saratov State University, IPM&C RAS, Saratov, Russia

14.45-15.00
Boris V. Gnedenko's Scientific School: Principles of Activity
Dmitry B. Gnedenko[1], Valery M. Anikin[2]
[1]Moscow State University, Moscow, Russia
[2]Saratov State University, Saratov, Russia

15.00-15.10
Étienne Malus, Louis Pasteur & Eiffel Tower
Michail A. Starshov, Saratov State University, Saratov, Russia

15.10-15.20
Kitchen as "Locus Experimentum"
Michail A. Starshov, Saratov State University, Saratov, Russia

15.20-15.30
A submarine and a ghost in the theater
Nikolai S. Lyubimov[1], Mikhail A. Starshov[2],
[1]The 7th grade ofthe Lyceum 37 in Saratov, Saratov,Russia
[2]Saratov State University, Saratov, Russia

15.30-15.40
On students' views of "Mechanics" physics practicum
Victoriya D. Philippova, Petr D. Baranovsky, Danila G. Murentsov, Sergey S. Viktorov, Petr E. Shlygin, Dmitry V. Churochkin, Svetlana V. Churochkina, Sergey B. Venig, Saratov State University, Saratov, Russia

15.40-15.50
Development of a master's program in the direction of preparation "analysis and synthesis of distributed networks of technical systems" in the conditions of transition to industry 4.0
I.V. Veshneva, Saratov State University, Saratov, Russia

15.50-16.00
On one possibility of calculating Fibonacci numbers by using the Binet formula
Boris L. Faifel, Yuri Gagarin State Technical University of Saratov, Saratov, Russia

16.00-16.30
Coffee break

16.30-16.40
The Many-Faced Gauss
Michael M. Stolnitz, Saratov State University, Saratov, Russia

16.40-16.50
Differential diagnosis of skin diseases on the example of lichen and eczema by means of mathematical methods of pattern recognition.
Kirill D. Kovardakov, 1,1, Julia A. Brodskaya, Saratov State University, Saratov, Russia

16.50-17.00
Study of carotenoids in the gall forming host and its ecto and endoparasitoids
Matvey I. Nikekshparg[1], Evelina I. Nikelshparg[2], Daniil N. Bratashov[1], Vasily V.Anikin[1],
[1]Saratov State University, Saratov, Russia
[2]Lomonosov Moscow State University, Moscow, Russia

17.00-17.10
The history of cancer hyperthermia development
Vadim D. Genin[1,2];
[1]Saratov State University, Saratov, Russia;
[2]Tomsk State University, Tomsk, Russia.

17.10-17.20

Challenges and prospects of combined laser therapy in oncology
Alla Bucharskaya[1,2,4], Galina Maslyakova[1,2], Nikita Navolokin[1,2], Georgy Terentyuk[2], Nikolai Khlebtsov[2,3], Boris Khlebtsov[3], Vadim Genin[2,4], Elina Genina[2,4], Valery Tuchin[2]
[1]Saratov State Medical University, Saratov, Russia
[2]Saratov State University, Saratov, Russia,
[3]Institute of Biochemistry and Physiology of Plants and Microorganisms of Federal Research Center "Saratov Scientific Center of the Russian Academy of Sciences", Saratov, Russia
[4]National Research Tomsk State University, Tomsk, Russia

17.20-17.30
Optical methods for the diagnosis of primary multiple malignant neoplasms
Artyom M. Mylnikov[1,2], Dmitry A. Mudrak[1], Nikita Navolokin[1,2], Alla B. Bucharskaya[1,2,3], Galina N. Maslyakova[1,2]
[1]Saratov State Medical University, Saratov, Russia
[2]Saratov State University, Saratov, Russia
[3]National Research Tomsk State University, Tomsk, Russia

17.30-17.40
Hydrothermal synthesis of water-soluble luminescent gold nanoclusters
Kseniya R. Kalishina, Alina A. Kokorina, Irina Y. Goryacheva, Saratov State University, Saratov, Russia

17.40-17.50
Synthesis of quantum dots based on solid solutions: mistakes and the right way
D.A. Kornilov, D.D. Drozd, O.A. Goryacheva, Saratov State University, Saratov, Russia

17.50-18.00
Synthesis and analysis of a mathematical model of noise of the output signal of a fiber-optic gyroscope with a noise compensation system
Dmitriy M. Spiridonov[1,2], Alexander A. Ignatiev[1], Dmitriy V. Obukhovich[2]
[1]Saratov State University, Saratov, Russia
[2]LLC RPC "Optolink", Russia

September 29, Thursday

ROUND TABLE
Man and light in natural and art treatment of the Universe
(Scientific Library Conf. Hall)

Moderator: **Boris A. Medvedev**, Saratov State University, Russia

Panel members:
Valery V. Tuchin[a], Vladimir P. Ryabukho[a], Vladimir L. Derbov[a], Victor V. Rozen[a], Oleg V. Shimelfenig[a], A. G. Rokakh[a], Lev M. Babkov[a], Vyacheslav I. Kochubey[a], A. V. Gorokhov[b], Dmitry A. Zimnyakov[c], Leonid A. Melnikov[c], Dmitry V. Mikhel[c], Julia M. Duplinskay[c], Evgeniya V. Listvina[a], Oleg M. Parshkov[c], A. V. Priezzhev[d],
[a]Saratov State University, Saratov, Russia
[b]Samara University, Samara, Russia
[c]Yuri Gagarin State Technical University of Saratov, Russia
[d]M.V. Lomonosov Moscow State University, Moscow, Russia

15.00-15.15
Science and the country in the mirror of a hundred years of history of one department
V. V. Sorokin. Saratov State University, Saratov, Russia

15.15-15.30
A.A. Michelson: Half a century watch
A. G. Rokakh., Saratov State University, Saratov, Russia

15.30-15.45
Fourier interferometer and spectrometry
A. Rokakh, Saratov State University, Saratov, Russia

15.45-16.00
How to build students' motivation to learn
Konstantin A. Grebenyuk, Saratov State University, Saratov, Russia

16.00-16.15
New information of DNA barcoding of the fossil remains of the species genus Homo
Vasily V. Anikin, Saratov State University, Saratov, Russia

16.15-16.30
The thread of knowledge does not broken in time…
Boris A. Medvedev, Saratov State University, Saratov, Russia

16.30-16.40
Uncertainty principle in the knowledge of nature: philosophical, physical and logical-mathematical aspects
Boris A. Medvedev, Yulia A. Brodskaya, Saratov State University, Saratov, Russia

16.40-16.50
Is a synthesis of science and religion possible?
Oleg V. Schimelfenig, Saratov State University, Saratov, Russia

16.50-17.00
The specifics of scientific knowledge: common misconceptions
Victor V. Rozen, Saratov State University, Saratov, Russia

17.00-17.10
Models of the mathematical theory of pattern recognition as a text attribution tool on the example of the works of Mikhail Sholokhov
Julia A. Brodskaya, Saratov State Univercity, Saratov, Russia

17.40-17.50
Structures and Patterns: Perceptual Bias Possibilities
Yuliya M. Duplinskya, Yuri Gagarin State Technical University of Saratov, Saratov, Russia

17.50-18.00
The dichotomy of metaphysics and physics: a modern interpretation
Natal'ya V. Dovgalenko, Yuri Gagarin State Technical University of Saratov, Saratov, Russia

JOINT POSTER/INTERNET SESSION AND INTERNET DISCUSSION

(On-line)

Chair (H): **A. Markin**, Saratov State University, Saratov, Russia

1H. Riemann Hypothesis, Hypercomputing and Physics of Black Holes
Yuriy N. Zayko, Russian Presidential Academy of National Economy and Public Administration, Stolypin Volga Region Institute, Saratov, Russia

2H. Studies of the dynamics of the optical properties of apples of different varieties during their storage in the refrigerator
Lidiia Timchenko[1], Irina Kurbatova[1], Samara, Lyceum "Technical" Elena Timchenko[2]
[1]Lyceum "Technical", Samara, Russia
[2]Samara University, Samara, Russia

3H. Studies of the optical properties of peas under different growing conditions
Alisa Timchenko[1], Olga Nikulkina[1], Elena Timchenko[2], Samara, Samara University
[1]Lyceum "Technical", Samara, Russia
[2]Samara University, Samara, Russia

4H. Quantum Optics and Dynamical Group Theory
Alexander V. Gorokhov, Samara University, Samara, Russia

5H. Group interaction technology in distance learning
Larisa A. Kudryavtseva, Sergo Ordzhonikidze Russian State University for Geological Prospecting, Moscow, Russia