INTERNATIONAL SYMPOSIUM FLAMN-19

FUNDAMENTALS OF LASER ASSISTED MICRO- & NANOTECHNOLOGIES

DEDICATED TO THE 50TH ANNIVERSARY OF THE FIRST CONFERENCE
“NON-RESONANT LASER-MATTER INTERACTION”

Symposium Program

JUNE 30 - JULY 4, 2019
ST. PETERSBURG, RUSSIA
INTERNATIONAL SYMPOSIUM
FUNDAMENTALS OF LASER ASSISTED MICRO– & NANOTECHNOLOGIES (FLAMN-19)

JUNE 30 - JULY 4, 2019
ST. PETERSBURG, RUSSIA

- SECTION “LASER-MATTER INTERACTION”
- SECTION “LASER-ASSISTED MICRO- AND NANOTECHNOLOGIES”

SPECIAL SCIENTIFIC EVENTS:
- CONFERENCE FOR YOUNG SCIENTISTS, ENGINEERS AND STUDENTS
  “INTENSIVE LASER ACTIONS AND ITS APPLICATIONS”
- CONFERENCE “INTENSIVE LASER ACTIONS FOR BIOLOGY & MEDICINE”
- WORKSHOP “PHOTOPHYSICS OF NANO-SCALE SYSTEMS”
- WORKSHOP “LASER TECHNOLOGIES FOR NANOPHOTONICS”
- WORKSHOP “ULTRAFAST LASER-MATTER INTERACTION & TECHNOLOGIES”
- WORKSHOP “LASER SURFACE MICROSTRUCTURING”
- WORKSHOP “LASERS FOR SURFACES CLEANING, CHARACTERISATION AND ARTIFACTS RESTORATION”
- WORKSHOP “INDUSTRIAL APPLICATION OF LASERS”
ORGANIZERS

ITMO UNIVERSITY, ST. PETERSBURG, RUSSIA,

GPI RAS, MOSCOW, RUSSIA.

IN COOPERATION WITH

THE STATE RUSSIAN MUSEUM,

LASER CENTER LLC,

LASER ASSOCIATION.

WITH THE FINANCIAL SUPPORTED OF THE
RUSSIAN FOUNDATION FOR BASIC
RESEARCH, PROJECT # 19-02-20018

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LAZER LLC
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GPI RAS, Moscow

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Vadim Veiko
ITMO University, St. Petersburg,

Vitaly Konov
GPI RAS, Moscow

SCIENTIFIC SECRETARY

G. Odintsova, ITMO University, St. Petersburg

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A. Rode, ANU, Australia

S. Garnov, GPI RAS, Russia

A. Semerok, CEA Saclay, France

B. Chichkov, LUH & Laser Zentrum, Germany

M. J. Soileau, CREOL, USA

Lu Yongfeng, Nebraska University, USA

K. Sugioka, RIKEN, Japan

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Grigoryants A., Russia

Luches A., Italy

Zheltikov A., Russia

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Miyamoto I., Japan
# INTERNATIONAL PROGRAM COMMITTEE

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<td>Zhu Xiao</td>
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# ORGANIZING COMMITTEE

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<tr>
<td>Yakovlev E.</td>
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CONFERENCES & WORKSHOPS CO-CHAIRS

Conference for young scientists, engineers and students  
“Intensive Laser Actions and its Applications”  
T. Vartanyan, ITMO University, St. Petersburg, Russia,  
M. Sergeev, ITMO University, St. Petersburg, Russia.

Conference “Intensive Laser Actions for Biology & Medicine”  
A. Belikov, ITMO University, St. Petersburg, Russia,  
V. Tuchin, Saratov State University, Saratov, Russia.

Workshop “Photophysics of Nano-scale Systems”  
T. Vartanyan, ITMO University, St. Petersburg, Russia,  
N. Destouches, Univ Lyon, UJM - Saint-Etienne, Hubert Curien Lab., France.

Workshop “Laser Technologies for Nanophotonics”  
S. Makarov, ITMO University, St. Petersburg, Russia,  
B. Chichkov, Institut fur Quantenoptik, Leibniz Universitat Hannover, Germany.

Workshop “Ultrafast Laser-Matter Interaction & Technologies”  
D. Ivanov, University of Kassel, Kassel, Germany,  
A. Rode, The Australian National University, Canberra, Australia,  
D. Polyakov, ITMO University, St. Petersburg, Russia.

Workshop “Laser Surface Microstructuring”  
T. Itina, Univ Lyon, UJM - Saint-Etienne, Hubert Curien Lab., Saint-Etienne, France,  
S. Klimentov, National Research Nuclear University MEPhl, Moscow, Russia,  
G. Odintsova, ITMO University, St. Petersburg, Russia.

Workshop “Lasers for Surfaces Cleaning, Characterisation and Artifacts Restoration”  
V. Detalle, Centre de Recherche et de Restauration des Musées de France,  
Palais du Louvre, Paris, France,  
A. Semerok, CEA, DEN, SEARS, Université Paris-Saclay, France,  
S. Sirro, The State Russian Museum, St. Petersburg. Russia,  
E. Shahno, ITMO University, St. Petersburg, Russia.

Workshop “Industrial Application of Lasers”  
S.Gorny, Laser Center LLC, St. Petersburg, Russia.
GENERAL INFORMATION

Symposium venue
The FLAMN-19 Symposium will be held from June 30 till July 4, 2019, at St. Petersburg:

Opening ceremony and Plenary Session 1
at House of Scientists, 26 Palace Embankment

Regular Sessions
at ITMO University, 14-16 Birzhevaya line

Workshop “Lasers for Surfaces Cleaning, Characterisation and Artifacts Restoration”
at the State Russian Museum, 8 Inzhenernaya street

ARRIVAL & REGISTRATION
Members of the Organizing Committee will meet the foreign participants at Pulkovo airport on June 30 & July 1. Transportation for foreign participants will be provided from the airport and railway stations to the hotels/place of registration.

The Registration Desk will be open for participants at

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Time</th>
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<tr>
<td>House of Scientists</td>
<td>June 30</td>
<td>15:00 – 19:00</td>
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<tr>
<td>House of Scientists</td>
<td>July 1</td>
<td>9:00 – 11:00</td>
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<td>ITMO University</td>
<td>July 1</td>
<td>15:00 – 17:00</td>
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<tr>
<td>ITMO University</td>
<td>July 2-4</td>
<td>9:00 – 15:00</td>
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</table>

The hard copies of Symposium Program, Electronic Book of Abstracts and other information will be given at the Registration Desk.

CONTACTS

ITMO University

E–mails: flamn_org@corp.ifmo.ru / flamn_prog@corp.ifmo.ru
Web site: https://flamn.ifmo.ru

Scientific Secretary: +7 (911) 085-90-39 (Galina Odintsova)
TECHNICAL SESSIONS
The Symposium sessions will include oral and poster presentations.

ORAL PRESENTATION
The time for plenary presentation is 40 min, for invited presentation - 30 min,
for oral presentation - 20 min including questions and
discussion. Media projectors will be available.

POSTER PRESENTATION
During poster sessions presenters remain in the vicinity of their posters
for informal discussion and explanations. The maximum poster size is A1 (vertical
0.9 m, horizontal 0.6 m). Tape to stick the posters will be provided by organizers.

LANGUAGE
The official language of the symposium is English.

TIME
Moscow time is used throughout the program. Moscow time is 3 hours ahead of
Greenwich time and 2 hours ahead of central European time.

WEATHER
The weather in July usually unstable in Saint-Petersburg with the
temperature in the range of +15°C...+25°C. Rain is possible.

SOCIAL PROGRAM
A number of excursions is planned.
The complete information concerning the social program
will be available at the Symposium website.
PROCEEDINGS

Selected papers of the Symposium will be published in scientific journals:

OPTICAL AND QUANTUM ELECTRONICS
(Springer journal)

КВАНТОВАЯ ЭЛЕКТРОНИКА (RU) / QUANTUM ELECTRONICS (ENG)

JOURNAL OF BIOMEDICAL PHOTONICS & ENGINEERING

ОПТИЧЕСКИЙ ЖУРНАЛ (RU) / JOURNAL OF OPTICAL TECHNOLOGY (ENG)
SJR (2017): 0.234; WOS (2017): 0.392; РИНЦ (2017): 0.699.

НАУЧНО-ТЕХНИЧЕСКИЙ ВЕСТНИК ИНФОРМАЦИОННЫХ ТЕХНОЛОГИЙ,
МЕХАНИКИ И ОПТИКИ (RU) / SCIENTIFIC AND TECHNICAL JOURNAL OF
INFORMATION TECHNOLOGIES, MECHANICS AND OPTICS (ENG)
РИНЦ (2017): 0.479.

НАУЧНО-ТЕХНИЧЕСКИЙ ЖУРНАЛ «ФОТОНИКА» (RU) /
JOURNAL PHOTONICS (ENG)
РИНЦ (2017): 0.345.

YOU CAN FIND MORE DETAILED INFORMATION AT FLAMN WEBSITE
IN PAPER SUBMISSION SECTION
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<th>Time</th>
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<th>Mon, July 1</th>
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<td>LT</td>
<td>W03, W04</td>
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<td>10:00</td>
<td>Opening ceremony of Symposium (House of Scientists)</td>
<td>W05, W06</td>
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<td>Plenary session (House of Scientists)</td>
<td>Coffee break</td>
<td>W07 (The State Russian Museum)</td>
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**ALL MEETINGS, WHERE THE VENUE IS NOT SPECIFICALLY INDICATED IN THE TABLE, ARE HELD IN THE BUILDING OF ITMO UNIVERSITY AT THE ADDRESS: 14-16 BIRZHEVAYA LINE**
## DAILY SYMPOSIUM SCHEDULE

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<td>Farewell party</td>
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### Color Codes:
- **LMI** - LASER-MATTER INTERACTION
- **LT** - LASER-ASSISTED MICRO-AND NANOTECHNOLOGIES
- **C01** - CONFERENCE FOR YOUNG SCIENTISTS, ENGINEERS, AND STUDENTS “INTENSIVE LASER ACTIONS AND APPLICATIONS” (POSTER SESSION)
- **C02** - CONFERENCE “INTENSIVE LASER ACTIONS FOR BIOLOGY AND MEDICINE”
- **W03** - WORKSHOP “PHOTOPHYSICS OF NANO-SCALE SYSTEMS”
- **W04** - WORKSHOP “LASER TECHNOLOGIES FOR NANOPHOTONICS”
- **W05** - WORKSHOP “ULTRAFAST LASER-MATTER INTERACTION & TECHNOLOGIES”
- **W06** - WORKSHOP “LASER SURFACE MICROSTRUCTURING”
- **W07** - WORKSHOP “LASERS FOR SURFACES CLEANING, CHARACTERISATION AND ARTIFACTS RESTORATION”
- **W08** - WORKSHOP “INDUSTRIAL APPLICATION OF LASERS”

**ALL MEETINGS, WHERE THE VENUE IS NOT SPECIFICALLY INDICATED IN THE TABLE, ARE HELD IN THE BUILDING OF ITMO UNIVERSITY AT THE ADDRESS: 14-16 BIRZHEVAYA LINE**
MONDAY,
JULY 1
PLENARY SESSION

HOUSE OF SCIENTISTS, 26 PALACE EMBANKMENT

10.00 – 10.30 OPENING CEREMONY OF SYMPOSIUM

10.30–13.50 PLENARY SESSION
(Joint session of FLAMN-19, C01, C02 and W07)

CHAIRMEN: V. Konov, B. Chichkov

10.30 PL-1 Laser printing of nanoparticles and living cells (INVITED)
B. Chichkov,
Institut fur Quantenoptik, Leibniz Universität Hannover, Germany

11.10 PL-2 Contribution of laser methods to the conservation and characterization -down to the nanoscale- of works of art (INVITED)
M. Menu\textsuperscript{1,2}, V. Detalle\textsuperscript{1,2}, T. Calligaro\textsuperscript{1,2},
X. Bai\textsuperscript{1}, M. Lopez\textsuperscript{1},
C. Koch- Dandolo\textsuperscript{1}
\textsuperscript{1}Centre de Recherche et de Restauration des Musées de France, Palais du Louvre, Paris, France
\textsuperscript{2}PSL Res Univ, Chim Paris Tech, CNRS, Inst Rech Chim Paris, France

COFFEE BREAK

12.30 PL-3 PDT and High-Power Laser – from Experiments to Clinical application (INVITED)
R. Sroka, A. Rühm, M. Eisel, H. Stepp
Laser-Forschungslabor, LIFE Center, University Hospital of Munich, Munich, Germany

13.10 PL-4 Femtosecond laser 3D processing for fabrication of functional micro and nanosystems (INVITED)
K Sugioka
Advanced Laser Processing Research Team, RIKEN Center for Advanced Photonics, Japan
16.00 – 17.30 SESSION LASER ASSISTED MICRO- AND NANOTECHNOLOGIES (LT)
(Joint session of LT and C01)

CHAIRMEN: M. Sentis, E. Avrutin

16.00 LT-1 Novel method for precise and productive CVD diamond surface microstructuring based on ultra-short pulsed laser processing (INVITED)

V.I. Konov¹, T.V. Kononenko¹, D.N. Sovyk¹, V.S. Pavelyev²,
B.A. Knyazev³, G.N. Kulipanov³

¹ General Physics Institute, Moscow, Russia
² Aerospace State University, Samara, Russia
³ Nuclear Research Institute, Novosibirsk, Russia

16.30 LT-2 Power limitations and some design ideas for high-power semiconductor lasers for laser material processing and LIDARs (INVITED)

E. Avrutin
Dept of Electronic Engineering, University of York, UK

17.00 LT-3 Frontiers in micro- and nano-domain engineering of nonlinear-optical ferroelectrics (INVITED)

V.Ya. Shur, A. R. Akhmatkhanov, A.A. Esin, M.A. Chuvakova,
E.A. Mingaliev, A.I. Lobov, M.S. Kosobokov

School of Natural Sciences and Mathematics, Ural Federal University, Ekaterinburg, Russia

COFFEE BREAK
18.00 – 20.00 SESSION LASER ASSISTED MICRO- AND NANOTECHNOLOGIES (LT)
(Joint session of LT and C01)
CHAIRMEN: A. Semerok, N. Bityurin

18.00 LT-4 **Dynamics of laser nanoprinting** (INVITED)
P. Delaporte, Q. Li, A. Murali, D. Grojo, A.-P. Alloncle
LP3 laboratory, CNRS, Aix-Marseille University, Marseille, France

18.30 LT-5 **Near-field laser ablation for surface nano-analysis: modeling and experiments** (INVITED)
A. Semerok¹, S. V. Fomichev¹², L. Douillard⁴, J. Simonnet¹
C. Jabbour¹, J.-L. Lacour¹, M. Tabarant¹, F. Chartier¹
¹Den-Service d’Etudes Analytiques et de Réactivité des Surfaces (SEARS), CEA, Université Paris-Saclay, Gif sur Yvette, France
²National Research Center “Kurchatov Institute”, Moscow, Russia
³Moscow Institute of Physics and Technology, Dolgoprudny, Moscow region, Russia
⁴SPEC, CNRS, CEA, Université Paris-Saclay, France

19.00 LT-6 **Advanced laser technologies for photonics applications: 2D/3D photonics materials micro & nanostructuring** (INVITED)
V. Veiko
ITMO University, St. Petersburg, Russia

19.30 LT-7 **Laser exfoliation to improve the uptake of foliar-applied agrochemicals in orange plants** (INVITED)
L. Ponce¹², E. Etxeberria¹, T. Flores¹², P. Gonzalez¹
¹University of Florida, Lake Alfred, Florida, USA
²ONTEKO LLC, Tampa, Florida, USA
16.00 – 17.30 SESSION LASER–MATTER INTERACTION (LMI)
(Joint session of LMI and C01)
CHAIRMEN: S. Arakelian, M. Garcia

16.00 LMI-1 Few-cycle laser damage on ZnSe surface (INVITED)
MJ Soileau, Yingjie Chai
CREOL, College of Optics and Photonics, University of Central Florida, Orlando, Florida, USA

16.30 LMI-2 Simulation of the structural response of nanostructures and proteins to femtosecond-laser- and microwave radiation (INVITED)
M. Garcia,
Institute of Physics, Universität Kassel and Center for Interdisciplinary Nanostructure Science and Technology, Kassel, Germany

17:00 LMI-3 Nanophysics in laser-induced cluster systems: topological quantum states in electrical conductivity and features of optical spectra. Theory and experiment for dimensional effects (INVITED)
Stoletovs Vladimir State University, Vladimir, Russia

COFFEE BREAK
LASER–MATTER INTERACTION
ITMO UNIVERSITY, 14-16 BIRZHEVAYA LINE

18.00–20.00  SESSION LASER–MATTER INTERACTION (LMI)
(Joint session of LMI and C01)
CHAIRMEN:    B. Rethfeld, N. Inogamov

18.00  LMI-4  Nanoparticle research and the chemistry in laser-induced
plasmas for space exploration and astrobiology (INVITED)
J. Laserna
University of Málaga (Spain)

18.30  LMI-5  Laser technologies: from physics of ablation to surface
nanostructuring, synthesis of colloids, and 3D printing (INVITED)
N. Inogamov¹,², V. Zhakhovsky²,¹, Yu. Petrov¹,³, V. Khokhlov¹
¹Landau Institute for Theoretical Physics, RAS, Chernogolovka,
Moscow Region, Russia
²Dukhov Research Institute of Automatics, Moscow, Russia
³Moscow Institute of Physics and Technology, Dolgoprudnyi,
Moscow region, Russia

19.00  LMI-6  Ultrafast laser-heating of solids: electron-lattice coupling effects
(INVITED)
B. Rethfeld, S. Weber
¹Department of Physics and OPTIMAS Research Center, TU
Kaiserslautern, Germany

19.30  LMI-7  Laser dielectric interaction: new insight from double pulse
experiments (INVITED)
S Guizard¹, A Bildé¹, A Mouskeftaras¹, S Klimentov²
¹Laboratoire des Solides Irradiés, Ecole Polytechnique, Palaiseau,
France
²General Physics Institute RAS, Moscow, Russia
16.00 – 17.40 ATOMS IN NANOWORLD
(Joint session of W03 and W04)
CHAIRMEN: T.A. Vartanyan

16.00 W03,04-1 Optical characterization of antirelaxation coatings for photonics applications
S. Gateva¹, S. Tsvetkov¹, G. Todorov¹, S. Cartaleva¹, T. Vartanyan²
¹Institute of Electronics, Bulgarian Academy of Sciences, Sofia, Bulgaria
²ITMO University, St. Petersburg, Russia

16.20 W03,04-2 High resolution laser spectroscopy of spatially restricted hot alkali atom and dimer vapor
P. Todorov¹, T. Vartanyan², D. Sarkisyan³, G. Pichler⁴, S. Cartaleva¹
¹Institute of Electronics, Bulgarian Academy of Sciences, Sofia, Bulgaria
²ITMO University, St. Petersburg Russia
³Institute for Physical Research, National Academy of Sciences of Ashtarak-2, Armenia
⁴Physics Department, Kuwait University, Safat, Kuwait

16.40 W03,04-3 Resonant reflection of the light from a thin layer of a gaseous medium
A.V. Ermolaev¹, T.A. Vartanyan¹
ITMO University, St. Petersburg, Russia

17.00 W03,04-4 Resonant interactions of alkali-metal atoms with gold plasmonic nanoparticles
F.O. Nigmatulin, T.A. Vartanyan
ITMO University, St. Petersburg, Russia

17.20 W03,04-5 Adsorption of potassium and rubidium atoms on sapphire and glass surfaces studied by laser induced desorption
M. Burkova, P. Petrov, T. Vartanyan
ITMO University, St. Petersburg, Russia

COFFEE BREAK
18.00 – 19.50  LASER ACTION ON MECHANICAL MOTION OF NANOOBJECTS
(Joint session of W03 and W04)
CHAIRMEN: V.I. Balykin

18.00  W03,04-6  Optical Manipulation with a Meta-Lens (INVITED)
                P. Ginzburg
                Electrical Engineering Department, Tel Aviv University, Tel Aviv, Israel

18.30  W03,04-7  Nano fingerprint: how to study and discriminate nanoparticles with laser light (INVITED)
                G. Ferrini
                Interdisciplinary Laboratories for Advanced Materials Physics, Department of Mathematics and Physics, Università Cattolica del Sacro Cuore, Italy

19.00  W03,04-8  Numerical research of the interaction gas-powder jets formed by coaxial nozzles for laser cladding
                D.V. Bedenko, O.B. Kovalev, D.V. Sergachev
                Siberian branch of RAS, Khrisitanovich institute of theoretical and applied mechanics, Novosibirsk, Russia
TUESDAY,
JULY 2
09.00 – 11.00  SESSION LASER ASSISTED MICRO- AND NANOTECHNOLOGIES (LT)
(Joint session of LT and C01)
CHAIRMEN: V. Temnov, Zhengyan Li

9.00  LT-8  The Tendency and Tasks of Laser micro- and accuracy processing in Wuhan Optics Valley of China (INVITED)
Xiao Zhu$^{1,2,3}$, Zhengyan Li$^{1,2,3}$, Xiahui Tang$^{1,2,3}$, Guangzhi Zhu$^{1,2,3}$
$^1$National Engineering Center for Laser Processing, Huazhong University of Science and Technology, Wuhan, Hubei, China
$^2$Wuhan Optics Valley of China Laser Association, Hubei, China
$^3$Hubei Laser Society, Wuhan, Hubei, China

9.30  LT-9  Ultrafast dynamics at fs-laser-excited magnetic meta-surfaces (INVITED)
V. Temnov, A. Alekhin
Institut des Molécules et Matériaux du Mans, Le Mans Université, Le Mans, France

10.00  LT-10  Surface structuring with bursts of ps-delayed femtosecond laser pulses (INVITED)
A. Ancona$^1$, G. Giannuzzi$^{1,2}$, C. Gaudioso$^{1,2}$, R. Di Mundo$^3$, L. Mirenghi$^4$, Pietro Mario Lugarà$^{1,2}$
$^1$Institute for Photonics and Nanotechnologies -CNR, Bari, Italy
$^2$Università di Bari – PhysicsDepartment “M. Merlin”, Bari, Italy
$^3$Politecnico di Bari – Department of Civil, Environmental, Land, Bari, Italy
$^4$Italian National Agency for New Technologies, Energy and Sustainable Economic Development, Brindisi Research Centre, Brindisi, Italy

10.30  LT-11  Strong field optoelectronics in semiconductors and dielectrics (INVITED)
M. Kholodtsova$^1$, X. Liu$^1$, D. Franz$^2$, S. Kaassamani$^1$, D. Gauthier$^1$, V. Nefedova$^1$, S. Fröelich$^1$, J-T Gomes$^2$, L. Lavoute$^2$, D. Gaponov$^2$, N. Ducros$^2$, S. Fevrier$^{2,3}$, G. Jargot$^4$, P. Georges$^4$, M. Hanna$^4$, L. Douillard$^5$, W. Boutu$^1$, H. Merdji$^1$
$^1$LIDYL, CEA, CNRS, Université Paris-Saclay, CEA Saclay, France
$^2$Novae, ZA du Moulin Cheyroux, Aixe-sur-Vienne, France
$^3$XLIM, CNRS, Université de Limoges, Limoges, France
$^4$Laboratoire Charles Fabry, CNRS, Institut d’Optique, France
$^5$SPEC, CEA, CNRS, Université Paris-Saclay, CEA Saclay, France

COFFEE BREAK
11.30 – 13.10  SESSION LASER ASSISTED MICRO- AND NANOTECHNOLOGIES (LT)  
(Joint session of LT and C01)  
CHAIRMEN: E. Perlin, D. Ivanov

11.30  LT-12  
Ultrafast all-optical switching due to photon-avalanche-like processes in heterostructures with deep quantum wells  
E. Perlin\textsuperscript{1,2}, A. Popov\textsuperscript{1}, A. Ivanov\textsuperscript{3}  
\textsuperscript{1}Research Center “Information Optical Technologies”, ITMO University, St. Petersburg, Russia  
\textsuperscript{2}Department of Experimental Physics, Peter the Great Polytechnic University, St. Petersburg, Russia

11.50  LT-13  
Chemical functionalization of graphene on patterned surfaces  
I. Mirza\textsuperscript{1}, P. Kovaříček\textsuperscript{4}, M. Stehlik\textsuperscript{1,2}, J. Sládek\textsuperscript{1,2}, Th. Derrien\textsuperscript{1},  
N. Bulgakova\textsuperscript{1}, M. Gedvillas\textsuperscript{3}, G. Račiukaitis\textsuperscript{3}, K. Drogska\textsuperscript{4},  
A. Rodriguez\textsuperscript{4}, M. Kalbác\textsuperscript{4}  
\textsuperscript{1}HiLASE Centre, Institute of Physics of the CAS, Dolni Brezany, Czech Republic  
\textsuperscript{2}FNSPE, Czech Technical University in Prague, Czech Republic  
\textsuperscript{3}Centre for Physical Sciences and Technology, Vilnius, Lithuania  
\textsuperscript{4}Department of Low-Dimensional systems, J. Heyrovsky Institute of Physical Chemistry of the CAS, Prague, Czech Republic

12.10  LT-14  
Deposition of Ag metal on glass with Laser-Induced Reverse Transfer techniques using a ps UV laser  
L. A. Angurel\textsuperscript{1}, R. Molina\textsuperscript{2}, V. Rico\textsuperscript{3}, F. Yubero\textsuperscript{3},  
A.R. González-Elipe\textsuperscript{3}, D. Muñoz-Rojas\textsuperscript{4}, G.F. de la Fuente\textsuperscript{1}  
\textsuperscript{1}ICMA (CSIC-University of Zaragoza), Zaragoza, Spain  
\textsuperscript{2}IQAC-CSIC, Barcelona, Spain  
\textsuperscript{3}ICMS (CSIC-University of Sevilla), Sevilla, Spain  
\textsuperscript{4}LMGP, UMR 5628 CNRS – Grenoble INP Minatec, France

12.30  LT-15  
Laser and plasma assisted fabrication of immiscible nanocrystalline alloys  
N. Tarasenka\textsuperscript{1}, A. Nomine\textsuperscript{2}, A. Nevar\textsuperscript{1}, M. Nedelko\textsuperscript{1}, H. Kabbara\textsuperscript{3},  
S. Bruyere\textsuperscript{3}, J. Ghanbaja\textsuperscript{3}, C. Noel\textsuperscript{3}, A. Krasilin\textsuperscript{2}, G. Zograf\textsuperscript{2},  
V. Milichko\textsuperscript{2}, N. Kulachenkov\textsuperscript{2}, S. Makarov\textsuperscript{2}, Th. Belmonte\textsuperscript{3}, N. Tarasenko\textsuperscript{1}  
\textsuperscript{1}B.I. Stepanov Institute of Physics, National Academy of Sciences of Belarus  
\textsuperscript{2}ITMO University, St. Petersburg 197101, Russia  
\textsuperscript{3}Institut Jean Lamour - CNRS - Universite de Lorraine - Nancy, France

12.50  LT-16  
X-Ray source based on repetition rate femtosecond pulse interaction with structured magnetic tape  
A.A. Garmatina\textsuperscript{1}, A.V. Andreev\textsuperscript{2}, A.A. Konovko\textsuperscript{2}, F.V. Potemkin\textsuperscript{2},  
M.M. Nazarov\textsuperscript{1}, V.M. Gordienko\textsuperscript{2}  
\textsuperscript{1}National Research Centre, “Kurchatov Institute”, Moscow, Russia  
\textsuperscript{2}Faculty of Physics and International Laser Centre, M.V. Lomonosov Moscow State University, Moscow, Russia
14.00 C02-1  **Studying the pathophysiological mechanisms of photodynamic effects on human tumor cells in cell cultures using digital holographic microscopy** (INVITED)

A.V. Belashov\(^1,2\), A.A. Zhikhoreva\(^3\), D.A. Gorbenko\(^1\), N.A. Avdonkina\(^3\), I.A. Baldueva\(^3\), A.B. Danilova\(^3\), M.L. Gelfond\(^3\), T.L. Nekhaeva\(^3\), T.N. Belyaeva\(^4\), E.S. Kornilova\(^4\), A.V. Salova\(^4\), I.V. Semenova\(^1\), O.S. Vasyutinskii\(^4\)

\(^1\) Ioffe Institute of RAS, St. Petersburg, Russia

\(^2\) ITMO University; St. Petersburg, Russia

\(^3\) N.N. Petrov National Medical Research Center of Oncology, St. Petersburg, Russia

\(^4\) Institute of Cytology of RAS, St. Petersburg, Russia

14.30 C02-2  **Advanced Strategy for Plasmonic Photothermal Therapy of Tumors** (INVITED)

E.A. Genina \(^1,2\), A.B. Bucharskaya \(^3\), G.N. Maslyakova \(^3\), M.L. Chekhonatskaya \(^3\), G.S. Terentyuk \(^3\), V.D. Genin \(^1\), N.G. Khlebtsov \(^1,4\), V.V. Tuchin \(^1,2,5\), A.N. Bashkatov \(^1,2\)

\(^1\) 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, Russian Academy of Sciences, Saratov, Russia

15.00 C02-3  **A novel co-culture spheroid model for preclinical intercellular photosensitizer-mediated tumor study**

Yu. Maklygina \(^1\), D. Farrakhova \(^2\), L. Bolotine \(^2\), A. Plyutinskaya \(^3\), T. Karmakova \(^3\), A. Pankratov \(^3\), V. Loschenov \(^4,4\)

\(^1\) Prokhorov General Physics Institute of the Russian Academy of Sciences, Moscow, Russia

\(^2\) Centre de Recherche en Automatique de Nancy (CRAN), Université de Lorraine, Institut de Cancérologie de Lorraine, Nancy, France

\(^3\) National Medical Research Radiological Centre of the Ministry of Health of the Russian Federation, Moscow, Russia

\(^4\) National Research Nuclear University MEPhI, Moscow, Russia
15.20  C02-4 Photodynamic inactivation of *Pseudomonas Aeruginosa* bacterial biofilms using new polycationic photosensitizers

E.V. Akhlyustina¹, G.A Meerovich¹,², I.G. Tiganova³,
E.A. Makarova⁴, E.R. Tolordava³, I.D. Romanishkin²,
N.I. Philipova³, Yu.S. Zhizhimova³, E.A. Lukyanets⁴,
Yu.M. Romanova³, V.B. Loschenov¹,²

¹ National Research Nuclear University "MEPHI", Moscow, Russia
² Prokhorov General Physics Institute of the Russian Academy of Sciences, Moscow, Russia
³ N.F. Gamaleya National Research Center of Epidemiology and Microbiology, Moscow, Russia
⁴ Organic Intermediates and Dyes Institute, Moscow, Russia

COFFEE BREAK

16.20  C02-5 Chemosensitized blood photomodification in the treatment of cancer patients (INVITED)

*M. Gelfond, E. Anokhina, S. Protsenko*

N.N. Petrov National Medical Research Center of Oncology, Saint Petersburg, Russia

16.50  C02-6 Video system approbation with zoom on multicellular tumor spheroids model

*D. Farrakhova¹, Yu. Maklygina¹, A. Borodkin¹, L. Bolotine²,
A. Plyutinskaya³, T. Karmakova³, A. Pankratov³, V. Loschenov¹,⁴*

¹ Prokhorov General Physics Institute of the RAS, Moscow, Russia
² Centre de Recherche en Automatique de Nancy, Université de Lorraine, Institut de Cancérologie de Lorraine, France
³ National Medical Research Radiological Centre of the Ministry of Health of the Russian Federation; Moscow, Russia
⁴ National Research Nuclear University «MEPhI», Moscow, Russia

17.10  C02-7 Dynamic Light Scattering imaging with unsatisfying ergodicity conditions (INVITED)

*I. Meglinski¹, A. Sdobnov¹, V. Kalchenko², A. Popov¹, A. Bykov¹*

¹ Opto-Electronics and Measurement Techniques Unit, University of Oulu, Oulu, Finland
² Department of Veterinary Resources, Weizmann Institute of Science, Rehovot, Israel

17.40  C02-8 Benefits of tissue optical clearing for intensive laser actions (INVITED)

*V. V. Tuchin*

Saratov State University, Saratov; Tomsk State University, Tomsk; Institute of Precision Mechanics and Control RAS, Saratov; ITMO University, Saint-Petersburg, Russia
PHOTOPHYSICS OF NANO-SCALE SYSTEMS
LASER TECHNOLOGIES FOR NANOPHOTONICS

ITMO UNIVERSITY, 14-16 BIRZHEVAYA LINE

09.00 – 11.00 PLASMONICS AND LIGHT SCATTERING
(Joint session of W03 and W04)

CHAIRMEN: V.P. Drachev

9.00  W03,04-9  Plasmonic planar optics: from basic elements to quantum generator (INVITED)

V.I. Balykin
Institute of Spectroscopy RAS, Troitsk, Moscow, Russia

9.30  W03,04-10  Dipole model of Purcell effect in metal-enhanced fluorescence and surface-enhanced Raman scattering (INVITED)

C. Simovski
Dept. of Electronics and Nanoengineering, Aalto University, Finland

10.00 W03,04-11  Metal-dielectric Optical Resonance in Metasurfaces and SERS effect (INVITED)

A.K. Sarychev\textsuperscript{1}, I.V. Bykov\textsuperscript{1}, I.A. Boginskaya\textsuperscript{1}, A.V. Ivanov\textsuperscript{1}, I.N. Kurochkin\textsuperscript{2}, A.N. Lagarkov\textsuperscript{1}, N.L. Nechaeva\textsuperscript{2}, I.A. Ryzhikov\textsuperscript{1}
\textsuperscript{1} Institute for Theoretical and Applied Electrodynamics, RAS, Moscow, Russia
\textsuperscript{2} Emanuel Institute of Biochemical Physics, RAS, Moscow, Russia

10.30 W03,04-12  Non-Steady Resonant Light Scattering by an Obstacle (INVITED)

M.I. Tribelsky\textsuperscript{1,2}
\textsuperscript{1} M. V. Lomonosov Moscow State University, Faculty of Physics, Moscow, Russia
\textsuperscript{2} National Research Nuclear University MEPhI (Moscow Engineering Physics Institute), Biomedical Institute, Kashira, Moscow, Russia

COFFEE BREAK
Localized surface plasmon resonance as a partner in the exciton-plasmon interactions (INVITED)
T.A. Vartanyan
ITMO University, St. Petersburg, Russia

Ellipsoidal model of light scattering by small particles of non-ellipsoidal shapes (INVITED)
V.G. Farafonov¹, V.B. Il’in¹², V.I. Ustimov¹, M.S. Prokopjeva², A.R. Tulegenov¹
¹ St. Petersburg University of Aerospace Instrumentation, St. Petersburg, Russia
² St. Petersburg University, St. Petersburg, Russia

Si-based integrated microwave-photonics (INVITED)
V.P. Drachev¹², G.I. Nazarikov¹, I.A. Pshenichnyuk¹, S.S. Kosolobov¹
¹ Skolkovo Institute of Science and Technology, Moscow, Russia
² University of North Texas, Denton, TX, USA
14.00 - 15.50  DIELECTRIC AND SEMICONDUCTOR NANOSTRUCTURES

(Joint session of W03 and W04)

CHAIRMEN: S.V. Makarov

14.00  W03,04-16  Laser-assisted ultraprecise fabrication of nanoscale resonant structures at the surface of an optical fiber (INVITED)
M. Sumetsky\textsuperscript{1}, N. A. Toropov\textsuperscript{1,2}
\textsuperscript{1}Aston Institute of Photonic Technologies, Aston University, Birmingham, UK
\textsuperscript{2}ITMO University, St. Petersburg, Russia

14.30  W03,04-17  Permanent and Reconfigurable WGM Microresonators at Optical Fibres: Mechanical and Laser-Assisted Tuning
N. Toropov\textsuperscript{1,2}, M. Sumetsky\textsuperscript{1}
\textsuperscript{1}Aston Institute of Photonic Technologies, Aston University, Birmingham, UK
\textsuperscript{2}ITMO University, St. Petersburg, Russia

14.50  W03,04-18  Electron-vibrational interactions in molecular aggregates: from exciton absorption and luminescence to exciton-polaritons in nanofibers and switching waves (INVITED)
B.D. Fainberg\textsuperscript{1,2}, N.N. Rosanov\textsuperscript{3,4,5}, N.A. Veretenov\textsuperscript{3,4}
\textsuperscript{1}Faculty of Sciences, Holon Institute of Technology, Holon, Israel
\textsuperscript{2}School of Chemistry, Tel-Aviv University, Tel-Aviv, Israel
\textsuperscript{3}ITMO University, St. Petersburg, Russia
\textsuperscript{4}Vavilov State Optical Institute, St. Petersburg 199053, Russia
\textsuperscript{5}Ioffe Physical-Technical Institute, RAS, St. Petersburg, Russia

15.20  W03,04-19  Regular optical patterns formation by a single Gaussian beam passed through a photorefractive LiNbO\textsubscript{3}:Fe crystal (INVITED)
R. Drampyan, L. Tsarukyan, A. Badalyan
Institute for Physical Research of National Academy of Sciences, Ashtarak-2, Armenia

COFFEE BREAK
Control of photoprocesses in colloidal silver sulfide quantum dots (INVITED)
A.S. Perepelitsa, M.S. Smirnov, O.V. Ovchinnikov
Voronezh State University, department of optics and spectroscopy, Voronezh, Russia

Laser fabrication of nanoemitters and nanolasers from halide perovskites (INVITED)
S.V. Makarov
ITMO University, Saint Petersburg, Russia

Photoinduced nanocomposites: experimental results and theoretical modeling (INVITED)
N. Bityurin, A. A. Smirnov, A. Pikulin
Institute of Applied Physics RAS, Nizhny Novgorod, Russia

Applications of ultrafast lasers in materials engineering and diagnostics (INVITED)
E. Stratakis
Institute of Electronics Structure and Laser, Foundation for Research and Technology Hellas (IESL-FORTH), Greece
How spatiotemporal coupling in ultrashort laser beams can induce 3D writing anisotropy: insight from inside (INVITED)

N.M. Bulgakova\textsuperscript{1,2}, V.P. Zhukov\textsuperscript{1,3}, S. Aktürk\textsuperscript{4}

\textsuperscript{1}HiLASE Centre, Institute of Physics of the Czech Academy of Sciences, Prague, Czech Republic

\textsuperscript{2}S.S. Kutateladze Institute of Thermophysics SB RAS, Novosibirsk, Russia

\textsuperscript{3}Institute of Computational Technologies SB RAS, Novosibirsk, Russia

\textsuperscript{4}Karaiskaki, Athens, Greece

Generation of deterministic nanostructures with ultrashort UV pulses under predefined interface boundary conditions (INVITED)

J. Ihlemann\textsuperscript{1}, A. Blumenstein\textsuperscript{1}, F. Kleinwort\textsuperscript{1}, J. Oltmanns\textsuperscript{1}, D.S. Ivanov\textsuperscript{2}, P.N. Terekhin\textsuperscript{3}, B. Rethfeld\textsuperscript{3}, M.E. Garcia\textsuperscript{2}, P. Simon\textsuperscript{1}

\textsuperscript{1}Laser-Laboratorium Göttingen, Göttingen, Germany

\textsuperscript{2}Physics Department, University of Kassel, Kassel, Germany

\textsuperscript{3}Physics Department, Technical University of Kaiserslautern, Kaiserslautern, Germany

Ultrashort laser-induced damage thresholds of metals and semiconductors in air and water

A.V. Bulgakov\textsuperscript{1,2}, M. Stehlik\textsuperscript{1}, Ch. Liberatore\textsuperscript{1}, I. Mirza\textsuperscript{1}, N.M. Bulgakova\textsuperscript{1,2}

\textsuperscript{1}HiLASE Centre, Institute of Physics of the Czech Academy of Sciences, Dolní Břežany, Czech Republic

\textsuperscript{2}S.S. Kutateladze Institute of Thermophysics SB RAS, Novosibirsk, Russia
10.20 W05,06-4  Low collision rate model of inter- and intra-band electron excitation by ultrashort laser pulses in wide-band-gap crystals (INVITED)
V. Gruzdev\textsuperscript{1}, O. Sergaeva\textsuperscript{2}
\textsuperscript{1}Department of Physics and Astronomy, University of New Mexico, Albuquerque, USA
\textsuperscript{2}ITMO University, St. Petersburg, Russia

11.30 W05,06-5  Formation of fine LIPSS on metals irradiated by double pulse beam of femtosecond laser (INVITED)
M. Hashida\textsuperscript{1,2}, H. Sakagami\textsuperscript{3}, S. Masuno\textsuperscript{4}, S. Inoue\textsuperscript{1,2}, S. Sakabe\textsuperscript{1,2}, M. Tsukamoto\textsuperscript{4}
\textsuperscript{1}Institute for Chemical Research, Kyoto University, Kyoto, Japan
\textsuperscript{2}Graduate School of Science, Kyoto University, Kitashirakawa, Kyoto, Japan
\textsuperscript{3}National Institute for Fusion Science, Gifu, Japan
\textsuperscript{4}Joining and Welding Research Institute, Osaka University, Osaka, Japan

12.00 W05,06-6  Hydrodynamic modeling of surface nano- and microstructuring by femtosecond laser (INVITED)
A. Rudenko, C. Mauclair, F. Garrelie, R. Stoian, J.-Ph. Colombier (Presented by R. Stoian)
Univ Lyon, UJM-St-Etienne, Laboratoire Hubert Curien, CNRS, Saint-Etienne, France

12.30 W05,06-7  Large-scale atomistic simulations of nanoparticle generation and surface modification by short laser pulses in vacuum and liquid environment (INVITED)
L. Zhigilei\textsuperscript{1}, Ch. Shih\textsuperscript{1,2}, Ch. Chen\textsuperscript{1}, M. Shugaev\textsuperscript{1}
\textsuperscript{1}University of Virginia, Department of Materials Science and Engineering, Charlottesville, USA
\textsuperscript{2}Research Center for Applied Sciences, Academia Sinica, Taipei, Taiwan
Modelling of the ultrafast dynamics and surface plasmon properties of Silicon upon irradiation with mid-infrared femtosecond laser pulses (INVITED)

G.D. Tsibidis\textsuperscript{1}, E. Petrakakis\textsuperscript{1,2}, E. Stratakis\textsuperscript{1,2}

\textsuperscript{1}Institute of Electronic Structure and Laser (IESL), Foundation for Research and Technology (FORTH), Heraklion, Crete, Greece
\textsuperscript{2}Materials Science and Technology Department, University of Crete, Heraklion, Greece

Expansion and fragmentation of droplets after short-pulse irradiation (INVITED)

V.V. Zhakhovsky\textsuperscript{1}, S.Yu. Grigoryev\textsuperscript{1}, S.A. Dyachkov\textsuperscript{1}, B.V. Lakatosh\textsuperscript{2,3}, M.S. Krivokorytov\textsuperscript{2,3}, V.V. Medvedev\textsuperscript{2,3}

\textsuperscript{1}Dukhov Research Institute of Automatics, Moscow, Russia
\textsuperscript{2}Institute for Spectroscopy, RAS, Troitsk, Moscow region, Russia
\textsuperscript{3}EUV Labs, Troitsk, Moscow region, Russia

Modeling of ultrafast electron dynamics near silicon/vacuum interface and related phenomena induced by the action of ultrashort laser pulse

D.S. Polyakov, E.B. Yakovlev

ITMO University, Saint-Petersburg, Russia

MD-based Modeling of Nanoparticles Generation due to Laser Ablation of Metals in Liquids (INVITED)

D.S. Ivanov\textsuperscript{1,2}, M.E. Garcia\textsuperscript{1}

\textsuperscript{1}Theoretical Physics Department, University of Kassel, Kassel, Germany
\textsuperscript{2}ITMO University, Saint-Petersburg, Russia

COFFEE BREAK
16.20  W05,06-12  Numerical study of thermal dynamics and stress build-up in laser-induced periodic surfaces structures formation on metals and dielectrics  
Y. Levy, E. Gurevich, N. Bulgakova  
1 HiLASE Centre, Institute of Physics of the Czech Academy of Sciences, Dolní Břežany 252 41, Czech Republic  
2 Applied Laser Technologies, Ruhr-Universität Bochum, Bochum, Germany  
3 S.S. Kutateladze Institute of Thermophysics SB RAS, Novosibirsk, Russia

16.40  W05,06-13  Ultrafast diagnostics of microplasma induced by tightly focused infrared femtosecond laser pulse in bulk silicon  
B. Rumiantsev, E. Mareev, E. Migal, I. Novikov, F. Potemkin  
Faculty of Physics and International Laser Center, M.V. Lomonosov Moscow State University, Moscow, Russia

17.00  W05,06-14  Femtosecond laser-induced periodic surface structure transform on the amorphous silicon surface: experiment and theory  
1 Lomonosov Moscow State University, Faculty of Physics, Moscow, Russia  
2 Lomonosov Moscow State University, Skobeltsyn Institute of Nuclear Physics, Moscow, Russia  
3 Quantum Technology Centre, Faculty of Physics, Lomonosov Moscow State University, Moscow, Russia  
4 National Research Centre «Kurchatov Institute», Russia  
5 Moscow Institute of Physics and Technology, Russia

17.20  W05,06-15  The Beam shaping in macro- and micro- scale for laser processing (INVITED)  
1 Osaka University, Osaka, Japan  
2 Institute for Laser Technology, Osaka, Japan  
3 National Institute of Advanced Industrial Science and Technology, Osaka, Japan  
4 Osaka City University, Osaka, Japan  
5 Murata Manufacturing Co., Ltd., Kyoto, Japan  
6 Osaka Gas Co, Ltd., Osaka, Japan

17.50  W05,06-16  Nonlinear Kerr lensing array for surface laser parallel processing  
Zhengyan Li, Wenbiao Ge, Cheng Xing, Jiawen Yao  
Huazhong University of Science and Technology, Wuhan, China
LASERS FOR SURFACES CLEANING, CHARACTERISATION AND ARTIFACTS RESTORATION

10.00 – 15.50 WORKSHOP “LASERS FOR SURFACES CLEANING, CHARACTERISATION AND ARTIFACTS RESTORATION” (W07)
CHAIRMEN: A. Semerok

10.00 W07-1
Introductory words
S. Sirro (Presented by A. Semerok)
The State Russian Museum, St. Petersburg, Russia

10.10 W07-2
Coupling laser spectroscopies: how LIBS-LIF-Raman can improve cultural heritage characterization (INVITED)
V. Detalle, X. Bai, C. Koch Dandolo, M. Lopez, M. Menu
1 Centre de Recherche et de Restauration des Musées de France, Palais du Louvre, Paris, France
2 PSL ResUniv, Chim Paris Tech, CNRS, Inst Rech Chim Paris, Paris, France

10.40 W07-3
Laser-induced breakdown spectroscopy in cultural heritage: depth-resolved analysis of layered painting samples (INVITED)
J. Kaiser, E. Pospíšilová, K. Novotný, P. Pořízka, D. Hradišť, J. Hradilová, V. Kanický
1 Department of Chemistry, Faculty of Science, Masaryk University, Brno, Czech Republic
2 Central European Institute of Technology, Masaryk University (CEITEC MU), Brno, Czech Republic
3 Central European Institute of Technology, Brno University of Technology (CEITEC BUT), Brno, Czech Republic
4 Institute of Inorganic Chemistry of the CAS, v.v.i., ALMA Laboratory, Husinec-Řež, Czech Republic
5 Academy of Fine Arts in Prague, ALMA Laboratory, Prague.

11.10 W07-4
Laser cleaning of golden embroidery of the Peter the Great small throne hall at the State Hermitage Museum (INVITED)
I.K. Malkiel
The State Hermitage Museum, St. Petersburg. Russia

11.40 W07-5
Laser cleaning of typographical anilox shafts from pigments: from idea to serial production
M. Iarchuk
LLC "Lazer", St. Petersburg, Russia

12.00 W07-6
Oil painting research by non-destructive methods. Modern issues and problems
T. Pavlova
The State Russian Museum, St. Petersburg. Russia
Coffee break

13.00 Poster session 2 (see pp. 66-67)

14.00 W07-7 Laser cleaning of archaeologically corroded iron

*D.S. Prokuratov*¹², A.S. Davtian³, O.S. Vereshchagin⁴, N.S. Kurganov⁵⁶, A.A. Samokhvalov⁷, D.V. Pankin⁸, A.V Povolotckaia⁸

¹ Department of Photonics, Saint Petersburg Electrotechnical University "LETI", St. Petersburg, Russia
² The State Hermitage Museum, St. Petersburg, Russia
³ "Lasers and Optical Systems" Co., Ltd., St. Petersburg, Russia
⁴ Mineralogical Department, Institute of Earth Sciences, Saint-Petersburg State University, Saint-Petersburg, Russia
⁵ Conservation Department, Faculty of Arts, Saint Petersburg State University, Saint-Petersburg, Russia
⁶ Institute of the History of Material Culture of the Russian Academy of Sciences, Saint-Petersburg, Russia
⁷ International laboratory "Laser micro-and nanotechnologies", ITMO University, Saint-Petersburg, Russia
⁸ Center for optical and laser materials research, Saint-Petersburg State University, St. Petersburg, Russia

14.20 W07-8 Characterization of CH surfaces by different laser techniques

(INVITED)

*V. Spizzichino, R. Fantoni, L. Caneve, F. Colao*

ENEA – FSN-TECFIS – Frascati Research Centre, Frascati, Italy

14.50 W07-9 Multi-analytical investigation of the encapsulated XIIIth century French Legendarium F-403 from the Library of Russian Academy of Science

*A. Povolotckaia¹, M. Korogodina⁲, D. Pankin¹, V. Podkovyrova², N. Kurganov¹, E. Tileva², I. Tseveleva², A. Mikhailova¹, Yu. Petrov¹, A. Povolotskiy¹, E. Borisov¹, A. Kurochkin¹*

¹ Saint-Petersburg State University, Saint-Petersburg, Russia
² Russian Academy of Sciences Library, St. Petersburg, Russia

15.10 W07-10 Comparative study of two frescoes from Campana collection of the State Hermitage museum

*I. Grigorieva¹, K. Chugunova¹, L. Gavrilenko¹, S. Khavrin¹, P. Kondrakhina¹, I. Budnichenko¹, D. Pankin², A. Povolotckaia²*

¹ The State Hermitage Museum, St-Petersburg, Russia
² Saint-Petersburg State University, St-Petersburg, Russia

15.30 W07-11 Surface thermography for cultural heritage

*J.-L. Bondar (Presented by V. Detalle)*

University of Reims Champagne-Ardenne | URCA · Physics and Engineering Sciences (PSPI), France
WEDNESDAY,
JULY 3
9.00 C02-9 Clinical study and thermal effects in the area of operating tips during energetic cataract surgery (INVITED)
V.G. Kopayeva, S.Yu. Kopayev, A.V. Belikov, S.N. Smirnov
1 The S. Fyodorov Eye Microsurgery Federal State Institution, Moscow, Russia
2 ITMO University; St. Petersburg, Russia

9.30 C02-10 Optical-morphological justification of fractional laser treatment with a wavelength of 980 nm for human oral mucosa scars treatment
1 ITMO University, St. Petersburg, Russia
2 St. Petersburg State University, St. Petersburg, Russia
3 FSBSI «IEM», Moscow, Russia

9.50 C02-11 Pain and intense laser effects in dentistry (INVITED)
I.A. Shugailov, O.N. Moskovets, D.K. Yudin
Academy of Innovative Dentistry, Moscow, Russia
Department of Dentistry RMAPO Ministry of Health, Moscow, Russia

10.20 C02-12 Laser cutting of tissue: can old dogs be taught new tricks? (INVITED)
IPG Photonics Corporation, Oxford, USA

COFFEE BREAK
11.30 C02-13 **Optothermal fiber converter for laser surgery: theory and experiment** (INVITED)

*A.V. Belikov, A.V. Skrypnik*

ITMO University, St. Petersburg, Russia

12.00 C02-14 **Interaction of terahertz radiation with bio-like objects: theoretical and numerical modelling, real objects and phantom experiments** (INVITED)

*O.A. Smolyanskaya¹, Q. Cassar², M.S. Kulya¹, N.V. Petrov¹, K.I. Zaytsev³⁴, V.N. Trukhin¹⁵, A. Gorodetsky¹⁶, J.-P. Guillet², P. Mounaix², V.V. Tuchin¹⁷⁸*

¹ ITMO University, Saint-Petersburg, Russia
² Bordeaux University, IMS Laboratory, Bordeaux, France
³ Bauman Moscow State Technical University, Moscow, Russia
⁴ Prokhorov General Physics Institute of the Russian Academy of Science, Moscow, Russia
⁵ Ioffe Physical Technical Institute RAS, St. Petersburg, Russia
⁶ Imperial College London, London, UK
⁷ Saratov State University, Saratov, Russia
⁸ Institute of Precision Mechanics and Control of the RAS, Saratov, Russia

12.30 C02-15 **Recent advances in tissue biomechanics using Dynamic Optical Coherence Elastography** (INVITED)

*K.V. Larin*

University of Houston, Houston, USA
14.00  C02-16  Laser ablated nanoparticles in nuclear medicine and radiotherapy (INVITED)
  I. Zavestovskaya1,2, A. Kabashin1,3, V. Petriev1,4
  1 MEPhI, Institute of Engineering Physics for Biomedicine, Moscow, Russia,  
  2 Quantum Radiophysics Department of P.N. Lebedev Physical Institute, Moscow, Russia  
  3 Aix-Marseille Univ, CNRS, LP3, Marseille, France  
  4 National Medical Research Centre of radiology of the Ministry of Health of the Russian Federation, Obninsk, Russia

14.30  C02-17  Surface enhanced Raman spectroscopy on gold coated nanoporous silica (AuNS) glass (INVITED)
  A. Douplik1, Aditya Pandya1, Irina Schelkanova2, O.V. Andreeva2, J. Kumaradas1,  
  1 Department of Physics, Ryerson University, Toronto, Canada  
  2 ITMO University, Saint-Petersburg, Russia

15.00  C02-18  Research of the antibacterial properties of nanoparticles obtained by laser ablation in liquid
  A. Samokhvalov1, D. Shakirova1, L. Kraeva2, Ya. Golubev1, D. Pankin3  
  1 ITMO University, Saint-Petersburg, Russia  
  2 Saint Petersburg Research Institute of Epidemiology and microbiology behalf of Pasteur, St. Petersburg, Russia  
  3 Saint-Petersburg State University, Center for optical and laser materials research, St. Petersburg, Russia

15.20  C02-19  Multifunctional nanoparticles in bio-medical research and applications (INVITED)
  E. Perevedentseva1,2, L.Y. Lin1,2, A. Karmenyan1, C.L. Cheng1  
  1 Physics Department, National Dong Hwa University, Hualien, Taiwan  
  2 Institute of Physics, Academia Sinica, Taipei, Taiwan  
  3 Lebedev Physics Institute of RAS, Moscow, Russia

COFFEE BREAK
Laser-ablated nanoparticles from crystalline and porous silicon and their applications in optical bioimaging and therapy (INVITED)

S.V. Zabotnov¹, A.V. Skobelkina¹, F.V. Kashaev¹, A.V. Kolchin¹, D.A. Kurakina², A.V. Khilov², E.A. Sergeeva², M.Yu. Kirillin², L.A. Golovan¹

¹Lomonosov Moscow State University, Faculty of Physics, Moscow, Russia
²Institute of Applied Physics RAS, Nizhny Novgorod, Russia

Research of tumors tissue heating kinetics by radiation of the near IR spectral range at the introduction of gold nanoparticles in the tissue

V.D. Genin¹, E.A. Genina¹,2, A.B. Bucharskaya³, N.G. Khlebtsov⁴, V.V. Tuchin¹,2,5, A.N. Bashkatov¹,2

¹Saratov State University, Saratov, Russia
²Tomsk State University, Tomsk, Russia
³Saratov State Medical University, Saratov, Russia
⁴Institute of Biochemistry and Physiology of Plants and Microorganisms RAS, Saratov, Russia
⁵Institute of Problems of Precise Mechanics and RAS, Saratov, Russia

Application of laser technologies for micromanipulation and diagnostics of preimplantation mammalian embryos (INVITED)

A.S. Karmenyan¹, E.V. Perevedentseva¹,³, A.S. Krivokharchenko², M.N. Sarmiento¹, E.L. Barus¹, V.A. Nadtochenko², C.L. Cheng¹

¹Physics Department, National Dong Hwa University, Hualien, Taiwan,
²Institute of Chemical Physics, RAS, Moscow, Russia
³P. N. Lebedev Physical Institute, RAS, Moscow, Russia

Chest shield for prevention of symptomatic patent ductus arteriosus in preterm babies undergoing phototherapy (INVITED)

A. N. Yaroslavsky

University of Massachusetts, Lowell, USA
9.00 – 11.10  LASER SYNTHESIS AND PROCESSING OF NANOSTRUCTURES
(Joint session of W03 and W04)
CHAIRMEN:  E. Mariotti

9.00  W03,04-24  Laser-induced periodic surface nanostructures (INVITED)
J. Bonse, S.V. Kirner, S. Höhm, T.J.-Y. Derrien, J. Krüger
Bundesanstalt für Materialforschung und -prüfung, Berlin, Germany

9.30  W03,04-25  Atmospheric pressure pulsed laser deposition of
plasmonic nanoparticle silver films for surface-enhanced Raman spectroscopy
J.G. Lunney, T.M. Khan, K.E. Siewerska
School of Physics and AMBER, the University of Dublin, Ireland

9.50  W03,04-26  Shape control of PbO nanoparticles produced by laser ablation in liquid
School of Natural Sciences and Mathematics, Ural Federal University, Ekaterinburg, Russia

10.10  W03,04-27  The laser synthesis of new carbon allotropes - elongated linear carbon chains (INVITED)
A. Kucherik1,2,3, A. Osipov3 A. Povolotskiy4, V. Samyshkin1, R. Hartmann5, A. Kavokin2,3, M. E. Portnoi6,7, S. Kutrovskaya1,2,3
1 School of Science, Westlake University, Hangzhou, China
2 Institute of Natural Sciences, Westlake Institute for Advanced Study, Hangzhou, China
3 Department of Physics and Applied Mathematics, Stoletov Vladimir State University, Vladimir, Russia
4 Institute of Chemistry, St. Petersburg State University, Russia
5 Physics Department, De La Salle University, Manila, Philippines
6 School of Physics, University of Exeter, Exeter, UK
7 ITMO University, Saint Petersburg, Russia

10.40  W03,04-28  Carbon nanostructures for solid-state laser mode-locking in the 2-µm spectral range (INVITED)
U. Griebner1, Y. Zhao1,2, W. Chen1,3, F. Rotermund4, P. Loiko5, X. Mateos6, V. Petrov1
1 Max Born Institute for Nonlinear Optics and Short Pulse Spectroscopy, Berlin, Germany 2 Jiangsu Normal University, Xuzhou, China 3 Fujian Institute of Research on the Structure of Matter, Chinese Academy of Sciences, Fuzhou, China 4 Department of Physics, KAIST, Republic of Korea 5 ITMO University, St. Petersburg, Russia 6 Universitat Rovira i Virgili, Campus Sescelades, Spain

COFFEE BREAK
Ultra-fast optically induced structural dynamics in phase-change materials probing by time-resolved x-ray diffraction using a free-electron laser

Laser assisted functionalisation of micro- and nanosystems with coatings (INVITED)
J. Wochnowski
Technische Hochschule, Lübeck, Germany

Nanotechnology in optics (INVITED)
N.V. Kamanina

Vavilov State Optical Institute, St. Petersburg, Russia
St. Petersburg Electrotechnical University (“LETI”), St. Petersburg, Russia
14.00 W03,04-32 Nanoparticle formation in nanoporous structures and applications (INVITED)

E. Mariotti¹, C. Marinelli¹, L. Marmugi¹, S. Arena¹, N. Papi¹, F. Sarri¹, A. Vanella¹, R. Cecchi¹, L. Stiaccini¹, R. Drampyan², P. Petrov³, T. Vartanyan³
¹ Dipartimento di Scienze Fisiche, della Terra e dell'Ambiente, Siena, Italy
² Institute for Physical Research of National Academy of Sciences, Ashtarak-2, Armenia
³ ITMO University, St. Petersburg, Russia

14.30 W03,04-33 Optical properties of nanowires synthesized in regular nanochannels of porous matrices (INVITED)

V.I. Belotitskii, A.V. Fokin, Y.A. Kumzerov, A.A. Sysoeva
Ioffe Physical-Technical Institute, RAS, St. Petersburg, Russia

15.00 W03,04-34 Au coated nanoporous silicate matrices in biomedical application of Surface Enhanced Raman Scattering

O.V. Andreeva¹, A.O. Ismagilov¹, I.Yu. Schelkanova¹, A.H. Pandya², N.V. Andreeva¹, A. Douplik²
¹ ITMO University, Saint-Petersburg, Russia
² Ryerson University, Toronto, Canada

15.20 W03,04-35 Photo-, thermo- and electromagnetic effects in laser-assisted fabrication of random and periodic nanocomposite materials (INVITED)

T.E. Itina¹, H. Ma¹, Y. Andreeva², P. Varlamov², M. Sergeev², V.P. Veiko², F. Vocanson¹, N. Destouches¹, A. Rudenko¹
¹ Univ Lyon, UJM - Saint-Etienne, Hubert Curien Lab., Saint-Etienne, France
² ITMO University, St. Petersburg, Russia

COFFEE BREAK
16.20 W03,04-36 Perspectives of laser local oxidation nanolithography for fabrication of subwavelength and high-na diffractive optical elements
V.P. Korolkov¹, V.P. Veiko², E.A. Shakhno², A.V. Dostovalov¹, D.A. Sinev², A.G. Sedukhin¹, D.A. Belousov¹, R.K. Nasyrov¹
¹ IA&E SB RAS, Novosibirsk, Russia
² ITMO University, Saint Petersburg, Russia

16.40 W03,04-37 Femtosecond laser micromaching of a polymeric Lab-on-a Chip for particle sorting
A. Volpe¹, P. Paiè², U. Krishnan³, A. Ancona¹, R. Osellame²,⁴
¹ Institute for Photonics and Nanotechnologies (IFN)-CNR, Bari, Italy
² Institute for Photonics and Nanotechnologies (IFN)-CNR, Milan, Italy
³ Universita degli Studi di Bari, Dipartimento Interuniversitario di Fisica, Bari, Italy
⁴ Department of Physics, Politecnico di Milano, Milan, Italy

17.00 W03,04-38 Laser-induced tuning of optical properties in hybrid nanostructures (INVITED)
D. Zuev
ITMO University, Saint Petersburg, Russia

17.30 W03,04-39 Direct laser printing of functional surfaces and microdevices with structured beams (INVITED)
A. Kuchmizhak¹,²
¹ School of Natural Sciences, Far Eastern Federal University, Vladivostok, Russia
² Institute for automation and control processes of FEB RAS, Vladivostok, Russia
9.00 – 13.00  LASER STRUCTURING OF SOLID SURFACES AND
ITS FUNCTIONALIZATION
(Joint session of W05 and W06)
CHAIRMEN: C.P. Grigoropoulos

9.00  W05,06-17  Laser Processing of Silicon Nanostructures for Optical
Applications (INVITED)
C.P. Grigoropoulos¹, L. Wang¹, M. Eliceiri¹, Y. Rho¹, H. Pan²,
¹ Laser Thermal Laboratory, Department of Mechanical
Engineering University of California, Berkeley, USA
² Department of Mechanical and Aerospace Engineering,
Missouri University of Science and Technology, Missouri,
USA

9.30  W05,06-18  Ultrashort pulsed laser micro-structuring of large
cylindrical embossing tools for surface functionalization in
industrial applications (INVITED)
G. Hennig¹, S. Brüening², B. Neuenschwander³, B. Jäggi⁴
¹ Daetwyler Graphics AG, Bleienbach, Switzerland;
² Schepers GmbH & Co. KG, Vreden, Germany;
³ Bern University of Applied Sciences, Burgdorf, Switzerland
⁴ Lasea Switzerland SA, Bienne, Switzerland

10.00  W05,06-19  Synthesis of high-quality graphene and graphene-based
structures by laser processing of carbides
S. Yannopoulos, A. Antonelou, V. Dracopoulos, Th. Ioannides
Foundation for Research and Technology – Hellas, Institute
of Chemical Engineering Sciences, Rio-Patras, Greece

10.20  W05,06-20  Metal surface nanostructures developed with sub-ns UV
laser line scanning under different atmospheres (INVITED)
G.F. de la Fuente, L.A. Angurel, A. Cubero, L. Porta-Velilla,
M. Castro, J.A. Rojo, E. Martinez, R. Navarro
ICMA CSIC-University of Zaragoza, Zaragoza, Spain

COFFEE BREAK
Modification of surface and near-surface layers of metal materials for medical application by pulsed laser irradiation (INVITED)

Yu.R. Kolobov¹,², A.Yu. Tokmacheva-Kolobova¹,³
¹ Institute of Problems of Chemical Physics RAS, Chernogolovka, Russia
² Belgorod National Research University, Belgorod, Russia
³ National Research University of Science and Technology “MISIS”, Moscow, Russia

Optical properties for femtosecond laser ablation of preirradiated titanium

Y. Furukawa¹,², S. Kojima¹, S. Inoue¹,², M. Hashida¹,², S. Sakabe¹,²
¹ Institute for Chemical Research, Kyoto University, Kyoto, Japan
² Graduate School of Science, Kyoto University, Kyoto, Japan

Laser functionalization of titanium implants surface: from idea to manufacturing application

G.V. Odintsova¹, Yu.Yu. Karlagina¹, T.E. Itina¹,², V.V. Romanov¹, V.I. Bozko¹, C.A. Zernitskaia³, G.N. Chernenko⁴, D.S. Kuznetsova⁵ and V.P. Veiko¹
¹ Faculty of Laser Photonics and Optoelectronics, ITMO University, St. Petersburg, Russia
² Laboratoire Hubert Curien, UMR CNRS 5516/UJM-Saint-Etienne/Univ. Lyon, Saint-Etienne, France
³ Pavlov First Saint Petersburg State Medical University, St. Petersburg, Russia
⁴ Lenmiriot Dental Implant Prosthetics Manufacture, St. Petersburg, Russia
⁵ Institute of Biomedical Technologies, Privolzhsky Research Medical University, Nizhny Novgorod, Russia

Laser induced fabrication of cobalt-doped zinc oxide nanostructured films

N.V. Tarasenko, N.N. Tarasenka, V.G. Kornev, M.I. Nedelko, E.A. Shustava
B. I. Stepanov Institute of Physics, National Academy of Sciences of Belarus, Minsk, Belarus
Femtosecond laser micro-texturing to reduce friction of soft matter surfaces

C. Gaudioso\textsuperscript{1,2}, C. Putignano\textsuperscript{2,3}, D. Scarati\textsuperscript{3}, R. Di Mundo\textsuperscript{4}, A. Ancona\textsuperscript{2}, G. Carbone\textsuperscript{2,3}

\textsuperscript{1} Universita di Bari – Physics Department “M. Merlin”, Bari, Italy
\textsuperscript{2} Institute for Photonics and Nanotechnologies (IFN)-CNR, Italy
\textsuperscript{3} Politecnico di Bari – Department of Mechanics, Mathematics and Management, Bari, Italy
\textsuperscript{4} Politecnico di Bari – Department of Civil, Environmental, Italy

High-resolution observations of crystal grains beneath ultrafast laser-induced periodic surface structures on yttria-stabilized zirconia

M. Kakehata\textsuperscript{1}, H. Yashiro\textsuperscript{1}, A. Oyane\textsuperscript{2}, A. Ito\textsuperscript{3}, K. Torizuka\textsuperscript{1}

\textsuperscript{1} Electronics and Photonics Research Institute, National Institute of Advanced Industrial Science and Technology (AIST), Japan
\textsuperscript{2} Nanomaterials Research Institute, National Institute of Advanced Industrial Science and Technology (AIST), Japan
\textsuperscript{3} Health Research Institute, National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Japan

Laser micromachining of Silicon with bursts of fs- and ps-pulses in the NIR

B. Neuenschwander, S.M. Remund, M.V. Chaja

Bern University of Applied Sciences, Institute for Applied Laser, Photonics and Surface Technologies ALPS, Burgdorf, Switzerland

Surface plasmonpolaritons and nanostructuring of materials

P.N. Terekhin\textsuperscript{1,2}, P.D. Ndione\textsuperscript{1}, S.Th. Weber\textsuperscript{1}, B. Rethfeld\textsuperscript{1}

\textsuperscript{1} Department of Physics and Research Center OPTIMAS, Technische Universitaet Kaiserslautern, Kaiserslautern, Germany
\textsuperscript{2} National Research Center “Kurchatov Institute”, Russia

Large-scale atomistic modeling of short-pulse laser-induced generation of crystal defects in Ni-based single-phase binary solid–solution alloys

L. Zhigilei\textsuperscript{1}, M. He\textsuperscript{1}, Ch. Wu\textsuperscript{1}, M. Shugaev\textsuperscript{1}, G. Samolyuk\textsuperscript{2}
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<td>15.20</td>
<td>W05,06-29</td>
<td><strong>Nonthermal phase transitions in solids: large-scale simulations with ab-initio accuracy</strong></td>
<td><em>M. Garcia, B. Bauerhenne</em></td>
<td>Institute of Physics and Center for Interdisciplinary Nanostructure Science and Technology (CINSA), Universität Kassel, Kassel, Germany</td>
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<td>16.20</td>
<td>W05,06-31</td>
<td><strong>Laser surface structuring: large and small irradiation spots, short and long pulses</strong></td>
<td><em>N. Inogamov</em>, <em>V. Zhakhovsky</em>, <em>Yu. Petrov</em>, <em>V. Khokhlov</em></td>
<td>Landau Institute for Theoretical Physics, Russian Academy of Sciences, Chernogolovka, Moscow Region, Russia</td>
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<td>Dukhov Research Institute of Automatics, Moscow, Russia</td>
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<td>Moscow Institute of Physics and Technology, Dolgoprudny, Moscow region, Russia</td>
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<td>16.40</td>
<td>W05,06-32</td>
<td><strong>Ultrafast electronic and structural non-equilibrium in laser surface structuring</strong></td>
<td><em>R. Stoian, H. Zhang, C. Li, E. Bévillon, E. Silaeva, L. Ben Mahfoud, J. P. Colombier</em></td>
<td>Laboratoire Hubert Curien, UMR 5516 CNRS, Université de Lyon, Université Jean Monnet, St. Etienne, France</td>
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<td>17.00</td>
<td>W05,06-33</td>
<td><strong>Origin of two-dimensional nanostructures formation under circular polarized femtosecond laser radiation interaction with condensed media</strong></td>
<td><em>Makin V.S.</em></td>
<td>Institute for Nuclear Energetic, Sosnovy Bor City, Leningrad region, Russia</td>
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<td>17.20</td>
<td>W05,06-34</td>
<td><strong>The low-dimensional carbon nanostructure synthesis under fs-laser radiation on bulk graphite units in liquid nitrogen: nonlinear dynamic theory and experiment</strong></td>
<td><em>K. Khorkov, D. Kochuev, R. Chkalov, V. Prokoshev, S. Arakelian</em></td>
<td>Stoletovs Vladimir State University, Vladimir, Russia</td>
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<td>18.00</td>
<td>W05,06-35</td>
<td><strong>Silicon nanocrystals and Micron-sized Periodic Structures created at the surface of the crystal and amorphous silica by resonant CO₂ laser irradiation</strong></td>
<td><em>A.F. Mukhamedgalieva</em>, <em>I.M. Shvedov</em>, <em>V.B. Laptev</em></td>
<td>NITU MISIS, Moscow, Russia</td>
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<td>Institute of Spectroscopy RAS, Moscow, Troitsk, Russia</td>
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09.00  W08-1  Some approaches for a transition instability suppression in pulsed fiber lasers (INVITED)
    S.V. Larin
    NTO IRE-Polus, Moscow, Russia

09.30  W08-2  The challenges of processing field and beam shape formation in laser industrial systems (INVITED)
    V. Yurevich
    Laser Center LLC., St. Petersburg, Russia

10.00  W08-3  Current and prospective industrial applications of femtosecond lasers (INVITED)
    M. Koniashchenko
    Avesta Project Ltd., Troitsk, Moscow, Russia

10.30  W08-4  (INVITED)
    G.A. Turichin
    SMTU, St. Petersburg, Russia

COFFEE BREAK

11.30  W08-5  Some aspects of thermomechanical and thermoelectric effects under laser action on metals (INVITED)
    Yu. Sudenkov
    St. Petersburg University, St. Petersburg, Russia

12.00  W08-6  Interaction of pulsed radiation with non-ferrous metals during laser shock treatment (INVITED)
    I.N. Shiganov, A.I. Misyurov, D.M. Melnikov
    The Bauman Moscow State Technical University, Russia

12.30  W08-7  Laser-filament glass cutting (INVITED)
    Currie Rao¹, A. A. Akimov², N. V. Burov², F. M. Vasilenko², S. N. Shelygina²,³
    ¹Huaray Precision Laser Co., Ltd., Wuhan, China
    ²JSC Leningrad Laser Systems, St. Petersburg, Russia
    ³ITMO University, St. Petersburg, Russia
14.00 W08-8  **Glass processing by innovative CO\textsubscript{2} laser** (INVITED)
V. Kiyko, D. Mikhaylov
Prokhorov General Physics Institute of the Russian Academy of Sciences, Moscow, Russia

14.30 W08-9  **Industrial application of laser cleaning** (INVITED)
Yu. I. Rogalsky
EXPERIMENTAL DESIGN BUREAU “BULAT”, Moscow, Russia

15.00 W08-10  **Technology of CFRP and GFRP precision cutting by a ytterbium fiber laser**
S.A. Kotov\textsuperscript{1}, N.A. Lyabin\textsuperscript{2}
\textsuperscript{1} IRE-Polus Co.; Moscow region, Fryazino, Russia
\textsuperscript{2} «RPE «ISTOK» n. a. Shokin» , Moscow region, Fryazino, Russia

15.30 W08-11  **Ultra-dense high-informative matrix code and areas of its application** (INVITED)
E.I. Pryakhin, I.M. Malyushin
Saint-Petersburg Mining University, St. Petersburg, Russia
THURSDAY,
JULY 4
9.00–10.20  PLENARY SESSION
(Joint session of FLAMN-19, C01, W05 and W06)
CHAIRMEN: N. Bulgakova, A. Kolobov

9.00  PL-5
Laser interaction below 15 fs duration on dielectrics and metals – applications to LIDT for Ti:Sa PW lasers (INVITED)
M. Sentis, O. Utéza, R. Clady, Th. Genieys, N. Sanner
Aix-Marseille University, CNRS, LP3 UMR 7341, F-13288 Marseille, France

9.40  PL-6
Material Functionalization with Femtosecond Lasers (INVITED)
Ch. Guo
The Institute of Optics, University of Rochester, Rochester, USA

10.20 – 12.10  SESSION LASER–MATTER INTERACTION
(SEE P. 54)
(Joint session of LMI and C01)
CHAIRMEN: I. Gornushkin, S. Ašmontas

12.40 – 14.00  SESSION LASER–MATTER INTERACTION
(SEE P. 55)
(Joint session of LMI and C01)
CHAIRMEN: N. Bulgakova, L. Zhigilei

10.30 – 14.00  ULTRAFAST LASER-INDUCED BULK MODIFICATION OF TRANSPARENT DIELECTRICS
(SEE PP. 56-57)
(Joint session of W05 and W06)
CHAIRMEN: A. Okhrimchuk, A.V. Rode

14.00–14.30  CLOSING CEREMONY
CHAIRMEN: V. Veiko, V. Konov
10.20 – 12.10 SESSION LASER–MATTER INTERACTION (LMI)  
(Joint session of LMI and C01)  
CHAIRMEN: I. Gornushkin, S. Ašmontas

10.20 LMI-7  
**Electronic excitation-induced semiconductor-to-metal transition in monolayer MoTe$_2$ (INVITED)**  
A.V. Kolobov$^{1,2}$, P. Fons$^2$, Y. Saito$^2$, K. Makino$^2$, J. Tominaga$^2$  
$^1$Department of Physical Electronics, Faculty of Physics, Herzen State Pedagogical University of Russia, St Petersburg, Russia  
$^2$Nanoelectronics Research Institute, National Institute of Advanced Industrial Science and Technology, Tsukuba, Japan

10.50 LMI-8  
**Interaction of Intense Ultrashort Terahertz Pulses with Narrow-Gap Semiconductors (INVITED)**  
S. Ašmontas, S. Bumelienė, J. Gradauskas, R. Raguotis, A. Sužiedelis  
Electronics Department, Centre for Physical Sciences and Technology, Vilnius, Lithuania

11.20 LMI-9  
**Kinetics of heterogeneous melting of a thin film near the threshold for complete melting: How slow can it get?**  
M. Arefev$^{1,2}$, M. Shugaev$^2$, L. Zhigilei$^2$  
$^1$ITMO University, St. Petersburg, Russia  
$^2$University of Virginia, Department of Materials Science and Engineering, Charlottesville, USA

11.40 LMI-10  
**Dynamics of Phase Change Materials Driven by Infrared and Terahertz Pulses (INVITED)**  
K. Makino  
National Institute of Advanced Industrial Science and Technology, Japan

COFFEE BREAK
12.40 – 14.10 SESSION LASER–MATTER INTERACTION (LMI)
(Joint session of LMI and C01)
CHAIRMEN: N. Kamanina, D. Polyakov

12.40 LMI-11 Model of stimulated emission in aluminum laser-induced plasma produced by resonance pumping (INVITED)
Igor Gornushkin¹, Alexander Kazakov²
¹BAM Federal Institute for Materials Research and Testing, Berlin, Germany
²St. Petersburg State University of Technology and Design, St. Petersburg, Russia

13.10 LMI-12 Thermal and dynamic effects of laser irradiation of thin metal films
V. Shepelev, N. Inogamov², S. Fortova¹
¹Institute for Computer-Aided Design of RAS, Moscow, Russia
²Landau Institute for Theoretical Physics of RAS, Chernogolovka, Moscow Region, Russia

13.30 LMI-13 Generation of controllable supercontinuum accompanying femtosecond filamentation in high density gases and supercritical fluids: enhancement of the SC generation under cluster formation
E. Mareev¹,², F. Potemkin¹,², V. Aleshkevich¹, N. Minaev³, V. Gordienko¹,²
¹Faculty of Physics, M.V. Lomonosov Moscow State University, Moscow, Russia
²International Laser Center, M.V. Lomonosov Moscow State University, Moscow, Russia
³Institute of Photon Technologies of Federal Scientific Research Centre “Crystallography and Photonics” of RAS, Troitsk, Russia

13.50 LMI-14 Interaction of doughnut-shaped laser pulses with transparent solids: effects of wavelength, focusing angle and pulse duration
V. Zhukov¹,², N. Bulgakova¹,³, M. Fedoruk²,⁴
¹HiLASE Centre, Institute of Physics of the Czech Academy of Sciences, Prague, Czech Republic
²Institute of Computational Technologies SB RAS, Novosibirsk, Russia
³S.S. Kutateladze Institute of Thermophysics SB RAS, Novosibirsk, Russia
⁴Novosibirsk State University, Novosibirsk, Russia
10.30–12.00 ULTRAFAST LASER-INDUCED BULK MODIFICATION OF TRANSPARENT DIELECTRICS
(Joint session of W05 and W06)
CHAIRMEN: A. Okhrimchuk, A.V. Rode

10.30 W05,06-35 Picosecond Laser Processing of Photosensitive Glasses for Lab-on-a-Chip Applications (INVITED)
F. Sima¹, F. Jipa¹, S. Iosub¹², C. Butnaru¹, E. Axente¹,
G. Chiritoiu², L.E. Sima², K. Sugioka³
¹CETAL, National Institute for Lasers, Plasma and Radiation Physics, Magurele, Romania
²Institute of Biochemistry of the Romanian Academy, Bucharest, Romania
³RIKEN Center for Advanced Photonics, Saitama, Japan

11.00 W05,06-36 3D structuring of bulk optical materials down to the nanoscale (INVITED)
R. Stoian
Laboratoire Hubert Curien, CNRS UMR 5516, Université Jean Monnet, St. Etienne, France

11.30 W05,06-37 Material modification at Megabar pressures with ultrashort laser pulses (INVITED)
A.V. Rode¹, L. Rapp¹, E.G. Gamaly¹, S. Juodkazis²
¹Laser Physics Centre, Research School of Physics and Engineering, The Australian National University, Canberra, Australia
²Centre for Micro-Photonics, Swinburne University of Technology, Hawthorn, Australia

COFFEE BREAK
**12.30 W05,06-38**  
**Femtosecond laser-driven shock compression of solids and its engineering applications (INVITED)**  
*T. Sano*  
Division of Materials and Manufacturing Science, Osaka University, Suita, Japan

**13.00 W05,06-39**  
**Effect of femtosecond laser pulse parameters on nanograting inscription in sodium-germanate glasses**  
*S.V. Lotarev, S.S. Fedotov, A.I. Kurina, A.S. Lipatiev, V.N. Sigaev*  
Mendeleev University of Chemical Technology of Russia, Moscow, Russia

**13.20 W05,06-40**  
**Efficient laser writing in glasses with a sub-nanosecond burst of ultra-short pulses**  
*A. Okhrimchuk\(^1,2\), M. Smayev\(^1\), V. Dorofeev\(^1,3\)*  
\(^1\) D. Mendeleev University of Chemical Technology of Russia, Moscow, Russia  
\(^2\) Fiber Optics Research Center of RAS, Moscow, Russia  
\(^3\) G.G. Devyatikh Institute of Chemistry of High-Purity Substances of RAS, Nizhny Novgorod, Russia

**13.40 W05,06-41**  
**Laser processing of glassy composite with plasmonic nanoparticles**  
*M.M. Sergeev\(^1\), Y.M. Andreeva\(^1\), R.A. Zakoldaev\(^1\), T.E. Itina\(^1,2\)*  
\(^1\) ITMO University, St. Petersburg, Russia  
\(^2\) Univ Lyon, UJM - Saint-Etienne, Hubert Curien Lab., Saint-Etienne, France
POSTER SESSIONS 1-2

JULY 2

Poster presentations marked by C1 are presented by participants of the conference for young scientists, engineers and students
POSTER SESSION 1

18.00–19.30 POSTER SESSION LT
CHAIRMEN: T. Itina, G. Odintsova

PS1-LT-1 Femtosecond laser annealing of layered structures based on germanium and silicon (C1)
A.V. Kolchin¹, D.V. Shuleiko¹, A.V. Pavlikov¹, S.V. Zabotnov¹, L.A. Golovan¹, D.E. Presnov¹, V.A. Volodin², G.K. Krivyakin², A.A. Popov³
¹ Lomonosov Moscow State University, Moscow, Russia
² Rzhanov Institute of Semiconductor Physics, Novosibirsk, Russia
³ Yaroslavl branch of Valiev Institute of Physics and Technology, Yaroslavl, Russia

PS1-LT-2 Study of changes in properties of submicrocrystalline titanium as a result of femtosecond laser treatment (C1)
A.Yu. Tokmacheva-Kolobova¹², S.S. Manokhin¹
¹ Institute of Problems of Chemical Physics RAS, Chernogolovka, Russia
² National Research University of Science and Technology “MISIS”, Moscow, Russia

PS1-LT-3 Particle characterization using forward elastic light scattering
M.A. Casas-Ramos¹, G.E. Sandoval-Romero²
¹ Posgrado de Maestria y Doctorado en Ingenieria, Universidad Nacional Autonoma de Mexico, Mexico City, Mexico
² Instituto de Ciencias Aplicadas y Tecnología, Universidad Nacional Autónoma de México, Mexico City, Mexico

PS1-LT-4 Second Harmonic Generation in Magneto-Plasmonic Metasurfaces
D.A. Kuzmin¹², I.V. Bychkov¹², V.G. Shavrov³ V.V. Temnov⁴
¹ South Ural State University (National Research University), Chelyabinsk, Russia
² Chelyabinsk State University, Chelyabinsk, Russia
³ Kotelnikov Institute of Radio-engeneering and Electronics of RAS, Moscow, Russia
⁴ Institut des Molécules et Matériaux du Mans, CNRS UMR 6283, Université du Maine, Le Mans cedex, France

PS1-LT-5 The development of picosecond terawatts CO₂ laser and its applications in particle acceleration
Tang Xiaohui, Qin Yingxiong, Li Zhengyan
National Engineering Research Center for Laser Processing, Huazhong University of Science &Technology, Wuhan, China
18.00–19.30 POSTER SESSION LMI

CHAIRMEN: T. Itina, G. Odintsova

PS1-LMI-1 The change in fluorescence of ZnO films doped with detonation nanodiamonds under DNA action
E.A. Boruleva, G.K. Chudinova
1 National Research Nuclear University MEPhI, Moscow, Russia
2 Natural Science Center General Physics Institute RAS, Moscow, Russia

PS1-LMI-2 Conical beams in selective laser cladding
Yu. Chivel
Additive Technologies Lab., Minsk, Belarus

PS1-LMI-3 Selective laser melting of multi-material parts
Yu. Chivel
Additive Technologies Lab., Minsk, Belarus

PS1-LMI-4 Strain gauge based on Bragg fiber grating
A.A. Dmitriyev, A.S. Varzhel, S.V. Varzhel
1 ITMO University, St. Petersburg, Russia

PS1-LMI-5 Inscription and investigation of the spectral characteristics of tilted fiber Bragg gratings
A. Cherepanov, K.A. Konnov, A.I. Gribaev, S.V. Varzhel, I.K. Meshkovskiy
ITMO University, St. Petersburg, Russia

PS1-LMI-6 Picosecond Nd:YAG lasers in laser-induced μ-plasma (LIμP) applications
V. V. Koval, A. S. Davtian, A. F. Kornev, R. A. Zakoldaev,
M. M. Sergeev, V. P. Veiko
1 «Lasers & Optical Systems» Co. Ltd., 199053, St. Petersburg, Russia
2 ITMO University, 197101, St. Petersburg, Russia

PS1-LMI-7 Air flow motion rate measuring method, based on fiber Bragg gratings
V. A. Novikova, S. V. Varzhel
ITMO University, St. Petersburg, Russia

PS1-LMI-8 Photoinduced nonradiative relaxation due to the vibronic coupling in two-level dissipative systems
P. Volkov, E. Perlin, A. Ivanov
ITMO University, St. Petersburg, Russia

PS1-LMI-9 Electrostatic instability of solids lattice under intensive laser action
V. Komolov
ITMO University, St. Petersburg, Russia

PS1-LMI-10 Quality analysis of optical crystals by means of high-resolution THz spectroscopy
G. Rogozhnikov
FSUE “RFNC-VNIIEF”, Sarov, Russia
PS1-LMI-11 Numerical modeling of energy relaxation in molybdenum thin films on glass substrates upon irradiation by femtosecond and picosecond laser pulses
K. Hlinomaz, Y. Levy, T.J.-Y. Derrien, N.M. Bulgakova
1 HiLASE Centre, Institute of Physics of the Czech Academy of Sciences, Prague, Czech Republic
2 Czech Technical University in Prague, Faculty of Nuclear Sciences and Physical Engineering
3 S.S. Kutateladze Institute of Thermophysics SB RAS, Russia

PS1-LMI-12 Nonlinear scattering in photorefractive LiNbO$_3$ crystals
S. Kostritskii, M. Aillerie, E. Kokanyan, O. Sevostyanov
1 RPC Optolink, Zelenograd, Moscow, Russia
2 LMOPS, University of Lorraine and Supelec, Metz, France
3 Institute for Physical Research, National Academy of Sciences of Armenia, Ashtarak, Armenia
4 Phys. Dept., Kemerovo State University, Kemerovo, Russia

PS1-LMI-13 Frequency down-conversion of femtosecond pulses in nanocomposites
O. Khasanov, O. Fedotova, G. Rusetsky, T. Smirnova
1 Scientific-Practical Material Research Centre, NAS of Belarus, Belarus
2 International Sakharov Environmental University, Minsk, Belarus

PS1-LMI-14 Comparative analysis of light bullet scenarios for powerful femtosecond vortex and Gaussian pulses in Kerr media
O. Fedotova, O. Khasanov, T. Smirnova, G. Rusetsky
1 Scientific-Practical Material Research Centre, Minsk, Belarus
2 International Sakharov Environmental University, Minsk, Belarus

PS1-LMI-15 Algorithms of result processing automatization for light induced damage threshold measurements
R.M. Akhmadullin, A.N. Sergeev, A.V. Belikov, A.A. Afonyushkin, S.V. Gagarskiy
ITMO University, St. Petersburg, Russia

PS1-LMI-16 Reflectivity of niobium in ablation with nanosecond laser pulses at 1.06 and 0.69 mm
O. Benavides, L. de la Cruz May, E.B. Mejia, A. Flores Gil
1 Universidad Autónoma del Carmen, Cd. del Carmen, Campeche, México
2 Centro de Investigaciones en Óptica, León, Guanajuato, México

PS1-LMI-17 Modeling the Influence of Laser-Induced Plasma on the Target Heating under Nanosecond Pulses in an Ambient Gas
D.V. Bedenko, O.B. Kovalev
Siberian branch of RAS, Khrisianovich institute of theoretical and applied mechanics, Novosibirsk, Russia
PS1-W03-1 Optical properties of ZnO nanoparticles and thin films relevant for gas-sensor applications (C1)
M.G. Gushchin, I.A. Gladskikh, A.V. Sokolova, D.A. Kurshanov, T.A. Vartanyan
ITMO University, St. Petersburg, Russia

PS1-W03-2 Spaser emission of a monolayer of silver nanoparticles coated with coumarin 481 dye (C1)
A.N. Kamalieva, N.A. Toropov, T.A. Vartanyan
ITMO University, St. Petersburg, Russia

PS1-W03-3 Laser deposition of Fe- and Ni-based micro-powder coatings (C1)
M.N. Khomyakov¹, P.A. Pinaev², A.L. Smirnov³, P.A. Statsenko⁴, G.N. Grachev⁵
Institute of laser physics SB RAS, Novosibirsk, Russia

PS1-W03-4 Topological electroconductivity in nanocluster metallic thin films: a shape depended nonlinear model for the electroconductivity physics enhancement
Vladimir State University, Vladimir, Russia

PS1-W03-5 Laser assisted fragmentation of metal nanoparticles
P. Gladskikh, I. Gladskikh, T. Vartanyan
ITMO University, St. Petersburg, Russia

PS1-W03-6 Study of optical and photoelectric properties of nanocomposite material based on titanium dioxide and graphene oxide
N. Ibrayev, E. Seliverstova, A. Zhumabekov
Institute of Molecular Nanohotonics, Buketov Karaganda State University, Karaganda, Kazakhstan

PS1-W03-7 Photoinduced electron transfer in multilayered hybrid structures based on CdSe quantum dots and TiO₂ nanoparticles
A. Makovetskaya¹, E. Kolesova¹, V. Maslov¹, A. Dubavik¹, Yu. Gun’ko¹,², A. Orlova¹
¹ ITMO University, St. Petersburg, Russia
² University of Dublin, Trinity College, Dublin 2, Ireland

PS1-W03-8 Optical properties of molecular layer of cyanine dye coated on Ag or Au island film
R.D. Nabiullina, A.A. Starovoytov, I.A. Gladskikh
ITMO University, St. Petersburg, Russia
PS1-W03-9  Photoinduced chirality of semiconductor quantum dots
F. Safin, V. Maslov
ITMO University, St. Petersburg, Russia

PS1-W03-10  Optical properties of molecular layer of pyrylium compounds
A.A. Starovoytov, E.N. Kaliteevskaya, V.P. Krutyakova, T.K. Razumova
ITMO University, St. Petersburg, Russia

PS1-W03-11  Morphological and optical properties of isolated zinc nanoparticles obtained by magnetron sputtering on quartz substrates
V.V. Tomaev¹⁴, T.A. Vartanyan², V.A. Polishchuk³, N.B. Leonov²
¹ St. Petersburg State Technological Institute (Technical University), St. Petersburg, Russia
² ITMO University, St. Petersburg, Russia
³ State University of Maritime and River Fleet named after Admiral S.O. Makarov, St. Petersburg, Russia
⁴ St. Petersburg Mining University, St. Petersburg, Russia

PS1-W03-12  Self-assembled formation of nanodomain structures by multiple IR laser pulse irradiation of lithium niobate crystals
School of Natural Sciences and Mathematics, Ural Federal University, Ekaterinburg, Russia

PS1-W03-13  Application of metal nanoparticles for intracellular uptake monitoring
D.R. Dadadzhanov¹², A.N. Kamalieva¹, T.A. Vartanyan¹
¹ ITMO University, St. Petersburg, Russia
² Electrooptics and Photonics Engineering Department and Ilse Katz Institute for Nanoscale Science and Technology, Ben-Gurion University, Beer-Sheva, Israel

PS1-W04-1  Synthesis and optical characteristics of core-shell nanostructures of Ag-SiO₂
D. Afanasyev¹², E. Alikhaidarova¹, N. Ibrayev¹
¹ Institute of Molecular Nanophotonics, Buketov Karaganda State University, Karaganda, Kazakhstan
² Institute of Applied Mathematics, Karaganda, Kazakhstan

PS1-W04-2  FBGs inscription in multicore fibers with an ordinary and an astigmatic Gaussian beam
A.V. Dostovalov¹², A.A. Wolf, K.A. Bronnikov¹², S.A. Babin¹²
¹ Institute of Automation and Electrometry SB RAS, Novosibirsk, Russia
² Novosibirsk State University, Novosibirsk Russia

PS1-W04-3  Optical fiber 3D shape sensor based on fiber Bragg gratings chirped array
D.A. Egorova, A.V. Kulikov, V.S. Lavrov, M.Y. Plotnikov, A.N. Nikitenko
ITMO University, St. Petersburg, Russia
PS1-W04-4 Fast fabrication of phase diffraction elements on silicon by laser-induced microplasma action
V. Gresko, M. Sergeev, V. Rymkevich
ITMO University, St. Petersburg, Russia

PS1-W04-5 Formation of thin films of ZnO doped with REI by laser annealing
L.V. Grigoryev\textsuperscript{1}, I.S. Morozov\textsuperscript{1}, N.V. Zhuravlev\textsuperscript{1}, A.V. Mikhailov\textsuperscript{2}
\textsuperscript{1}ITMO University, Russia
\textsuperscript{2}SOI Vavilov Research Institute, Saint-Petersburg, Russia

IPS1-W04-6 Influence of nanoporous silicate matrices surface nanoroughness on the SERS signal
A.O. Ismagilov\textsuperscript{1}, I.Yu. Schelkanova\textsuperscript{1}, A.H. Pandya\textsuperscript{2}, N.V. Andreeva\textsuperscript{1}, A. Douplik\textsuperscript{2}, O.V. Andreeva\textsuperscript{1}
\textsuperscript{1}ITMO University, Saint-Petersburg, Russia
\textsuperscript{2}Ryerson University, Toronto, Canada

PS1-W04-7 Formation of nanoparticles from thin silver films under a liquid layer by single-shot nanosecond laser action
ITMO University, Saint-Petersburg, Russia

PS1-W04-8 Cylindrical and flat surface electromagnetic waves in laser technology of silicon surface texturing with a double femtosecond pulse
E.V. Kuzmin, D.S. Polyakov, A.A. Samokhvalov, G.D. Shandybina
ITMO University, Saint-Petersburg, Russia

PS1-W04-9 Laser direct writing of microstructures on thin titanium films by cw laser radiation
Q.D. Nguyen, E.V. Lebedeva, D.A. Sinev, E.A. Shakhno
ITMO University, Saint-Petersburg, Russia

PS1-W04-10 Structural and optoelectronic properties of multimodal nanocomposites formed by laser-assisted modification of silicon-based nanoparticles
Y.V. Ryabchikov
HiLASE Centre, Institute of Physics of the Czech Academy of Sciences, Prague, Czech Republic

PS1-W04-11 Photocatalytic properties of TiO\textsubscript{2} and TiO\textsubscript{2}-Ag nanoparticles synthesized by pulsed laser ablation in liquid
A.A. Samokhvalov\textsuperscript{1}, M.V. Lukiantcev\textsuperscript{1}, Y.D. Golubev\textsuperscript{1}, V.V. Sedova\textsuperscript{1}, D.V. Pankin\textsuperscript{2}
\textsuperscript{1}ITMO University, Saint-Petersburg, Russia
\textsuperscript{2}Center for optical and laser materials research, Saint-Petersburg State University, Saint-Petersburg, Russia
PS1-W04-12 Fast fabrication of spiral varying retarder on CaCO\textsubscript{3} plate by laser-induced microplasma for generating radially polarized light
V. Shkuratova\textsuperscript{1}, G. Kostyuk\textsuperscript{2}, M. Sergeev\textsuperscript{3}, E. Vikhrova\textsuperscript{4}
ITMO University, Saint-Petersburg, Russia

PS1-W04-13 Direct writing of micropatterns using selective laser sintering technique and their application as non-enzimatic sensors
I.I. Tumkin\textsuperscript{1}, E.M. Khairullina\textsuperscript{1}, M.S. Panov\textsuperscript{1}, D.M. Gordeychuk\textsuperscript{1}, M. Mizoshiri\textsuperscript{2}
\textsuperscript{1}Saint-Petersburg State University, Saint-Petersburg, Russia
\textsuperscript{2}Dept. of Mechanical Engineering, Nagaoka University of Technology, Nagaoka, Japan

PS1-W04-14 Usage of laser-induced microplasma for fabrication of birefringent phase plate to generate ring beam from linearly-polarized Gaussian beam
E. Vikhrova, G. Kostyuk, M. Sergeev, V. Shkuratova
ITMO University, Saint-Petersburg, Russia

PS1-W04-15 The effect of the size of gold nanoparticles on the effect of fluorescence intensity enhancing of a polymethine dye
N.D. Zhumabay, E.V. Seliverstova, N.Kh. Ibrayev
Institute of Molecular Nanophotonics, Buketov Karaganda State University Karaganda, Kazakhstan

PS1-W04-16 Kinetic of micro-relief formation on fused silica by laser-induced microplasma action
V.S. Rymkevich, M.M. Sergeev, R.A. Zakoldaev, E.B. Yakovlev
ITMO University, Saint-Petersburg, Russia

PS1-W04-17 Atomistic simulation of laser ablation of silicon by ultrashort laser pulses
L. Kolotova, S. Starikov
Joint Institute for High Temperatures RAS, Moscow, Russia

PS1-W04-18 Laser induced growth and degradation of gold nanoparticles in titanium dioxide porous film
Ya. Andreeva\textsuperscript{1}, N. Sharma\textsuperscript{2}, N. Destouches\textsuperscript{2}, F. Vocanson\textsuperscript{2}, T. Itina\textsuperscript{1,2}
\textsuperscript{1}Faculty of Laser Photonics and Optoelectronics, ITMO University, St. Petersburg, Russia
\textsuperscript{2}Laboratoire Hubert Curien, UMR CNRS 5516/UJM-Saint-Etienne/Univ. Lyon, Saint-Etienne, France
PS2-W07-1 The removal of candle soot and coating varnish from the surface of oil painting by hydrogen fluoride laser
V.M. Fomin, E.A. Klimuk, G. A. Troshchinenko
FSUE RSC "Applied chemistry", St. Petersburg, Russia

PS2-W07-2 Optimization of cleaning of various contaminated surfaces using YAG: Nd\(^{3+}\) laser
Ya.V. Kravchenko\(^1\), S.I. Derzhavin\(^1\), S.M. Klimentov\(^2\), D.N. Mamonov\(^1\)
\(^1\) Prokhorov General Physics Institute RAS
\(^2\) National Research Nuclear University MEPhI (Moscow Engineering Physics Institute), Moscow, Russia

PS2-W07-3 Investigation of 19th century glass beads degraded areas by Raman spectroscopy and luminescence spectroscopy
D. Pankin\(^1\), I. Kadikova\(^2\), E. Morozova\(^2,3\), T. Yuryeva\(^2\), I. Grigorieva\(^4\), I. Afanasyev\(^5\), A. Povolotckia\(^1\), V. Yuryev\(^6\)
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\(^2\) The State Research Institute for Restoration of the Ministry of Culture of the Russian Federation, Moscow, Russia
\(^3\) N.S.Kurnakov Institute of General and Inorganic Chemistry RAS, Moscow, Russia
\(^4\) The State Hermitage Museum, Saint-Petersburg, Russia
\(^5\) The Russian Federal Center of Forensic Science of the Ministry of Justice, Moscow, Russia
\(^6\) A.M. Prokhorov General Physics Institute RAS, Moscow, Russia
PS2-W07-4  Laser cleaning of lead and zinc exterior sculpture. The role of the pulse duration
D.S. Prokuratov\textsuperscript{1,2}, A.S. Davtian\textsuperscript{3}, O.S. Vereshchagin\textsuperscript{4},
N.S. Kurganov\textsuperscript{5,6}, A.A. Samokhvalov\textsuperscript{7}, D.V. Pankin\textsuperscript{8},
A.A. Mikhaylova\textsuperscript{8}, A.V Povolotckaia\textsuperscript{8}, A.A. Shimko\textsuperscript{8}
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\textsuperscript{2}The State Hermitage Museum, St. Petersburg 190000, Russia
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\textsuperscript{5}Conservation Department, Faculty of Arts, Saint Petersburg State University, Saint-Petersburg 199034, Russia
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\textsuperscript{8}Center for optical and laser materials research, Saint-Petersburg State University, St. Petersburg 199034, Russia

PS2-W07-5  Layer-by-layer analysis of archaeological coins by means of laser-induced breakdown spectroscopy
A. A. Samokhvalov\textsuperscript{1}, Y.V. Frenkel\textsuperscript{2}, D.S. Prokuratov\textsuperscript{2,3},
N.S. Kurganov\textsuperscript{4,5}, K.V. Gorlov\textsuperscript{5}
\textsuperscript{1}ITMO University, St. Petersburg, Russia
\textsuperscript{2}The State Hermitage Museum, St. Petersburg, Russia
\textsuperscript{3}Department of Photonics, Saint Petersburg Electrotechnical University "LETI", St. Petersburg, Russia
\textsuperscript{4}Saint-Petersburg State University, St. Petersburg, Russia
\textsuperscript{5}Institute for the History of material culture RAS, St. Petersburg, Russia

PS2-W07-6  Laser cleaning of easel painting with near infrared fiber laser radiation
A.V. Strusevich\textsuperscript{1}, V.P. Veiko\textsuperscript{1}, S.V. Sirro\textsuperscript{2}
\textsuperscript{1}ITMO University, St. Petersburg, Russia
\textsuperscript{2}The State Russian Museum, St. Petersburg, Russia
Poster presentations marked by C1 are presented by participants of the conference for young scientists, engineers and students
PS3-C02-1 Determination of level of tissue denaturation at upconversion particles (C1)
I.Yu. Yanina,¹,² N.A. Navolokin,³ E.A. Sagaydachnaya,¹ I.V. Vidyacheva,⁴ V.I. Kochubey,¹,² V.V. Tuchin¹,²,⁵
¹ Department of Optics and Biophotonics, Saratov State University, Saratov, Russia
² Interdisciplinary Laboratory of Biophotonics, Tomsk State University, Tomsk, Russia
³ Department of Pathological Anatomy, Saratov State Medical University, Saratov, Russia
⁴ Education and Research Institution of Nanostructures and Biosystems, Saratov State University, Saratov, Russia
⁵ Institute of Precision Mechanics and Control RAS, Saratov, Russia

PS3-C02-2 Effects of scattering and birefringence on phase retardation of polarized light propagated in biological tissues
M. Borovkova, A. Bykov, A. Popov, I. Meglinski
Optoelectronics Unit, Faculty of Information Technology and Electrical Engineering, P.O.Box 4500
FI-90014 University of Oulu, Oulu, Finland

PS3-C02-3 Complex spectral assessment of organic composition of the bone bioimplants in their manufacture
O O. Frolov ¹, P.E. Timchenko ¹, E.V. Timchenko ¹, L.T. Volova ²
¹ Samara National Research University, Samara, Russia, Moscow
² Experimental Medicine And Biotechnologies Institute of the Samara State Medical University, Samara, Russia

PS3-C02-4 Detailed analysis of Raman spectra for rapid assessment of the bioimplants quality for dentistry
O O. Frolov ¹, P.E. Timchenko ¹, E.V. Timchenko ¹, L.T. Volova ², E.F. Yagofarova ¹, I. S. Tikhov ¹
¹ Samara National Research University, Samara, Russia, Moscow
² Experimental Medicine And Biotechnologies Institute of the Samara State Medical University, Samara, Russia
PS3-C02-5 Fraunhofer diffraction and waveguide light propagation in tooth enamel  
*V.N. Grisimov*  
Scientific Department of Modern Dental Technologies of the Research Institute of Dentistry and Maxillofacial Surgery of the First St. Petersburg state medical university, St. Petersburg, Russia

PS3-C02-6 The optical analysis of surfaces of regenerates after performing different methods of chondroplasty  
*E.V. Timchenko¹, P.E. Timchenko¹, D.A. Dolgushkin², L.T. Volova², V.A. Lazarev², M.D. Markova¹, A.V. Lomkina¹*  
¹ Samara National Research University, Samara, Russia  
² Samara State Medical University, Samara, Russia

PS3-C02-7 Theoretical study of iron oxide nanoparticles for laser photothermal therapy  
*S.F. Salem¹, V.V. Tuchin¹,²,³,⁴*  
¹ Department of Optics and Biophotonics, Saratov State University, Saratov, Russia  
² Interdisciplinary Laboratory of Biophotonics, Tomsk State University, Tomsk, Russia  
³ Laboratory of Femto medicine, ITMO University, St. Petersburg, Russia  
⁴ Institute of Precision Mechanics and Control of the Russian Academy of Sciences, Saratov, Russia

PS3-C02-8 Automatic classification of fluorescence and diffuse reflectance spectra of biological tissues with significantly different optical properties  
*T. Savelieva¹,², E. Ahlyustina², K. Linkov¹, G. Meerovich¹,², V. Loschenov¹,²*  
¹ Prokhorov General Physics Institute of RAS, Moscow, Russia  
² National Research Nuclear University MEPhI, Moscow, Russia  
⁵ Institute of Precision Mechanics and Control, RAS, Saratov, Russia
PS3-C02-9  Kinetics of optical properties on selected laser lines of human periodontal gingiva when exposed to glycerol-propylene glycol mixture
A. A. Selifonov,1,2 V. V. Tuchin1,3,4,5
1Saratov State University, Saratov, Russia
2Saratov State Medical University, Saratov, Russia
3Tomsk State University, Tomsk, Russia
4ITMO University, St. Petersburg, Russia

PS3-C02-10  LED devices for the extremely limited high-intensive PDT of onychomycosis and phototherapy of COPD
Y.V. Semyashkina1, A.V. Belikov1, A.V. Skrypnik1, M.L. Gelfond2, E.I. Sergeeva3
1ITMO University, St. Petersburg, Russia
2Petrov Research Institute of Oncology, St. Petersburg, Russia
Clinic of dermatology and venereology, St. Petersburg, Russia

PS3-C02-11  Laser ablation of porous silicon for biomedical imaging
A.V. Skobelkina1, F.V. Kashaev1, S.V. Zabotnov1, D.A. Kurakina2, A.V. Khilov2, P.D. Agrba, M.Yu. Kirillin2, P.K. Kashkarov1
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Institute of Applied Physics RAS, Nizhny Novgorod, Russia
Lobachevsky State University of Nizhny Novgorod, Nizhny Novgorod, Russia

PS3-C02-12  Active drug delivery of Zn-containing nanomaterials using radiation of Er:YLF laser
A.V. Belikov, N.V. Nikonorov, S.K. Evstropiev, A.D. Tavalinskaya, S.N. Smirnov
ITMO University, St. Petersburg, Russia

PS3-C02-13  Modeling of the heating process of biological tissues during multipulse ultrashort laser irradiation
A. Shamova, E. Yakovlev, G. Shandybina
ITMO University, St. Petersburg, Russia

PS3-C02-14  Spectral analysis of bone tissue after ovariectomy and the effectiveness of its treatment with allogeneic hydroxyapatite
I.V. Fedorova1, E.V. Timchenko1, P.E. Timchenko1, E.V. Pisareva1, L.T. Volova2, A.S. Tumuchenkova1, O.O. Frolov1, A.Subatovich1
1Samara National Research University, Samara, Russia
2Samara State Medical University, Samara, Russia
The fluctuation of the absorbed energy during femtosecond laser writing as a factor for the on-line control of waveguide quality
S.S. Fedotov, A.G. Okhrimchuk
Mendeleev university of chemical technology of Russia, Moscow, Russia

Structural modifications of LiNbO\textsubscript{3} crystal at femtosecond-laser writing of waveguides
S.M. Kostritskii\textsuperscript{1}, Yu.N. Korkishko\textsuperscript{1}, V.A. Fedorov\textsuperscript{1}, O.G. Sevostyanov\textsuperscript{2}, M. Chirkova\textsuperscript{2}, N.N. Skryabin\textsuperscript{3}
\textsuperscript{1}RPC Optolink Ltd, Zelenograd, Moscow, Russia
\textsuperscript{2}Kemerovo State University, Kemerovo, Russia

Femtosecond laser-induced tailoring of crystalline tracks in glass by beam shaping and partial amorphization
A.S. Lipatiev\textsuperscript{1}, S.V. Lotarev\textsuperscript{1}, M.P. Smayev\textsuperscript{1}, E.V. Lopatina\textsuperscript{1}, T.O. Lipateva\textsuperscript{1}, I.A. Karateev\textsuperscript{2}, V.N. Sigaev\textsuperscript{2}
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Anomalously oriented nanograting formation under ultrashort polarized laser radiation interaction with condensed media
V. Makin\textsuperscript{2}, R. Makin\textsuperscript{2}
\textsuperscript{1}Institute for Nuclear Energetic, SosnovyBor City, Leningrad region, Russia
\textsuperscript{2}National Research Nuclear University “MEPHI”, Moscow, Russia

Influence of band filling effect on photo-excitation of semiconductors by short and ultrashort laser pulses at wavelength near the edge of interband absorption
D.S. Polyakov, E.B. Yakovlev
ITMO University, Saint-Petersburg, Russia

Dislocation-related luminescence in Si and Si/SiO\textsubscript{2} structure after laser irradiation
D.S. Polyakov\textsuperscript{1}, A.E. Kalyadin\textsuperscript{2}, N.A. Sobolev\textsuperscript{2}, V.P. Veiko\textsuperscript{1}, V.I. Vdovin\textsuperscript{3}
\textsuperscript{1}ITMO University, Saint-Petersburg, Russia
\textsuperscript{2}Ioffe Physical Technical Institute RAS, Saint-Petersburg, Russia
\textsuperscript{3}Rzhanov Institute of Semiconductor Physics, Novosibirsk, Russia
PS3-W05-7 Modeling of interference thermochemical recording on thin metal films by ultrashort laser pulses
Q.D. Nguyen, E.A. Shakhno
ITMO University, Saint-Petersburg, Russia

PS3-W05-8 Photoacoustic and spectroscopic study of double-pulse femtosecond laser ablation of silicon and transparent dielectrics
A.A. Samokhvalov, D.S. Polyakov, Y.D. Golubev, S.N. Shelygina
ITMO University, Saint-Petersburg, Russia

PS3-W05-9 Femtosecond supercontinuum generation in dissipative medium: photoacoustic and spectroscopic investigations
S.N. Shelygina, A.A. Samokhvalov, S.I. Kudryashov
ITMO University, Saint-Petersburg, Russia

PS3-W05-10 Ultrafast nonlinear magnetization dynamics and magnetization switching in magnetostrictive nanomagnets
V. Vlasov, A. Golov, A. Alekhin, A. Lomonosov, L. Kotov, D. Kuzmin, I. Bychkov, V. Temnov
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2 Institut des Molecules et Materiaux du Mans, UMR CNRS 6283, Le Mans Universite, Le Mans, France
3 Chelyabinsk State University, Chelyabinsk, Russia
4 South Ural State University (National Research University), Chelyabinsk, Russia

PS3-W05-11 Magneto-acoustics in ferromagnetic nanostructures with zero magnetostriction
A. Golov, V. Vlasov, A. Lomonosov, A. Alekhin, L. Kotov, D. Kuzmin, I. Bychkov, V. Temnov
1 Syktyvkar State University named after Pitirim Sorokin, Syktyvkar, Russia
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3 Chelyabinsk State University, Chelyabinsk, Russia
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PS3-W05-12 Inscription of waveguides in porous glass by femtosecond laser-induced densification
Zhong Lijing, R.A. Zakoldaev, M.M. Segeev, T.V. Antropova, V.P. Veiko
1 ITMO University, St. Petersburg, Russia
2 Huazhong University of Science & Technology, Wuhan, China
3 Grebenshchikov Institute of Chemistry of Silicates, RAS, St. Petersburg, Russia
POSTER SESSION 3
ITMO UNIVERSITY, 14-16 BIRZHEVAYA LINE

18.00–19.30 POSTER SESSION W06
CHAIRMEN: T. Vartanyan, M. Sergeev

PS3-W06-1 Laser-induced synthesis of carbon-based nanostructures on the substrate of polyimide
V.S. Andriianov, I.I. Tumkin, E.M. Khairullina, M.S. Panov, V.S. Mironov
Saint-Petersburg State University, Institute of chemistry, Saint-Petersburg, Russia

PS3-W06-2 Thermochemical LIPSS formation on Si films with an astigmatic Gaussian beam
K.A Bronnikov\textsuperscript{1,2}, A.V Dostovalov\textsuperscript{1,2}, V.S Terentyev\textsuperscript{1}, V.P Korolkov\textsuperscript{1,2},
S.A Babin\textsuperscript{1,2}
\textsuperscript{1}Institute of Automation and Electrometry SB RAS, Novosibirsk, Russia
\textsuperscript{2}Novosibirsk State University, Novosibirsk, Russia

PS3-W06-3 Formation of oxide films with given thickness during laser oxidation of metals
V. Luong, N. Subbotina, D. Sinev, Q. Nguyen, D. Polyakov and G. Odintsova
Faculty of Laser Photonics and Optoelectronics, ITMO University, Saint-Petersburg, Russia

PS3-W06-4 Investigation of the spectral characteristics of Ag -Ag\textsubscript{2}O nanoparticles produced by laser ablation in air
D. Lutoshina\textsuperscript{1}, N. Shchedrina\textsuperscript{1}, M. Sergeev\textsuperscript{1}, A. Nguyen\textsuperscript{1}, D. Kruchkova\textsuperscript{2},
A. Yenakieva\textsuperscript{2} and G. Odintsova\textsuperscript{1}
\textsuperscript{1} Faculty of Laser Photonics and Optoelectronics, ITMO University, Saint-Petersburg, Russia
\textsuperscript{2}School of laser technologies, ITMO University, St. Petersburg, Russia

PS3-W06-5 Formation of biomimetic materials for structural coloration under the action of nanosecond laser pulses
M. Moskvina\textsuperscript{1}, N. Shchedrina\textsuperscript{1}, Y. Wang\textsuperscript{1}, G. Zhang\textsuperscript{1}, A. Filippov\textsuperscript{2} and G. Odintsova\textsuperscript{1}
\textsuperscript{1} Faculty of Laser Photonics and Optoelectronics, ITMO University, St. Petersburg, Russia
\textsuperscript{2}School of laser technologies, ITMO University, St. Petersburg, Russia
PS3-W06-6 Laser-induced formation of hydrophobic and hydrophilic biomimetic structures on metal surface

N. Shchedrina\textsuperscript{1}, A. Ramos\textsuperscript{1,2}, D. Correa\textsuperscript{1,2}, V. Bozko\textsuperscript{1}, R. Yatsuk\textsuperscript{1}, M. Moskvin\textsuperscript{1} and G. Odintsova\textsuperscript{1}

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\textsuperscript{2} Instituto Politecnico Nacional, SEPI-ESIME-Zacatenco, Mexico

PS3-W06-7 Laser-induced formation of microcones on germanium in oxidizing atmosphere and vacuum. Dynamics of relief

Y. Pestov, V. Makin

Scientific Research Institute for Optoelectronic Instrument Engineering, Sosnovy Bor, Russia

PS3-W06-8 Laser-induced breakdown spectroscopy for micromapping of coating formed by laser cladding

A.O. Samokhvalov\textsuperscript{1}, A.A. Petrov\textsuperscript{1}, S.N. Smirnov\textsuperscript{2}, S.N. Shelygina\textsuperscript{1}, V.P. Veiko\textsuperscript{1}

\textsuperscript{1} ITMO University, St. Petersburg, Russia
\textsuperscript{2} SP Lasertech, St. Petersburg, Russia

PS3-W06-9 Reactive laser-induced microplasma: physical properties and technological capabilities for micromachining of transparent dielectrics

A.A. Samokhvalov, T.V. Shilov, V.A. Smolensky, V.P. Veiko

ITMO University, St. Petersburg, Russia

PS3-W06-10 Effect of auxiliary substances on the surface structure of titanium after laser treatment

D.A. Sinev, A.I. Kiian

ITMO University, St. Petersburg, Russia
SUPPLY AND INTEGRATION OF LASER AND OPTIC COMPONENTS

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"Laser Ltd" is founded on 2010 at the base of the Laser Photonics and Optoelectronics Faculty ITMO University. The company specializes on the laser cleaning of typographical anilox shafts from pigments. The company started its small-scale production of equipment in 2016. A representative office of the "Laser Ltd" in Germany is opened in 2015.