

**International Conference
“Fundamentals of Laser Assisted Micro– and Nanotechnologies”
(FLAMN-07)**

**Workshop
“Laser Cleaning and Artworks Conservation”
(LCAC)**

PROGRAM



ITMO
Russia



RFBR
Russia



LSS LMT
Russia



LSS PNSS
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SPIE
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Russia



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SMP TS
Russia

June 25-28, 2007

St. Petersburg - Pushkin, Russia

We wish to thank the following for their contribution to the success of the conference:
European Office of Aerospace Research and Development, Air Force Office of
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<http://www.london.af.mil>

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INTERNATIONAL CONFERENCE
**Fundamentals of
Laser Assisted Micro– & Nanotechnologies
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“Laser Cleaning and Artworks Conservation”
(LCAC)**

**June 25-28, 2007
St. Petersburg - Pushkin, Russia**

To the memory of A.M. Bonch-Bruевич and M.N. Libenson –
founders of Russian and International conferences on non-resonant laser-matter interaction

Organizers:

- St. Petersburg State University of Information Technologies, Mechanics and Optics (ITMO),
- General Physics Institute of Russian Academy of Sciences (GPI RAS), Moscow,
- S.I. Vavilov State Optical Institute (SOI), St. Petersburg

in cooperation with:

Russian Chapter of SPIE,
Laser Association,
Rozhdestvensky Optical Society

Sponsors:

- * Russian Federation Ministry of Education and Science,
- * Russian Foundation for Basic Research (RFBR),
- * St. Petersburg State University of Information Technologies, Mechanics and Optics (ITMO),
- * General Physics Institute of Russian Academy of Sciences (GPI RAS), Moscow,
- * Leading Scientific School of Russian Federation “Fundamentals of Laser Microtechnologies” (LSS LMT)
- * Leading Scientific School of Russian Federation “Photophysics of nanoscale surface structures” (LSS PNSS)
- * State Museum Preserve "Tsarskoye Selo" (SMP TS)
- * Ecole Nationale d'Ingenieurs de Saint-Etienne (ENISE)
- * European Office of Aerospace Research & Development (EOARD)

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GPI RAS, Moscow

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International Program Committee

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Kovsh I., Russia	Smirnov V., Russia

GENERAL INFORMATION

CONFERENCE VENUE

The FLAMN-07 Conference will be held from June 25 till June 28, 2007
at the Manager Training Center ("Kochubey Mansion")
Radishcheva 4, Pushkin, St. Petersburg, Russia
Tel: +7(812) 465-3980

ARRIVAL

Members of the Organizing Committee will meet the participants at Pulkovo airport and at Moskowsky and Vitebsky railway terminals on June 24. Transportation for foreign participants will be provided from the airport and the terminals to the place of registration. To ensure that you will be met please inform the Organizing Committee of the exact time and place of your arrival in Saint Petersburg by e-mail: lamn@pochta.ru

REGISTRATION

Registration will take place at the Manager Training Center ("Kochubey Mansion") in city Pushkin, Radishcheva street 4, tel. (812)465-3980. The place of registration can be reached from Saint-Petersburg by local train from Vitebsky railway terminal ("Pushkinskaya" subway station) or from Kupchino railway station ("Kupchino" subway station) to Pushkin and then by bus number 381 from Pushkin Railway Terminal till bus stop "Parkovaya ulitsa".

The Registration Desk will be open for participants on:

Sunday, June 24: 12.00 - 14.00, 19.00-22.00

Monday, June 25: 9.00 - 18.00

at "Kochubey Mansion"

The Conference Program, Book of Abstracts and other information will be given at the Registration Desk.

ACCOMMODATION

A sufficient number of hotel-rooms will be reserved in the hotel of MTC "Kochubey Mansion" at the same location as the conference center.

TECHNICAL SESSIONS

The Conference sessions will include oral and poster presentations. The time for invited talk is 30 min. including 5 min. for questions and discussion.

The time for oral presentation is 15 min. and 5 min. are given to answer the questions. Overhead, media and slide projectors will be available.

During the poster sessions (see time schedule) presenters remain in the vicinity of their posters for informal discussion and explanations.

The maximum poster size is: vertical 1.0 m, horizontal 1.0 m

Tape to stick the posters will be provided by organizers.

LANGUAGES

The official language of the Conference is English.

TIME

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

WEATHER

The weather in the end of June 2007 usually unstable in Saint-Petersburg with the temperature in the range of +15°C...+25°C. Rains are possible.

SOCIAL PROGRAM

A number of excursions both at Saint Petersburg and at Pushkin are planned. The complete information concerning the social program will be available at the Registration Desk at the beginning of the Conference.

PROCEEDINGS

Full length papers will be published by SPIE. Manuscripts must be prepared in accordance with the usual rules of SPIE and should be submitted to the Organizing Committee till June 28.

The limited number of papers (selected by the Program Committee) will be published:

in “Laser Physics” (in English); in “Opticheskii Zhurnal and in Izvestiya Vuzov, seriya Priborostroeniye” (in Russian).

Conference Executive Director: **A.A. Allas**

Conference Secretariat:

Phone: +7(812) 233–3406

from June 24:

Phone: +7(812) 465-3980

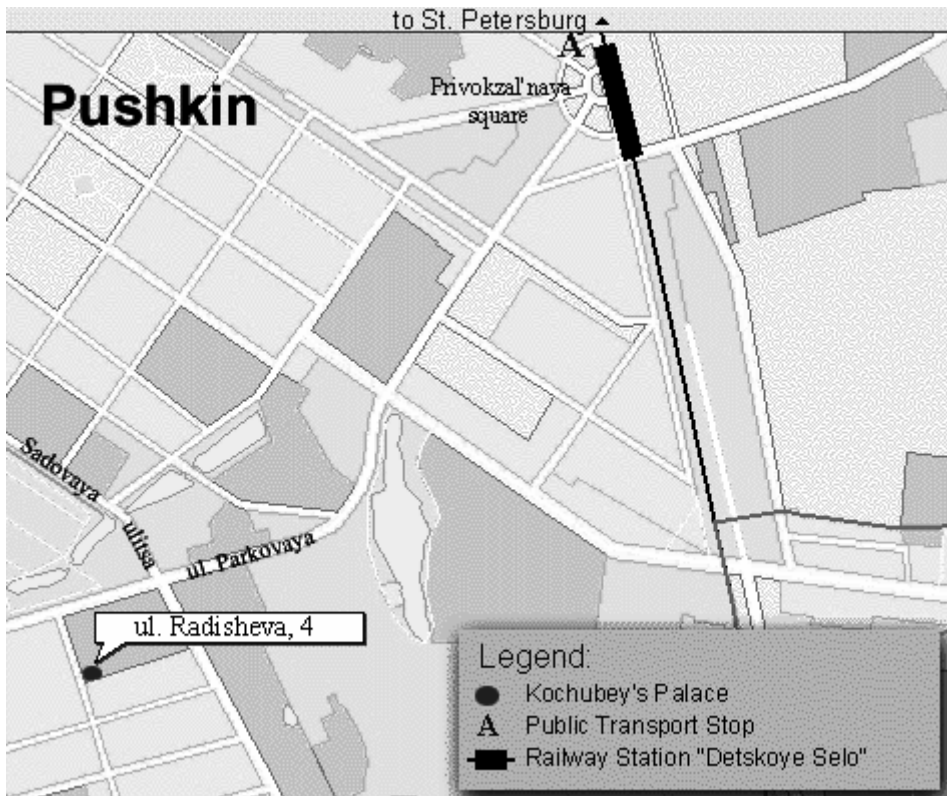
Location

KOCHUBEY MANSION,

189620, St. Petersburg, Pushkin, Radishcheva, 4

Phone +7(812) 465-3980

Fax +7(812) 465-5208



How to get to the Kochubey's Palace from St. Petersburg:

1. Take the metro and go to the station "Pushkinskaya"
2. Go to Vitebskiy Vokzal (near the metro-station) and take local train. The trains run according to timetable.
3. On the local train go to the station "Detskoye selo"(Pushkin).
4. Go to the stop of Public Transport (see the map). Take Public bus 382, 370, 378. Kochubey's palace is situated in 4 Radishchev Street. It will take you approximately 10-20 minutes to get there.
5. Get out of the bus on the cross of Parkovaya ulitsa and Sadovaya ulitsa (see the map).
6. Follow the map to get to the Kochubey's Palace.

Conference Schedule

Monday, June 25

TIME	ORAL PRESENTATIONS	POSTER SESSIONS
10.00-10.30	Opening ceremony	
10.30 – 14.00	Historico-memorial session	
14.00-15.00	Lunch time	
15.30-16.30	Plenary session 1 (1/2)	
16.30-16.45	Coffee break	
16.45-18.15	Plenary session 1 (2/2)	
18.30	Welcome reception	

Tuesday, June 26

TIME	ORAL PRESENTATIONS	POSTER SESSIONS
9.30-12.00	Session OR1 (1/2)	
12.00-12.20	Coffee break	
12.20-14.00	Session OR1 (2/2)	
14.00-15.00	Lunch time	
15.00-16.20	Session OR2 (1/2)	
16.20-17.00	Coffee break	
17.00-19.00	Session OR2 (2/2)	
19.00-20.30		Session PS1

Wednesday, June 27

TIME	ORAL PRESENTATIONS	POSTER SESSIONS
9.30-12.00	Session OR3 (1/2)	
12.00-12.20	Coffee break	
12.20-14.00	Session OR3 (2/2)	
14.00-15.00	Lunch time	
15.00-18.00	Workshop “Laser Cleaning and Artworks Conservation”	
15.00-16.00	Session OR4 (1/2)	
16.20-16.30	Coffee Break	
16.30-18.00	Session OR4 (2/2)	
18.00–19.30		Session PS2
20.00	Conference dinner	

Thursday, June 28

TIME	ORAL PRESENTATIONS	POSTER SESSIONS
9.30-12.00	Session OR5 (1/2)	
12.00-12.20	Coffee break	
12.30-14.00	Session OR5 (2/2)	
14.00-15.00	Lunch time	
15.00-17.00	Plenary session 2	
16.30-17.00	Closing remarks	

MONDAY, June 25

MONDAY, June 25

10.00 – 10.30 OPENING CEREMONY

10.30 – 14.00 HISTORICO-MEMORIAL SESSION:

**In memory of A.M. Bonch-Bruевич and M.N. Libenson – founders
of the conferences of non-resonant laser-matter interaction**

CHAIRMEN: *M.J. SOILEAU, V. VEIKO*

E.B. Aleksandrov

M.J. Soileau;

V.P. Veiko;

T.A. Vartanyan;

11.15–11.30 COFFEE BREAK

**The history of early steps of laser-matter interactions and its
application**

11.30

S.I. Anisimov,

THE FIRST CONFERENCES OF THE NON-RESONANT LASER-
MATTER INTERACTION (INVITED)

12.00

B.S. Luk'yanchuk,

M.N. LIBENSON AND HIS PLACE IN STUDY OF THERMO-
CHEMICAL INSTABILITIES (INVITED)

12.30

V.P. Veiko,

LASER-ASSISTED MICRO-TECHNOLOGY – FROM 1964 TILL
NOW

13.00

E. Maldutis,

FUNDAMENTALS OF THE RESISTANCE OF THE OPTICAL
TRANSPARENCE MATERIALS TO HIGH POWER LASER PULSE
RADIATION (INVITED)

13.30

B.N. Chichkov,

2D AND 3D PHOTOFABRICATION BY FEMTOSECOND LASER
PULSES (INVITED)

14.00–15.00 LUNCH TIME

15.00–18.15 PLENARY SESSION 1

CHAIRMEN: *V.I. KONOV, A. SEMEROK*

15.00

HIGH-POWER LASERS IN THE RUSSIAN FEDERAL NUCLEAR
CENTER – ALL RUSSIAN RESEARCH INSTITUTE OF
EXPERIMENTAL PHYSICS (RFNC – VNIIEF) (INVITED),
S.G. Garanin

MONDAY, June 25

All Russian Research Institute of Experimental Physics, Russia

15.30 LIBS DEVELOPMENT AND APPLICATIONS FOR NUCLEAR MATERIAL ANALYSIS (INVITED),

A. Semerok

Commissariat à l'Energie Atomique CEA Saclay, France

16.00 EFFECT OF ELECTRIC FIELD ON SUBNANOSECOND-PULSED LASER ABLATIVE DRILLING (INVITED),

V.I. Konov¹, S.M. Klimentov¹, P.A. Pivovarov¹, D. Walter², F. Dausinger²,

¹ General Physics Institute of RAS, Moscow, Russia,

² Institut für Strahlwerkzeuge, Stuttgart, Germany

16.30–16.45 COFFEE BREAK

16.45 LASER FORWARD TRANSFER TECHNIQUES FOR MICROELECTRONICS FABRICATION (INVITED),

Alberto Piqué¹, Nick Charipar¹, Ray Auyeung¹, Heungsoo Kim, Scott Mathews²

¹ Materials Science and Technology Division, Naval Research Laboratory, Washington DC, USA

² Department of Electrical Engineering, The Catholic University of America, Washington, DC, USA

17.15 HIGH PRECISION ULTRAFAST OPTICAL DIAGNOSTICS OF PICO- FEMTOSECOND LASER MICROPLASMA (INVITED),

Serge V. Garnov,

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

17.45 TIME RESOLVED STUDIES OF FEMTOSECOND LASER INDUCED BREAKDOWN: REVIEW OF RECENT EXPERIMENTS ON TRANSPARENT DIELECTRICS (INVITED),

Stéphane Guizard, Ghita Geoffroy and Jérôme Gaudin.*

Laboratoire des Solides Irradiés, CEA/DSM/DRECAM and CNRS, Ecole Polytechnique, France;

* Now at: BESSY, Berlin, Germany.

18.30 WELCOME RECEPTION (on shipboard along the Neva River)

TUESDAY, June 26

TUESDAY, June 26

- 9.30–14.00** **SESSION OR1 (section 1/2)**
ULTRA SHORT LASER PULSES - INTERACTION
WITH A MATTER AND APPLICATION IN MICRO- AND
NANOTECHNOLOGIES
CHAIRMEN: *V. KOMOLOV, B. RETHFELD*
- 9.30 NANOSPALLATION UNDER ACTION OF FEMTOSECOND
LASER PULSE (INVITED),
S.I. Anisimov¹, M.B. Agranat², S.I. Ashitkov², V.V. Zhakhovskii^{2,3},
N.A. Inogamov¹, K. Nishihara³, A.V. Ovchinnikov², Yu.V. Petrov¹,
D.S. Sitnikov², V.A. Khokhlov¹
¹ L.D.Landau Institute for Theoretical Physics RAS
² Joint Institute of High Temperature RAS
³ Institute of Laser Engineering, Osaka University
- 10.00 ATOMIC-LEVEL COMPUTER MODELING OF LASER-INDUCED
PLASTICITY AND STRUCTURAL TRANSFORMATIONS IN
METAL TARGETS (INVITED),
L. V. Zhigilei, Zhibin Lin
Department of Materials Science and Engineering, University of
Virginia, USA
- 10.30 TIME-RESOLVED DESCRIPTION OF FREE-ELECTRON
GENERATION IN LASER-EXCITED DIELECTRICS (INVITED),
B. Rethfeld,
Gesellschaft fuer Schwerionenforschung (GSI), Darmstadt, Germany
- 11.00 EXPERIMENTAL AND THEORETICAL ANALYSES OF
NANOPARTICLE GENERATION VIA FEMTOSECOND LASER
ABLATION (INVITED),
J. Hermann, T.E. Itina, L. Zhigilei, S. Noel, M.E. Povarnitsyn, K.
Gouriet
Laboratoire Lasers, Plasma et Pcedes Photoniques LP3 UMR 6182
CNRS - Universite Aix-Marseille II, Marseille cedex 9, France
- 11.30 HOT PLASMA CONTROL AND DIAGNOSTICS DURING
FEMTOSECOND Cr: FORSTERITE LASER MICROMACHINING IN
AMBIENT AIR (INVITED),
Gordienko V.M., Didjoev M.S., Makarov I.A., Podshivalov A.A.,
Zhvania I.A.
ILC M.V.Lomonosov Moscow State University, Moscow, Russia

12.00–12.20 **COFFEE BREAK**

TUESDAY, June 26

- 12.20–14.00 SESSION OR1 (section 2/2)**
ULTRA SHORT LASER PULSES - INTERACTION WITH A MATTER AND APPLICATION IN MICRO- AND NANOTECHNOLOGIES
(Joint session of FLAMN-07 and LCAC)
CHAIRMEN: *S. GARNOV, L. ZHIGILEI*
- 12.20 ULTRA-SHORT LASER PULSE INDUCED CHARGED PARTICLE DESORPTION RATE ENHANCEMENT NEAR THE DAMAGE THRESHOLD OF DIELECTRIC SURFACES
Florenta Costache, Sebastian Eckert, Jürgen Reif
Brandenburg University of Technology and JointLab IHP/BTU Cottbus, Germany
- 12.40 PECULIARITIES AND CONSEQUENCES OF CHARGE-CARRIER TRANSPORT IN THE DIFFERENT TYPES OF MATERIALS UNDER ULTRASHORT PULSED LASER IRRADIATION
N.M. Bulgakova¹, A. Rosenfeld², L. Ehrentrau², R. Stoian³, I. V. Hertel^{2,4}
¹Institute of Thermophysics SB RAS
²Max-Born-Institut für Nichtlineare Optik und Kurzzeitspektroskopie
³Laboratoire TSI (UMR 5516 CNRS), Université Jean Monnet
⁴Department of Physics, Free University of Berlin
- 13.00 THEORY OF INTERACTION OF INTENSE LASER RADIATION WITH ATOMS, NUCLEI AND FEMTO-SECOND LASER PLASMA AT SURFACE. ATOMIC DYNAMICS WITH NON-RECTANGULAR LASER PULSES
A.V. Glushkov
Odessa University, Odessa, Ukraine
- 13.20 SPECTRAL DEPENDENCE OF CONICAL EMISSION IN GASES
S.M. Klimentov, P.A. Pivovarov, V.I. Konov
General Physics Institute of RAS, Moscow, Russia,
D. Walter, F. Dausinger
Forschungsgesellschaft für Strahlwerkzeuge, Stuttgart, Germany
- 13.40 SELF-GUIDING PROPAGATION OF VORTEX PULSED BEAM IN IONIZED DIELECTRICS
O.Khasanov, O.Fedotova, T.Smirnova,
Institute of Solid State and Semiconductor Physics NASB, Minsk, Belarus,
A.Volyar,
Taurida National University V.I. Vernadsky, Sympheropol, Ukraine
A.Sukhorukov
Faculty of Physics, Moscow State University, Moscow, Russia

14.00–15.00 LUNCH TIME

TUESDAY, June 26

15.00–19.00 SESSION OR2

**LASER-ASSISTED DIAGNOSTIC AND SPECTROSCOPY
(Joint session of FLAMN-07 and LCAC)**

CHAIRMEN: *S. ALIMPIEV, J. HERMANN*

- 15.00 LASER-MATTER INTERACTION AND RELATED SPECTROSCOPIES (INVITED),
A. Giardini^{1,3}, R. Teghil², A. Santagata³, S. Orlando³
¹Dipartimento di Chimica, Università “La Sapienza” di Roma, Roma, Italy
²Dipartimento di Chimica, Università della Basilicata, Potenza, Italy
³CNR –IMIP Sede di Potenza, Zona Industriale di Tito Scalo, Italy
- 15.30 SURFACE-ASSISTED LASER DESORPTION IONIZATION OF ORGANIC COMPOUNDS FROM SILICON (INVITED),
*S. Alimpiev¹, A. Grechnikov², J. Sunner³, V. Karavanskii¹,
Ya. Simanovsky¹, S. Zhabin¹, S. Nikiforov¹*
¹A.M. Prokhorov General Physics Institute of RAS, Moscow, Russia.
²Vernadsky Institute of Geochemistry and Analytical Chemistry of RAS, Moscow, Russia.
³School of Pharmacy and Biomedical Sciences, University of Portsmouth, Portsmouth, UK
- 16.00 ULTRAFAST INTERFEROMETRIC MICROSCOPY OF FEMTOSECOND LASER PLASMA: ACQUISITION AND PROCESSING OF MICROPLASMA PHASE IMAGES
V.V. Bukin, S.V. Garnov, A.A. Malyutin, V.V. Strelkov
A.M. Prokhorov General Physics Institute, RAS, Moscow, Russia
- 16.20–17.00 COFFEE BREAK**
- 17.00 MECHANISMS OF CLUSTER EMISSION FROM FEMTOSECOND-LASER-IRRADIATED SILICON
A.V. Bulgakov, N.M. Bulgakova
SB RAS Institute of Thermophysics
I. Ozerov, W. Marine
Universite de la Mediterranee, Faculte des Sciences de Luminy, CRMC-N
- 17.20 THE ROLE OF PLASMON-POLARITONS AND WAVEGUIDE MODES IN SURFACE MODIFICATION OF SEMICONDUCTORS BY ULTRASHORT LASER PULSES
G.D. Shandybina, G.A. Martsinovskiy, D.S. Smirnov
Saint-Petersburg State University of Information Technologies, Mechanics and Optics, Saint-Petersburg, Russia
L.A. Golovan, P.K. Kashkarov, V.Yu. Timoshenko, S.V. Zaboltnov
Physics Department, M.V. Lomonosov Moscow State University, Moscow, Russia

- 17.40 THREE-DIMENSIONAL NANOMODIFICATION WITH ULTRAFAST PULSE LASER
Yasuhiko Shimotsuma¹, Masaaki Sakakura², Kiyotaka Miura³, Peter G. Kazansky⁴, Kazuyuki Hirao³
¹International Innovation Center, Kyoto University
²Innovation Plaza, JST
³Department of Material Chemistry, Kyoto University
⁴Optoelectronics Research Centre, University of Southampton
- 18.00 POSSIBILITY OF CONTROL OF PROPAGATION REGIME IN MEDIUM WITH CUBIC NONLINEARITY FOR CHIRPED FEMTOSECOND PULSE UNDER THE TEMPORAL DISPERSION OF NONLINEAR RESPONSE
V.A. Trofimov, A.G. Volkov
Dept. of Computational Mathematics and Cybernetics, Lomonosov Moscow State University, Moscow, Russia
- 18.20 NANOSCALE DOMAIN ENGINEERING IN LITHIUM NIOBATE CRYSTALS BY PULSE LASER ILLUMINATION
Vladimir Shur, Dmitry Kuznetsov, Alexei Lobov, Pavel Zelenovsky, Eugene Shishkin,
Ferroelectric Laboratory, Ural State University, Ekaterinburg, Russia,
Vyacheslav Platonov, Maxim Ivanov, Albert Orlov, Vladimir Osipov,
Quantum Electronics Laboratory, Inst. of Electrophysics UB RAS, Ekaterinburg, Russia
- 18.40 THE ANALYTICAL SOLUTION OF THE KINETIC EQUATION FOR THE CRYSTALLIZATION PROCESS WITH SUPERFAST COOLING VELOCITIES UNDER LASER MATERIAL PROCESSING
Irina N. Zvestovskaya
Lebedev Physical Institute, Moscow, Russia
- 19.00–20.30 POSTER SESSION PS1**
CHAIRMEN: *S. KLIMENTOV, S. MULENKO*
- PS1_01 FEMTOSECOND LASER PATTERNING OF MICRO DIMENSION HETEROSTRUCTURES USING LASER INDUCED FORWARD TRANSFER (LIFT)
Marius Dumitru, Marian Zamfirescu, Iulia Angel, Maria Dinescu, Razvan Dabu
National Institute for Laser, Plasma and Radiation Physics, Magurele, Bucharest, Romania
- PS1_02 STRUCTURAL AND OPTICAL PROPERTIES OF SILICON SURFACES IRRADIATED BY FEMTOSECOND LASER PULSES

TUESDAY, June 26

Stanislav V. Zobotnov, Leonid A. Golovan, Victor Yu. Timoshenko, Pavel K. Kashkarov

Physics Department, M.V. Lomonosov Moscow State University,
Moscow, Russia

Galina D. Shandybina

St. Petersburg State University of Information Technologies, Mechanics
and Optics, St. Petersburg, Russia

- PS1_03 MASKLESS SUPER-RESOLUTION FEMTOSECOND LASER
LITHOGRAPHY
E.Fadeeva¹, J. Koch and Boris N. Chichkov
Laser Zentrum Hannover, Germany
- PS1_04 SUPERCONTINUUM GENERATION AND
MICROMODIFICATIONS IN POROUS GLASS DOPED WITH
EUFOD₃ INDUCED BY FEMTOSECOND CR:FORSTERITE LASER
*E.A. Chutko ILIT RAS, V. N. Bagratashvili ILIT RAS, V. M. Gordienko
ILC & MSU, I.A. Makarov ILC & MSU*
- PS1_05 FUNDAMENTAL STUDIES OF FEMTOSECOND LASER INDUCED
BREAKDOWN IN KDP AND DKDP CRYSTALS
Ghita Geoffroy, Stephane Guizard.
Laboratoire des Solides Irradiés, CEA/DSM/DRECAM and CNRS,
Ecole Polytechnique, 91128 PALAISEAU, France.
- PS1_06 DYNAMICS OF BULK MODIFICATION INSIDE GLASS BY
FEMTOSECOND LASER
*Masaaki Sakakura, Masahide Terazima, Kiyotaka Miura, Yasuhiko
Shimotsuma, Kazuyuki Hirao,*
Kyoto University, Japan
- PS1_07 ULTRASHORT ELECTRON BEAM DEFLECTION DUE TO
GRADIENT FIELD OF FEMTOSECOND PULSE DURATION
Aseyev S.A., Mironov B.N., Chekalin S.V., Letokhov V.S.
Institute of Spectroscopy of Russian Acad. of Sci. 142190 Troitsk,
Moscow region
- PS1_08 NUMERICAL ANALYSIS OF THIN METAL FILM HEATING BY
ULTRA-SHORT LASER PULSES USING A HYPERBOLIC TWO-
TEMPERATURE MODEL
*Alexander Dement'ev¹, Raimondas Čiegis², Gerda Jankevičiūtė², Vitalij
Roščinski¹*
¹ Institute of Physics, Savanoriu av. 231, LT-02300 Vilnius,
² Vilnius Gediminas Technical University, Sauletekio av. 11, LT-10223
Vilnius,
- PS1_09 STRUCTURING OF THE SURFACE LAYER OF TRANSPARENT
DIELECTRICS DUE TO THE COULOMB FIELDS, GENERATED
BY INTENSE LASER PULSES

TUESDAY, June 26

Vladimir L. Komolov, Sergey G. Przhibel'skii

St. Petersburg State University of Information Technologies, Mechanics and Optics, St. Petersburg, Russia

PS1_10 LASER MICRO- AND NANOPATTERNING OF SURFACES OF DYE DOPED PMMA SAMPLES

A.Yu. Malyshev, N.A. Agareva, N.M. Bityurin

Institute of Applied Physics RAS, Nizhniy Novgorod, Russia

PS1_11 IN-SITU CRYSTALLIZATION OF AMORPHOUS FILMS, DEPOSITED FROM LASER EROSION PLASMA

*A.Bagmut, S.Grigorov, V.Zhuchkov, V.Kolosov, * V.Kosevich, G.Nikolaichuk*

National Technical University "Kharkov Polytechnic Institute", Kharkov, Ukraine,

*Ural State Economic University, Ekaterinburg, Russia

PS1_12 LASER PHOTOIONIZATION METHOD AND TECHNOLOGIES FOR CLEANING THE SEMICONDUCTOR MATERIALS AND PREPARING THE FILMS OF PURE COMPOSITION AT ATOMIC LEVEL

A.V. Glushkov, A.V. Malinovsky, S.V. Ambrosov

Odessa University, Odessa, Ukraine

PS1_13 REVERSE CRYSTALLIZATION OF GLASS-CERAMIC ST-50-1 UNDER LASER ACTION

Novikov B.Y., Shadchin M.K., Kuznetsov D.E.,

St. Petersburg State University of Information Technologies, Mechanics & Optics, St. Petersburg, Russia

PS1_14 CRYSTALLIZATION PHENOMENON IN DIFFERENT GLASS-CERAMIC AND GLASS MATERIALS UNDER CO₂ LASER ACTION

V.P.Veiko, A.I.Ignatyev, N.V.Nikonorov, D.V.Orlov, E.B.Yakovlev

St. Petersburg State University of Information Technologies, Mechanics and Optics, St. Petersburg, Russia

PS1_15 HIGH RATE ABLATIVE FORMATION OF ULTRA-DEEP CHANNELS BY SELF-ADAPTIVE ND:YAG LASER WITH DYNAMICALLY ADJUSTABLE PASSIVE Q-SWITCH

Sergey Smetanin, Alexander Fedin, Andrey Gavrilov, Sergey Solokhin
Kovrov State Technological Academy,

Kovrov, Vladimir region, Russia.

Tasoltan Basiev, Sergey Garnov, Sergey Klimentov, Pavel Pivovarov

Prokhorov General Physics Institute of RAS,

Moscow, Russia

PS1_16 METAL FILMS MODIFICATION BY SPATIALLY MODULATED LASER RADIATION

TUESDAY, June 26

*V.M. Yasinskii, E.V. Ivakin, A.V. Suchadolau, A.Y. Khairullina,
A.H.Kokitz*

B.I. Stepanov Institute of physics of NASB, Minsk, Belarus

- PS1_17 LASER BASED PROCESSING OF POROUS GLASS FOR MICRO OPTICAL DEVICES
Petrov D. V., Yakovlev E. B., Antropova T. V.
Laser-based Technologies and Applied Ecology Department, St. Petersburg State University of Information Technologies, Mechanics and Optics, St. Petersburg, Russia
- PS1_18 OPTICAL PROPERTIES OF THE CHALCOGENIDE FILMS FOR INTERFERENCE COATINGS IN IR SPECTRAL RANGE
E.N.Kotlikov¹, V.N.Prokashev¹, A.N.Tropin²,
¹ St. Petersburg's State university of aerospace instrumentation, St. Petersburg, Russia
² "Scientific-Research Institute "Giricond", St. Petersburg, Russia
- PS1_19 DRILLING OF CERAMIC OBJECTS BY MEANS OF LASER RADIATION WITH ADJUSTABLE IMPULSE SHAPE
Allas A.,
"Center TRIZ "Tvorchestvo", Ltd., St. Petersburg;
Vejko V.,
St. Petersburg State University of Information Technologies, Mechanics and Optics, St. Petersburg, Russia
Kudryavtsev A., Saprykin L.,
"Lazery & Apparatura TM", Ltd., Zelenograd
- PS1_20 FAST CRYSTALLIZATION OF GLASSES AT LASER LOCAL HEATING
Ilin D.V., Jakovlev E.B.,
St. Petersburg State University of Information Technologies, Mechanics and Optics, St. Petersburg, Russia
- PS1_21 OPTICAL DIAGNOSTICS IN LASER ASSISTED RAPID MANUFACTURING
M. Doubenskaia, F. Bayle
Ecole Nationale d'Ingénieurs de Saint-Etienne, DIPI Laboratory Saint-Etienne Cedex, France
- PS1_22 3D TRANSIENT MODEL FOR CO₂ LASER HARDENING
Giovanni Tani, Leonardo Orazi, Alessandro Fortunato, Giampaolo Campana
DIEM – Department University of Bologna, Bologna, Italy
- PS1_23 MICROOPTICAL ELEMENTS FOR SEMICONDUCTOR LASER–TO–FIBER COUPLING ARE BASED ON POROUS GLASS
G.K.Kostyuk, V.A.Chuiko, E.B.Yakovlev

St. Petersburg State University of Information Technologies, Mechanics and Optics, St. Petersburg, Russia

- PS1_24 LASER DEPOSITION OF SmCo THIN FILM
L.Allocca¹, A.Morone², M.Valentino³
¹ CNR-Istituto Motori, Napoli, Italy
² CNR-Istituto di Metodologie Inorganiche e dei Plasmi-Unità Distaccata di Potenza, Italy
³ CNR-INFN Coherencia, Napoli, Italy
and Dipartimento di Scienze Fisiche, Università di Napoli "Federico II", Napoli, Italy
- PS1_25 FABRICATION OF Nd:Gd₃Ga₅O₁₂ PLANAR WAVEGUIDE LASER BY PULSED LASER DEPOSITION
Larisa Starovoytova, Dimitri Ganser, Herbert Horn-Solle, Leonid Moiseev, Ion Vasilief,, Dirk Wortmann, Jens Gottmann,*
Lehrstuhl für Lasertechnik, RWTH Aachen, Aachen, Germany
- PS1_26 LASER TECHNOLOGICAL SYSTEM FOR PRECISION 3D MATERIAL TREATMENT AND INSPECTION
Alexander G. Verkhogliad
Technological Design Institute of Scientific Instrument Engineering, Siberian Branch of Russian Academy of Sciences, Novosibirsk, Russia
- PS1_27 DYNAMICS OF CO₂-LASER ABLATION OF POLY(METHYL METACRYLATE): A COMBINED EXPERIMENTAL AND THEORETICAL STUDY
Nadezhda M. Bulgakova
Institute of Thermophysics SB RAS
Lev A. Zakharov
Novosibirsk State University
Andrei A. Onischuk, Anatoly M Baklanov
Institute of Chemical Kinetics and Combustion SB RAS
Mikhail A. Shulepov, Alexei N. Panchenko
Institute of High-Current Electronics SB RAS
- PS1_28 LASER DESORPTION OF POLYCYCLIC AROMATIC HYDROCARBONS ADSORBED ON SOOT PARTICLES
M. Ziskind¹, K. Thomson^{1,2}, A. Faccineto^{1,2}, E. Therssen², P. Desgroux² and C. Focsa¹
¹Laboratoire de Physique des Lasers, Atomes et Molécules (UMR 8523)
²Laboratoire de Physicochimie des Processus de Combustion et de l'Atmosphère (UMR 8522)
Centre d'Etudes et de Recherches Lasers et Applications (FR 2416)
Université des Sciences et Technologies de Lille, Villeneuve d'Ascq Cedex France
- PS1_29 UNIVERSALITY OF FEIGENBAUM AND SHAROVSKY ORDER FOR HIGHLY NONEQUILIBRIUM NONLINEAR SYSTEMS

TUESDAY, June 26

V.S. Makin

Research Institute for Complex Testing of Optoelectronic Devices,
Sosnovy Bor, Leningrad region, Russia

R.S. Makin

Research Institute of Atomic Reactors, Dimitrovgrad, Ulyanovsky
region, Russia

A.Y. Vorobyev

Institute of Optics, Rochester University, New York, USA

PS1_30

LASER-INDUCED TIP-SHAPED BUMP FORMATION ON
SURFACES OF HIGHLY REFRACTORY METALS

Yuri I. Pestov, Vladimir S. Makin

Research Institute for Complex Testing of Optoelectronic Devices, Laser
Physics Department, Sosnovy Bor, Leningrad region, Russia

PS1_31

DESTRUCTION OF METALS AT SOLID STATE INDUCED BY
LASER

Yu. Chivel,

Institute of Molecular & Atomic Physics, Minsk, Belarus

M. Petrushina,

United Institute of Informatics Problem, Minsk, Belarus

PS_32

TRANSROTATIONAL MICROSTRUCTURE OF Re FILMS
PREPARED BY PULSED-LASER DEPOSITION

Vladimir Yu. Kolosov

Physics Dept., Ural State Economic University, Ekaterinburg, Russia

PS_33

THE ANGULAR SPECTRA OF ATI PHOTOELECTRONS AT THE
INTERACTION OF MOLECULE OF HYDROGEN WITH INTENSE
TWO COLOR LASER FIELD

Koval' A.V., Koval' V.M.

Institute of Applied Laser Field of Heat Physics Department of Uzbek
Academy of Science, Tashkent, Uzbekistan

PS_34

LASER ASSISTED DIRECT MANUFACTURING

Bertrand Ph.

ENISE Laboratoire DIPI, 58 Rue Jean Parot 42023, Saint Etienne
Cedex 2, France

PS_35

USING OF MIDDLE YR LASERS FOR GUIDED
TERMOCLEAVAGE OF GLASS

Sysoev V.K.¹, Bulkin Yu.N.², Vyatlev P.A.¹, Soldatov A.N.²

¹Lavochkin Association, Khimki, Russia,

²RFNC-VNIEN, Sarov, Russia, Tomsk, Russia

WEDNESDAY, June 27

WEDNESDAY, June 27

- 9.30–12.00** **SESSION OR3**
LASER TECHNOLOGY IN MATERIAL SCIENCES (section 1/2)
(Joint session of FLAMN-07 and LCAC)
CHAIRMEN: *V.M. GORDIENKO, A.V. KOLOBOV*
- 9.30 LASER-INDUCED STATIC AND DYNAMIC CHANGES IN LOCAL ORDERING IN THE PHASE CHANGE MATERIAL $\text{Ge}_2\text{Sb}_2\text{Te}_5$: SNAPSHOTS WITH A 150 ps SHUTTER (INVITED)
Paul Fons^{1,2}, A.V. Kolobov^{1,2,3}, Toshio Fukaya¹, Motohiro Suzuki², Tomoya Uruga², Naomi Kawamura², Masafumi Takagaki², Hitoshi Ohsawa², Hajime Tanida², and Junji Tominaga¹
¹ Center for Applied Near-Field Optics Research, National Institute of Advanced Industrial Science and Technology, Tsukuba, Japan
² Japan Synchrotron Radiation Institute, Kouto, Mikazuki, Sayo, Hyogo, Japan
³ Laboratoire de physicochimie de la matière condensée, UMR CNRS 5617, Université Montpellier II, Place Eugène Bataillon, Montpellier Cedex 5, France
- 10.00 NANOSTRUCTURED METAL OXIDE THIN FILMS FOR OPTICAL GAS SENSING APPLICATIONS (INVITED),
I.N. Mihailescu, G. Socol, C. Ristoscu, F. Sima, A. Popescu, N. Stefan
Lasers Department, National Institute for Lasers, Plasma, and Radiations Physics, Bucharest, Romania
E. Gyorgy, G. Sauthier, A. Figueras
Consejo Superior de Investigaciones Científicas, Instituto de Ciencia de Materiales de Barcelona, Spain
J. Ferreira, L. Escoubas, F. Flory, P. Torchio
Université Paul Cézanne Aix-Marseille III Laboratoire TECSSEN, Domaine Universitaire de St Jérôme, Marseille, France
A. Giannoudakos, M. Kompitsas
National Hellenic Research Foundation, Theoretical and Physical Chemistry Institute, Athens, Greece
- 10.30 LASER-INDUCED MODIFICATION OF GLASS-CERAMICS MATERIALS STRUCTURE: PHYSICAL ASPECTS (INVITED),
V. Veiko, E. Yakovlev
St. Petersburg State University of Information Technologies, Mechanics and Optics, St. Petersburg, Russia
- 11.00 DIRECT LASER SYNTHESIS OF MICRO-SCALED CERAMIC COMPONENTS FROM LIQUID PRECURSORS
J. Wilden, G. Fischer
Technical University Ilmenau Institute of Production Technologies

Neuhaus, Germany

- 11.20 LASER INTERACTION WITH TITANIUM OXIDE GELS AND ORGANIC-INORGANIC HYBRID MATERIALS
N. Bityurin
Institute of Applied Physics RAS, 603950, Nizhny Novgorod, Russia
- 11.40 GROWTH OF METAL-OXIDE SEMICONDUCTOR NANOCOMPOSITE THIN FILMS BY A SYNCHRONIZED LASER SYSTEM
E. György,^{1,3} G. Sauthier,¹ A. Figueras,¹ A. Giannoudakos,² M. Kompitsas,² I.N. Mihailescu³
¹Consejo Superior de Investigaciones Científicas, Instituto de Ciencia de Materiales, Bellaterra, Spain
²National Hellenic Research Foundation, Theoretical and Physical Chemistry Institute, Athens, Greece
³National Institute for Lasers, Plasma and Radiations Physics, Bucharest, Romania

12.00–12.15 COFFEE BREAK

- 12.15–14.00 SESSION OR3
LASER TECHNOLOGY IN MATERIAL SCIENCES (section 2/2)
(Joint session of FLAMN-07 and LCAC)**

CHAIRMEN: *A.P. CARICATO, G. TURICHIN*

- 12.15 ORGANIC AND NANOPARTICLE THIN FILMS DEPOSITED BY MAPLE FOR SENSOR APPLICATIONS (INVITED)
A.P. Caricato¹, A. Luches¹, M. Martino¹, F. Romano¹, T. Tunno¹, D. Valerini¹,
¹Dipartimento di Fisica, gruppo L³, Lecce, Italy,
S. Capone², J. Spadavecchia², M. Epifani², L. Francioso², M. Lomascolo², P. Siciliano², R. Rella²,
²Istituto per la Microelettronica ed i Microsistemi (IMM) CNR, Lecce, Italy,
R. Paolesse³, M. Mastroianni³, F. Mandoj³,
³Dipartimento di Scienze e Tecnologie Chimiche Università di Roma "Tor Vergata", Rome, Italy
- 12.45 LASER ASSISTED MICRO SHEET FORMING
Jens Holtkamp, Arnold Gillner
Department of Micro Technology, Fraunhofer Institute for Laser Technology, Aachen, Germany;
- 13.05 NEW PHOTOREFRACTIVE SILVER-PLASMONS GLASS FOR PHOTONICS COMPONENTS FABRICATION
Nikonorov N.V., Tsekhomsky V.A., Ignatiev A.I.
St. Petersburg State University of Information Technologies, Mechanics,

WEDNESDAY, June 27

and Optics, St. Petersburg, Russia

13.25 DEPOSITION OF FILMS AND LAYERS FOR SENSORS WITH PLD AND LIFT METHOD

S.A.Mulenko¹, Y.V.Kudryavtsev¹, N.T.Gorbachuk¹, A.Luches², A.P.Caricato², V.P.Veiko³, V.A.Chuiko³, A.A.Petrov³

¹Institute for Metal Physics NAS of Ukraine, Kiev, Ukraine,

²University of Salento, Department of Physics, Lecce, Italy

³Laser technology Department, St. Petersburg State University of Information Technologies, Mechanics and Optics, St. Petersburg, Russia

13.45 CONTROL OF STEEL MICROSTRUCTURE BY LASER-LIGHT HYBRID TECHNIQUE

V. Lopota¹, G. Turichin¹, Yu. N. Bulkin², E. Valdaitseva¹, K. Sizaya¹

¹Institute of laser and welding technology, St. Petersburg state polytechnic university

²State research nuclear center, Sarov

14.00–15.00 LUNCH TIME

15.00–17.00 WORKSHOP “Laser Cleaning and Artworks Conservation” (LCAC)

CHAIRMEN: *V.A. PARFENOV, S. SIANO*

15.00 LASER TECHNIQUES IN CULTURAL HERITAGE PRESERVATION (INVITED)

V.A. Parfenov

St. Petersburg State University of Information Technologies, Mechanics and Optics, St. Petersburg, Russia

15.30 THE CONTRIBUTION OF PHYSICS TO THE CONSERVATION OF CULTURAL HERITAGE (INVITED)

S. Siano

Istituto di Fisica applicata “Nello Carrara”, Sesto Fiorentino, Italy.

16.00 PHYSICAL FOUNDATION OF LASER RESTORATION OF WORKS OF ART

V.P. Veiko, E.A. Shakhno, V.A. Parfenov

St. Petersburg State University of Information Technologies, Mechanics and Optics, St. Petersburg, Russia

16.20 LASER CLEANING OF MARBLE SCULPTURES OF THE SUMMER GARDEN: FIRST EXPERIENCE

Alexei Baruzdin¹, Oleg Ivanov¹, Anna Kazanova¹, Irina Kirtsideli¹, Pavel Lazarev¹, Paolo Marone², Vadim Parfenov³, Bella Toporkova¹, and Galina Khvostova¹

¹ State Russian Museum, St.Petersburg, Russia,

WEDNESDAY, June 27

² Istituto Internazionale del Marmo, Milano, Italy,

³ St Petersburg State University of Information Technologies,
Mechanics and Optics, St.Petersburg, Russia

16.40 ULTIMATE COLOR HOLOGRAPHY FOR MUSEUMS
APPLICATION

Yves Gentet¹, Michael Shevtsov²

¹ Art and science holographic atelier, Bordeaux, France

² State Optical S. I. Vavilov institute, Saint-Petersburg, Russia

**15.00–18.00 SESSION OR4
INTERACTION WITH SOFT AND BIO MATERIALS
(Joint session of FLAMN-07 and LCAC)**

CHAIRMEN: *E.N. SOBOL, N. BITYURIN*

15.00 PULSED / CW LASER APPLICATIONS TO SOFT- AND BIO-
MATERIALS (INVITED),

Yasuyuki Tsuboi

Division of Chemistry, Graduate School of Science, Hokkaido
University,
Sapporo, JAPAN

15.30 NANOBASED MATERIALS AND MICRO SYSTEMS
APPLICATIONS IN LIFE SCIENCE AND SENSORTECHNOLOGY
(INVITED),

Reinhardt A.; Goetzen R.; Goetzen J.; Bohlmann H.

microTEC Gesellschaft für Mikrotechnologie mbH, Germany

16.00 LASER ASSISTED MODIFICATION OF TISSUE
NANOSTRUCTURE AND MECHANICAL STRESS DISTRIBUTION

E.N. Sobol

Biophotonics Laboratory, Institute on Laser and Information
Technologies, RAS, Troitsk, Moscow Region, Russia

16.20–16.30 COFFEE BREAK

16.30 MODEL FOR XeCl LASER INDUCED PHOTOAGGREGATION IN
WATER SOLUTIONS OF EYE LENS PROTEINS

N. Bityurin, E. Chelnokov, N. Sapogova, L. Soustov

Institute of Applied Physics RAS, Nizhniy Novgorod, Russia

16.50 BIOMIMETIC GLASS COATINGS FOR ADVANCED METALLIC
IMPLANTS OBTAINED BY PULSED LASER DEPOSITION

*A. Popescu¹, C. Ristoscu¹, F. Sima¹, G.Socol¹, G. Dorcioman¹, I. N.
Mihailescu¹, L. Zdrentu², S. Petrescu², V. Simon³, S. Simon³, C. Ducu⁴,
C. Sutan⁴, D. Tanaskovic⁵, Dj. Janackovic⁵*

¹Lasers Department, National Institute for Lasers, Plasma, and Radiations Physics, Bucharest-Magurele, Romania

²Institute of Biochemistry, Bucharest, Romania

³Babes-Bolyai University, Cluj, Romania

⁴ University of Pitesti, Pitesti, Romania

⁵Faculty of Technology and Metallurgy, University of Belgrade, Belgrade, Serbia

17.10 LASER MODIFICATION OPTICAL AND MECHANICAL PROPERTIES OF HUMAN TOOTH ENAMEL
A.V. Belikov, E.P. Zholobova, T.V. Strunina, A.V. Skrypnik
Saint-Petersburg State University of Information Technologies, Mechanics and Optics (ITMO), Department of Laser Technics and Biomedical Optics, St. Petersburg, Russia

17.30 LASER MICRO SINTERING OF SiO₂ WITH AN NIR-LASER
A. Streek, P. Regenfuß, R. Ebert, H. Exner
Hochschule Mittweida, Germany

17.50 DIFFUSE OPTICAL TOMOGRAPHY FOR BIOMEDICAL APPLICATIONS
Olga V. Kravtseyuk¹, Jorge Ripoll¹, Giannis Zacharakis¹, Alexander B. Konovalov², Vitaly V. Vlasov², Vladimir V. Lyubimov³
¹ Institute of Electronic Structure & Laser - Foundation for Research and Technology – Hellas, Heraklion, Greece
² Russian Federal Nuclear Centre –Zababakhin Institute of Applied Physics, Snezhinsk, Russia
³ Institute for Laser Physics of Vavilov State Optical Institute, St.Petersburg, Russia

18.00–19.30 POSTER SESSION PS2

CHAIRMEN: *V.N. SMIRNOV, E.A. SHAKHNO*

PS2_01 MOLECULAR DYNAMICS STUDY OF THE MECHANISMS OF MATRIX-ASSISTED PULSED LASER EVAPORATION (MAPLE) OF POLYMER MOLECULES
Elodie Leveugle and Leonid V. Zhigilei
Department of Materials Science and Engineering, University of Virginia, USA

PS2_02 VERTICALLY ALIGNED CARBON NANOTUBE PATTERNING USING FEMTOSECOND LASER
Won Seok Chang^{#}, Byung Heon Yoo^{*}, Yun Young Bang^{*}*
^{*}Nano-Mechanical Systems Research Center, Korea Institute of

Machinery and Materials, Daejeon, Korea

- PS2_03 ANALYSIS OF SNOM TIP APERTURE BY FAR-FIELD INTENSITY DISTRIBUTION
Yakovlev E.B., Veiko V.P., Kirillovski V.K., Varkentina N.V., Le D. T., Zyong Z.V.,
Saint-Petersburg State University of Information Technologies,
Mechanics and Optics, St. Petersburg, Russia
- PS2_04 APPLICATION OF LASER SPUTTERING OF A SOLID TARGET FOR THE FABRICATION OF SEMICONDUCTOR NANOHETEROSTRUCTURES
Dorokhin M.V., Zvonkov B.N., Danilov Y.A., Vikhrova O.V., Demina P.B.,
Physical-Technical Research Institute of Nizhniy Novgorod State University, Nizhniy Novgorod, Russia
- PS2_05 TIP-ENHANCED SECONDARY EMISSION OF SEMICONDUCTOR QUANTUM DOTS
I.D. Rukhlenko, A.V. Fedorov, A.V. Baranov, Yu.M. Voronin, G.N. Vinogradova, P.S. Parfenov
Center of Information Optical Technologies,
Saint-Petersburg State University of Informational Technologies,
Mechanics and Optics, St. Petersburg, Russia
- PS2_06 PHOTOINDUCED FORMATION OF NANOSIZED GOLD PARTICLES IN DIFFERENT SOLID POLYMERIC MATRICES
N. Sapogova¹⁾, N. Yakimovich²⁾, A. Alexandrov¹⁾, T. Gracheva²⁾, L. Smirnova²⁾, N. Bityurin¹⁾
¹⁾ Institute of Applied Physics RAS, 603950 Nizhny Novgorod, Russia
²⁾ Chemical Department of Nizhny Novgorod State University, Nizhny Novgorod, Russia
- PS2_07 NEAR-FIELD OPTICAL RESPONSE OF METAL NANOPARTICLE STRUCTURES LOCATED WITHIN A DIELECTRIC LAYER
A.Yu. Leksin, A.B. Evlyukhin, M.N. Gerke and N.M. Voronova,
Department of Physics and Applied Mathematics, Vladimir State University, Vladimir, Russia
- PS2_08 RADIATION-INDUCED TRANSFER PHENOMENA IN NANOSCALE SYSTEMS
Valeri V. Levdansky¹⁾, Jiri Smolik²⁾, Vladimir Zdimal²⁾, Pavel Moravec²⁾
¹⁾Heat and Mass Transfer Institute NASB, Minsk, Belarus
²⁾Institute of Chemical Process Fundamentals AS CR, Prague, Czech Republic
- PS2_09 SELECTIVE MODIFICATION OF SIZE AND SHAPE DISTRIBUTIONS OF NANOPARTICLES IN ISLAND METAL FILMS USING PHOTOATOM EMISSION AND PHOTOINDUCED

SURFACE SELF-DIFFUSION

V.V. Khromov, N.B. Leonov, A.E. Logunov, S.G. Przhibel'skii, T.A. Vartanyan

St. Petersburg State University of Information Technologies, Mechanics and Optics, St. Petersburg, Russia

PS2_10

LIGHT ACTION ON ELECTRON TUNNELING BETWEEN NANOPARTICLES IN NA ISLAND METAL FILM

V.V. Khromov, N.B. Leonov, S.G. Przhibel'skii, A.V. Papko, E.V. Vaschenko, T.A. Vartanyan

St. Petersburg State University of Information Technologies, Mechanics and Optics, St. Petersburg, Russia

PS2_11

THE FEATURES OF KINETICS OF CLUSTERS FORMATION UNDER INTENSIVE EVAPORATION OF SMALL SOLID PARTICLES BY SHORT LASER PULSES

German A. Lukyanov, Olga I. Simakova, Nikolay Yu. Bykov

Center for Advanced Studies of SPbSPU, St. Petersburg, Russia

PS2_12

MODELING OF METAL NANOCLUSTERS FORMATION, GROWTH AND DEPOSITION ON A SURFACE UNDER PULSED LASER ABLATION IN VACUUM

Lukyanov G.A., Bykov N.Y., Nikolaeva L.Y.

Center for Advanced Studies of SPbSPU, St. Petersburg, Russia

PS2_13

POLARITONIC MODEL FOR THE REGULAR NANOSTRUCTURING OF TRANSPARENT DIELECTRICS AND SEMICONDUCTORS BY FEMTOSECOND LASER RADIATION

Makin V.S.

Reseach Inst. for Complex Testing of Opto-Electronic Devices, Sosnovy Bor, Leningrad district, Russia

PS2_14

THE NANOCLUSTERS FORMATION AT THE SURFACE OF SILICATES INDUCED BY CO₂ LASER RADIATION

Anel F. Mukhamedgalieva¹, Anatolii M. Bondar²

¹Moscow State Mining University, Moscow, Russia,

²A.A.Baikov Institute of Metallurgy and Material Sciences, RAS, Moscow, Russia

PS2_15

TOPOLOGICAL MODEL OF MULTIPLE PHOTON AND THERMAL EXCITATION OF CARRIERS OF CHARGE IN LOW DIMENSIONAL NANOSTRUCTURES

V.P. Aksenov

General Physics Institute, Moscow, Russia

PS2_16

SILICON NANOSTRUCTURE FORMATION UNDER ABLATION OF TARGET BY QUASICONTINUOUS LASER PULSE

Aksenov V.P.¹, Voronov V.V.¹, Kask N.E.², Leksina E.G.², Mikhailova G.N.¹, Michurin S.V.², Fedorov G.M.²

¹A.M. Prokhorov General Physics Institute of RAS, Moscow, Russia

²D.V. Skobeltsyn Institute of Nuclear Physics of M.V. Lomonosov
Moscow State University, Moscow, Russia

- PS2_17 PICO- AND FEMTOSECOND SPECTROSCOPIC DETECTION OF
FREE CHARGE CARRIERS IN A_1B_7 NANOCRYSTALS
D.I. Staselko, S.A. Tikhomirov, O.V. Baganov, S.M. Markov
Research Center "Optical Informational Technologies" St. Petersburg
State University for Information Technologies, Mechanics, and Optics,
St. Petersburg, Russia
- PS2_18 MICROTOOLS FOR BIOMEDICAL PURPOSES BASED ON LASER
TECHNOLOGY
*Gorshkova A.A., Zyong Z.V., Markovkina N.N., Veiko V.P.,
Yakovlev E.B.*
St. Petersburg State University of Information Technologies, Mechanics
and Optics, St. Petersburg, Russia
- PS2_19 EFFECTS OF POLLUTANTS IN FREE-SPACE OPTICAL
COMMUNICATIONS: CASE STUDY, MEXICO CITY
Victor Argueta-Diaz and G. Eduardo Sandoval-Romero
Centro de Ciencias Aplicadas y Desarrollo Tecnológico, Universidad
Nacional Autónoma de México, México
- PS2_20 NEW POSSIBILITIES FOR MEASUREMENTS OF PULSE SHAPE
OR BEAM PROFILE OF LASER RADIATION
Vyacheslav A., Trofimov V., Svetlana A. Varentsova
Dept. of Computational Mathematics and Cybernetics, Lomonosov
Moscow State University, Moscow, Russia
- PS2_21 PRECISION LASER SYSTEM BASED ON COMPLEMENTARY
SCANNING PRINCIPLE FOR DIELECTRIC MATERIALS
MICROPROCESSING
*Nikolay Goloshevsky, Aleksey Aleshin, Sergey Baev, Victor Bessmeltsev,
Konstantin Smirnov, Mikhail Maksimov, Mikhail Mikhailov*
Novosibirsk, Academician Koptug ave. 1
- PS2_22 HIGH-PEAK-POWER DIODE-PUMPED PICOSECOND LASER
WITH HIGH REPETITION RATE
P.V. Kostryukov, V.B. Morozov, A.N. Olenin, V.G. Tunkin, D.V. Yakovlev
International Laser Centre and Physics Department of M.V. Lomonosov
Moscow State University, Moscow, Russia
- PS2_23 B-DIKETONATE OF EUROPIUM (EuFOD_3) CONFINED IN
MICROPOROUS GLASS: UV LASER INDUCED LUMINESCENCE
KINETICS AND QUANTUM YIELD
*E.A. Chutko ILIT RAS, V.N. Bagratashvili ILIT RAS, V.M. Gordienko
ILC & MSU, M.S. Djidjoev ILC & MSU*
- PS2_24 CdTe SURFACE LAYER PHOTOLUMINESCENCE UNDER

NANOPULSED LASER IRRADIATION

Ivlev G.D., Gatskevich E.I., Zykov G.L.

Institute of Electronics of NAS of Belarus, Minsk, Belarus

PS2_25

LASER PHOTOIONIZATION METHOD DETECTING THE SINGLE ATOMS AND PRODUCTS OF NUCLEAR REACTIONS

Alexander V. Glushkov, Olga Khetselius

Odessa University, Odessa, Ukraine

PS2_26

LIGHT DIFFRACTION ON MODULATIONS OF SOLID SURFACE RELIEF AND LOW THRESHOLD IR MULTI-PHOTON LASER-MOLECULAR DISSOCIATION ON SURFACE. LASER MICROSCOPY

Alexander V. Glushkov, Andrey V. Malinovsky, Andrey V. Loboda

Odessa University, Odessa, Ukraine

PS2_27

NUMERIC MODELING SYSTEM OF SCATTERING PROCESS OF COHERENT WAVES FOR REMOTE CONTROL SYSTEM OF REAL TIME

Dmitry K. Proskurin, Nikita S. Pechenkin, Aleksander. Zemtsov

Voronezh State University of Architecture and Civil Engineering, Voronezh, Russia

PS2_28

DENSIMETER OF FINE PARTICLES FOR SENSOR OF NANOMETRIC DISPLACEMENTS

G. Eduardo Sandoval-Romero, Angélica Ramírez-Ibarra, Salvador Palma-Vargas

Centro de Ciencias Aplicadas y Desarrollo Tecnológico, Universidad Nacional Autónoma de México, México.

PS2_29

MICROLENSSES ON THE ENDS OF OPTICAL FIBERS FOR OPTIMIZATION OF OPTICAL INTERCONNECTIONS

Ageev A.I., Petrov A.A., Wen Yang

Laser-based Technologies and Applied Ecology Department, St. Petersburg State University of Information Technologies, Mechanics and Optics, St. Petersburg, Russia

PS2_30

THE DEVELOPMENT OF LASER SINTERING PROCESS MONITORING

Yu. Chivel¹, I. Smurov², D.Zatiagin¹,

¹Institute of Molecular & Atomic Physics NAS Belarus, Minsk, Belarus

²Ecole Nationale d'Ingénieurs de Saint-Etienne (ENISE), DIPI Laboratory, Saint -Etienne Cedex 2, France

PS2_31

EXPERIMENTAL AND THEORETICAL INVESTIGATIONS ON THE DYNAMICS OF LASER ABLATION PLASMA PLUMES

S. Gurlui¹, M. Agop², P. Nica², M. Ziskind³, C. Focsa³

¹Faculty of Physics, "Al.I.Cuza" University, Romania

²Department of Physics, Technical "Gh. Asachi" University, Romania

³Laboratoire de Physique des Lasers, Atomes et Molécules (UMR 8523), Centre d'Etudes et de Recherches Lasers et Applications (FR CNRS2416), Université des Sciences et Technologies de Lille, 59655 Villeneuve d'Ascq cedex, France

PS2_32 LASER DAMAGE OF FUSED SILICA INDUCED BY SUBSURFACE MICRO FRACTURES IN NANOSECOND REGIME

P. Grua,
CEA – FRANCE

PS2_33 DYNAMICS OF SHOCK WAVES GENERATED IN LIQUIDS BY HIGH-ENERGY KrF LASER

Vladimir Zvorykin¹, Laurent Berthe², Michel Boustie³, Alexey Levchenko¹, Nikolai Ustinovskii²

¹ P.N. Lebedev Physical Institute of Russian Academy of Sciences, Leninsky pr. 53, 119991 Moscow, Russia;

² Centre Laser Franco-Allemand, Laboratoire pour l'Application des lasers de Puissance, 16 bis, Avenue Prieur de la Côte d'Or, 94114 Arcueil Cadex, France

³ Laboratoire de Combustion et de Détonique, UPR 9028-CNRS, Université de Poitiers-ENSMA, B.P. 109-86960 Futuroscope Cedex, France

PS2_34 DIFFRACTIVE MODEL OF SCATTERING BY A ROUGH SURFACE OF RADIATION. DEPENDENCE OF A SPATIAL FREQUENCY SPECTRUM ON SIZE OF A ROUGHNESS

Vladimir I. Bronnikov

"International Science Centre (ISC) Sun Energies", Sosnovy Bor, Leningrad region, Russia

PS2_35 LASER-INDUCED PLUME EXPANSION FROM A SILICON WAFER IN A WIDE RANGE OF AMBIENT GAS PRESSURE

Alexey N. Volkov, German A. Lukianov** Gerard M. O'Connor****

*National Centre for Laser Applications, National University of Ireland, Galway, Ireland NCLA, Dept. of Physics, NUI Galway, University Road, Galway City, Galway, Ireland.

**Center for Advanced Studies, St. Petersburg Polytechnical University, St. Petersburg, Russia

***National Centre for Laser Applications, National University of Ireland, Galway NCLA, Dept. of Physics, NUI Galway, University Road, Galway City, Galway, Ireland.

PS2_36 A STUDY OF THERMALLY STIMULATED REVERSIBLE REARRANGEMENT OF THE STRUCTURE AND OPTICAL PARAMETERS OF MOLECULAR LAYERS AND SOLUTIONS. IR IMAGE VISUALIZATION BASED ON THE STEREOISOMERIZATION OF MOLECULAR SYSTEMS

L.N. Asnis, E.N. Kaliteevskaya, V.P. Krutyakova, T.K. Razumova,

WEDNESDAY, June 27

St. Petersburg University of Information Technologies, Mechanics &
Optics, St. Petersburg, Russia,

A.N. Tarnovskii

Bowling Green State University, OH, USA,

A.S. Tibilov

Scientific Production Association “S.I. Vavilov State Optical Institute”,
St. Petersburg, Russia

PS2_37 PHOTOACOUSTIC STUDY OF LIQUID EXPLOSIVE BOILING ON
ABSORBING TARGETS BY PAIRS OF SHORT LASER PULSES
Samokhin Alexander A., Klimentov Sergey M., Pivovarov Pavel A.
General Physics Institute of RAS, Moscow, Russia

PS2_38 SRS-GAIN IN AgCl(J) MONOCRYSTALS UNDER FEMTOSECOND
EXCITATION: ANOMALY LARGE SPECTRAL SHIFT AND HIGH
AMPLIFICATION OF WEAK SIGNALS
D.I. Staselko, S.A. Tikhomirov, O.V. Bugarov**
Research Center “Optical Informational Technologies” St. Petersburg
State University for Information Technologies, Mechanics, and Optics,
St. Petersburg, Russia,
* Institute of Molecular and Atomic Physics, National Academy of
Sciences of Belarus, Minsk, Belarus

PS2_39 LOW THRESHOLD OPTICAL BREAKDOWN OF AIR NEAR THE
TWO TRANSPARENT DIELECTRIC PLATES UNDER TEA CO₂
LASER PULSE ACTION
A.V. Kulikov, V.N. Smirnov
St. Petersburg State University of Information Technologies, Mechanics and
Optics, St. Petersburg, Russia

20.00 CONFERENCE DINNER

THURSDAY, June 28

THURSDAY, June 28

**9.30–12.00 SESSION OR5
NANOSTRUCTURES FORMATION AND INVESTIGATION
(section 1/2)**

CHAIRMEN: *B.S. LUK'YANCHUK, A. MEDVID'*

- 9.30 NEAR-FIELD DISTRIBUTION IN LASER ILLUMINATED TIP-SAMPLE SYSTEM FOR NANOPATTERNING (INVITED),
Z.B. Wang¹, B.S. Luk'yanchuk², L. Li¹, P.L. Crouse¹, Z. Liu³, G. Dearden⁴, K.G. Watkins⁴
¹Laser Processing Research Centre, School of Mechanical, Aerospace and Civil Engineering, University of Manchester, Manchester, UK
²Data Storage Institute, Republic of Singapore
³Corrosion and Protection Centre, School of Materials Science, University of Manchester, Manchester, UK
⁴Laser Group, Department of Engineering, University of Liverpool, UK
- 10.00 PLASMONIC SURFACE NANOSTRUCTURING BY INTENSE FEMTOSECOND LASER (INVITED),
Minoru Obara, Nikolay N. Nedyalkov, Tetsuo Sakai
Department of Electronics and Electrical Engineering, Faculty of Science and Technology, Keio University, Yokohama, Japan
- 10.30 PHOTOPHYSICS PAVES INTELLIGENT ROUTE TO NANOSCALE SURFACE STRUCTURES (INVITED),
T.A. Vartanyan
Laboratory of Surface Photophysics, Center for Informational Optical Technologies, St. Petersburg State University of Information Technologies, Mechanics and Optics. St. Petersburg, Russia
- 11.00 ENERGY TRANSFER OF ELECTRONIC PHOTO-EXCITATIONS IN SEMICONDUCTOR QUANTUM DOTS (INVITED),
A.V. Fedorov, S.Yu. Kruchinin, A.V. Baranov, V.G. Maslov, A.O. Orlova
Center of Information Optical Technologies, Saint-Petersburg State University of Informational Technologies, Mechanics and Optics, St. Petersburg, Russia
- 11.30 NEW TYPE OF RESONANCE LIGHT SCATTERING BY SMALL PARTICLES (INVITED),
M.I. Tribelsky¹, B.S. Luk'yanchuk²
¹Moscow State Institute of Radioengineering, Electronics and Automation MIREA (Technical University), Moscow, Russia;
²Data Storage Institute, Agency for Science, Technology and Research, Singapore

12.00–12.20 COFFEE BREAK

THURSDAY, June 28

**12.30–14.00 SESSION OR5
NANOSTRUCTURES FORMATION AND INVESTIGATION
(section 2/2)**

CHAIRMEN: *V. SHUR, I.N. ZAVESTOVSKAYA*

12.20 PROPERTIES OF NANOHILLS FORMED ON A SURFACE OF Ge,
Si AND GaAs BY LASER RADIATION: QUANTUM
CONFINEMENT EFFECT

Artur Medvid¹, Pavels Onufrijevs¹, Igor Dmytruk², Irina Pundyk²

¹Riga Technical University, LV-1048, Riga, 14 Azenes Str., Latvia,

²Kyiv National University, Kyiv 03022, Pr .Acad. Glushko 2, Ukraine

12.40 HIGHLY NONLINEAR OPTICAL ABSORPTION IN QUANTUM
WELLS AND IN WIDE-GAP BULK MATERIALS

E.Yu. Perlin

Research Center “Optical Informational Technologies” , Saint
Petersburg State University for Information Technologies, Mechanics,
and Optics, St. Petersburg, Russia

13.00 NEAR FIELD PROPERTIES IN VICINITY OF GOLD
NANOPARTICLE ARRAY

N.N. Nedyalkov^{1,2}, P.A. Atanasov², M. Obara^{1}*

¹Department of Electronics and Electrical Engineering, Faculty of
Science and Technology, Keio University, Yokohama, Japan

²Institute of Electronics, Bulgarian Academy of Sciences, Sofia,
Bulgaria

13.20 IR LASER RESONANT DESORPTION: SELECTIVE VS
CLUSTERING REGIMES

C. Focsa, B. Chazallon, M. Ziskind

Laboratoire de Physique des Lasers, Atomes et Molécules (UMR 8523),
Centre d’Etudes et de Recherches Lasers et Applications (FR CNRS
2416), Université de Lille 1, 59655 Villeneuve d’Ascq cedex, France

13.40 BACKSCATTERING UNDER PULSE PROPAGATION IN
DIELECTRICS

O. Fedotova, O. Khasanov, T. Smirnova,

Joint Inst. of Solid State and Semicond. Physics NASB, Minsk, Belarus

A. Sukhorukov

Faculty of Physics, Moscow State University, Moscow, Russia

14.00–15.00 LUNCH TIME

THURSDAY, June 28


15.00–17.00 PLENARY SESSION 2

CHAIRMEN: *KOJI SUGIOKA, E.Yu. PERLIN*

- 15.00 3D MICROFABRICATION BY FEMTOSECOND LASER DIRECT WRITING FOR BIOPHOTONIC MICROCHIPS (INVITED),
Koji Sugioka, Yasutaka Hanada, Katsumi Midorikawa
RIKEN – The Institute of Physical and Chemical Research, Wako, Japan
- 15.30 A LASER PRODUCED PLASMA (LPP) SOURCE PROTOTYPE FOR PRODUCTION OF HIGH POWER EUV RADIATION (INVITED),
P. Y. Thro,
Commissariat à l’Energie Atomique, CEA Saclay, France
- 16.00 COMPLEX BEAM SCULPTING WITH TUNABLE ACOUSTIC GRADIENT INDEX LENSES (INVITED)
Craig B. Arnold
Department of Mechanical and Aerospace Engineering Princeton
Institute for Science and Technology of Materials, Princeton University

17.00

CLOSING REMARKS

	<p>ООО «Центр ТРИЗ "Творчество» Октябрьская наб., Санкт-Петербург. Генеральный директор Аллас Александр Арнольдович. Т/ф (812) 444-59-24 менеджер Снеткова Ольга Дмитриевна Удалова Мария Александровна</p>
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- Производство вырубных штампов для вырубки картонной упаковки
- Плоттерная резка элементов наружной рекламы.
- Продажа промышленных масел и смазок (вакуумных, компрессорных, станочных)
- Продажа восстановленного лазерного технологического оборудования
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