Technical Program

SPIE
High-Power Laser Ablation

Conference: 20–24 April 2008
Sagebrush Inn
Taos, New Mexico, USA
The conference is dedicated to the memory of Arthur Guenther.

Art Guenther
1931–2007

SPIE and the organizers gratefully acknowledge Photonic Associates, LLC for its sponsorship of this event.

Left cover image: Courtesy of Georgia Tech, Photo: Gary Meek. CardioMEMS engineer Michael Fonseca uses a laser to separate pressure sensors in the company’s clean room facility in the ATDC Biosciences Center located at Georgia Tech’s Environmental Science and Technology Building. Middle cover image: Courtesy of Jefferson Lab. Source lab laser test setup.

Conference Chair:
Claude R. Phipps, Photonic Associates, LLC

Program Committee:
Sergey Anisimov, Landau Institute for Theoretical Physics (Russia)
V. Apollonov, General Physics Institute (Russia)
Michel Autric, Univ. de la Méditerranée (France)
Dieter Bäuerle, Johannes Kepler Univ. Linz (Austria)
Willy Bohn, Deutsches Zentrum für Luft- und Raumfahrt e.V. (Germany)
Boris Chichkov, Laser Zentrum Hannover e.V. (Germany)
Gordon Hager, Air Force Research Lab.
Richard Haglund, Vanderbilt Univ.
Victor Hasson, Trex Enterprises Corp.
Andrey Ionin, P.N. Lebedev Physical Institute (Russia)
Michael Lander, General Dynamics Information Technology
Thomas Lippert, Paul Scherrer Institut (Switzerland)
Boris Luk’yanchuk, Data Storage Institute (Singapore)
Max Michaelis, Univ. of KwaZulu-Natal (South Africa)
Minoru Obara, Keio Univ. (Japan)
Dennis Paisley, Los Alamos National Lab.
James Reilly, Northeast Science and Technology
Klaus Sokolowski-Tinten, Univ. Duisburg-Essen (Germany)
Michael Tribelsky, Moscow Institute of Electrical Engineering and Technical Univ. (Russia)

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Daily Schedule and Special Events

Note: All events are located in the Chamisa Ballroom I except as noted below.

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<td>Posters, 8:00 to 10:00 pm</td>
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**SPIE welcomes new Fellow**

Edward I. Moses,
Lawrence Livermore National Lab.

**Registration**

Conference Center Lobby

Sunday ......................................................... 6:00 to 8:00 pm
Monday ....................................................... 7:00 am to 4:00 pm
Tuesday ...................................................... 7:15 am to 4:00 pm
Wednesday .................................................. 7:15 am to 4:00 pm
Thursday .................................................... 7:15 am to 4:00 pm

**Sunday Evening Welcome Reception and Registration**

Conference Center Lobby and Chamisa Ballroom II

Sunday ......................................................... 6:00 to 8:00 pm

A welcome reception for conference attendees will be held Sunday night from 6:00 to 8:00 pm in the Chamisa Ballroom II at the Sagebrush Inn and Convention Center. Attendees should first visit the registration desk in the conference lobby to pick up badges and reception tickets. This reception is included in your registration fee. Guests may accompany a registered attendee by purchasing a guest Welcome Reception and Conference Dinner ticket for $60.00 per person. Purchase ticket before reception at SPIE Registration Desk.

**Monday Luncheon**

Chamisa Ballroom II

Monday ....................................................... 11:50 to 1:00 pm

A complimentary welcome luncheon for technical attendees only will be held Monday. Attendees should make their own luncheon arrangements on subsequent days.

**Poster Sessions**

Chamisa Ballroom II

Monday and Tuesday ................................. 8:00 to 10:00 pm

Technical attendees are encouraged to view the high-quality papers presented in this interactive format. Authors will be present at their posters to discuss them with session attendees. Light snacks and beverages will be served. All participants are requested to wear their conference badges while attending these sessions.

Poster authors: You may set up your poster after 10:00 am on the day of your assigned poster session. Posters must be removed at the end of the session. Posters left on the boards after the session will be discarded.

**Wednesday Conference Dinner and Best Paper Awards**

Chamisa Ballroom II

Wednesday .............................................. 7:00 to 10:00 pm

This dinner is included in your registration fee. Guests may accompany a registered attendee for $60.00 per person. Guest tickets may be purchased before Tuesday noon at the SPIE Registration Desk.

**Event of related interest**

6th International Conference on Photo-Excited Processes and Applications (ICPEPA6)

9-12 September 2008

http://www.icpepa6.com

**Car Rental**

Hertz Car Rental is the official car rental agency for this Symposium. To obtain special SPIE rates, use the code information below. The closest Hertz location is in Santa Fe, New Mexico. There are no Hertz offices in Taos. Call 1-800-654-2240. You must identify yourself as a HP08 attendee. Use the Hertz/SPIE Meeting Code CV# 029B0011
High-Power Laser Ablation VII
Conference Chair: Claude R. Phipps, Photonic Associates, LLC

Program Committee: Sergeyev I. Anisimov, Landau Inst for Theoretical Physics (Russia); V. V. Apollonov, General Physics Institute (Russia); Michel L. Autric, Univ. de la Méditerranée (France); Dieter Bäuerle, Johannes Kepler Univ. Linz (Austria); Willy L. Bohn, Deutsches Zentrum für Luft- und Raumfahrt e.V. (Germany); Boris N. Chichkov, Laser Zentrum Hannover e.V. (Germany); Gordon D. Hager, Air Force Research Lab.; Richard F. Hagiund, Jr., Vanderbilt Univ.; Victor H. Hassan, Trex Enterprises Corp.; Andrey A. Ionin, P.N. Lebedev Physical Institute (Russia); Michael L. Lander, General Dynamics Information Technology; Thomas K. M. Lippert, Paul Scherrer Institut (Switzerland); Boris S. Luk’yanchuk, Data Storage Institute (Singapore); Max M. Michaelis, Univ. of KwaZulu-Natal (South Africa); Minoru Obara, Keio Univ. (Japan); Dennis N. Paisley, Los Alamos National Lab.; James P. Reilly, Northeast Science and Technology; Klaus Sokolowski-Tinten, Univ. Duisburg-Essen (Germany); Michael I. Tribelsky, Moscow Institute of Electrical Engineering and Technical Univ. (Russia).

Monday 21 April
Chamisa Ballroom I ..................... Mon. 7:30 am
Introductory Remarks
Claude R. Phipps, Photonic Associates, LLC

Chamisa Ballroom I ..................... Mon. 7:45 am
Dedication to Arthur Guenther
William Pete Latham, Air Force Research Lab.

SESSION 1
Session Chair: Claude R. Phipps, Photonic Associates, LLC
7:55 am: High speed high precision ablation from ms to fs (Invited Paper), Reinhart Poprawe, Arnold Giliner, Fraunhofer-Institut für Lasertechnik Germany. [7005-02]
Coffee Break ................................. 8:35 to 8:50 am

SESSION 2
Session Chair: Klaus Sokolowski-Tinten, Univ. Duisburg-Essen (Germany)
8:50 am: Experimental and theoretical studies of carrier dependent lattice stability in semiconductors (Invited Paper), Kelly J. Gaffney, Stanford Linear Accelerator Ctr.; Patrick B. Hillyard, Stanford Univ.; Aaron M. Lindenberg, Stanford Linear Accelerator Ctr.; David A. Reis, Univ. of Michigan ... [7005-03]
9:15 am: Femtosecond x-ray diffuse scattering measurements of semiconductor ablation dynamics (Invited Paper), Aaron Lindenberg, Stanford Univ. and Stanford Linear Accelerator Ctr.; Simon Engemann, Kelly J. Gaffney, Stanford Linear Accelerator Ctr.; Klaus Sokolowski-Tinten, Univ. Duisburg-Essen (Germany); Jørgen Larrison, Lundis Univ. (Sweden); David Reis, Univ. of Michigan; Jerome B. Hastings, Stanford Linear Accelerator Ctr. ... [7005-04]
9:40 am: Femtosecond coherent imaging with a free electron laser: x-ray snapshots of nanoscale transient phenomena (Invited Paper), Anton Barty, Lawrence Livermore National Lab. ... [7005-05]

10:05 am: Ultrafast pulse lasers applied to propulsion/control in space- and atmospheric flight (Invited Paper), Kevin Kremeyer, Physics, Materials and Applied Mathematics Research, L.L.C. ... [7005-06]
10:30 am: Ultrafast laser irradiation vs cluster ion impact: molecular-dynamics comparison of materials processes in highly energized solids (Invited Paper), Herbert M. Urbassek, Technische Univ. Kaiserslautern (Germany) ... [7005-07]

10:50 am: Implementation of phase transitions into hydrocode for simulation of laser ablation, Mikhail Povarnitsyn, Konstantin Khishchenko, Pavel Levashov, Joint Institute for High Temperatures (Russia) ... [7005-08]
11:10 am: Nonlinear ultrafast femtosecond X-waves (Invited Paper), Jerome V. Moloney, Miroslav Kolesik, College of Optical Sciences/The Univ. of Arizona ... [7005-16]

Chamisa Ballroom II ....................... 11:35 am to 12:45 pm
Welcome Luncheon

SESSION 3
Chamisa Ballroom I ..................... Mon. 12:45 to 2:40 pm
Materials Modification and Processing with Ultrashort Pulses
Session Chair: Minoru Obara, Keio Univ. (Japan)
12:45 pm: Fundamental issues of material removal by laser irradiation at sub-threshold fluences: insulating (wide bandgap) materials (Invited Paper), J. Thomas Dickinson, Washington State Univ. ... [7005-09]
1:10 pm: Theoretical models of laser-induced ionization of transparent materials: challenges and recent improvements (Invited Paper), Vitaly E. Gruzdev, Univ. of Missouri/Columbia ... [7005-10]
1:35 pm: Charging and plasma effects under ultrashort pulsed laser ablation (Invited Paper), Nadezhda M. Bulgakova, Alexander V. Bulgakov, Institute of Thermophysics (Russia); Vladimir P. Zakhov, Institute of Computational Technologies (Russia); Wladimir I. Marine, Univ. de la Méditerranée (France); Anatoly Y. Vorobyev, Chunlei Guo, Univ. of Rochester ... [7005-11]
2:00 pm: High speed scribing of FPD panels by use of high repetition (Invited Paper), Masanao Kamata, Sugio Wako, Tomohiro Imahoko, Norhiro Inoue, Tetsumi Sumiyoshi, Hitoshi Sekita, Cyber Laser Inc. (Japan) ... [7005-12]
2:25 pm: Fabrication of microfluidic networks using a high power femtosecond fiber laser, Lawrence Shah, IMRA America Inc.; DongHyuck Kam, Jyotirmoy Mazumder, Univ. of Michigan; ... [7005-10]
Coffee Break ................................. 2:40 to 3:10 pm

Chamisa Ballroom I ..................... Mon. 3:10 to 5:30 pm
Keynote II
Session Chair: Claude R. Phipps, Photonic Associates, LLC
3:10 pm: Multi-MegaJoule NIF (Invited Paper), Edward I. Moses, Lawrence Livermore National Lab. ... [7005-01]

SESSION 5
Chamisa Ballroom I ..................... Mon. 3:55 to 5:35 pm
Short Pulse Laser Matter Interactions II
Session Chair: William Pete Latham, Air Force Research Lab.
3:55 pm: On the mechanism of resonant infrared polymer ablation: the case of polystyrene (Invited Paper), Richard F. Hagiund, Jr., Stephen L. Johnson, Vanderbilt Univ.; Daniel M. Bubb, Rutgers Univ.; Kannattessen Appavoo, Berea College ... [7005-16]
4:20 pm: Transient structures at laser-excited surfaces studied with fs-XUV-scattering, Klaus Sokolowski-Tinten, Univ. Duisburg-Essen (Germany) ... [7005-17]
4:35 pm: Ultrafast laser ablation-based “green” synthesis of non-toxic nanoparticles in aqueous solutions, Andrei V. Kabashin, Sebastien Besner, Michel Meunier, Ecole Polytechnique de Montréal (Canada); Francoise M. Winnik, Univ. de Montréal (Canada) ... [7005-18]
4:50 pm: Correlation between early-stage expansion and spectral emission of a nanosecond laser-induced plasma from an organic material, Matthieu Baudelet, Myriam Boueri, Jin Yu, Univ. Claude Bernard Lyon 1 (France); Samuel S. Mao, Xianglei Mao, Rick E. Russo, Lawrence Berkeley National Lab. ... [7005-19]
Tuesday 22 April

SESSION 6

Chamisa Ballroom I .......................... Tues. 7:30 to 9:00 am

Short Pulse Laser Matter Interactions III

Session Chair: Thomas M. Lippert, Paul Scherrer Institut (Switzerland)

7:30 am: Ultrafast dynamic ellipsometry (UDE) and its application to the study of ablation dynamics (Invited Paper), Cynthia A. Boline, Massachusetts Institute of Technology; David J. Funk, Shawn D. McGane, David S. Moore, Los Alamos National Lab. ............................... [7005-22]

7:55 am: Ultra-short laser interactions with metals and optical multi-layer materials: transport phenomena and damage threshold (Invited Paper), Tatiana E. Itina, Olivier P. Uteza, Nicolas Sanner, Marc L. Sents, Univ. de la Méditerranée (France) .......................... [7005-23]

8:20 am: Ultrafast dynamics of electrons in laser-excited solids (Invited Paper), Bärbel Rethfeld, Technische Univ. Kaiserslautern (Germany) .......................... [7005-24]

8:45 am: Investigations of the ultrafast laser induced melt dynamics by means of transient quantitative phase microscopy (TQPM), Ilya Mingareev, Fraunhofer-Institut für Lasertechnik (Germany); Alexander Horn, RWTH Aachen (Germany) .......................... [7005-25]

Coffee Break .................................. 9:00 to 9:15 am

SESSION 7

Chamisa Ballroom I .......................... Tues. 9:15 to 11:10 am

Nanoscale Physics and Structures

Session Chair: Gediminas Raciaukis, Fizikos Institutas (Lithuania)

9:15 am: Industrially-scaled pulsed laser deposition based coating techniques for the realization of hemocompatible surfaces for blood contact applications, Juergen M. Lackner, JOANNEUM RESEARCH Forschungsgesellschaft mbH (Austria); Xiaoyu Li, J. Rose, R. Sin, B. Liu, Hong Kong Polytechnic University (China) ............................... [7005-103]

9:30 am: Self-organized nanostructure formation upon femtosecond laser ablation (Invited Paper), Juergen Reif, Olga Varlamova, Florenta A. Costache, Brandenburgische Technische Univ. Cottbus (Germany) .......................... [7005-27]

9:55 am: Laser ablation on nanoscales (Invited Paper), Zengbo Wang, The Univ. of Manchester (United Kingdom); Boris S. Luk'yanchuk, Data Storage Institute (Singapore); Wei Guo, Lin Li, Zhu Liu, The Univ. of Manchester (United Kingdom) .......................... [7005-28]

10:20 am: Formation of nanoparticles by short and ultra-short laser pulses (Invited Paper), Karine Gouriet, Tatiana E. Itina, Sylvie Noël, Jörg Hermann, Marc L. Sents, Univ. de la Méditerranée-Aix Marseille II (France); Leonid V. Zhigilei, Univ. of Virginia .......................... [7005-94]

10:45 am: Nanopulsed laser modification of Ge/Si heterostructures (Invited Paper), Elena I. Gatskevich, Gennadii D. Ivel, B.I. Stepanov Institute of Technical Physics (Belarus), Andrei V. Agranat, Sergei A. Migunes, Elena I. Gatskevich, Gennadii D. Ivlev, B.I. Stepanov Institute of Technical Physics (Belarus) .......................... [7005-98]

Lunch Break .................................. 11:00 am to 12:00 pm

SESSION 8

Chamisa Ballroom I .......................... Tues. 12:50 to 2:30 pm

Novel Applications in Physics and Electronics

Session Chair: Michel L. Autric, Univ. de la Méditerranée (France)

12:50 pm: Development of high efficient solar pump laser for renewable magnesium energy cycle (Invited Paper), Takashi Yabe, Shigeaki Uchida, Tokyo Institute of Technology (Japan) .......................... [7005-31]

1:15 pm: Pulsed laser deposition of ferromagnetic alloys for spintronics: an overview (Invited Paper), Cristiana E. A. Grigorescu, National Institute of Research & Development for Optoelectronics (Romania) .......................... [7005-32]

1:40 pm: Laser-induced plasma from pure and doped water-ice at high fluence (Invited Paper), Jørgen Schou, Danmarks Tekniske Univ. (Denmark); Andreasa Matei, National Institute for Lasers, Plasma and Radiation Physics (Romania); Katarzyna Rodriguez, Danmarks Tekniske Univ. (Denmark); Maria Dinescu, National Institute for Lasers, Plasma and Radiation Physics (Romania) .......................... [7005-33]

2:05 pm: Combinatorial pulsed laser deposition of thin films (Invited Paper), Valentin Craciun, Doina Craciun, Ion N. Mihailescu, Gabriel Socol, Nicolae Stefan, Emanuel Axilr, National Institute for Lasers, Plasma and Radiation Physics (Romania) .......................... [7005-34]

Coffee Break .................................. 2:30 to 2:45 pm
SESSION 9
Chamisa Ballroom I ........................ Tues. 2:45 to 4:25 pm
Laser Space Propulsion

Session Chair: Willy L. Bohn, Deutsches Zentrum für Luft- und Raumfahrt e.V. (Germany)

3:10 pm: First demonstration of photonic laser thruster (PLT) (Invited Paper), Young K. Bae, Bae Institute ................................................................. [7005-36]
3:35 pm: Stationary force production: experimental and theoretical investigations (Invited Paper), Victor V. Apollonov, General Physics Institute (Russia) ................................. [7005-37]
4:00 pm: Materials for laser propulsion (Invited Paper), Thomas K. M. Lippert, Lukas Urech, Alexander J. Wokaun, Paul Scherrer Institut (Switzerland); Claude R. Phipps, Photonic Associates, LLC, .................................. [7005-38]

SESSION 10
Chamisa Ballroom I ........................ Tues. 2:45 to 5:30 pm
Laser Driven Flyers and Laser Cleaning

Session Chair: Dennis L. Paisley, Los Alamos National Lab.

4:25 pm: Pulsed laser cleaning: comparing science and art and cultural heritage applications (Invited Paper), Deb M. Kane, Alanna J. Fernandes, Macquarie Univ. (Australia) .................................. [7005-39]
5:15 pm: The laser-driven flyer system for space debris hypervelocity impact simulations, Zhi Cheng Gong, Beijing Institute of Spacecrafts Environment Engineering (China) ........................ [7005-41]

Chamisa Ballroom II ....................... Tues. 8:00 to 10:00 pm

Posters-Tuesday

Attendees are encouraged to view the high-quality papers presented in this interactive format. Authors will be present at their posters to discuss them with session attendees. Light snacks and beverages will be served. All participants are requested to wear their conferences badges while attending these sessions.

Poster authors: You may set up your poster after 10:00 am on Monday. Posters must be removed at the end of each session. Posters left on the boards after the sessions will be discarded.

Laser Radiation plasma dynamics and momentum coupling (Invited Paper), John L. Remo, Peter X. Hammerling, Quantum Resonance Inc. .......................... [7005-70]

Efficient TEA CO2 laser-based ablation system, Francois J. Prinsloo, Stephan P. van Heerden, Neil C. du Preez, Scientific Development and Integration (South Africa); Lourens R. Botha, Council for Scientific and Industrial Research (South Africa) ................................................ [7005-39]

Accumulation effects in laser ablation of metals with high-repetition rate lasers, Gediminas Racikuaitis, Marius Brikas, Paulius Gecys, Mindaugas Gedvilas, Fizikos Institute (Lithuania) .................................................. [7005-104]

High energy density laser beam interactions simulating astrophysical and planetary processes, John L. Remo, Quantum Resonance Inc.; Richard G. Adams, Sandia National Labs. .................................. [7005-106]

Terawatt picosecond CO2 laser on a basis of ring amplifier scheme, Yuri A. Reznukov M.D., Research Institute for Complex Testing of Optoelectronic Devices and Systems (Russia) .................................. [7005-107]

Surface morphology and crystalline structure of CdTe, ZnTe low-dimensional films, Victor K. Savchuk, Bohdan K. Kotlyarchuk, Pidstryhach Institute for Applied Problems of Mechanics and Mathematics (Ukraine); Maciej Oszwalowski, Politechnika Poznanska (Poland) .......................... [7005-108]

Reflection Fourier transform infrared spectroscopy of polymer targets for CO2 laser ablation, John E. Sinko, The Univ. of Alabama in Huntsville; Clifford A. Schlecht, Washington Univ. in St. Louis .................................. [7005-110]

Area scaling for laser propulsion, John E. Sinko, Nilesh B. Dhole, Jonathan Lassiter, Don A. Gregory, The Univ. of Alabama in Huntsville .................................. [7005-111]

Investigation on momentum coupling coefficient for a parabolic shell, Rongqing Tan, Yijun Zheng, Changjun Ke, Kuohai Zhang, Donglei Wang, Chongyi Wan, Shining Liu, The Institute of Electronics (China); Jin Wu, Institute of Electronics (China) .................................................. [7005-112]

Efficient gas lasers pumped by the generators with inductive energy storage, Victor F. Tarasenko, Institute of High Current Electronics (Russia); Alexei N. Panchenko, Institute of High Current Electronics; Alexei E. Tel’minov, Institute of High Current Electronics (Russia) .................. [7005-113]

VUV and UV excilamps, Victor F. Tarasenko, Mikhail I. Lomaev, Institute of High Current Electronics (Russia); Eduard A. Sosnin, Institute of High Current Electronics; Dmitry V. Shizt, Institute of High Current Electronics (Russia) .................................. [7005-114]

Magnetic field for efficient exhaustion of CO2 laser-produced Sn plasma in EUV light source, Yoshihumi Ueno, Georg Sourdame, Takashi Suganuma, Takayuki Yabu, Masato Moriya, Hiroshi Komori, Tamotsu Abe, Akira Endo, Akira Sumitani, Extreme Ultraviolet Lithography System Development Association (Japan) .......................... [7005-115]

Femtosecond laser surface structuring of biocompatible metals, Anatoly Y. Vorobyev, Chunlei Guo, Univ. of Rochester .................................................. [7005-116]

Dynamics of femtosecond laser-induced periodic surface structures on metals, Jincheng Wang, Anatoly Y. Vorobyev, Chunlei Guo, Univ. of Rochester .................................. [7005-117]

Space polypropulsion, Barry J. Kellett, Douglas K. Griffin, Rutherford Appleton Lab. (United Kingdom); Robert N. Campbell, Univ. of KwaZulu-Natal (South Africa); Robert Bingham, Rutherford Appleton Lab. (United Kingdom); Andrew Forbes, Council for Scientific and Industrial Research (South Africa); Max M. Michaelis, Univ. of KwaZulu-Natal (South Africa) .................................. [7005-118]

Nanolasers surface processing by tuning near-field focusing properties of particle lens, Wei Guo, Zengbo Wang, Lin Li, Zhu Liu, David J. Whitehead, The Univ. of Manchester (United Kingdom) .................................. [7005-121]

Femtosecond laser milling of ultrathin films of LiNbO3, Ophir Gaathon, AviShai Olan, Jerry I. Dadap, Jr., Alexander Wirthmüller, Columbia Univ.; Lakshmanan Vanamurthy, Sasha Bakhrum, Hassaram Bakhrum, Univ. at Albany; Richard M. Osgood, Jr., Columbia Univ. .................................. [7005-122]
Wednesday 23 April

SESSION 11
Chamisa Ballroom I .......................... Wed. 7:30 to 8:40 am
PLD, MAPLE and Processing of Advanced Materials
Session Chair: Claude R. Phipps, Photonic Associates, LLC
7:30 am: Matrix-assisted pulsed laser evaporation (MAPLE): fundamental studies and emerging research (Invited Paper), James M. Fitz-Gerald, Aaron T. Sellinger, Elodie Leveugle, Leonid V. Zhigilei, Univ. of Virginia ........................ [7005-42]
7:55 am: Molecular dynamics simulation study of the ejection of polymer molecules and generation of molecular balloons in matrix-assisted pulsed laser evaporation (Invited Paper), Leonid V. Zhigilei, Elodie Leveugle, Aaron Sellinger, James M. Fitz-Gerald, Univ. of Virginia ........................ [7005-43]
8:20 am: Designing laser-induced refractive index changes in “thermal” glasses (Invited Paper), Razvan I. Stoian, Alexandre Mermillod-Blondin, Cyril Mauciar, Nicolas Huot, Eric Audouard, Univ. Jean Monnet Saint-Etienne (France); Igor M. Burakov, Nadezhda M. Bulgakova, Institute of Thermophysics (Russia); Yuri P. Meschcheryakov, Institute of Hydrodynamics (Russia); Arkady Rosenfeld, Ingolf V. Hertel, Max-Born-Institut für Nichtlineare Optik und Kurzzeitpektroskopie (Germany) ........................ [7005-44]
8:45 am: Thin film nano-processing mediated with surface plasmon coupling excited by femtosecond laser (Invited Paper), Yuto Tanaka, Minoru Obara, Keio Univ. (Japan) ........................ [7005-45]
9:00 am: Pulsed-laser deposition of ZnO and related compound thin films for optoelectronics, Eric Millon, Univ. d’Orléans (France); Jacques Perriere, Univ. Paris 7-Denis Diderot (France); Chantal M. Boulmer-Leborgne, Univ. d’Orléans (France) ........................ [7005-46]
9:15 am: Low defect ZnO growth and catalyst-free growth of ZnO nanorods by pulsed laser deposition (Invited Paper), Tatsunori Sakano, Keio Univ. (Japan); Ryo Nishimura, Hiroki Fukukoa, Keio Univ (Japan); Yoshihito Yada, Minoru Obara, Keio Univ. (Japan); Hiroyuki Kato, Michihiro Sano, Stanley Electric Co., Ltd. (Japan) ........................ [7005-47]
Coffee Break ........................................ 9:40 to 9:55 am

SESSION 12
Chamisa Ballroom I .......................... Wed. 9:55 to 11:50 am
High Power Lasers Applications and Diagnostics
Session Chair: Michael L. Lander, General Dynamics Information Technology
9:55 am: Novel aspects in laser propulsion (Invited Paper), Willy L. Bohn, Deutsches Zentrum für Luft- und Raumfahrt e.V. (Germany) ........................ [7005-48]
10:45 am: Lasers in space (Invited Paper), Max M. Michaelis, Univ. of KwaZulu-Natal (South Africa); Andrew Forbes, Council for Scientific and Industrial Research (South Africa); Robert Bingham, Rutherford Appleton Lab. (United Kingdom) ........................ [7005-50]
11:10 am: CO2 laser with 65MW pulses and 100KW average power (concept and first steps of development) (Invited Paper), Dieter Schaubcker, Bernhard Holzinger, Technische Univ. Wien (Austria) ........................ [7005-51]
Lunch Break ........................................ 11:50 am to 1:50 pm

SESSION 13
Chamisa Ballroom I .......................... Wed. 1:50 to 3:55 pm
COIL, DOIL, EOIL and Other Unusual Sources
Session Chair: Carl William Larson, Air Force Research Lab.
2:15 pm: Latest developments toward the demonstration of a KW-class EOIL laser (Invited Paper), Alan E. Hill, Plasmatics, Inc. ........................ [7005-54]
2:40 pm: Influence of nitrogen oxides NO and NO2 additives on single/delta oxygen production in pulsed e-beam sustained discharge in oxygen (Invited Paper), Andrey A. Ionin, Yuri M. Klimachev, Andrey Y. Kozlov, Andrey A. Kotkov, P.N. Lebedev Physical Institute (Russia); Igor V. Kochetov, Anatoly P. Napultovich, Oleg A. Rulev, TropSekt Institute for Innovation and Fusion Research (Russia); Leonid V. Seleznev, Dmitry V. Sinitzin, Nikolay P. Vagin, Nikolay N. Yuryshhev, P.N. Lebedev Physical Institute (Russia) ........................ [7005-55]
3:05 pm: Optical sources based on a multichannel surface discharge and their application to pump photolytically driven femtosecond XeF(C-A) amplifier (Invited Paper), Vladimir Tcheremskine, Olivier P. Uteza, Marc L. Sentis, Univ. de la Méditerranée-Aix Marseille II (France); Leonid D. Mikheev, P.N. Lebedev Physical Institute (Russia) ........................ [7005-56]
Coffee Break ........................................ 3:55 to 4:10 pm

SESSION 14
Chamisa Ballroom I .......................... Wed. 4:10 to 5:45 pm
Optically Pumped Lasers
Session Chair: Andrey A. Ionin, P.N. Lebedev Physical Institute (Russia)
4:10 pm: Problem definition of experimental investigations on laser propulsion under space conditions (Invited Paper), Yuri A. Rezunov M.D., Research Institute for Complex Testing of Optoelectronic Devices and Systems (Russia); Yuri M. Baturin, Yuri Gagarin Russian State Science Research Cosmonauts Training Ctr. (Russia) ........................ [7005-58]
4:35 pm: Formation of superpower volume discharges and their application for modification surface of metals (Invited Paper), Victor F. Tarasenko, Michael A. Shulepov, Institute of High Current Electronics (Russia); Andrey A. Kuznetsov, Oleg A. Rulev, P.N. Lebedev Physical Institute (Russia) ........................ [7005-59]
5:00 pm: Development of CO2 laser drilling machine for microvias formation of the HDI printed circuit boards, Ming-Fei Chen, Yu-Pin Chen, Wen-Tse Hsiao, National Changhua Univ. of Education (Taiwan) ........................ [7005-60]
5:15 pm: Optically pumped HBr gas laser operating in regions of high atmospheric transmission, Vasudevan Nampoothiri, Aminar Ratanavich, Neil Campbell, Wolfgang Rudolph, The Univ. of New Mexico ........................ [7005-62]
5:30 pm: Efficient and compact short pulse MOPA system for Laser-Produced-Plasma Extreme-UV sources employing RF-discharge slab-waveguide CO2 amplifiers, Krzysztof M. Nowak, Takashi Suganuma, Akira Endo, Akira Sumitani, Extreme Ultraviolet Lithography System Development Association (Japan); Dmitri A. Goryachkin, Nikolay A. Romanov, Andrey Y. Rodionov, Vladimir E. Sherstobitov, Lev V. Volchuck, J.S.C. Laser Physics (Russia) ........................ [7005-63]

Conference Dinner and Best Poster Awards
Thursday 24 April

SESSION 15

Chamisa Ballroom I .......................... Thurs. 7:30 to 9:00 am

Physics of Laser Matter Interactions

Session Chair: Max M. Michaelis, Univ. of KwaZulu-Natal (South Africa)

7:30 am: Spectroscopic characterization of an ultrashort laser driven Ar cluster target incorporating both Boltzmann and particle-in-cell models, Manolo E. Sherrill, Joseph Abdallah, Jr., George Csanak, Evan S. Dodd, Los Alamos National Lab.; Yuji Fukuda, Japan Atomic Energy Research Institute (Japan); Anatoly Y. Skobelev, VNIIIPFI (Russia). ........................................ [7005-64]

7:45 am: Ultrafast modification of optical properties of metals, irradiated by powerful laser pulses, Mikhail Veyssman, Nikolay Andreev, Vladimir E. Fortov, Konstantin Khishchenko, Oleg Kostenko, Pavel Levashov, Mikhail Povarnitsyn, Institute for High Energy Densities (Russia). .......................... [7005-65]

8:00 am: Coloring metals with femtosecond laser pulses (Invited Paper), Anatoly Y. Vorobyev, Chunlei Guo, Univ. of Rochester. ............................ [7005-66]


8:30 am: Subpicosecond dielectric breakdown and incubation in Ti:S1-xO2 composite films with adjustable band gap, Luke Emmert, Duy Nguyen, Igor Cravetchi, Wolfgang Rudolph, The Univ. of New Mexico; Marco Jupe, Marc Lappachsies, Kai Starke, Detlev Ristau, Laser Zentrum Hannover e.V. (Germany). ................................................................. [7005-68]

8:45 am: Equation of state of matter irradiated by short laser pulse and geometry of spallation cupola, Nai A. Inogamov, L.D. Landau Institute for Theoretical Physics (Russia); Vasilii V. Zhakhovskii, Osaka Univ. (Japan) and Joint Institute of High Temperature (Russia); Katsunobu Nishihara, Osaka Univ. (Japan). ................................................................. [7005-69]

Coffee Break .......................................................... 9:00 to 9:15 am

SESSION 16

Chamisa Ballroom I .......................... Thurs. 9:15 to 10:25 am

Laser Space Propulsion II

Session Chair: Akihiro Sasoh, Nagoya Univ. (Japan)


9:30 am: Binary polymer propellants for laser-propelled constant momentum missions (Invited Paper), Andrew V. Pakhomov, The Univ. of Alabama in Huntsville; Kevin Mahafy, Exquadrum, Inc. ................. [7005-72]

9:55 am: Critical fluence effects in laser propulsion (Invited Paper), John E. Sinko, Don A. Gregory, The Univ. of Alabama in Huntsville. ........................ [7005-73]

10:10 am: Novel concept of laser-plasma microthruster design, Andrei V. Fedenev, Fedor N. Ljubchenko, Central Research Institute of Engineering (Russia). ................................................................. [7005-74]

SESSION 17

Chamisa Ballroom I .......................... Thurs. 10:25 to 11:40 am

DPALS I

Session Chair: Gordon D. Hager, The Univ. of New Mexico

10:25 am: Diode pumped alkali lasers: an overview (Invited Paper), William F. Krupke, WFK Lasers, LLC. ................................................................. [7005-75]

10:50 am: Collisional quenching and radiation trapping kinetics for Rb(5p) in the presence of ethane (Invited Paper), David A. Hostutler, Air Force Research Lab.; Gordon D. Hager, The Univ. of New Mexico; Michael C. Heaven, Emory Univ. ................................................................. [7005-123]

11:15 am: Resonance transition 795-nm Rubidium laser with He buffer gas (Invited Paper), Sheldon S.Wu, Lawrence Livermore National Lab. and Univ. of California/San Diego; Thomas F. Soules, Ralph H. Page, Scott C. Mitchell, Vernon K. Kanz, Raymond J. Beach, Lawrence Livermore National Lab. ................................................................. [7005-77]

Lunch Break .......................................................... 11:40 am to 1:40 pm

SESSION 18

Chamisa Ballroom I .......................... Thurs. 1:40 to 2:45 pm

DPALS II

Session Chair: Gordon D. Hager, The Univ. of New Mexico

1:40 pm: Alkali lasers development at Laser and Optics Research Center of the US Air Force Academy (Invited Paper), Boris V. Zhdanov, Randall J. Knize, U.S. Air Force Academy. ................................................................. [7005-78]

2:05 pm: High power diode pumped alkali vapor lasers (Invited Paper), Jason S. Zweilbach, General Atomics; William F. Krupke, WFK Lasers, LLC; Paul S. Banks, Aleksey M. Komashko, Chris Murphy, Justin Nash, John Smith, General Atomics. ................................................................. [7005-79]

2:30 pm: Pressure broadening of the D1 and D2 lines in atomic cesium, Greg A. Pitz, Glen P. Perram, Air Force Institute of Technology. .......................... [7005-80]

Coffee Break .......................................................... 2:45 to 3:00 pm

SESSION 19

Chamisa Ballroom I .......................... Thurs. 3:00 to 4:05 pm

DPALS III

Session Chair: Gordon D. Hager, The Univ. of New Mexico

3:00 pm: Microplasmas as efficient generators of singlet delta oxygen, Vincent Puech, Gerard Bauville, Bernard Lacour, Joao Santos Sousa, Univ. Paris-Sud II (France); Leanne C. Pitchford, Univ. Paul Sabatier (France)[7005-81]


3:40 pm: Second harmonic operation of diode-pumped Rb vapor lasers (Invited Paper), Alan B. Petersen, Randall Lane, Spectra-Physics. ........................ [7005-83]

Final Remarks .................................................... Thurs. 4:05 pm

Claude R. Phipps, Photonic Associates, LLC
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