



2 - 7 February 2013
The Moscone Center
San Francisco, California United States

Conference 8607

Laser Applications in Microelectronic and Optoelectronic Manufacturing (LAMOM) XVIII

Conference Program Track: **Laser Applications** ()

[View Daily Schedule of Program Track](#)

Available in print as **Proceedings of SPIE Volume 8607**

Dates: **Monday-Thursday 4 - 7 February 2013**

Location: **130 (Exhibit Level)**

Conference Chairs

Xianfan Xu, Purdue Univ. (United States); **Guido Hennig**, Daetwyler Graphics AG (Switzerland); **Yoshiki Nakata**, Osaka Univ. (Japan); **Stephan W. Roth**, BLZ Bayerisches Laserzentrum GmbH (Germany)

Program Committee

Craig B. Arnold, Princeton Univ. (United States); **J. Thomas Dickinson**, Washington State Univ. (United States); **Jan J. Dubowski**, Univ. de Sherbrooke (Canada); **Bo Gu**, Bos Photonics (United States); **Henry Helvajian**, The Aerospace Corp. (United States); **Ralf Knappe**, LUMERA LASER GmbH (Germany); **Yongfeng Lu**, Univ. of Nebraska-Lincoln (United States); **Michel Meunier**, Ecole Polytechnique de Montréal (Canada); **Beat Neuenschwander**, Bern Univ. of Applied Science (Switzerland); **Hiroyuki Niino**, National Institute of Advanced Industrial Science and Technology (Japan); **Alberto Piqué**, U.S. Naval Research Lab. (United States); **Gediminas Raciukaitis**, Ctr. for Physical Sciences and Technology (Lithuania); **Andrei V. Rode**, The Australian National Univ. (Australia); **Klaus Sokolowski-Tinten**, Univ. Duisburg-Essen (Germany); **Razvan Stoian**, Lab. Hubert Curien (France); **Koji Sugioka**, RIKEN (Japan)

[Show All Abstracts](#)

Monday 4 February

Session 1: Nanoscale Materials Synthesis and Processing: Joint Session with Conferences 8607 and 8609

Date: **Monday 4 February**

Time: **8:10 AM - 10:00 AM**

Room: **120 (Exhibit Level)**

Session Chair: **Guido Hennig**, Daetwyler Graphics AG (Switzerland)

10-year perspective on laser generation of sub-100 nm structures *(Invited Paper)*

Paper 8609-18

Time: **8:10 AM - 8:40 AM**

Author(s): **Andreas Ostendorf**, Ruhr-Univ. Bochum (Germany)

[Show Abstract](#)

[Add to My Schedule](#)

Formation of quantum dots from precursors in polymeric films by ps-laser

Paper 8607-1

Time: **8:40 AM - 9:00 AM**

Author(s): **Gediminas Raciukaitis**, Institute of Physics (Lithuania) and Ctr. for Physical Sciences and Technology (Lithuania); **Paulius Gecys**, Institute of Physics (Lithuania); **Francesco Antolini**, Lenuta Stroea, ENEA (Italy); **Ashu K. Bansal**, Ifor D. W. Samuel, Univ. of St. Andrews (United Kingdom); **Sybille Allard**, Ulrich Scherf, Bergische Univ. Wuppertal (Germany); **Luca Ortolani**, Istituto per la Microelettronica e Microsistemi (Italy)

[Show Abstract](#)

[Add to My Schedule](#)

Growth of periodic ZnO nano-crystals on buffer layer patterned by interference laser irradiation

Paper 8607-2

Time: **9:00 AM - 9:20 AM**

Author(s): **Daisuke Nakamura**, Tetsuya Shimogaki, Kota Okazaki, Mitsuhiro Higashihata, Kyushu Univ. (Japan); **Yoshiki Nakata**, Osaka Univ. (Japan); **Tatsuo Okada**, Kyushu Univ. (Japan)

[Show Abstract](#)

[Add to My Schedule](#)

Sintering of solution-based aluminum nano-particles by laser ignition

Paper 8607-3

Time: **9:20 AM - 9:40 AM**

Author(s): **Jie Zhang**, Panasonic Boston Lab. (United States)

[Show Abstract](#)

[Add to My Schedule](#)

F2 laser induced surface and interface modifications of aluminum thin films for selective metallization

Paper 8607-4

Time: **9:40 AM - 10:00 AM**

Author(s): Masayuki Okoshi, Kazufumi Iwai, National Defense Academy (Japan); Hidetoshi Nojiri, Renias Co., Ltd. (Japan); Narumi Inoue, National Defense Academy (Japan)

[Show Abstract](#)

[Add to My Schedule](#)

Coffee Break 10:00 AM - 10:30 AM

Session 2: Nanoscale Patterning: Joint Session with Conferences 8607 and 8609

Date: **Monday 4 February**

Time: **10:30 AM - 12:00 PM**

Room: **120 (Exhibit Level)**

Session Chair: **Xianfan Xu**, Purdue Univ. (United States)

Nanopatterning beyond the far-field diffraction limit *(Invited Paper)*

Paper 8607-5

Time: **10:30 AM - 11:00 AM**

Author(s): Rajesh Menon, The Univ. of Utah (United States)

[Show Abstract](#)

[Add to My Schedule](#)

Periodic surface structures generated by cross-polarized double femtosecond laser pulse irradiation sequences

Paper 8607-6

Time: **11:00 AM - 11:20 AM**

Author(s): Arkadi Rosenfeld, Sandra Höhm, Max-Born-Institut für Nichtlineare Optik und Kurzzeitspektroskopie (Germany); Jörn Bonse, Jörg Krüger, Bundesanstalt für Materialforschung und -prüfung (Germany)

[Show Abstract](#)

[Add to My Schedule](#)

Periodic surface nanopatterning controlled with preformed scattering structures excited by femtosecond laser irradiation

Paper 8607-7

Time: **11:20 AM - 11:40 AM**

Author(s): Go Obara, Naoki Maeda, Hisashi Shimizu, Mitsuhiro Terakawa, Keio Univ. (Japan); Eric Mazur, Harvard Univ. (United States); Minoru Obara, Keio Univ. (Japan)

[Show Abstract](#)

[Add to My Schedule](#)

Far-field laser direct synthesis of 60 nm silicon nanowires for chemical sensing

Paper 8607-8

Time: **11:40 AM - 12:00 PM**

Author(s): James I. Mitchell, Woongsik Nam, Xianfan Xu, Purdue Univ. (United States)

[Show Abstract](#)

[Add to My Schedule](#)

Tuesday 5 February

Session 3: Ultrafast Laser Micromachining I: Fundamentals: Joint Session with Conferences 8607 and 8611

Date: **Tuesday 5 February**

Time: **8:00 AM - 10:10 AM**

Room: **130 (Exhibit Level)**

Session Chair: **Yong Feng Lu**, Univ. of Nebraska-Lincoln (United States)

Modelling electron excitation and relaxation in solids under ultrafast laser irradiation *(Invited Paper)*

Paper 8607-9

Time: **8:00 AM - 8:30 AM**

Author(s): Bärbel Rethfeld, Technische Univ. Kaiserslautern (Germany)

[Show Abstract](#)

[Add to My Schedule](#)

Time-resolved X-ray scattering studies of ultrafast phase transitions in laser-excited materials

Paper 8607-10

Time: **8:30 AM - 8:50 AM**

Author(s): Klaus Sokolowski-Tinten, Univ. Duisburg-Essen (Germany)

[Show Abstract](#)

[Add to My Schedule](#)

Time-resolved spectroscopy characterization of femtosecond fiber laser induced plasma

Paper 8611-42

Time: **8:50 AM - 9:10 AM**

Author(s): Huan Huang, Lih-Mei Yang, Jian Liu, PolarOnyx, Inc. (United States)

[Paper\(s\): Beat Neuenschwander, Beat Jaeggi, Marc C. Schmid, Berner Fachhochschule Technik und Informatik \(Switzerland\)](#)

[Show Abstract](#)

[Add to My Schedule](#)

Time and space resolved fs-laser ablation of transparent tantalum pentoxide thin films

Paper 8607-11

Time: **9:10 AM - 9:30 AM**

Author(s): Stephan Rapp, Janosch Rosenberger, Matthias Domke, Gerhard Heise, Heinz P. Huber, Hochschule München für Angewandte Wissenschaften (Germany)

[Show Abstract](#)

[Add to My Schedule](#)

Factors controlling the incubation in the application of ps laser pulses on copper and iron surfaces

Paper 8607-12

Time: **9:30 AM - 9:50 AM**

Author(s): Beat Neuenschwander, Beat Jaeggi, Marc C. Schmid, Berner Fachhochschule Technik und Informatik (Switzerland); Alex Dommann, Antonia Neels, Ctr. Suisse d'Electronique et de Microtechnique SA (Switzerland); Guido Hennig, Daetwyler Graphics AG (Switzerland)

[Show Abstract](#)

[Add to My Schedule](#)

Study on the influence of repetition rate and pulse duration on ablation efficiency using a new generation of high power Ytterbium doped fiber ultrafast laser

Paper 8611-43

Time: **9:50 AM - 10:10 AM**

Author(s): John Lopez, Univ. Bordeaux 1 (France); Rémi Torres, ALPhANOV (France); Yoann Zaouter, Clemens Hoenninger, Amplitude Systèmes (France); Patrick Georges, Marc Hanna, Institut d'Optique Graduate School (France); Eric P. Mottay, Amplitude Systèmes (France); Rainer Kling, ALPhANOV (France)

[Show Abstract](#)

[Add to My Schedule](#)

Coffee Break 10:10 AM - 10:40 AM

Session 4: Ultrafast Laser Micromachining II: Fundamentals: Joint Session with Conferences 8607 and 8611

Date: **Tuesday 5 February**

Time: **10:40 AM - 12:30 PM**

Room: **130 (Exhibit Level)**

Session Chair: **Stefan Nolte**, Friedrich-Schiller-Univ. Jena (Germany)

Ultrafast lasers for materials processing in consumer electronics *(Invited Paper)*

Paper 8611-44

Time: **10:40 AM - 11:10 AM**

Author(s): Haibin Zhang, Electro Scientific Industries, Inc. (United States)

No abstract available

[Add to My Schedule](#)

Micro-structuring of thin titanium films with ultra-short laser pulses

Paper 8611-45

Time: **11:10 AM - 11:30 AM**

Author(s): Regina Moser, Tobias Gschwilm, Adrian Zacherle, Gerhard Heise, Heinz P. Huber, Hochschule München für Angewandte Wissenschaften (Germany)

[Show Abstract](#)

[Add to My Schedule](#)

High throughput laser micro machining on a rotating cylinder with ultra short pulses at highest precision

Paper 8607-13

Time: **11:30 AM - 11:50 AM**

Author(s): Beat Neuenschwander, Beat Jaeggi, Markus Zimmermann, Thomas Meier, Berner Fachhochschule Technik und Informatik (Switzerland); Guido Hennig, Daetwyler Graphics AG (Switzerland)

[Show Abstract](#)

[Add to My Schedule](#)

Formation of mixed metal oxides by femtosecond laser irradiation for solar harvesting

Paper 8607-14

Time: **11:50 AM - 12:10 PM**

Author(s): Kasey C. Phillips, Jin Suntivich, Harvard Univ. (United States); Tian Ming, Shao-Horn Yang, Massachusetts Institute of Technology (United States); Eric Mazur, Harvard Univ. (United States)

[Show Abstract](#)

[Add to My Schedule](#)

Transient investigations of the laser lift-off process of thin molybdenum films

Paper 8611-46

Time: **12:10 PM - 12:30 PM**

Author(s): Matthias Domke, Stephan Rapp, Jürgen Sotrop, Hochschule München für Angewandte Wissenschaften (Germany); Heinz P. Huber, Hochschule München für Angewandte Wissenschaften (Germany)

[Show Abstract](#)[Add to My Schedule](#)**Lunch/Exhibition Break 12:30 PM - 2:00 PM****Session 5: Ultrafast Laser Micromachining III: Joint Session with Conferences 8607 and 8611**

Date: **Tuesday 5 February**
 Time: **2:00 PM - 3:30 PM**
 Room: **130 (Exhibit Level)**

Session Chair: **Haibin Zhang**, Electro Scientific Industries, Inc. (United States)

Double-pulse irradiation of ultrafast laser for high-efficiency glass microwelding *(Invited Paper)*

Paper 8607-15
 Time: **2:00 PM - 2:30 PM**
 Author(s): Koji Sugioka, Sizhu Wu, Katsumi Midorikawa, RIKEN (Japan)

[Show Abstract](#)[Add to My Schedule](#)**Ultrastable bonding of glass with femtosecond laser bursts**

Paper 8611-47
 Time: **2:30 PM - 2:50 PM**
 Author(s): Sören Richter, Felix Zimmermann, Sven Döring, Friedrich-Schiller-Univ. Jena (Germany); Andreas Tünnermann, Stefan Nolte, Friedrich-Schiller-Univ. Jena (Germany) and Fraunhofer-Institut für Angewandte Optik und Feinmechanik (Germany)

[Show Abstract](#)[Add to My Schedule](#)**Selective localised modification of silicon crystal by ultrafast laser induced micro-explosion**

Paper 8607-16
 Time: **2:50 PM - 3:10 PM**
 Author(s): Ludovic Rapp, Bianca Haberl, Jodie Bradby, Eugene G. Gamaly, The Australian National Univ. (Australia); Saulius Juodkazis, Swinburne Univ. of Technology (Australia); Andrei V. Rode, The Australian National Univ. (Australia)

[Show Abstract](#)[Add to My Schedule](#)**Contrast of femtosecond near infrared and nanosecond deep ultraviolet laser interaction with fused silica glass**

Paper 8607-17
 Time: **3:10 PM - 3:30 PM**
 Author(s): Jianzhao Li, Samira Karimelahi, Peter R. Herman, Univ. of Toronto (Canada)

[Show Abstract](#)[Add to My Schedule](#)**Coffee Break 3:30 PM - 4:00 PM****Session 6: Ultrafast Laser Micromachining IV: Joint Session with Conferences 8607 and 8611**

Date: **Tuesday 5 February**
 Time: **4:00 PM - 5:40 PM**
 Room: **130 (Exhibit Level)**

Session Chair: **Klaus Sokolowski-Tinten**, Univ. Duisburg-Essen (Germany)

Influence of ambient pressure on the hole formation process in ultrashort pulse laser deep drilling

Paper 8611-48
 Time: **4:00 PM - 4:20 PM**
 Author(s): Sven Döring, Sören Richter, Tobias Ullsperger, Friedrich-Schiller-Univ. Jena (Germany); Andreas Tünnermann, Stefan Nolte, Friedrich-Schiller-Univ. Jena (Germany) and Fraunhofer-Institut für Angewandte Optik und Feinmechanik (Germany)

[Show Abstract](#)[Add to My Schedule](#)**Laser through hole formation for microelectronic substrate vertical interconnection**

Paper 8607-18
 Time: **4:20 PM - 4:40 PM**
 Author(s): Chong Zhang, Nikhil Sharma, Amanda E. Schuckman, Islam A. Salama, Tao Wu, Sheng Li, Intel Corp. (United States)

[Show Abstract](#)[Add to My Schedule](#)**Micro-hole drilling with femtosecond fiber laser**

Paper 8607-19
 Time: **4:40 PM - 5:00 PM**
 Author(s): Huan Huang, Lih-Mei Yang, Jian Liu, PolarOnyx, Inc. (United States)

[Show Abstract](#)[Add to My Schedule](#)

Spatio-temporal dynamics of femtosecond Bessel beams for high-aspect ratio nanochannel drilling in dielectrics

Paper 8611-49

Time: **5:00 PM - 5:20 PM**

Author(s): Jinggui Zhang, Univ. de Franche-Comté (France); Francois Courvoisier, Institut Femto ST (France); Arnaud Couairon, Ecole Polytechnique (France); John M. Dudley, Univ. de Franche-Comté (France)

[Show Abstract](#)[Add to My Schedule](#)**Understanding femtosecond laser hyperdoping mechanism via pump-probe methods**

Paper 8607-20

Time: **5:20 PM - 5:40 PM**

Author(s): Yu-Ting Lin, Harvard Univ. (United States); Guoliang Deng, Sichuan Univ. (China); Weilu Shen, Rensselaer Polytechnic Institute (United States); Meng-Ju Sher, Eric Mazur, Harvard Univ. (United States)

[Show Abstract](#)[Add to My Schedule](#)**Posters-Tuesday**Date: **Tuesday 5 February**Time: **6:00 PM - 8:00 PM**Room: **103 (Exhibit Level)**

Conference attendees are invited to attend the LASE poster session on Tuesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/PWPosterGuidelines>.

Reducing damage in femtosecond laser processed silicon for photovoltaics

Paper 8607-44

Author(s): Benjamin Franta, Harvard Univ. (United States); Clarissa Klein, Menlo School (United States); Eric Mazur, Harvard Univ. (United States)

[Show Abstract](#)[Add to My Schedule](#)**Research on period microstructure induced by femtosecond laser in transparent dielectric**

Paper 8607-49

Author(s): Shuwei Fan, Yan Zhang, Xi'an Jiaotong Univ. (China)

[Show Abstract](#)[Add to My Schedule](#)**Fresnel attenuator of laser radiation power**

Paper 8607-50

Author(s): Jan A. Owsik, Military Univ. of Technology (Poland); Yury Avdeev, A. N. Severtsov Institute of Ecology and Evolution (Russian Federation); Anatoly A. Liberman, Alexander A. Kovalev, Alexey S. Mikryukov, Sergey A. Moskalyuk, All-Russian Research Institute for Optical and Physical Measurement (Russian Federation); Janusz Noga, Military Univ. of Technology (Poland); Anna Z. Rembielinska, LOT Polish Airlines (Poland); Joanna Walczuk, Agency for Restructuring and Modernisation of Agriculture (Poland)

[Show Abstract](#)[Add to My Schedule](#)**Development of hybrid ArF laser system for lithography**

Paper 8607-51

Author(s): Takashi Onose, Shinji Ito, Kouji Kakizaki, Takashi Matsunaga, Hakaru Mizoguchi, Gigaphoton Inc. (Japan); Shuntaro Watanabe, Chun Zhou, Tokyo Univ. of Science (Japan); C. T. Chen, X. T. Wang, Chinese Academy of Sciences (China); Teruto Kanai, Yohei Kobayashi, The Univ. of Tokyo (Japan)

[Show Abstract](#)[Add to My Schedule](#)**Laser-induced front side etching using self-regenerating adsorbing layer (SAL-LIFE) of commercial glasses**

Paper 8607-52

Author(s): Pierre Lorenz, Martin Ehrhardt, Klaus-Peter Zimmer, Leibniz-Institut für Oberflächenmodifizierung e.V. (Germany)

[Show Abstract](#)[Add to My Schedule](#)**Measuring the complex refractive index of metals in the solid and liquid state and its influence on the laser machining**

Paper 8607-53

Author(s): Marc C. Schmid, Sarah Zehnder, Patrick Schwaller, Beat Neuenschwander, Joseph Zürcher, Urs W. Hunziker, Bern Univ. of Applied Science (Switzerland)

[Show Abstract](#)[Add to My Schedule](#)**Laser processing system development of large area and high precision**

Paper 8607-54

Author(s): Hyeongchan Park, Kwanghyun Ryu, Tae-sang Hwang, ASTJETEC Co., Ltd. (Korea, Republic of)

[Show Abstract](#)[Add to My Schedule](#)

Sub-ns and ps laser performance and results

Paper 8607-55

Author(s): Joyce P. Kilmer, Matthew Terraciano, Yusong Yin, Photonics Industries International, Inc. (United States)

[Show Abstract](#)[Add to My Schedule](#)**Femtosecond laser based in-fiber long period grating fabrication for improved solution sensing**

Paper 8607-57

Author(s): Farid Ahmed, Univ. of Victoria (Canada); Md. Shamim Ahsan, Man Seop Lee, KAIST (Korea, Republic of); Martin B. G. Jun, Univ. of Victoria (Canada)

[Show Abstract](#)[Add to My Schedule](#)**Low cost of ownership solid state laser delivering 120 W at 355 nm for material processing applications**

Paper 8607-58

Author(s): Aleksej M. Rodin, Nick Hay, Young Kwon, Yili Guo, Powerlase Photonics Ltd. (United Kingdom)

[Show Abstract](#)[Add to My Schedule](#)**Micromachining of Ti-3Al-2.5V tubes by nanosecond Nd:YAG laser**

Paper 8607-59

Author(s): Yaomin Lin, Alfred E. Mann Foundation for Scientific Research (United States); Mool C. Gupta, Univ. of Virginia (United States)

[Show Abstract](#)[Add to My Schedule](#)**Mechanism of micromachining of semiconductor silicon by nano short pulses of multi wavelength laser**

Paper 8607-60

Author(s): Shiva P. Gadag, Southern Methodist Univ. (United States)

[Show Abstract](#)[Add to My Schedule](#)**Wednesday 6 February****Session 7: Diagnostics in Laser Processing**Date: **Wednesday 6 February**Time: **8:00 AM - 9:50 AM**Room: **130 (Exhibit Level)**Session Chair: **David Jae-Seok Hwang**, Stony Brook Univ. (United States)**Laser-based spectroscopy and spectrometry (Invited Paper)**

Paper 8607-21

Time: **8:00 AM - 8:30 AM**

Author(s): Yong Feng Lu, Xiang Nan He, Xi Huang, Lian Bo Guo, Univ. of Nebraska-Lincoln (United States)

[Show Abstract](#)[Add to My Schedule](#)**Raman and fluorescence microscopy in polarized light to probe local femtosecond laser-induced partial amorphization of the monoclinic doped crystal LYB:Eu³⁺**

Paper 8607-22

Time: **8:30 AM - 8:50 AM**

Author(s): Nicolas Marquestaut, Univ. Bordeaux 1 (France); Marc Dussauze, Yannick G. Petit, Institut de Chimie de la Matière Condensée de Bordeaux (France); Arnaud Royon, Gautier Papon, Univ. Bordeaux 1 (France); Véronique Jubera, Institut de Chimie de la Matière Condensée de Bordeaux (France); Michel Couzi, Vincent Rodriguez, Univ. Bordeaux 1 (France); Thierry Cardinal, Institut de Chimie de la Matière Condensée de Bordeaux (France); Lionel S. Canioni, Univ. Bordeaux 1 (France)

[Show Abstract](#)[Add to My Schedule](#)**Quantum cascade laser-based sensing to investigate fast laser ablation process**

Paper 8607-23

Time: **8:50 AM - 9:10 AM**

Author(s): Francesco P. Mezzapesa, Vincenzo Spagnolo, Antonio Ancona, Gaetano Scamarcio, CNR-IFN UOS Bari (Italy)

[Show Abstract](#)[Add to My Schedule](#)**High resolution laser direct imaging technology for package substrate high density routing application**

Paper 8607-24

Time: **9:10 AM - 9:30 AM**

Author(s): Sheng Li, Islam A. Salama, Danny R. Singh, Chong Zhang, Intel Corp. (United States)

No abstract available

[Add to My Schedule](#)**Femtosecond single-beam dual-voxel local probing of two-photon excited fluorescence in the Eu³⁺-doped monoclinic**

Li₆Y(BO₃)₃ crystal

Paper 8607-25

Time: **9:30 AM - 9:50 AM**

Author(s): Yannick G. Petit, Institut de Chimie de la Matière Condensée de Bordeaux (France); Arnaud Royon, Nicolas Marquestaut, Univ. Bordeaux 1 (France); Marc Dussauze, Philippe Veber, Véronique Jubera, Thierry Cardinal, Institut de Chimie de la Matière Condensée de Bordeaux (France); Lionel S. Canioni, Univ. Bordeaux 1 (France)

[Show Abstract](#)[Add to My Schedule](#)**Coffee Break 9:50 AM - 10:20 AM****LASE Plenary Session**Date: **Wednesday 6 February**Time: **10:20 AM - 12:30 PM**Room: **134 (Exhibit Level)****Welcome and Opening Remarks 10:20 - 10:25****Bo Gu**, Bos Photonics (USA); **Andreas Tünnermann**, Fraunhofer-Institut für Angewandte Optik und Feinmechanik (Germany) and Friedrich-

Schiller-Univ. Jena (Germany)

Announcement of the Best "Green" LASE Paper Award 10:25 - 10:30**Stephen J. Eglash**, Precourt Institute for Energy, Stanford Univ. (USA)**Laser-Based Particle Acceleration and the Path to TeV Physics and Compact X-ray and Gamma Ray Sources***(Presentation Only) (Plenary)*

Paper 8600-101

Time: **10:30 AM - 11:10 AM**

Author(s): Wim P. Leemans, Lawrence Berkeley National Lab. (United States)

[Show Abstract](#)[Add to My Schedule](#)**Three-Dimensional Metamaterials Made By Direct Laser Writing *(Presentation Only) (Plenary)***

Paper 8600-102

Time: **11:10 AM - 11:50 AM**

Author(s): Martin Wegener, Karlsruher Institut für Technologie (Germany)

[Show Abstract](#)[Add to My Schedule](#)**Remote Laser Welding for Automotive Seat Production *(Presentation Only) (Plenary)***

Paper 8600-103

Time: **11:50 AM - 12:30 PM**

Author(s): Geert G. Verhaeghe, TWI Ltd. (United Kingdom)

[Show Abstract](#)[Add to My Schedule](#)**Lunch/Exhibition Break 12:30 PM - 2:00 PM****Session 8: 3D Manufacturing I**Date: **Wednesday 6 February**Time: **2:00 PM - 3:00 PM**Room: **130 (Exhibit Level)***Session Chair:* **Henry Helvajian**, The Aerospace Corp. (United States)**3D printing, additive manufacturing, and solid freeform fabrication: a new direction in manufacturing *(Invited Paper)***

Paper 8607-26

Time: **2:00 PM - 2:30 PM**

Author(s): Joseph J. Beaman, The Univ. of Texas at Austin (United States)

[Show Abstract](#)[Add to My Schedule](#)**Laser additive manufacturing in China *(Invited Paper)***

Paper 8607-27

Time: **2:30 PM - 3:00 PM**

Author(s): Henry Peng, Rui Guo, Yanmin Li, Zoe Wu, GE China Technology Ctr. (China)

[Show Abstract](#)[Add to My Schedule](#)**Coffee Break 3:00 PM - 3:30 PM****Session 9: 3D Manufacturing II**

Date: **Wednesday 6 February**
 Time: **3:30 PM - 5:20 PM**
 Room: **130 (Exhibit Level)**

Session Chair: **Gediminas Raciukaitis**, Institute of Physics (Lithuania)

Laser processing of 2D and 3D metamaterial structures *(Invited Paper)*

Paper 8607-29

Time: **3:30 PM - 4:00 PM**

Author(s): Nicholas A. Charipar, Kristin M. Metkus, Heungsoo Kim, Matthew A. Kirleis, Raymond C. Y. Auyeung, Andrew T. Smith, Scott A. Mathews, Alberto Piqué, U.S. Naval Research Lab. (United States)

[Show Abstract](#)

[Add to My Schedule](#)

Optical tweezers in microassembly

Paper 8607-30

Time: **4:00 PM - 4:20 PM**

Author(s): Andreas Ostendorf, Reza Ghadiri, Sarah I. Ksouri, Ruhr-Univ. Bochum (Germany)

[Show Abstract](#)

[Add to My Schedule](#)

Hologram design for holographic laser machining inside transparent materials

Paper 8607-31

Time: **4:20 PM - 4:40 PM**

Author(s): Masaaki Sakakura, Naoaki Fukuda, Yasuhiko Shimotsuma, Kazuyuki Hirao, Kiyotaka Miura, Kyoto Univ. (Japan)

[Show Abstract](#)

[Add to My Schedule](#)

LIFT printing of conductive materials for passive microelectronic components

Paper 8607-32

Time: **4:40 PM - 5:00 PM**

Author(s): Julie Ailuno, Ludovic Rapp, Anne Patricia B. Alloncle, Philippe Delaporte, Lasers, Plasmas et Procédés Photoniques (France)

[Show Abstract](#)

[Add to My Schedule](#)

Investigation of cw and ultrashort pulse laser irradiation of powder surfaces: a comparative study

Paper 8607-61

Time: **5:00 PM - 5:20 PM**

Author(s): Robby Ebert, Frank Ullmann, Joerg Schille, Udo Loeschner, Jan Drechsel, Horst Exner, Hochschule Mittweida (Germany)

[Show Abstract](#)

[Add to My Schedule](#)

Thursday 7 February

Session 10: Laser Direct Write

Date: **Thursday 7 February**

Time: **8:30 AM - 10:10 AM**

Room: **130 (Exhibit Level)**

Session Chair: **Hiroyuki Niino**, National Institute of Advanced Industrial Science and Technology (Japan)

Film-free laser microprinting of transparent solutions *(Invited Paper)*

Paper 8607-33

Time: **8:30 AM - 9:00 AM**

Author(s): Pere Serra, Adrian Patrascioiu, Juan Marcos Fernández-Pradas, José Luis Morenza, Univ. de Barcelona (Spain)

[Show Abstract](#)

[Add to My Schedule](#)

Applications of laser printing for organic electronics *(Invited Paper)*

Paper 8607-34

Time: **9:00 AM - 9:30 AM**

Author(s): Philippe Delaporte, Centre National de la Recherche Scientifique (France)

[Show Abstract](#)

[Add to My Schedule](#)

Chemical and Z-scan analysis on the direct laser writing of 3D nanofabrication of metal structures

Paper 8607-35

Time: **9:30 AM - 9:50 AM**

Author(s): SeungYeon Kang, Kevin Vora, Christopher C. Evans, Kelly Miller, Eric Mazur, Harvard Univ. (United States)

[Show Abstract](#)

[Add to My Schedule](#)

Maskless selective laser patterning of PEDOT:PSS on barrier/foil for organic electronics applications

Paper 8607-36

Time: **9:50 AM - 10:10 AM**

Author(s): Dimitris Karaklis, Tim Stephens, Oxford Lasers Ltd. (United Kingdom); Greg Chabrol, ECAM Strasbourg, Europe (France)

Author(s): Dimitris Karamis, Tim Stephens, Oxford Lasers Ltd. (United Kingdom); Greg Chabot, ECAM Strasbourg-Europe (France)

[Show Abstract](#)

[Add to My Schedule](#)

Coffee Break 10:10 AM - 10:40 AM

Session 11: Laser Patterning and Drilling

Date: **Thursday 7 February**
Time: **10:40 AM - 12:20 PM**
Room: **130 (Exhibit Level)**

Session Chair: **Stephan W. Roth**, BLZ Bayerisches Laserzentrum GmbH (Germany)

Laser patterning of thin indium tin oxide film on a plastics substrate for high-resolution touch applications

Paper 8607-37

Time: **10:40 AM - 11:00 AM**

Author(s): Tao Zhang, Di Liu, Hee K. Park, Stony Brook Univ. (United States); Dong X. Yu, YUCO Optics Corp. (United States); David J. Hwang, Stony Brook Univ. (United States)

[Show Abstract](#)

[Add to My Schedule](#)

Laser processing of GaN-based light-emitting diodes: the suitable laser source

Paper 8607-38

Time: **11:00 AM - 11:20 AM**

Author(s): Rüdiger Moser, Michael Kunzer, Christian Goßler, Klaus Köhler, Wilfried Pletschen, Fraunhofer-Institut für Angewandte Festkörperphysik (Germany); Ulrich T. Schwarz, Fraunhofer-Institut für Angewandte Festkörperphysik (Germany) and Albert-Ludwigs-Univ. Freiburg (Germany); Joachim Wagner, Fraunhofer-Institut für Angewandte Festkörperphysik (Germany)

[Show Abstract](#)

[Add to My Schedule](#)

Laser cutting of carbon fiber reinforced plastics (CFRP)

Paper 8607-39

Time: **11:20 AM - 11:40 AM**

Author(s): Hiroyuki Niino, Yoshizo Kawaguchi, Tadatake Sato, Aiko Narazaki, Ryoza Kurosaki, Yoshihisa Harada, National Institute of Advanced Industrial Science and Technology (Japan) and ALPROT (Japan); Takahiro Nagashima, Zyunpei Kase, Miyachi Corp. (Japan) and ALPROT (Japan); Masafumi Matsushita, Koichi Furukawa, Shin Nippon Koki Co. Ltd. (Japan) and ALPROT (Japan); Michiteru Nishino, Mitsubishi Chemical Corp. (Japan) and ALPROT (Japan)

[Show Abstract](#)

[Add to My Schedule](#)

Contrasting methods for high speed picosecond laser drilling of high aspect ratio holes in glass

Paper 8607-40

Time: **11:40 AM - 12:00 PM**

Author(s): Samira Karimelahi, Ladan E. Abolghasemi, Peter R. Herman, Univ. of Toronto (Canada)

[Show Abstract](#)

[Add to My Schedule](#)

Novel micro-dots design to resolve Hotspot appeared on ultra-slim LEDs backlight

Paper 8607-41

Time: **12:00 PM - 12:20 PM**

Author(s): Wei Ping Chan, Modie Tsai, Yu Ren Chiou, Chih Sheng Jao, Forhouse Corp. (Taiwan)

[Show Abstract](#)

[Add to My Schedule](#)

Lunch/Exhibition Break 12:20 PM - 1:50 PM

Session 12: Photovoltaics

Date: **Thursday 7 February**
Time: **1:50 PM - 3:10 PM**
Room: **130 (Exhibit Level)**

Session Chair: **Yoshiki Nakata**, Osaka Univ. (Japan)

Laser-assisted doping process for selective emitter formation in solar cells via combined pulsed and continuous wave laser illuminations

Paper 8607-42

Time: **1:50 PM - 2:10 PM**

Author(s): Di Liu, Hee K. Park, Stony Brook Univ. (United States); Dong X. Yu, YUCO Optics Corp. (United States); David J. Hwang, Stony Brook Univ. (United States)

[Show Abstract](#)

[Add to My Schedule](#)

Fabrication of polymer-nanocomposite anti-reflective coatings by RIR-MAPLE

Paper 8607-43

Time: **2:10 PM - 2:30 PM**

Author(s): Senthilrati Singaravelu, AnniFlex LLC (United States); Daniel C. Mayo, Vanderbilt Univ. (United States); Hee K. Park, Kenneth F.

Author(s): Sankhaja Singareva, Appliflex LLC (United States); Daniel C. Ho, Vanderbilt Univ. (United States); Richard F. Haglund, Jr., Vanderbilt Univ. (United States); Richard F. Schriber, Appliflex LLC. (United States); Richard F. Haglund, Jr., Vanderbilt Univ. (United States) and Vanderbilt Univ. (United States)

[Show Abstract](#)

[Add to My Schedule](#)

Scribing of thin film solar cells by high repetition rate picosecond and nanosecond pulsed lasers and in-situ scribing thickness monitoring

Paper 8607-45

Time: **2:30 PM - 2:50 PM**

Author(s): David J. Hwang, Di Liu, Hee K. Park, Stony Brook Univ. (United States); Dong X. Yu, YUCO Optics Corp. (United States)

[Show Abstract](#)

[Add to My Schedule](#)

Luminescence down shifter effect in hydrogenated amorphous silicon modified by femtosecond laser radiation

Paper 8607-46

Time: **2:50 PM - 3:10 PM**

Author(s): Andrey Emelyanov, Andrey G. Kazanskii, Mark Khenkin, Pavel Forsh, Pavel Kashkarov, Lomonosov Moscow State Univ. (Russian Federation); Mindaugas Gecevicius, Martynas Beresna, Peter G. Kazansky, Univ. of Southampton (United Kingdom)

[Show Abstract](#)

[Add to My Schedule](#)

Coffee Break 3:10 PM - 4:00 PM

Session 13: Photovoltaics, Alternative Energy Sources and Advanced Energy Storage Systems: Joint Session with 8607 and 8608

Date: **Thursday 7 February**

Time: **4:00 PM - 5:50 PM**

Room: **130 (Exhibit Level)**

Session Chairs: **David Jae-Seok Hwang**, Stony Brook Univ. (United States); **Udo Klotzbach**, Fraunhofer IWS Dresden (Germany)

Diode laser processed crystalline silicon thin-film solar cells (*Invited Paper*)

Paper 8608-27

Time: **4:00 PM - 4:30 PM**

Author(s): Sergey Varlamov, The Univ. of New South Wales (Australia); Bonne Eggleston, Jonathan Dore, The Univ. of New South Wales (Australia) and Suntech Power Holdings Co., Ltd. (Australia); Rhett Evans, Daniel Ong, Oliver Kunz, Suntech R&D Australia Pty Ltd. (Australia); Jialiang Huang, The Univ. of New South Wales (Australia); Ute Schubert, Suntech R&D Australia Pty Ltd. (Australia); Kyung Hun Kim, The Univ. of New South Wales (Australia) and Suntech Power Holdings Co., Ltd. (Australia); Renate Egan, Suntech R&D Australia Pty Ltd. (Australia); Martin A. Green, The Univ. of New South Wales (Australia)

[Show Abstract](#)

[Add to My Schedule](#)

The photovoltaic potential of femtosecond-laser textured amorphous silicon

Paper 8608-28

Time: **4:30 PM - 4:50 PM**

Author(s): Meng-Ju Sher, Lysander Christakis, Kenneth Hammond, Eric Mazur, Harvard Univ. (United States)

[Show Abstract](#)

[Add to My Schedule](#)

Investigation of a reliable all laser scribing process in thin film Cu(In,Ga)(S,Se)₂ manufacturing

Paper 8607-47

Time: **4:50 PM - 5:10 PM**

Author(s): Reiner M. Witte, Bruno Frei, Stefan Schneeberger, Solneva SA (Switzerland); Stephan Buecheler, Shiro Nishiwaki, EMPA (Switzerland); Andreas Burn, Martin Mural, Valerio Romano, Bern Univ. of Applied Science (Switzerland); Lukas Krainer, Onefive GmbH (Switzerland)

[Show Abstract](#)

[Add to My Schedule](#)

Laser scribing integration of polycrystalline thin film solar cells

Paper 8608-29

Time: **5:10 PM - 5:30 PM**

Author(s): Michele Sozzi, Filomena Manilia, Roberto Antezza, Cristina Catellani, Alessandro Candiani, Enrico Coscelli, Annamaria Cucinotta, Stefano Selleri, Daniele Menossi, Alessio Bosio, Univ. degli Studi di Parma (Italy)

[Show Abstract](#)

[Add to My Schedule](#)

Scribing of CIGS thin films for solar module fabrication by external integrated interconnection

Paper 8607-48

Time: **5:30 PM - 5:50 PM**

Author(s): Pierre Lorenz, Martin Ehrhardt, Anja Wehrmann, Leibniz-Institut für Oberflächenmodifizierung e.V. (Germany); Christian Scheit, Steffen Ragnow, Alexander Braun, Solarion AG (Germany); Klaus-Peter Zimmer, Leibniz-Institut für Oberflächenmodifizierung e.V. (Germany)

[Show Abstract](#)

[Add to My Schedule](#)

SPIE | 1000 20th St. | Bellingham WA 98225-6705 USA | +1 360 676 3290
SPIE.org
