

Oral Presentations

Wednesday, June 14

9:40	Opening Remarks (9:40-9:50)
9:50	Session 1: Overview of Microfabrication Chairs: Andrew C. Tam , IBM Almaden Research Center (USA); Koji Sugioka , Institute of Physical and Chemical Research (Japan)
	<ul style="list-style-type: none">• Laser precision microfabrication in Japan (Invited Paper), I. Miyamoto, Osaka University; T. Ooie, Shikoku National Industrial Research Institute; S. Takeno, Mitsubishi Electric Co. (Japan) [4088-001]• Overview of laser microprocessing - fundamentals, practical applications and future prospects (Invited Paper), V.P. Veiko, St. Petersburg State Institute of Fine Mechanics and Optics (Russia) [4088-002]
	Coffee Break (10:50-11:10)
11:10	Session 2: Ultrafast Pulse Processing (1) Chairs: Malcolm C. Gower , Exitec (UK); Akira Yabe , National Institute of Materials and Chemical Research (Japan)
	<ul style="list-style-type: none">• Surface and bulk ultra-short laser processing of transparent materials (Invited Paper), I.V. Hertel, A. Rosenfeld, R. Stoian, Max-Born-Institute, Berlin; D. Ashkenasi, University of Potsdam (Germany) [4088-003]• Bulk and surface microstructuring of ceramics, dielectrics and polymers by short (ns) - and ultra-short (ps, fs) laser radiation for photonics, electrooptics, and micro technology (Invited paper) E.W. Kreutz, Lehrstuhl für Lasertechnik, Rheinisch-Westfälische Technische Hochschule Aachen (Germany) [4088-112]• 395-nm and 790-nm femtosecond laser ablation of aluminum-doped zinc oxide, M. Okoshi, K. Higashikawa, M.Hanabusa, Toyohashi University of Technology (Japan) [4088-005]• Formation of photonic crystals by femtosecond laser microfabrication, H. Misawa, H.B.Sun, S. Juodkazis, S. Matsuo, J. Nishii, University of Tokushima (Japan) [4088-006]
	Lunch (12:50-14:00)
14:00	Session 3: Ultrafast Pulse Processing (2) Chairs: Uve Stamm , Lambda Physik (Germany); Hiroaki Misawa , Tokushima University (Japan)
	<ul style="list-style-type: none">• Internal modification of glass materials by a femtosecond laser (Invited Paper), K. Hirao, Kyoto University (Japan) [4088-007]• Formation of a micro-string array in transparent materials exposed to a beam of 100-fs laser pulses, Y. Zhang, A. Endo, Sumitomo Heavy Industries, Ltd.(Japan); R.M. Lowe, P. Hannaford, Swinburne Center for Ultrafast Laser Spectroscopy (Australia); E. Harvey, Industrial Research Institute Swinburne (Australia) [4088-008]• Time-resolved dynamics of plasma self-channeling and bulk modification in silica glasses induced by high-intensity femtosecond laser, S.H. Cho, H. Kumagai, K. Midorikawa, RIKEN (Institute of Physical and Chemical Research); M. Obara, Keio University (Japan) [4088-010]• Observation of voids and optical seizing of voids in silica glass with infrared femtosecond laser pulses, W. Watanabe, T. Toma, K. Yamada, K. Itoh, Osaka University; J. Nishii, Osaka National Research Institute, Agency of Industrial Science and Technology; K. Hayashi, Sumitomo Heavy Industries, Ltd (Japan) [4088-011]• Micromachining with high repetition rate femtosecond laser sources, E. Baubeau, C. Jonin, E. Audouard, P. Laporte, Laboratoire Traitement du Signal et Instrumentation (France) [4088-012]
	Coffee Break (15:50-16:10)
16:10	Session 4: Modification Chairs: Yong-Feng Lu , National University of Singapore (Singapore); Koichi Toyoda , Science University of Tokyo (Japan)
	<ul style="list-style-type: none">• Laser-induced microstructuring of semiconductors (Invited Paper), J.J. Dubowski, Institute for Microstructural Sciences, National Research Council of Canada (Canada) [4088-013]• Micromachining of transparent materials by laser ablation of organic solution (Invited Paper), A. Yabe, H. Niino, J. Wang, National Institute of Materials and Chemical Research; J. Wang*, *Present address: Taiyo Yuden Corp. R&D Center (Japan) [4088-114]• Laser induced phase transformation in carbon nanotubes, J.W. Tang, K.J. Ma, C.L. Chao, Chung-Cheng Institute of Technology; C.Y. Wen, K.H. Chen, Institute of Atomic and Molecular Science, Academia Sinica (Taiwan) [4088-015]• F₂ laser ablation of GaN, T. Akane, K. Sugioka, K. Midorikawa, RIKEN (Institute of Physical and Chemical Research) (Japan) [4088-016]

Thursday, June 15 (A)

9:30	<p>Session 5: Fundamental Aspects Chairs: I.V. Hertel, Max-Born Institute (Germany); Toshihiko Ooie, Shikoku National Industrial Research Institute, AIST (Japan)</p> <ul style="list-style-type: none"> • Molecular dynamics simulation of ablation process with ultra short pulsed laser (Invited Paper), E. Ohmura, I. Miyamoto, Osaka University; I. Fukumoto, Japan Atomic Energy Research Institute (Japan) [4088-017] • Ultra-short pulsed laser microstructuring of diamond, M. Shirk, P. Molian, C. Wang, K. Ho, Iowa State University; A. Malshe, University of Arkansas (USA) [4088-018] • Thermoelastic wave in pulsed laser micro-machining, X. Wang, X. Xu, Purdue University (USA) [4088-019] • Effects of repetitive irradiation in laser ablation of aluminum in gases observed by photoacoustic and imaging techniques, Y. Ito, I. Oguro, S. Nakamura, Nagaoka University of Technology (Japan) [4088-020]
Coffee Break (11:00-11:20)	
11:20	<p>Session 6: Microfabrication (1) Chairs: Xifan Xu, Purdue University (USA); Shin-ichi Ishizaka, Japan Steel Works Ltd. (Japan)</p> <ul style="list-style-type: none"> • Novel technologies for laser precision microfabrication of hard materials (Invited Paper), K. Sugioka, K. Midorikawa, RIKEN (Institute of Physical and Chemical Research) (Japan) [4088-021] • Novel results of laser precision microfabrication with excimer lasers and solid-state lasers, U. Stamm, Lambda Physik GmbH (Germany) [4088-022] • A modular approach to laser systems for microfabrication, A. Petersen, M. Keirstead, N. Hodgson, Spectra Physics Lasers, Inc. (USA) [4088-023]
Lunch (12:30-13:30)	
13:30	<p>Session 7: Microfabrication (2) Chairs: Jan J. Dubowski, National Research Council Canada (Canada); Etsuji Ohmura, Osaka University (Japan)</p> <ul style="list-style-type: none"> • Excimer laser microfabrication and machining (Invited Paper), M.C. Gower, Exitech Limited (UK) [4088-024] • Investigation of micro-machining single crystal silicon by excimer lasers, C.L. Chao, K.J. Ma, Y.H. Chen, Y.T. Chen, Chung-Cheng Institute of Technology; M.K. Wei, RITEK (Taiwan) [4088-025] • High efficient microdrilling of silicon wafer using excimer lasers, S. Asada, T. Sano, I. Miyamoto, Osaka University (Japan) [4088-026] • Micromachining using femtosecond lasers, H.K. Toenshoff, A. Ostendorf, S. Nolte, F. Korte, Th. Bauer, Laser Zentrum Hannover e. v. (Germany) [4088-027] • Micromachining with ultrafast lasers, K. Shihoyama, A. Furukawa, HOYA Continuum Corporation (Japan); P. Bado, A. Said, Clark-MXR (USA) [4088-028]
Coffee Break (15:20-15:40)	
15:40	<p>Session 8: Industrial Applications Chairs: Vadim P. Veiko, St. Petersburg Institute of Fine Mechanics and Optics (Russia); Kunihiko Washio, NEC (Japan)</p> <ul style="list-style-type: none"> • Laser viahole drilling of printed wiring board (Invited Paper), T. Okada, Matsushita Electric Industrial Co., Ltd. (Japan) [4088-029] • Present status of excimer laser exposure apparatus (Invited Paper), A. Suzuki, Canon Inc., (Japan) [4088-030] • Local annealing of shape memory alloys using laser scanning and computer vision, M. Hafez, Y. Bellouard, T. Sidler, R. Clavel, R.P. Salathe, Swiss Federal institute of Technology (Switzerland) [4088-031] • Virtual engineering helps to get laser adjustment industrially accepted, B. Mueller, The Freidrich Alexander University (Germany) [4088-032] • Laser micro-assembly, W. Hoving, Philips Electronics Nederland B.V. (Netherlands) [4088-033]
17:40	Break (17:40 - 18:00)
18:00	Banquet (18:00 - 20:00)

Thursday, June 15 (B)

9:30	<p>Session 9: Laser Systems and Optical Elements Chairs: Alan Petersen, Spectra Physics (USA); Takahisa Jitsuno, Osaka University (Japan)</p> <ul style="list-style-type: none"> • Evaluation of characteristics of VUV optical materials irradiated by F2laser, Y. Itakura, F. Yoshida, Y. Kawasa, A. Sumitani, O. Wakabayashi, H. Mizoguchi, Komatsu LTD. (Japan) [4088-079] • High power second harmonic generation with free running Nd:YAG laser for micro-machining applications, S. Favre, T. Sidler, R.P. Salathe, Institute of Applied Optics (IOA), Swiss Federal Institute of Technology (EPFL) (Switzerland) [4088-035] • Efficient 50-mJ green laser based on an intracavity-frequency-doubled QCW LD pumped Q-switched Nd:YAG laser, S. Konno, Y. Inoue, T. Kojima, S. Hujikawa, K. Yasui, Mitsubishi Electric Corporation (Japan) [4088-081] • Ultrafast fiber lasers: alternative light sources for industrial material processing, G. Sucha, H. Endert, Electro-optics Group IMRA (USA) [4088-037]
Coffee Break (10:50-11:10)	
11:10	<p>Session 10: Surface Microstructuring Chairs: Heinrich Endert, IMRA(USA); Yoshiro Ito, Nagaoka University of Technology (Japan)</p> <ul style="list-style-type: none"> • Laser ablative shaping of optical surface using ArF laser, T. Jitsuno, Osaka University; K. Tokumura, Nalux Co.,Ltd.; H. Tamamura, Sony-Tektronix Co. (Japan) [4088-038] • Non-lithographic coherent array of ultrafine particles on an irradiated material by using Nd: YAG laser, Y. Kawakami, E. Ozawa, Vacuum Metallurgical Co., Ltd. (Japan) [4088-039] • Experimental study on Q-switched Nd:YAG laser texturing on steel surfaces, H. Gao, G.C. Barber, Oakland University (USA); G. Chen, Material Processing Center Institute of Mechanics Chinese Academy of Sciences (China) [4088-040] • Kinetic study of nanofabrication on gold films by atomic force microscope tips under laser irradiation B. Hu, Y.F. Lu, Z.H. Mai, W.D. Song, W.K. Chim, National University of Singapore (Singapore) [4088-083]
Lunch (12:30-13:30)	
13:30	<p>Session 11: Micro Welding and Cutting Chairs: Fredrich Dausinger, University of Stuttgart (Germany); Takashi Ishide, Mitsubishi Heavy Industry (Japan)</p> <ul style="list-style-type: none"> • Machining with a frequency-converted diode-pumped Nd:YAG laser, K. Hartke, K. Ely, EWI; K. King, Cutting Edge Optics, Inc.; D. Farson, Ohio State University (USA) [4088-042] • High-precision micro cutting of ceramics with short-pulsed solid-state lasers, J. Radtke, T. Abeln, M. Weikert, F. Dausinger, Institut für Strahlwerkzeuge (IFSW), University of Stuttgart (Germany) [4088-043] • Laser-micro-caving of steel with solid-state lasers, T. Abeln, J. Radtke, M. Weikert, F. Dausinger, Institut für Strahlwerkzeuge (IFSW), University of Stuttgart (Germany) [4088-044] • Laser joining of micro components with fibre lasers and diode lasers, A. Gillner, Fraunhofer-Institut für Lasertechnik (Germany) [4088-045] • Pulsed Nd-YAG laserwelding of titanium ear implants, J. Gedopt, E. Delarbre, The Laser Centre Vito (Belgium) [4088-046] • A compact, multi-sensor laser scanning head for processing and monitoring micro-spot welding, M. Hafez, K. Julliard, S. Grossmann, L. Olivetta, T. Sidler, R.P. Salathe, Swiss Federal Institute of Technology; H.P. Schwob, Lasagindustrial Lasers (Switzerland); T. Bloom, W. Hoving, Philips Centre for Manufacturing Technology (Netherlands) [4088-047]
Coffee Break (15:30-15:50)	
15:50	<p>Session 12: Pulsed Laser Deposition Chairs: Frank Wagner, Swiss Federal Institute of Technology Lausanne (Switzerland); Fumio Kokai, Institute of Research and Innovation (Japan)</p> <ul style="list-style-type: none"> • Observation of nanoparticle formation process by laser imaging spectroscopy, T.J. Muramoto, T. Inmaru, Y. Nakata, T. Okada, M. Maeda, Kyushu University (Japan) [4088-048] • Time-resolved emission spectroscopic studies of laser ablation of boron nitride and carbide, J.F. Kokai, K. Takahashi, M. Taniwaki, M. Ishihara, Y. Koga, National Institute of Materials and Chemical Research (Japan) [4088-049] • Influence of laser fluence on the synthesis of carbon nitride thin films by nitrogen-ion-assisted pulsed laser deposition, J.P. Zhao, Z.Y. Chen, T. Yano, T. Ooie, M. Yoneda, J. Sakakibara, Shikoku National Industrial Research Institute (Japan) [4088-050] • Preparation of metal oxides thin films using coating photolysis process with ArF excimer laser, T. Tsuchiya, A. Watanabe, Y. Imai, H. Niino, A. Yabe, I. Yamaguchi, T. Manabe, T. Kumagai, S. Mizuta, National Institute of Materials and Chemical Research (Japan) [4088-051] • Preparation of conducting polymer thin films by UV laser-assisted deposition, S. Nishio, M. Okumura, Y. Taketani, A. Matsuzaki, H. Sato, Mie-University (Japan) [4088-052]
17:30	Break (17:30 - 18:00)
18:00	Banquet (18:00 – 20:00)

Friday, June 16

9:30	Session 13: Micro System Chairs: Peter Herman, University of Toronto (Canada); Sumio Nakahara, Kansai University (Japan)
	<ul style="list-style-type: none"> • Nanosatellites and MEMS fabrication by laser microprocessing (Invited Paper), H. Helvajian, The Aerospace Co. (USA) [4088-053] • Microgroove fabrication with excimer laser ablation techniques for optical fibre array alignment purposes, K. Naessens, A.V. Hove, T. Coosemans, S. Verstuyft, L. Vanwassenhove, P.V. Daele, R. Baets, Ghent University IMEC (Belgium) [4088-054] • Fabrication of Ce:YIG film for electric and magnetic field sensor by pulsed-laser deposition and laser-induced forward transfer, Y. Nakata, F. Yahiro, T. Okada, M. Maeda, Kyushu university (Japan) [4088-055] • Electroosmotic flow control in micro channels produced by scanning excimer laser ablation, F. Wagner, P. Hoffmann, Institute of Applied Optics, BM, Swiss Federal Institute of Technology Lausanne (Switzerland) [4088-056]
	Coffee Break (11:00-11:20)
11:20	Session 14: Glass Materials Processing Chairs: W.T. Sigmon, Lawrence Livermore National Laboratory (USA); Junji Nishii, Osaka National Research Institute (Japan)
	<ul style="list-style-type: none"> • Advanced laser microfabrication of photonic components (Invited Paper), P. Herman, K. Chen, R. Marjoribanks, J. Zhang, University of Toronto (Canada) [4088-057] • Laser processing of convex structures in chalcogenide glasses, T. Gotoh, K. Tanaka, Hokkaido University (Japan) [4088-058] • Laser ablation process of quartz material using F₂ laser, T. Jitsuno, H. Mikata, Osaka University; K. Tokumura, Nalux Co.Ltd.; N.Kuzuu, Fukui University; Y. Kawaguchi, N. Kitamura, AIST, MITI (Japan) [4088-059]
	Lunch (12:30-13:30)
13:30	Poster Session (13:30-15:40)
15:40	Session 15: Advanced Applications Chairs: Henry Helvajian, The Aerospace Corp.(USA); Isamu Miyamoto, Osaka University (Japan)
	<ul style="list-style-type: none"> • Laser surface cleaning --- basic understanding, engineering efforts and technical barriers (Invited Paper), Y.F. Lu, W.D. Song, W.Y. Zheng, M.H. Hong, National University of Singapore (Singapore) [4088-060] • Laser processes for precise microfabrication of magnetic disk drive components (Invited Paper), A.C. Tam, IBM Corp., Almaden Research Center (USA) [4088-061] • Optical radiation pressure micromachining using a small particle, T. Miyoshi, H. Shimizu, Osaka University (Japan) [4088-062] • Micro-peak array in the scribe line on wafer, T. Chiba, R. Komura, A. Mori, Komatsu LTD (Japan) [4088-063] • Matrix assisted laser transfer of electronic materials for direct write applications, R.C.Y. Auyeung, A. Pique, J. Fitz-Gerald, R. Modi, H.D. Wu, S. Lakeou, R. Chung, D.B. Chrisey, Naval Research Laboratory (USA) [4088-064]
17:40	Closing Remarks (17:40-17:50)