

The 12th International Symposium on Laser Precision Microfabrication

LPM2011

June 7–10, 2011

Takamatsu, Kagawa, Japan

<http://www.jlps.gr.jp/lpm/lpm2011/>

Final Program

updated May 26, 2011

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<i>Co-Chair/Program Committee Chair</i>	Hiroyuki Niino	<i>AIST, Japan</i>
<i>Co-Chair</i>	Friedrich Dausinger	<i>Dausinger + Giesen GmbH, Germany</i>
<i>Co-Chair</i>	Alberto Piqué	<i>Naval Research Laboratory, USA</i>
<i>Co-Chair</i>	Kazuyoshi Itoh	<i>Osaka University, Japan</i>
<i>Co-Chair</i>	Seiji Katayama	<i>Osaka University, Japan</i>
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Paper Codes on LPM2011 Symposium Program

Oral Presentations

The **1st & 2nd letters** of the codes indicate the day of the week.

- Tu = Tuesday
- We = Wednesday
- Th = Thursday
- Fr = Friday

The **3rd number** indicates the presentation room.

- 1 = Room 1 (Kagawa International Conference Hall, 6F)
- 2 = Room 2 (Room #61, Sunport Hall Takamatsu, 6F)
- 3 = Room 3 (Room #62, Sunport Hall Takamatsu, 6F)

The **4th letter** indicates the presentation type.

- PL = Plenary
- I = Invited
- O = Oral
- UO = ppt with voice narration

The **last number after hyphen** signals the presentation order of the paper in each room.

For example, Tu1-O-4

[Tuesdayday] [Room 1] — [Oral Presentation] — [4th presentation in Room 1]

Poster Presentations

The **1st & 2nd letters** of the codes indicate the day of the week.

- We = Wednesday
- Th = Thursday

The **3rd letter P and UP** means Poster Presentation and Unmanned Poster Presentation, respectively.

The **last number after hyphen** signals the poster order of the paper of the day.

For example, We-P-1

[Wednesday] — [Poster Presentation] — [the 1st presentation on the day]

Important Notes

The poster presenters are requested to give Short Presentations and to be present in front of their poster during 12:20–14:00 of the indicated day.

Program

Oral Session

Day 1
Tuesday
June 7
10:00

Day 1: June 7

Room 1

Opening

10:00 Opening Remark

Room 1

Plenary Session

Chair: H. Niino

10:10 Tu1-PL-1 **Plenary** *Video Presentation*
Quantum cascade lasers: High performance compact light sources from the mid-infrared to the far-infrared, Federico Capasso¹, ¹*School of Engineering and Applied Sciences, Harvard University, USA*

10:50 Tu1-PL-2 **Plenary** *Video Presentation*
Basics and applications of femtosecond laser interaction with transparent materials, Ingolf Volker Hertel¹, Razvan Stoian², Arkadi Rosenfeld¹, ¹*Max Born Institute for Nonlinear Optics and Short Pulse Spectroscopy, Germany*, ²*Laboratoire Hubert Curien, CNRS UMR 5516, Université de Lyon, Université Jean Monnet, Saint Etienne 42000, France*

11:30 Tu1-PL-3 **Plenary**
Technological trends and laser applications for solar panels, Wataru Shinohara¹, Youichirou Aya¹, Mitsuoki Hishida¹, Akinao Kitahara¹, Haruki Yoneda¹, Akira Terakawa¹, Masahiro Iseki¹, ¹*SANYO Electric Co., Ltd. / Solar Division / Solar Energy Research Center / Advanced Photovoltaic Development Center, Japan*

12:10 Lunch Time

Day 1
Tuesday
June 7
14:10

Session 1.
Direct Writing

Chair: A. Piqué

14:10 Tu1-0-4

On-demand preparation of microdot patterns by laser-induced dot transfer, Aiko Narazaki¹, Ryozo Kurosaki¹, Tadatake Sato¹, Yoshizo Kawaguchi¹, Wataru Watanabe¹, Hiroyuki Niino¹, ¹*National Institute of Advanced Industrial Science and Technology (AIST), Japan*

14:30 Tu1-0-5 **Student**

Printing micro-droplets of silver NP inks using LIFT: Parametric analysis, Michael Zenou^{1,2}, Shoshana Winter¹, Amir Saar², Zvi Kotler¹, ¹*Orbotech Ltd., Israel*, ²*Hebrew University, Racah Institute of Physics, Isarel*

14:50 Tu1-0-6

Wet process of Si film by laser direct writing method, Akira Watanabe¹, ¹*Institute of Multidisciplinary Research for Advanced Materials, Tohoku University, Japan*

15:10 Tu1-0-7 **Student**

Microstructuring of glass materials using hybrid laser processing: Micro-optics and microfluidics, Daniel Nieto García^{1,2}, Gerard M. O'Connor², ¹*University of Santiago de Compostela, Spain*, ²*National Center for Laser Applications, Ireland*

15:30 Tu1-I-8

Invited

Laser micro and nanostructuring of surfaces fabricated by direct laser writing, Philippe Delaporte¹, Anne-Patricia Alloncle¹, Laurent Charmasson¹, David Grojo¹, Ludovic Rapp¹, Marc Sentis¹, ¹*LP3 laboratory – CNRS – Mediterranean University, France*

16:00 Coffee Break

Room 2

Session 3. SP1

**Interactions of Liquid and Light:
Fundamentals of Laser Induced
Cavitation and Jetting**

Chair: Alan Hunt

14:20 Tu2-U0-1 Student PPT**In situ detection of plasmonic enhanced ultrafast laser-induced pressure wave and cavitation bubble formation in water,** Rémi Lachaine¹, Étienne Boulais¹, Michel Meunier¹, ¹*École Polytechnique de Montréal, Canada*14:35 Tu2-U0-2 Student PPT**Modeling plasmonic enhanced laser-induced nanocavitation in water,** Étienne Boulais¹, Rémi Lachaine¹, Michel Meunier¹, ¹*École Polytechnique de Montréal, Canada*14:50 Tu2-I-3 Invited**Protein crystallization controlled by femtosecond laser-induced cavitation bubbles,** Hiroshi Yoshikawa¹, Ryota Murai^{2,3}, Gen Sasaki⁴, Shigeru Sugiyama^{2,3}, Yoshinori Takahashi^{2,3}, Mihoko Maruyama^{2,3}, Hiroaki Adachi^{2,3,5}, Satoshi Murakami^{3,5,6}, Hiroyoshi Matsumura^{2,3,5}, Tsuyoshi Inoue^{2,3,5}, Kazufumi Takano^{2,3,5}, Yusuke Mori^{2,3,5}, ¹*Department of Chemistry, Saitama University, Japan*, ²*Graduate School of Engineering, Osaka University, Japan*, ³*CREST JST, Japan*, ⁴*Phase Transition Dynamics Group, The Institute of Low Temperature Science, Hokkaido University, Japan*, ⁵*SOSHO Inc., Japan*, ⁶*Graduate School of Bioscience and Biotechnology, Tokyo Institute of Technology, Japan*15:20 Tu2-0-4**Experimental and numerical study of laser-induced jetting behavior,** Craig B. Arnold¹, Matthew S. Brown¹, Yiannis Ventikos², ¹*Department of Mechanical and Aerospace Engineering, Princeton University, USA*, ²*Department of Engineering Science, University of Oxford, UK*15:40 Tu2-0-5**Non-contact estimation of intercellular adhesion using femtosecond laser-induced impulsive force,** Yoichiro Hosokawa¹, Takanori Iino¹, Man Hagiyama², Akihiko Ito³, ¹*Graduate School of Materials Science, Nara Institute of Science and Technology, Japan*, ²*Institute of Medical Science, University of Tokyo, Japan*, ³*Department of Pathology, Faculty of Medicine, Kinki University, Japan*

16:00 Coffee Break

Room 3

Session 5.

Lasers and Systems

Chair: K. Washio

14:20 Tu3-0-1**Femtosecond and picosecond lasers for precision micro-machining,** Yoann Zaouter¹, Martin Delaigue¹, Sandrine Ricaud¹, Franck Morin¹, Clemens Hönninger¹, Eric Mottay, ¹*Amplitude Systemes, France*14:40 Tu3-0-2**Ultrafast, optical parametric chirped-pulse amplification system using a block of transparent material for pulse stretching and compression,** Koichi Yamakawa¹, Yutaka Akahane¹, Kanade Ogawa¹, ¹*Japan Atomic Energy Agency, Japan*15:00 Tu3-0-3**Laser plasma EUV source for processing polymers,** Henryk Fiedorowicz¹, Andrzej Bartnik¹, Roman Jarocki¹, Jerzy Kostecki¹, Anna Szczurek¹, Mirosław Szczurek¹, Przemysław Wachulak¹, ¹*Institute of Optoelectronics, Military University of Technology, Poland*15:20 Tu3-0-4**Laser scanner-stage synchronization method for high speed and wide area fabrication,** Kyunghan Kim¹, Kwangho Yoon¹, Jeong Suh¹, Jaehoon Lee¹, ¹*Korea Institute of Machinery and Materials, South Korea*

15:40 Coffee Break

Day 1
Tuesday
June 7
16:30

Session 2.

Micromachining and Modification

Chair: M. Schmidt

16:30 Tu1-U0-9 **Student**PPT

New method for nanosecond laser machining, Cinthya Emma Toro¹, Carlos Lasorsa², Carlos Alberto Rinaldi³, ¹*Dept. of Micro and Nanotechnology, National Commission of Atomic Energy, Argentina*, ²*Universidad Tecnológica Nacional, Facultad Regional Haedo, Buenos Aires, Argentina*, ³*National Council of Scientific and Technical Research, Argentina*

16:45 Tu1-0-10 **Student**

Laser-based fabrication of large-area controllable biomimetic microstructures, Si Zhu Wu¹, Dong Wu¹, Qi Dai Chen¹, Hong Bo Sun¹, ¹*Jilin University, China*, ²*Jilin University, China*, ³*Jilin University, China*, ⁴*Jilin University, China*

17:05 Tu1-0-11 **Student**

Micromachining of polymethylmethacrylate and polydimethylsiloxane using laser plasma soft X-rays, Shuichi Torii¹, Testuya Makimura¹, Kouta Okazaki², Daisuke Nakamura², Akihiko Takahashi³, Tatsuo Okada², Hiroyuki Niino⁴, Kouichi Murakami¹, ¹*Institute of Applied Physics, University of Tsukuba, Japan*, ²*Graduate School of Information Sciences and Electrical Engineering, Kyushu University, Japan*, ³*Department of Health Sciences, School of Medicine, Kyushu University, Japan*, ⁴*Photonics Research Institute, National Institute of Advanced Industrial Science and Technology, Japan*

17:25 Tu1-0-12 **Student**

Dopant activation modelling in implanted silicon under multi-pulsed excimer laser irradiation, Giuseppe Fisicaro^{1,2}, Karim Huet³, Markus Italia², Antonino La Magna², Giovanni Piccitto¹, Vittorio Privitera², Julien Venturini³, ¹*Department of Physics and Astronomy, University of Catania, Italy*, ²*CNR IMM, Z.I VIII Strada 5 I -95121 Catania, Italy*, ³*Excico 13-21 Quai des Gresillons, 92239 Gennevilliers, France*

17:45 Tu1-0-13 **Student**

Self organized nano-cone structures on InP/InGaAs/InGaAsP microstructures irradiated by ArF and KrF excimer lasers, Neng Liu¹, Khalid Moumanis¹, Jan J. Dubowski¹, ¹*Department of Electrical and Computer Engineering, Université de Sherbrooke, Canada*

Room 2

Session 4. SP1

**Interactions of Liquid and Light:
Optofluidic Devices and Bio Applications**

Chair: C. B. Arnold

16:30 Tu2-I-6

Invited

Nanomorphing with ultrafast lasers and biomedical applications, Alan J. Hunt¹,
¹*Biomedical Engineering, University of Michigan, USA*

17:00 Tu2-0-7

Concentration analysis of fluids using optofluidics fabricated by femtosecond laser direct writing, Yasutaka Hanada¹, Koji Sugioka¹, Katsumi Midorikawa¹, ¹*RIKEN-Advanced Science Institute, Japan*

17:20 Tu2-0-8

Student

A bacteria-driven micromotor produced by two-photon microstereolithography, Tomoyuki Sawada¹, Yuichi Hiratsuka², Shoji Maruo¹,
¹*Yokohama National University, Japan*, ²*Japan Advanced Institute of Science and Technology, Japan*

17:40 Tu2-0-9

Femtosecond laser direct writing for three-dimensional micro-optical and microfluidic devices, Dong Wu¹, Qi Dai Chen¹, Si Zhu Wu¹, Hong Bo Sun¹, ¹*Jilin University, China*,
²*Jilin University, China*, ³*Jilin University, China*,
⁴*Jilin University, China*

Room 3

Session 6.

Microwelding and Joining

Chair: W. Pflöging

16:30 Tu3-0-6

Direct joining of copper with polyethylene terephthalate using femtosecond laser pulses, Tomokazu Sano¹, Shogo Iwasaki¹, Yasuyuki Ozeki², Kazuyoshi Itoh², Akio Hirose¹, ¹*Division of Materials and Manufacturing Science, Graduate School of Engineering, Osaka University, Japan*, ²*Division of Advanced Science and Biotechnology, Graduate School of Engineering, Osaka University, Japan*

16:50 Tu3-0-7

In-situ X-ray observation of molten pool's depth during laser micro welding, Tomonori Yamada¹, Takahisa Shobu¹, Yukihiro Yonemoto¹, Susumu Yamashita¹, Akihiko Nishimura¹, Toshiharu Muramatsu¹, ¹*Japan Atomic Energy Agency, Japan*

17:10 Tu3-0-8

Student

Micro-welding of high thermal conductive material aluminum-graphite composite by pulsed Nd:YAG laser, Mohd Idris Shah Ismail¹, Yasuhiro Okamoto¹, Akira Okada¹, Yoshiyuki Uno¹, Muhaizad Mukhtar¹, ¹*Nontraditional Machining Laboratory, Graduate School of Natural Science and Technology, Okayama University, Japan*

17:30 Tu3-0-9

The reduction of postweld shift on butterfly type laser module packaging employing Nd:YAG laser and separated dual clip: Simulation and experiment, Yi-Cheng Hsu¹, Shi-Ping Hong¹, Shang-Chao Hung², ¹*Department of Biomechatronics Engineering, National Pingtung University of Science and Technology, Taiwan*,
²*Department of Information Technology and Communication, Shih Chien University, Taiwan*

17:50 Tu3-0-10

Simulation model of nonlinear absorptivity in internal modification of glass using USPL, Isamu Miyamoto^{1,2}, Kristian Cvecek³, Michael Schmidt^{2,3,4}, ¹*Osaka University, Japan*, ²*Erlangen Graduate School of Advanced Optical Technologies (SAOT), Germany*, ³*Bayerisches Laser Zentrum, Germany*, ⁴*University Erlangen-Nuremberl, Germany*

Day 2
Wednesday
June 8
9:00

Day 2: June 8

Session 7.
Microstructuring I

Chair: F. Dausinger

9:00 We1-U0-1

PPT

Machining performance of laser surface microtextured drilling tools, Milton S. F. Lima¹, Fabricio P. Ladario², Davi Neves¹, Rudimar Riva¹, Anselmo E. Diniz³, ¹*Institute for Advanced Studies, Brazil*, ²*Instituto Tecnológico de Aeronáutica (ITA), Brazil*, ³*Faculdade de Engenharia Mecânica, Universidade Estadual de Campinas (UNICAMP), Brazil*

9:15 We1-0-2 **Student**

Picosecond laser direct patterning of poly(3,4-ethylene dioxythiophene)-poly(styrene sulfonate) (PEDOT-PSS) thin films, Shizhou Xiao¹, Susana Abreu Fernandes¹, Andreas Ostendorf¹, ¹*Laser Application of Technologies, Ruhr University Bochum, Germany*

9:35 We1-0-3

A comparative study of the quantum well intermixing effect in InGaAsP/InGaAs/InP heterostructures induced by irradiation with 248 and 193 nm excimer lasers, Jonathan Genest¹, Romain Béal¹, Neng Liu¹, Khalid Moumanis¹, Vincent Aimez¹, Jan J. Dubowski¹, ¹*Department of Electrical and Computer Engineering, Université de Sherbrooke, Canada*

9:55 We1-0-4

Cutting and thinning vertically aligned carbon nanotube carpets by lateral femtosecond laser ablation, Pascal Boulanger¹, Olivier Sublemontier¹, Romain Ladret¹, Olivier Gobert¹, Christian Cornaggia¹, Mathieu Pinault, Martine Mayne-l'Hermitte, ¹*Atomic Energy Commission, Francis Perrin Laboratory, France*

10:15 We1-0-5 **Student**

Thin composite optical elements fabricated with laser direct imaging technique, Blaž Kavčič¹, Dušan Babič², Boštjan Podobnik¹, Igor Poberaj², ¹*LPKF Laser & Electronics, Slovenia*, ²*Faculty of Mathematics and Physics, University of Ljubljana, Slovenia*

10:35 We1-0-6

Laser-induced backside wet etching employing green DPSS laser and liquid metallic absorber, Tadataka Sato¹, Yoshizo Kawaguchi¹, Ryozi Kurosaki¹, Aiko Narazaki¹, Wataru Watanabe¹, Hiroyuki Niino¹, ¹*National Institute of Advanced Industrial Science and Technology (AIST), Japan*

10:55 Coffee Break

Poster 1

Chair: Y. Nakata

11:20 Short Presentation 1 for Poster Session 1

Room 1

12:20 Poster Session 1 and Exhibition

Small Hall 2 (5F)

Lunch Time

Room 2

Room 3

Session 10.
Microfabrication for Photonics

Session 13.
Microdrilling

Chair: Y. Bellouard

Chair: S. Katayama

9:00 We2-0-1

UV laser processing and multiphoton absorption processes in optical fibers, Matthieu Lancry¹, Bertrand Poumellec¹, Nathaniel Groothoff², John Canning², ¹University of Paris Sud 11, France, ²Interdisciplinary Photonics Laboratories (iPL), School of Chemistry, University of Sydney, Australia

9:20 We2-0-2 **Student**

Two-photon-induced microfabrication of flexible optical waveguides, Josef Kumpfmüller¹, Klaus Stadlmann², Zhiquan Li¹, Gerhard Schmid³, Juergen Stampfl², Robert Liska¹, ¹Institute of Applied Synthetic Chemistry, Vienna University of Technology, Austria, ²Institute of Material Science and Technology, Vienna University of Technology, Austria, ³Institute of Communications and Radio Frequency Engineering, Vienna University of Technology, Austria

9:40 We2-0-3

System for the fabrication of flexible optical interconnects by two photon polymerization (2PP), Klaus Stadlmann¹, Josef Kumpfmüller², Anne-Laure Calendron³, Robert Copperwhite⁴, Robert Liska², Jürgen Stampfl¹, Aleksandr Ovsianikov¹, ¹Institute of Material Science and Technology, Vienna University of Technology, Austria, ²Institute of Applied Synthetic Chemistry, Vienna University of Technology, Austria, ³HighQ Laser GmbH Feldgut 9 A-6830 Rankweil, Austria, ⁴Optical Sensors Laboratory (OSL), National Centre for Sensor Research (NCSR), Ireland

10:00 We2-0-4

Fabrication of 3D diffractive photonic crystal collimator by femtosecond direct laser writing in photoresist, Vyngantas Mizeikis¹, Lina Maigyte², Kestutis Staliunas², Saulius Juodkazis³, ¹Division of Global Research Leaders (Research Institute of Electronics), Shizuoka University, Japan, ²Departament de Física i Enginyeria Nuclear, Universitat Politècnica de Catalunya, Spain, ³Centre for Micro-Photonics, Swinburne University of Technology, Australia

10:20 We2-I-5 **Invited**

Harnessing burst trains to control ultrafast laser interactions, Peter R. Herman¹, ¹Dept. Electrical and Computer Engineering, University of Toronto, Canada

10:50 Coffee Break

Poster 1

Chair: Y. Nakata

11:20 Short Presentation 1 for Poster Session 1

Room 1

12:20 Poster Session 1 and Exhibition

Small Hall 2 (5F)

Lunch Time

9:00 We3-I-1 **Invited**

Flexible and precise material processing with femtosecond disk lasers, Steffen Sven Sommer¹, Friedrich Dausinger², ¹Technologiegesellschaft für Strahlwerkzeuge mbH, Germany, ²Dausinger + Giesen GmbH, Germany

9:30 We3-0-2

Modeling of Cu direct laser drilling process, Junichi Okada¹, Yuuji Okamoto¹, Kazumasa Shudo¹, Masafumi Yorozu¹, ¹Sumitomo Heavy Industries, Ltd. Research & Development Center, Japan

9:50 We3-0-3

Impact of laser hole drilling on the fracture strength of metal wrap-through (MWT) solar cells, Kyumin Lee¹, Jong-Keun Lim¹, Sang-Kyun Kim¹, In-Sik Moon¹, Won-jae Lee¹, Eun-Chel Cho¹, ¹Hyundai Electro-Mechanical Research Institute (HEMRI), Hyundai Heavy Industries Co. LTD., South Korea

10:10 We3-0-4

Microdrilling in GFRP sheet using UV solid state laser, Susumu Nakamura¹, ¹Department of Electrical and Electronic Systems Engineering, Nagaoka National College of Technology, Japan

10:30 We3-0-5 **Student**

An accurate ray tracing model for CFD simulation of laser drilling process, Junsu Ahn¹, Suck-Joo Na¹, ¹Department of Mechanical Engineering, Korea Advanced Institute of Science and Technology, Republic of Korea

10:50 Coffee Break

Day 2
Wednesday
June 8
14:10

Day 2: June 8

Session 8.
Microstructuring II

Chair: A. Ostendorf

14:10 We1-0-7

High quality ceramic microfabrication by pulsed fiber laser in different ambients, Minghui Hong^{1,2}, Zhenying Pan², Xiaozhu Xie^{1,3}, ¹*Department of Electrical and Computer Engineering, National University of Singapore, Singapore*, ²*Data Storage Institute, Singapore*, ³*Faculty of Electromechanical Engineering, Guangdong University of Technology, China*

14:30 We1-0-8

Optimisation of laser microprocessing by innovative methods of nanosecond pulselength tuning of disc lasers, Klaus P. Stolberg¹, Susanna Friedel¹, Sven Poggel¹, Tamehide Yamada², ¹*Jenoptik Laser GmbH, Germany*, ²*4666 Ikebe-cho, Tsuzuki-ku, Yokohama, Kanagawa 224-0053, Japan*

14:50 We1-0-9

Selective laser melting: From process fundamentals towards advanced products, Igor Yadroitsev¹, Andrey Gusarov¹, Igor Smurov¹, ¹*Ecole Nationale d'Ingénieurs de Saint-Etienne (ENISE), DIPI Laboratory, France*

15:10 We1-0-10

Femtosecond laser-assisted etching of fluoride crystals, Shigeki Matsuo¹, Kodai Iwasa¹, Takuro Tomita¹, Shuichi Hashimoto¹, ¹*Department of Ecosystem Engineering, The University of Tokushima, Japan*

15:30 We1-I-11 **Invited**

3D structures in battery materials, Wilhelm Pfleging¹, Robert Kohler¹, Michael Bruns¹, Carlos Ziebert¹, Johannes Proell¹, ¹*Karlsruhe Institute of Technology, Germany*

16:00 Coffee Break

Room 2**Room 3**

Session 11. SP2
Laser-Induced Deposition

Chair: B. Huis in 't Veld

14:30 We2-I-6 **Invited**

Characterization of the laser decal transfer process, Scott A. Mathews^{1,2}, Ray Auyeung², Andrew Birnbaum², Heungsoo Kim², Alberto Piqué²,
¹*Materials Science and Technology Division, Code 6364, Naval Research Laboratory, USA*

15:00 We2-0-7

Formation of adhesive metal microstructures inside glass by femtosecond laser direct writing, Jian Xu¹, Szabolcs Beke¹, Koji Sugioka¹, Katsumi Midorikawa¹, ¹*Laser Technology Laboratory, RIKEN – Advanced Science Institute, Japan*

15:20 We2-0-8

High-power excimer lasers for coated conductor upscaling, Ralph Delmdahl¹, Burkhard Fechner¹, ¹*Coherent GmbH, Germany*

15:40 We2-0-9

Synthesis of core/shell nanowires using doped ZnO targets, Daisuke Nakamura¹, Kota Okazaki¹, Akio Kumeda¹, Kazuyuki Toya¹, Kazuki Kubo¹, Koji Tsuta¹, Mitsuhiro Higashihata¹, Tatsuo Okada¹,
¹*Kyushu University, Japan*

16:00 Coffee Break

Day 2
Wednesday
June 8
16:30

Day 2: June 8

Session 9.

**Ultrafast Laser Processing:
 Micromachining and Drilling**

Chair: M. H. Hong

16:30 We1-0-12 Student

Water-assisted ultrashort laser pulse ablation, Martti Veli Johannes Silvennoinen¹, Jarno Jere, Juhani Kaakkunen¹, Kimmo Päiväsaari¹, Pasi Vahimaa¹, ¹*Department of Physics and Mathematics, University of Eastern Finland, Finland*

16:50 We1-0-13 Student

Focus position and polarization effects in ultrafast laser drilling of cemented tungsten carbide, Khai Pham Xuan¹, Rie Tanabe¹, Yoshiro Ito¹, ¹*Department of Mechanical Engineering, Nagaoka University of Technology, Japan*

17:10 We1-0-14

The effect of burst mode on TSV process using a picosecond laser, Dongsig Shin¹, Jeong Suh¹, Yongkwon Cho¹, ¹*Dept. of High Density Energy Beam Processing & System, Korea Institute of Machinery and Materials (KIMM), South Korea*

17:30 We1-0-15

Multi-layer patterning of organic semiconductor thin film layers with ultra short pulsed lasers, Wayne Lewis¹, Tino Petsch², Jens Hänel², Markus Lasch², ¹*Beams Inc., Japan,* ²*3D-Micromac AG, Germany*

17:50 We1-0-16

High power short and ultra short laser pulses for industrial micro machining, Birgit Faisst¹, Simone Russ², Sascha Weiler¹, Severin Massa², Jan Wieduwilt¹, Christof Siebert¹, ¹*TRUMPF Laser- und Systemtechnik GmbH, Germany,* ²*TRUMPF Laser GmbH + Co. KG, Germany*

Room 2

Session 12. SP2
Laser-Induced Deposition

Chair: S. A. Mathews

16:30 We2-I-10 **Invited**

Laser induced forward transfer of functional materials: The European eLIFT Project, Christof Walter Schneider¹, Thomas Lippert¹, Philippe Delaporte², ¹*Paul Scherrer Institut, General Energy Research Department, CH-5232 Villigen PSI, Switzerland*, ²*Laboratoire Lasers, Plasmas et Procédés Photoniques, F-13288 Marseille cedex 9, France*

17:00 We2-0-11

Picosecond laser induced forward transfer of Cu, Bert Huis in 't Veld^{1,2}, G. Oosterhuis², ¹*University of Twente, The Netherlands*, ²*TNO Science and Industry, The Netherlands*

17:20 We2-0-12

Generation of 3-D structures by Laser Origami, Alberto Piqué¹, Scott A. Mathews¹, Andrew Birnbaum¹, Ray Auyeung¹, Nick Charipar¹, Heungsoo Kim¹, Kristin Metkus¹, ¹*Materials Science and Technology Division, Code 6364, Naval Research Laboratory, USA*

Room 3

Session 14.
Biomedical Applications

Chair: Jan J. Dubowski

16:30 We3-0-6

Control of antibody immobilization by laser micro-processing, Yuji Yamachoshi¹, Masato Tanaka¹, Tomonori Nakahara¹, Kaori Abe¹, Masatoshi Kataoka¹, Toshihiko Ooie¹, ¹*AIST, Health Research Institute, Japan*

16:50 We3-0-7

3D photofabrication by femtosecond laser pulses and its applications in biomedicine, Aleksandr Ovsianikov¹, Jan Torgersen¹, Zhiquan Li², Robert Liska², Jürgen Stampfl¹, ¹*Institute of Materials Science and Technology, Vienna University of Technology, Austria*, ²*Institute of Applied Synthetic Chemistry, Vienna University of Technology, Austria*

17:10 We3-0-8 **Student**

Near-net-shape fabrication of three-dimensional bioceramic scaffolds using microstereolithography and ceramic slurry, Takashi Torii¹, Makoto Inada¹, Shoji Maruo¹, ¹*Yokohama National University, Japan*

17:30 We3-I-9 **Invited**

Laser-based micro- and nanofabrication for photonics and biomedicine, Kotaro Obata¹, Boris N. Chichkov¹, ¹*Laser Zentrum Hannover e.V., Nanotechnology Department, Germany*

Day 3
Thursday
June 9
9:00

Session 15.
**Ultrafast Laser Processing:
Internal Micromachining**

Chair: Y. Cheng

9:00 Th1-U0-1

PPT

Multipoint focusing of single ultrafast laser pulses, Cyril Mauclair¹, Alexandre Mermillod-Blondin², Arkadi Rosenfeld², Ingolf V. Hertel², Eric Audouard¹, Isamu Miyamoto³, Razvan Stoian¹, ¹Laboratoire Hubert Curien (UMR 5516 CNRS), Université de Lyon, Université de Saint-Étienne, France, ²Max-Born Institut für Nichtlineare Optik und Kurzzeitspektroskopie, Germany, ³Osaka University, Japan

9:15 Th1-I-2

Invited

The Femtoprint project, Yves Bellouard¹, A. Champion¹, M. Matteucci¹, M. Gevincevicius², C. Corbari², M. Beresna², P. Kazansky², O. Chappuis³, M. Kral³, R. Clavel³, J. -M. Breguet⁴, F. Barrot⁴, Y. Mabillard⁵, S. Bottinelli⁵, M. Hopper⁶, C. Hoenninger⁷, E. Mottay⁷, J. Lopez⁸, ¹Mechanical Engineering Department, Eindhoven University of Technology, The Netherlands, ²Optoelectronics Research Center (ORC), University of Southampton, United Kingdom, ³Ecole Polytechnique Fédérale de Lausanne, Switzerland, ⁴Centre Suisse d'Electronique et Microtechnique (CSEM), Switzerland, ⁵Mecartex, Switzerland, ⁶Quintenz Hybridtechnik, Germany, ⁷Amplitude Systèmes, France, ⁸AlphaNOV, France

9:45 Th1-0-3

Fabrication of microstructure arrays on photosensitive glass by femtosecond laser, P. N. Wan¹, C. W. Cheng², J. S. Chen³, ¹Department of Mechanical Engineering, National Chung Cheng University, Taiwan, R.O.C., ²ITRI South, Industrial Technology Research Institute, Taiwan, R.O.C., ³Department of Mechanical Engineering, National Chung Hsing University, Taiwan, R.O.C.

10:05 Th1-I-4

Invited

Micro-explosions triggered by femtosecond laser pulses: New tool of nano-structuring, Saulius Juodkazis¹, Arturas Vaillonis^{2,3}, Eugene G. Gamaly⁴, Vyantas Mizeikis⁵, Wenge Yang⁶, Andrei Rode⁴, ¹Swinburne University of Technology, Australia, ²Stanford University, USA, ³SLAC National Accelerator Laboratory, USA, ⁴The Australian National University, Australia, ⁵Shizuoka Univ, Japan, ⁶Argonne National Laboratory, USA

10:35 Th1-0-5

The origin of femtosecond laser induced form birefringence in silica glass, Matthieu Lancry¹, Bertrand Poumellec¹, Kevin Cook², John Canning², ¹University of Paris Sud 11, France, ²Interdisciplinary Photonics Laboratories (iPL), School of Chemistry, University of Sydney, Australia

10:55 Coffee Break

Poster 2

Chair: M. Okoshi

11:20 Short Presentation 2 for Poster Session 2

Room 1

12:20 Poster Session 2 and Exhibition

Small Hall 2 (5F)

Lunch Time

Room 2**Room 3**

Session 18.
Scribing and Cutting

Chair: S. H. Cho

9:20 Th2-0-1 **Student**

Scribing of thin-film solar cells with picosecond and femtosecond lasers, Paulius Gecys¹, Gediminas Račiukaitis¹, Anja Wehrmann², Klaus Zimmer², Alexander Braun³, Steffen Ragnow³,
¹*Center for Physical Sciences and Technology, Lithuania*, ²*Leibniz-Institute of Surface Modification, Germany*, ³*Solarion AG, Germany*

9:40 Th2-0-2

Progress in picosecond-laser scribing for CIGS solar cells, Gediminas Račiukaitis¹, Paulius Gecys¹, Simonas Grubinskas¹, Mindaugas Gedvilas¹, Alexander Braun², Steffen Ragnow², ¹*Center for Physical Sciences and Technology, Lithuania*, ²*Solarion AG, Germany*

10:00 Th2-0-3 **Student**

Thermal stress analysis considering frequency in laser scribing of glass, Keisuke Yahata¹, Etsuji Ohmura¹, Seiji Shimizu², Masanao Murakami²,
¹*Osaka University, Japan*, ²*Mitsuboshi Diamond Industrial Co., Ltd., Japan*

10:20 Th2-0-4

Laser grooving with line-shaped femtosecond laser pulses, Satoshi Hasegawa¹, Yoshio Hayasaki¹,
¹*Center for Optical Research and Education (CORE), Utsunomiya University, Japan*

10:40 Th2-0-5

Indirect laser glass cutting using a fiber-laser, Joochan Kim¹, Wonseok Choi¹, Chulku Lee¹, ¹*Seoul National University of Science and Technology, Korea*

11:00 *Coffee Break*

Poster 2

Chair: M. Okoshi

11:20 **Short Presentation 2 for Poster Session 2**

Room 1

12:20 **Poster Session 2 and Exhibition**

Small Hall 2 (5F)

Lunch Time

Day 3
Thursday
June 9
14:00

Session 16.

**Ultrafast Laser Processing:
Micro and Nano Texturing**

Chair: J. Reif

14:00 Th1-U0-6 Student PPT

Mechanisms of plasmonic enhanced laser nanoablation of silicon, Alexandre Robitaille¹, Étienne Boulais¹, Michel Meunier¹, ¹École Polytechnique de Montréal, Canada

14:15 Th1-0-7

Formation of fine ripples on surfaces of dielectrics and semiconductors, Ričardas Buivydas¹, Vygantas Mizeikis², Lorenzo Rosa¹, Remigijus Šliupas³, Tadas Kudrius³, Gintas Šlekys³, Saulius Juodkazis¹, ¹Swinburne University of Technology, Australia, ²Shizuoka Univ., Japan, ³Altechna Ltd., Lithuania

14:35 Th1-0-8 Student

Femtosecond laser induced nanostructures inside the microholes on soda-lime glass surface, Md. Shamim Ahsan^{1,2}, Man Seop Lee¹, ¹Photonics Application Lab, Korea Advanced Institute of Science and Technology (KAIST), South Korea, ²Electronics and Communication Engineering Discipline, Khulna University, Bangladesh

14:55 Th1-0-9

Flexible microstructuring of thin films using multi-beam interference ablation with ultrashort lasers, Bogdan Voisiat¹, Mindaugas Gedvilas¹, Simonas Indrišiūnas¹, Gediminas Račiukaitis¹, ¹Center for Physical Sciences and Technology, Lithuania

15:15 Th1-0-10

Comparison of picosecond and femtosecond laser ablation for surface engraving of metals and semiconductors, Eric Mottay¹, Martin Delaigue¹, Clemens Hönninger¹, John Lopez^{2,3}, Anne Lidolf², ¹Amplitude Systemes, France, ²Alphanov, France, ³Université Bordeaux 1, France

15:35 Th1-0-11 Student

Nano band texturing on azobenzene polymer by nanosecond pulse laser exposure, Jintang Huang^{1,2}, Stefan Beckemper², Si Wu³, Qijin Zhang³, Keyi Wang¹, Arnold Gillner², ¹Department of Precision Machinery and Precision Instrumentation, University of Science and Technology of China, China, ²Fraunhofer Institute for Laser Technology ILT / Chair for Laser Technology LLT, RWTH Aachen, Germany, ³Department of Polymer Science and Engineering, University of Science and Technology of China, China

15:55 Coffee Break

Room 2

Session 19.
Surface Modification

Chair: T. Makimura

14:10 Th2-I-6 **Invited**

Laser decontamination of radioactive nuclides polluted metallic surfaces, Vadim P. Veiko¹, Timofey Yu. Mutin¹, Valentin N. Smirnov¹, Andrey A. Samokhvalov¹, ¹*St. Petersburg State University of Information Technologies, Mechanism and Optics, Russia*

14:40 Th2-0-7

Laser microtexturing with positive features for improvement of surface interaction of components in viscous fluids, Pablo M. Romero Romero¹, Nerea Otero Ramudo¹, Alejandro González Solar¹, Alessandra Scano², ¹*AIMEN – Laser Applications Centre, Spain*, ²*AIN – Asociación de la Industria Navarra, Spain*

15:00 Th2-0-8

Surface texturing with laser micro cladding to improve tribological properties, Nerea Otero Ramudo¹, Pablo M. Romero Romero¹, Alejandro González Solar¹, Alessandra Scano², ¹*AIMEN – Laser Applications Centre, Spain*, ²*AIN – Asociación de la Industria Navarra, Spain*

15:20 Th2-0-9

Laser treatment of ITO and ZnO nanoparticles for the production of thin conducting layers on transparent substrates, Marcus Baum¹, Ilya Alexeev^{1,2}, Michael Schmidt^{1,2}, ¹*Chair of Photonic Technologies, University of Erlangen-Nuremberg, Germany*, ²*Erlangen Graduate School in Advanced Optical Technologies, Germany*

15:40 Th2-0-10 **Student**

Laser-assisted periodic diameter modulation of carbon nanotubes through rapid modulation of temperature, Masoud Mahjouri-Samani¹, Yunshen Zhou¹, Wei Xiong¹, Yongfeng Lu¹, ¹*University of Nebraska-Lincoln, USA*

16:00 Coffee Break

Room 3

Session 21.
Fundamentals and Monitoring

Chair: R. F. Haglund, Jr.

14:20 Th3-0-1

Comprehensive optical monitoring of selective laser melting, Maria Doubenskaia¹, Yuri Chivel¹, Mikhail Pavlov¹, Igor Smurov¹, ¹*Ecole Nationale d'Ingénieurs de Saint-Etienne (ENISE), DIPI Laboratory, France*

14:40 Th3-0-2 **Student**

Dynamics of laser induced under liquid ablation studied by photoelasticity technology, Thao Nguyen¹, Rie Tanabe¹, Yoshiro Ito¹, ¹*Department of Mechanical Engineering, Nagaoka University of Technology, Japan*

15:00 Th3-0-3 **Student**

Observation of femtosecond-laser ablation process by using the soft X-ray laser interferometer, Minoru Yamamoto^{1,2}, Noboru Hasegawa², Kota Terakawa³, Yoshifumi Umeda¹, Takuro Tomita¹, Yoshihiro Ochi², Takeshi Kaihori², Tetsuya Kawachi², Yasuo Minami³, Tohru Suemoto³, ¹*Department of Ecosystem Engineering, The University of Tokushima, Japan*, ²*Quantum Beam Science Directorate, Japan Atomic Energy Agency, Japan*, ³*Institute for Solid State Physics, The University of Tokyo, Japan*

15:20 Th3-0-4 **Student**

Non-thermal energetic ion emission from copper by the ablation with a low fluence femtosecond laser pulse, Yasuhiro Miyasaka^{1,2}, Masaki Hashida^{1,2}, Yoshinobu Ikuta^{1,2}, Kazuto Otani^{1,2}, Shigeki Tokita^{1,2}, Shuji Sakabe^{1,2}, ¹*ARBS, Institute for Chemical Research, Kyoto University, Japan*, ²*Department of Physics, Graduate School of Science, Kyoto University, Japan*

15:40 Th3-0-5

Laser removal mechanisms of metallic droplets, Aude Vetry¹, Christian Grisolia², David Grojo¹, Marc Sentis¹, Philippe Delaporte¹, ¹*LP3 laboratory – CNRS – Mediterranean University, France*, ²*Association Euratom/CEA, IRFM, France*

16:00 Coffee Break

Day 3
Thursday
June 9
16:30

Session 17.

**Ultrafast Laser Processing:
LIPS Formation**

Chair: K. Miyazaki

16:30 Th1-U0-12

PPT

Ultrafast laser-induced periodic-surface structure: Formation mechanisms and applications in laser marking, Jean-Philippe Colombier¹, Florence Garrelie¹, Florent Pigeon¹, Razvan Stoian¹, Mourad Bounhalli¹, Stéphanie Reynaud¹, Nicolas Faure¹, Philippe Brunet², Benjamin Dusser¹, Eric Audouard¹,
¹Université de Lyon, F-69003, Université de Saint-Etienne, Laboratoire Hubert Curien (UMR 5516 CNRS), France,
²Laboratoire de Mécanique de Lille, UMR CNRS 8107, Boulevard Paul Langevin, 59655 Villeneuve d'Ascq Cédex, France

16:45 Th1-0-13

Periodic nano-grating structures produced by femtosecond laser pulses for metals with low- and high-melting points, Masaki Hashida^{1,2}, Yasuhiro Miyasaka^{1,2}, Yoshinobu Ikuta^{1,2}, Kazuto Otani^{1,2}, Shigeki Tokita^{1,2}, Shuji Sakabe^{1,2},
¹Advanced Research Center for Beam Science, Institute for Chemical Research, Kyoto University, Japan, ²Department of Physics, Graduate School of Science, Kyoto University, Japan

17:05 Th1-0-14

Femtosecond laser ablation from silicon and ripples formation: Evolution of surface excitation, Mourad Bounhalli^{1,3}, Marco Muth¹, Olga Varlamova^{1,2}, Juergen Reif^{1,2},
¹Brandenburg. Tech. Univ. BTU Cottbus, Germany, ²JointLab Cottbus, Germany, ³Laboratoire Hubert Curien, Université Jean Monnet, St. Etienne, France

17:25 Th1-0-15

The role of anisotropic excitation in self-organized nanostructure formation upon femtosecond laser ablation, Olga Varlamova^{1,2}, Sergej Varlamov¹, Michael Bestehorn¹, Juergen Reif^{1,2},
¹Brandenburg. Tech. Univ. BTU Cottbus, Germany, ²JointLab Cottbus, Germany

17:45 Th1-0-16 Student

Formation of nanostructures on the stainless steel surface by femtosecond laser pulses, Md. Shamim Ahsan^{1,2}, Yeong Gyu Kim¹, Man Seop Lee¹,
¹Photonics Application Lab, Korea Advanced Institute of Science and Technology (KAIST), South Korea, ²Electronics and Communication Engineering Discipline, Khulna University, Bangladesh

Banquet

18:30 from the venue to Banquet on foot

19:00 Banquet

ANA Hotel Clement Takamatsu

Room 2

Session 20. SP3

Nanomaterials and Nanostructures:
3D Nano/Microfabrication

Chair: K. Ueno

16:30 Th2-I-11 **Invited****Recent developments in RAPID**

photolithography, John T. Fourkas¹⁻⁴, Michael P. Stocker¹, Linjie Li¹, Rafael R. Gattass¹, ¹*Department of Chemistry & Biochemistry, University of Maryland, USA*, ²*Institute for Physical Science and Technology, University of Maryland, USA*, ³*Center for Nanophysics and Advanced Materials, University of Maryland, USA*, ⁴*Maryland NanoCenter, University of Maryland, College Park, USA*

17:00 Th2-0-12

Two-photon fabrication of three-dimensional metallic nanostructures for plasmonic metamaterials

, Atsushi Ishikawa¹, Takuo Tanaka^{1,2}, ¹*RIKEN, Metamaterials Laboratory, Japan*, ²*Hokkaido University, Research Inst. for Electronic Science, Japan*

17:20 Th2-0-13

3D microfluidic structures directly fabricated in mesoporous glass by water-assisted femtosecond laser direct writing

, Yang Liao¹, Yong Feng Ju¹, Long Zhang¹, Fei He¹, Ya Cheng¹, Zhi Zhan Xu¹, Koji Sugioka², Katsumi Midorikawa², ¹*State Key Laboratory of High Field Laser Physics, Shanghai Institute of Optics and Fine Mechanics, Chinese Academy of Sciences, China*, ²*Laser Technology Laboratory, RIKEN – Advanced Science Institute, Japan*

17:40 Th2-0-14 **Student**

A laser-driven microrotor using total internal reflection illumination, Masaki Ikegame¹, Soichiro Murakami¹, Shoji Maruo¹, ¹*Yokohama National University, Japan*

18:00 Th2-0-15 **Student**

Assembling heterogeneous microstructures using holographic optical tweezers, Reza Ghadiri¹, Cemal Esen¹, Andreas Ostendorf¹, ¹*Ruhr-University Bochum, Institute of Laser Applications Technology, Germany*

Room 3

Session 22.

Advanced Material Synthesis

Chair: V. P. Veiko

16:30 Th3-0-6

Fabrication of SALDI substrate using laser

ablation in liquids, Takeshi Tsuji¹, Masato Yasutomo¹, Masaharu Tsuji¹, Hideya Kawasaki², Tetsu Yonezawa³, Fumitaka Mafune⁴, ¹*Institute of Advanced Materials Chemistry and Interdisciplinary Graduate School of Engineering Sciences, Kyushu University, Japan*, ²*Department of Applied Chemistry, Faculty of Engineering, Kansai University, Japan*, ³*Division of Materials Science and Engineering, Faculty of Engineering, Hokkaido University, Japan*, ⁴*Department of Basic Science, Graduate School of Arts and Sciences, The University of Tokyo, Japan*

16:50 Th3-0-7 **Student**

Laser excitations of precursor molecules by different laser powers in laser-assisted growth of diamond films, Zhiqiang Xie¹, Xiangnan He¹, Wei Hu¹, Yang Gao¹, Thomas Guillemet¹, Jongbok Park¹, Yunshen Zhou¹, Yongfeng Lu¹, ¹*University of Nebraska-Lincoln, USA*

17:10 Th3-0-8 **Student**

Using laser microfabrication to generate conductive polymer/SWNTs nanocomposites, Qingchuan Guo¹, Shizhou Xiao¹, Andreas Aumann¹, Matthias Jaeger¹, M'Barek Chakif¹, Reza Ghadiri¹, Andreas Ostendorf¹, ¹*Ruhr-University Bochum, Department of Laser Applications Technology, Germany*

17:30 Th3-0-9

Laser fabrication of nanocomposites in presence of matrix-coupling agents, Anne Hahn¹, Daniel Bartke^{1,2}, Philipp Wagener¹, Stephan Barcikowski², ¹*Laser Zentrum Hannover e. V., Germany*, ²*Particular GmbH, Germany*

17:50 Th3-I-10 **Invited**

Laser processing and diagnostic explorations of non-equilibrium nanomaterial growth, David B. Geohagan¹, A. A. Puretzky¹, J. D. Readle¹, M. Regmi², J. J. Jackson², C. M. Rouleau¹, N. Thonnard¹, G. Eres², M. Yoon², K. Xiao¹, G. J. M. Duscher^{2,3}, M. F. Chisholm², K. L. More², ¹*Center for Nanophase Materials Sciences, Oak Ridge National Laboratory, USA*, ²*Materials Science and Technology Division, Oak Ridge National Laboratory, USA*, ³*Materials Science and Engineering Dept., Univeristy of Tennessee, USA*

Banquet

18:30 from the venue to Banquet on foot

19:00 Banquet

ANA Hotel Clement Takamatsu

Day 4
Friday
June 10
9:00

Session 23.

**Ultrafast Laser Processing:
Creation of New Functions**

Chair: Y. F. Lu

9:00 Fr1-0-1 Student

Quenching non-equilibrium high-pressure phases of Si using femtosecond laser-driven ultrashort shock, Masashi Tsujino¹, Tomokazu Sano¹, Norimasa Ozaki¹, Osami Sakata², Kazuto Arakawa³, Masayuki Okoshi⁴, Narumi Inoue⁴, Hirotarō F. Mori³, Kojiro F. Kobayashi⁵, Ryosuke Kodama¹, Akio Hirose¹, ¹Graduate School of Engineering, Osaka University, Japan, ²Japan Synchrotron Radiation Research Institute / SPring-8, Japan, ³Research Center for Ultra-High Voltage Electron Microscopy, Osaka University, Japan, ⁴Department of Electrical and Electronic Engineering, National Defense Academy, Japan, ⁵The Wakasa Wan Energy Research Center, Japan

9:20 Fr1-0-2 Student

Variation of electric resistance of functional ceramics by shortpulse and CW laser irradiation, Togo Shinonaga¹, Masahiro Tsukamoto², Masataka Takahashi³, Masayuki Fujita⁴, Nobuyuki Abe², ¹Graduate School of Engineering, Osaka University, Osaka, Japan, ²Joining and Welding Research Institute, Osaka University, Osaka, Japan, ³Osaka Municipal Technical Research Institute, Osaka, Japan, ⁴Institute for Laser Technology, Osaka, Japan

9:40 Fr1-0-3

Magnetic and optical properties of Fe³⁺-doped transparent glasses irradiated with femtosecond laser, Seisuke Nakashima¹, Koji Sugioka¹, Katsumi Midorikawa¹, ¹Riken – Advanced Science Institute, Japan

10:00 Fr1-0-4

Femtosecond laser activation of photoluminescence in the bulk of Bi-doped glasses, Vitali Kononenko¹, Vladimir Pashinin¹, Boris Galagan¹, Sergey Sverchkov¹, Boris Denker¹, Vitali Konov¹, Evgeniy Dianov², ¹General Physics Institute, Russia, ²Fiber Optics Research Center at General Physics Institute, Russia

10:20 Fr1-0-5

Laser micro-machining of hydrophobic-hydrophilic patterns for fluid driven self-alignment in micro-assembly, G. R. B. E. Römer¹, M. M. J. Jorritsma¹, A.J. Huis in 't Veld², ¹University of Twente, Faculty of Engineering Technology, Chair of Applied Laser Technology, The Netherlands, ²University of Twente, Faculty of Engineering Technology, Chair of Applied Laser Technology and TNO Science & Industry, Department Materials Technology, The Netherlands

10:40 Coffee Break

Room 2

Session 25. SP3
**Nanomaterials and Nanostructures:
 Nanophotonics and Plasmonics**

Chair: John T. Fourkas

9:20 Fr2-I-1 **Invited**

Nanophotonic etching of glass substrate for Å-scale surface roughness, Takashi Yatsui¹, Wataru Nomura¹, Motoichi Ohtsu¹, ¹*The University of Tokyo, Japan*

9:50 Fr2-0-2 **Student**

Application of Gaussian optical tweezers for ultrafast laser assisted direct-write nanostructuring, Ulf Quentin^{1,2}, Karl-Heinz Leitz^{1,2}, Ilya Alexeev^{1,2}, Michael Schmidt^{1,2}, ¹*Chair of Photonic Technologies, University of Erlangen-Nuremberg, Germany*, ²*Erlangen Graduate School in Advanced Optical Technologies, Germany*

10:10 Fr2-0-3 **Student**

Nano porous processing of polymer films based on resonant excitation of localized surface plasmon of Au nanoparticles, Keita Muraoka¹, Tatsuya Shoji, Noboru Kitamura, Yasuyuki Tsuboi, ¹*School of Science, Hokkaido Univ., Japan*

10:30 *Coffee Break*

Room 3

Session 27.
Fundamentals and Photochemistry

Chair: Y. Ito

9:00 Fr3-0-1

Measurement of light-induced refractive index change in photopolymer with digital holographic microscopy, Wataru Watanabe¹, Hidenobu Arimoto¹, Kazuyoshi Masaki², Takashi Fukuda¹, ¹*Photonics Research Institute, National Institute of Advanced Industrial Science and Technology, Japan*, ²*Nippon Steel Chemical Co. Ltd., Japan*

9:20 Fr3-0-2

Electronic coupling of silicon nanocrystals with engineered surface by nanosecond laser processing in liquid media, Vladimir Švrček¹, Davide Mariotti², Michio Kondo¹, ¹*National Institute of Advanced Industrial Science and Technology (AIST), Japan*, ²*Nanotechnology & Advanced Materials Research Institute, University of Ulster, UK*

9:40 Fr3-0-3 **Student**

Lasing and motion of zinc oxide nano-crystals by ultraviolet laser irradiation, Kota Okazaki¹, Daisuke Nakamura¹, Mitsuhiro Higashihata¹, Tatsuo Okada¹, ¹*Graduate School of Information Science and Electrical Engineering, Kyushu University, Japan*

10:00 Fr3-0-4

Interaction of nanosecond pulse laser with colloidal nanoparticles, Alexander Pyatenko¹, Hongqiang Wang¹, Naoto Koshizaki¹, ¹*AIST, Japan*

10:20 Fr3-0-5

Photoluminescence dynamics in exciton-plasmon coupling observed in a novel multilayer heterostructure, Richard F. Haglund^{1,2}, Benjamin J. Lawrie², Richard Mu³, Kyeong Won Kim⁴, David P. Norton⁴, ¹*Vanderbilt University, Department of Physics and Astronomy, USA*, ²*Vanderbilt University, Interdisciplinary Graduate Program in Materials Science, USA*, ³*Fisk University, Department of Physics, USA*, ⁴*University of Florida, Department of Materials Science and Engineering, USA*

10:40 *Coffee Break*

Day 4
Friday
June 10
11:00

Session 24.

**Ultrafast Laser Processing:
Advanced Processing**

Chair: S. Juodkazis

11:00 Fr1-0-6

Generation of sharp and periodic structure by interfering femtosecond laser processing, Yoshiki Nakata¹, Kazuma Momoo¹, Noriaki Miyanaga¹, Takuya Hiromoto², ¹*Institute of Laser Engineering, Osaka Univ., Japan,* ²*Furukawa Electric, Japan*

11:20 Fr1-0-7

Ultra-fast writing of self-organized bubble networks using femtosecond laser exposure in the cumulative regime, Yves Bellouard¹, Max-Olivier Hongler², ¹*Eindhoven University of Technology (TU/e), Netherlands,* ²*Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland*

11:40 Fr1-I-8

Invited

Fs laser cleaning using filamentation, Sung-Hak Cho¹, Jung-Kyu Park¹, Jae-Yong Yu¹, Won-Seok Chang¹, Jae-Goo Kim¹, Ji-Yeon Choi¹, Kyung-Hyun Whang¹, ¹*Nano Machining Lab. KIMM (Korea Institute of Machinery and Materials), Korea*

12:10 Lunch Time

Room 2

Session 26. SP3

Nanomaterials and Nanostructures:
Synthesis of Nanomaterials

Chair: S. Maruo

11:00 Fr2-U0-4 Student PPT

New method for micro and nanoparticles fabrication, Cinthyia Emma Toro¹, Carlos Alberto Rinaldi², Edgardo Domingo Cabanillas³, ¹*Dept. of Micro and Nanotechnology, National Commission of Atomic Energy, Argentina*, ²*National Council of Scientific and Technical Research, Argentina*, ³*CONICET and Dept. of Nuclear Combustible, CNEA, Buenos Aires, Argentina*

11:15 Fr2-0-5

Carbon-assisted fabrication of sub micrometer spheres for low optical absorbance materials by laser selective heating in liquid, Xiangyou Li¹, Hongqiang Wang¹, Alexander Pyatenko¹, Naoto Koshizaki¹, ¹*National Institute of Advanced Industrial Science and Technology (AIST), Japan*

11:35 Fr2-0-6

Fabrication of submicrometer spherical particles by pulsed laser melting in liquid under low fluence conditions, Naoto Koshizaki¹, Hongqiang Wang¹, Yoshie Ishikawa², ¹*National Institute of Advanced Industrial Science and Technology (AIST), Japan*, ²*Kagawa University, Japan*

11:55 Fr2-0-7 Student

Femtosecond laser-induced size reduction of aqueous gold nanoparticles: In situ- and pump-probe spectroscopy investigation to reveal Coulomb explosion, Daniel Werner¹, Akihiro Furube², Shuichi Hashimoto¹, ¹*Department of Ecosystem Engineering, The University of Tokushima, Japan*, ²*National Institute of Advanced Industrial Science and Technology (AIST), Japan*, ³*Department of Ecosystem Engineering, The University of Tokushima, Japan*

12:15 Lunch Time

Room 3

Session 28.

Glass Welding

Chair: W. Watanabe

11:00 Fr3-0-6

Efficient microwelding of glass by double pulse irradiation of ultrafast laser beam, Koji Sugioka¹, Makoto Iida¹, Hiroshi Takai², Katsumi Midorikawa¹, ¹*RIKEN - ASI, Japan*, ²*Tokyo Denki University, Japan*

11:20 Fr3-0-7

Shear measurements of joining seams in glass welded by ultra-fast lasers depending on focus height, Kristian Cvecek¹, Isamu Miyamoto², Matthias Rascher¹, Thomas Frick¹, Michael Schmidt³, ¹*Bayerisches Laserzentrum, Germany*, ²*Osaka University, Japan*, ³*Chair of Photonics Technologies, University Erlangen-Nuremberg, Germany*

11:40 Fr3-0-8

Fusion welding characteristics of FOTURAN glass using ultrashort laser pulses, Isamu Miyamoto^{1,2}, Kristian Cvecek³, Yashuhiro Okamoto⁴, Michael Schmidt^{2,3,5}, Henry Helvajian⁶, ¹*Osaka University, Japan*, ²*Erlangen Graduate School of Advanced Optical Technologies (SAOT), Germany*, ³*Bayerisches Laser Zentrum, Germany*, ⁴*Okayama University, Japan*, ⁵*University Erlangen-Nuremberg, Germany*, ⁶*The Aero Space Corporation, US*

12:00 Fr3-0-9 Student

Energy-dependence of temperature dynamics in femtosecond laser microprocessing investigated by time-resolved micro-Raman spectroscopy, Tomoki Yoshino¹, Masato Matsumoto¹, Yasuyuki Ozeki¹, Kazuyoshi Itoh¹, ¹*Graduate School of Engineering, Osaka University, Japan*

12:20 Lunch Time

Room 1

Session 29.
Industrial Applications

Chair: K. Itoh

14:00 Fr1-I-9 **Invited**

Technology innovation of thin film transistors (TFTs) by laser crystallization processing,
Yoshitaka Yamamoto, ¹*Sharp Corporation*

14:30 Fr1-I-10 **Invited**

Stealth dicing technology and the trend, Junji Okuma¹, ¹*Hamamatsu Photonics K.K., Japan*

Room 1

Closing

15:00 **Outstanding Awards**

Closing Remark

15:30 *close*

**Day 4
Friday
June 10
14:00**

Poster Session

Poster 1

Wednesday, June 8

11:20 Short Presentation 1 for Poster Session 1 Room 1

12:20 Poster Session 1 and Exhibition Small Hall 2 (5F)

Fundamentals and Photochemistry

We-P-1

Plasma emission from glass/liquid interface for real-time monitoring of LIBWE process, Ji-Yen Cheng^{1,2,3}, Seyedehmansoureh Zarei Mousavi^{1,4,5}, Chun-Ying Wu^{1,2}, Hsieh-Fu Tsai^{1,3}, ¹Research Center for Applied Sciences, Academia Sinica Taiwan, Taiwan, ²Department of Mechanical and Mechatronic Engineering, National Taiwan Ocean University, Taiwan, ³Institute of Biophotonics, National Yang-Ming University, Taiwan, ⁴Department of Chemistry, National Taiwan University, Taiwan, ⁵Nano Science and Technology Program, Taiwan International Graduate Program, Academia Sinica Taiwan, Taiwan

We-P-2

Decrease in minority carrier lifetime caused by rapid laser heating, Toshiyuki Sameshima¹, Wataru Kato¹, Yasu Kanda¹, Shinya Yoshidomi¹, Masahiko Hasumi¹, Naoki Sano², ¹Tokyo University of Agriculture and Technology, Japan, ²Aurea Works Corporation, Japan

We-P-3

Laser induced formation of buried void layer in silicon, Toshiyuki Sameshima¹, Yasu Kanda¹, Masahiko Hasumi¹, Junichi Tatemichi², Yutaka Inouchi², Masao Naito², ¹Tokyo University of Agriculture and Technology, Japan, ²Nissin Ion Equipment Co.,Ltd, Japan

We-P-4 **Student**

Surface modification of silicone-coated polycarbonate by F₂ laser for lightweight window, Yoshihiko Nojima^{1,2}, Masayuki Okoshi¹, Hidetoshi Nojiri², Narumi Inoue¹, ¹National Defense Academy, Japan, ²RENIAS Co.,Ltd., Japan

We-UP-5 **Student**

No Attendant

Detecting plasma produced by laser in a micromachining system as in-process control, Cinthya Emma Toro¹, Carlos Lasorsa², Carlos Alberto Rinaldi³, ¹Dept. of Micro and Nanotechnology, National Commission of Atomic Energy, Argentina, ²Universidad Tecnológica Nacional, Facultad Regional Haedo, Buenos Aires, Argentina, ³National Council of Scientific and Technical Research, Argentina

Direct Writing

We-P-6

Driving cholesteric liquid crystal display by pulsed laser, Hsuan-Kai Lin¹, Heng-Yin Chen¹, Chao-Chiun Liang¹, Ju-Yuen Su¹, Da-Long Cheng², Yu-Chen Chang³, ¹Industrial Technology Research Institute, Taiwan, ²Department of Computer and Communication, SHU-TE University, Taiwan, ³Department of Materials and Optoelectronic Science; Center for Nanoscience and Nanotechnology, National Sun Yat-Sen University, Taiwan

We-P-7

Reversible writing of photorefractive structures in lithium niobate by laser lithography, Vygantas Mizeikis¹, Vytautas Purlys², Domas Paipulas², Saulius Juodkazis³, ¹Division of Global Research Leaders (Research Institute of Electronics), Shizuoka University, Japan, ²Laser Research Center, Department of Quantum Electronics, Vilnius University, Lithuania, ³Centre for Micro-Photonics, Swinburne University of Technology, Australia

We-P-8

Study on the mechanism of creating electroless plating seed on polymer by laser, Byoung Man Paik¹, Jae Hoon Lee¹, Dong Sig Shin¹, Kun Sang Lee², ¹*Korea Institute of Machinery & Materials, Korea*, ²*Kookmin University, Korea*

We-P-9

Laser induced graphite oxide/graphene transformation, Romualdas Trusovas¹, Gediminas Račiukaitis¹, Jurgis Barkauskas², Regina Mazeikiene³, ¹*Center for Physical Sciences and Technology, Lithuania*, ²*Faculty of Chemistry, Vilnius University, Lithuania*, ³*Institute of Chemistry, Center for Physical Sciences and Technology, Lithuania*

We-P-10

Position restricted growth of carbon nanotube and carbon nanofiber with laser processed catalytic metal by thermal decomposition in ethanol, Satoshi Kurumi¹, Daisuke Miura¹, Hiroaki Iwato¹, Kazuhiro Namiki¹, Kaoru Suzuki¹, ¹*Nihon University, Japan*

Ultrafast Laser Processing

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Comparison between plasma properties and damage thresholds in doped silica exposed to IR femtosecond laser, Matthieu Lancry¹, Bertrand Poumellec¹, Stéphane Guizard², Nikita Fedorov², ¹*University of Paris Sud 11, France*, ²*Laboratoire des Solides Irradiés/CEA IRAMIS, Ecole Polytechnique, Palaiseau, France*

We-P-12 *Student*

Grain size dependence of surface hardness in femtosecond laser-peened steels, Miho Tsuyama¹, Satoshi Yamatani¹, Shota Fujii¹, Toshiya Shibayanagi², Masahiro Tsukamoto², Nobuyuki Abe², Hitoshi Nakano¹, ¹*Program in Electronic Engineering, Interdisciplinary Graduate School of Science and Engineering, Kinki University, Japan*, ²*Joining and Welding Research Institute, Osaka University, Japan*

We-P-13 *Student*

Electrical conduction properties of SiC modified by femtosecond laser, Takuto Ito¹, Manato Deki¹, Takuro Tomita¹, Shigeki Matsuo¹, Shuichi Hashimoto¹, Takahiro Kitada², Toshiro Isu², Shinobu Onoda³, Takeshi Ohshima³, ¹*Department of Ecosystem Engineering, The University of Tokushima, Japan*, ²*Center of Frontier Research of Engineering, The University of Tokushima, Japan*, ³*Japan Atomic Energy Agency, Japan*

We-P-14 *Student*

Exact evaluation of joint force in ultrafast microwelding without the influence of contacting area, Yuto Oki¹, Yasuyuki Ozeki¹, Kazuyoshi Itoh¹, ¹*Department of Material and Life Science, Graduate School of Engineering, Osaka University, Japan*

We-P-15 *Student*

Time-resolved quantitative observation of phenomena induced by tightly-focused femtosecond laser pulse in glass, Keisuke Iwata¹, Akihiro Takita¹, Yoshio Hayasaki¹, ¹*Center for Optical Science and Education (CORE), Utsunomiya University, Japan*

We-P-16

Fabrication of nanostructures on SKD11 metal by femtosecond laser, C. Y. Lin¹, K. P. Chang¹, P. H. Wu¹, C. W. Cheng¹, S. M. Huang², ¹*ITRI South, Industrial Technology Research Institute, Taiwan, R.O.C.*, ²*Central Mint, Taiwan, R.O.C.*

We-P-17

Development of structural health monitoring sensors by optical fiber Bragg grating, Yukihiro Shimada¹, Akihiko Nishimura¹, ¹*Applied Laser Technology Institute at Tsuruga Head Office, Japan Atomic Energy Agency, Japan*

We-P-18 *Student*

Fabrication of micro-fluidic channel and waveguide in fused silica using femtosecond laser, Dae-Young Lee¹, A-Young Moon¹, Woon-Young Lee¹, Ki-Soo Lim¹, ¹*Chungbuk National University, R. O. Korea*

We-P-19 *Student*

Surface control of transparent materials for hydrophobicity using femtosecond laser micro-fabrication, Woon-Young Lee¹, Dae-Young Lee¹, A-Young Moon¹, Ki-Soo Lim¹, ¹*Chungbuk National University, R. O. Korea*

We-P-20

Nanostructuring of silicon surface with femtosecond-laser-induced near-field, Godai Miyaji¹, Kaifeng Zhang¹, Junji Fujita¹, Kenzo Miyazaki¹, ¹*Kyoto University, Institute of Advanced Energy, Japan*

We-P-21

Non-linear absorption of 1.3 μm wavelength femtosecond laser pulses focused inside semiconductors: FDTD-TTM joint computational study, Ilya Bogatyrev¹, David Grojo¹, Tatiana Itina², Philippe Delaporte¹, Marc Sentis¹, Wladimir Marin³, ¹*Lasers, Plasmas et Procédés Photoniques UMR 6182 CNRS, France*, ²*Laboratoire Hubert Curien UMR 5516 CNRS, France*, ³*Centre Interdisciplinaire de Nanoscience de Marseille, France*

We-P-22

Fabrication of diffractive optical elements in polymers by 400-nm femtosecond laser pulses, Wataru Watanabe¹, Katsumi Matsuda², Satoshi Hirono², Hiroyuki Mochizuki¹, ¹*Photonics Research Institute, National Institute of Advanced Industrial Science and Technology, Japan*, ²*Production Method Development Group, Omron Corporation, Japan*

We-P-23

Writing speed dependency of femtosecond laser refractive index modification in poly(dimethylsiloxane), Wataru Watanabe¹, Katsumi Matsuda², Satoshi Hirono², Hiroyuki Mochizuki¹, ¹*Photonics Research Institute, National Institute of Advanced Industrial Science and Technology, Japan*, ²*Production Method Development Group, Omron Corporation, Japan*

We-P-24

Femtosecond laser-driven shock hardening of aluminum, Tomokazu Sano^{1,2}, Yutaro Isshiki¹, Tomo Ogura¹, Masayuki Okoshi³, Narumi Inoue³, Kojiro F. Kobayashi⁴, Akio Hirose¹, ¹*Division of Materials and Manufacturing Science, Graduate School of Engineering, Osaka University, Japan*, ²*JST, CREST, Japan*, ³*National Defense Academy of Japan, Japan*, ⁴*The Wakasa Wan Energy Research Center, Japan*

We-P-25 *Student*

Hardening of iron using femtosecond and sub-nanosecond laser pulses, Tomoki Matsuda¹, Tomokazu Sano^{1,2}, Tomo Ogura¹, Kojiro F Kobayashi³, Akio Hirose¹, ¹*Division of Materials and Manufacturing Science, Graduate School of Engineering, Osaka University, Japan*, ²*JST, CREST, Japan*, ³*The Wakasa Wan Energy Research Center, Japan*

Advanced Laser Processing

We-P-26

Numerical simulation of the melt pool character in high power fiber laser welding, Ruihua Zhang¹, Zhipen Cai¹, Jiluan Pan¹, Seiji Katayama², Yan Zhang³, Fang Zhao³, Xiao Wang³, ¹*Tsinghua University, China*, ²*Joining and Welding Research Institute, Osaka University, Japan*, ³*China Iron & Steel Research Institute Group, China*

We-P-27

High-power fibre laser cleaning for green shipbuilding, Guoxin Chen¹, Tiao Joo Kwee¹, Kim Pong Tan¹, Yoo Sang Choo², Minghui Hong², ¹*Centre of Innovation (Marine & Offshore Technology), Ngee Ann Polytechnic, Singapore*, ²*Faculty of Engineering, National University of Singapore, Singapore*

We-P-28

Surface modifications of metals induced by soft X-ray laser pulse irradiations, Masahiko Ishino¹, Anatoly Faenov¹, Momoko Tanaka¹, Noboru Hasegawa¹, Masaharu Nishikino¹, Satoshi Tamotsu², Tatiana Pikuz¹, Toshiyuki Ohba¹, Takeshi Kaihori¹, Tetsuya Kawachi¹, ¹*Quantum Beam Directorate, Japan Atomic Energy Agency, Japan*, ²*Graduate School of Humanities and Science, Nara Women's University, Japan*

We-P-29

Laser joining of plastic and different plastic with elastomer sheet, Yutaka Mitooka¹, Makoto Hino¹, Teruto Kanadani², ¹*Industrial Technology Research Institute of Okayama Prefectural Government, Japan*, ²*Okayama University of Science, Japan*

We-P-30

Application of photo-stimulated desorption and decomposition process induced by VUV radiations to surface analysis, Masahito Katto¹, Masanori Kaku², Shoichi Kubodera², Atsushi Yokotani², Nobuyoshi Miyabayashi³, Wataru Sasaki⁴, ¹*CRCC and Photon Science Project, University of Miyazaki, Japan*, ²*Dept. of EEE and Photon Science Project, University of Miyazaki, Japan*, ³*ESCO, Ltd, Japan*, ⁴*NTP, Inc., Japan*

We-P-31 Student

Preparation of size-controlled nanoparticles with narrow size distribution by thin film laser ablation in water, Motishi Fukudome¹, Naoya Fujimoto², Hiroshi Ikenoue^{1,2},
¹*Advance course of Mechanical and Electrical Engineering, Kochi National College of Technology, Japan*, ²*Department of Electrical Engineering, Kochi National College of Technology, Japan*

Poster 2**Thursday, June 9**

11:20 Short Presentation 2 for Poster Session 2 Room 1

12:20 Poster Session 2 and Exhibition Small Hall 2 (5F)

Micro-patterning and Micro-machining**Th-P-1 Student**

UV laser drilling of glassy carbon die for microneedle array, Wataru Okazaki¹, Yoshikazu Yoshida^{1,2}, Takashi Uchida², ¹*Graduate school of Engineering, Toyo University, Japan*, ²*Bio-Nano Electronics Research Centre, Toyo University, Japan*

Th-P-2 Student

Laser cutting of flexible printed circuit boards in liquid, Teakgu Kim¹, Wooram Lee¹, Chulku Lee¹, Joochan Kim¹, ¹*Seoul National University of Science and Technology, Korea*

Th-P-3

Laser micromachining in Mg-Cu-Gd bulk metallic glass by pulsed lasers, Hsuan-Kai Lin¹, Ching-Jen Lee², Ting-Ting Hu², Chun-Han Li¹, Chih-Ching Jacob Huang²,
¹*Industrial Technology Research Institute, Taiwan*, ²*Department of Materials and Optoelectronic Science, National Sun Yat-Sen University, Taiwan*

Th-P-4 Student

The effect of a laser beam wavelength on micro grooving of aluminum nitride, Tatsuhiko Mori¹, Takuhito Otofujii¹, Shinri Nonaka¹, Yasuyuki Takata¹, Masamichi Kohno¹,
¹*Kyushu University, Japan*

Th-P-5

Laser drilling of Ni film on silicon for μ -SOFC, Mindaugas Maciulevičius¹, Mindaugas Gedvilas¹, Brigita Abakevičienė², Sigita Tamulevičius², Gediminas Račiukaitis¹, ¹*Center for Physical Sciences and Technology, Lithuania*, ²*Institute of Material science, Kaunas University of Technology, Lithuania*

Th-UP-6 Student

No Attendant

A new combined method to make microcavities in Si(100), Cinthya Emma Toro¹, Betiana Lerner¹, Maximiliano Perez¹, Carlos Lasorsa², Carlos Alberto Rinaldi³, Alfredo Boselli¹, Carlos Lamagna¹, ¹*Dept. of Micro and Nanotechnology, National Commission of Atomic Energy, Argentina*, ²*Universidad Tecnológica Nacional, Facultad Regional Haedo, Buenos Aires, Argentina*, ³*National Council of Scientific and Technical Research, Argentina*

Th-P-7 Student

An application and effects of aligned ultrasonic vibration for high precision in nanosecond laser machining, Gun Woo Kim¹, Bong Chul Kang¹, Sung Hak Cho², Jong Kweon Park², Min Yang Yang¹, ¹*Department of Mechanical Engineering, Korea Advanced Institute of Science and Technology (KAIST), Republic of Korea*, ²*Division of Nano-Mechanical Systems, Korea Institute of Machinery and Materials (KIMM), Republic of Korea*

Th-P-8 Student

Micro-channel formation for solid oxide fuel cells using laser beam interference ablation, Bogdan Voisiat¹, Mindaugas Gedvilas¹, Brigita Abakevičienė², Sigita Tamulevičius², Gediminas Račiukaitis¹, ¹*Center for Physical Sciences and Technology, Lithuania*, ²*Institute of Material science, Kaunas University of Technology, Lithuania*

Th-P-9

Variation in the etch rate of LIBWE fabricating deep microtrenches, Tadatake Sato¹, Yoshizo Kawaguchi¹, Ryozi Kurosaki¹, Aiko Narazaki¹, Wataru Watanabe¹, Hiroyuki Niino¹, ¹*National Institute of Advanced Industrial Science and Technology (AIST), Japan*

Th-UP-10

No Attendant

Magnetic assisted laser micromachining for highly reflective metals, Chia-Lung Kuo¹, Yuan-Jen Chang¹, Nai-Yu Wang¹, ¹National Yunlin University of Science and Technology, Taiwan

Manufacture of Micro Devices and Systems

Th-P-11

Fabrication of transparent and conductive microchips, Szabolcs Beke¹, Jian Xu¹, László Kőrösi², Koji Sugioka¹, Katsumi Midorikawa¹, ¹Laser Technology Laboratory, RIKEN — Advanced Science Institute, Japan, ²Supramolecular and Nanostructured Materials Research Group of the Hungarian Academy of Sciences, University of Szeged, Hungary

Th-P-12

The effect of sensing area and fiber lens on sensitivity for the side-polished plastic optical fiber sensor, Yi-Cheng Hsu¹, Hung-Chung Liu¹, Chih-De Hu¹, Jhih-Lin Chen¹, ¹Department of Biomechatronics Engineering National Pingtung University of Science and Technology, Taiwan

Th-P-13

The detection of raw milk doping constituted milk employing side-polished plastic fiber sensor, Yi-Cheng Hsu¹, Hung-Chung Liu¹, Jhih-Lin Chen¹, Mei-Jen Lin², Guai-Yu Chen², ¹Department of Biomechatronics Engineering National Pingtung University of Science and Technology, Taiwan, ²Department of Animal Science National Pingtung University of Science and Technology, Taiwan

Th-P-14

Laser irradiation on tin electroplating and whisker suppressibility, Makoto Hino¹, Yutaka Mitooka¹, Koji Murakami¹, Masao Takamizawa², Teruto Kanadani³, ¹Industrial Technology Research Institute of Okayama Prefecture, Japan, ²OM Sangyo Co. LTD., Japan, ³Okayama University of Science, Japan

Th-P-15

Continuous laser fabrication method using an adaptive cell decomposition, Kwangho Yoon¹, Kyunghan Kim¹, Jaehoon Lee¹, ¹Korea Institute of Machinery and Materials (KIMM), Korea

Th-P-16 Student

Guide mode resonance sensor realized by femtosecond laser machining, Chien-Hsing Chen¹, Ting-Chou Chang², Chai-Yu Lee², Jaw-Luen Tang¹, Shau-Chun Wang², Lai-Kwan Chau², Wei-Te Wu³, ¹Department of Physics, National Chung Cheng University, Taiwan, ²Department of Chemistry and Biochemistry, National Chun Cheng University, Taiwan, ³Department of Biomechatronics Engineering, National Pingtung University of Science and Technology, Taiwan

Film Deposition

Th-P-17

Development of a laser-assisted chemical vapour deposition system for the growth of carbon nanotubes, Takashi Uchida^{1,2}, Yoshikazu Yoshida^{1,2}, ¹Faculty of Science and Engineering, Toyo University, Japan, ²Bio-Nano Electronics Research Centre, Toyo University, Japan

Th-P-18 Student

Fabrication of TiO₂ films by electrophoretic deposition, C. Y. Lin¹, D. L. Cheng¹, K. S. Kao¹, C. H. Liang², H. K. Lin³, ¹Department of Computer and Communication, Shu-Te University, Taiwan, ²Department of Cosmetic Science, Chia Nan University of Pharmacy and Science, Taiwan, ³Laser Application Technology Center/ Industrial Technology Research Institute South (ITRI South), Taiwan

Lasers, Optics, and Systems

Th-P-19 Student

A new approach to characterizing surface texturing of crystalline silicon wafers for high efficiency solar cells application, Chil-Chyuan Kuo¹, Yi-Ruei Chen¹, ¹Ming Chi University of Technology, Taiwan

Th-P-20

Large-area UV microprocessing, Ralph Delmdahl¹, Rainer Paetzel¹, ¹*Coherent GmbH, Germany*

Th-P-21

Fabrication of anti-reflective structures using hot embossing with a stainless steel template fabricated by femtosecond laser, Tsung-Fu Yao¹, Ping-Han Wu², Chung-Wei Cheng², Tzong-Ming Wu², Cheng-Huan Yang¹, Sen-Yen Yang¹, ¹*Department of Mechanical Engineering, National Taiwan University, Taiwan, R.O.C.*, ²*ITRI South, Industrial Technology Research Institute, Taiwan, R.O.C.*

Th-P-22

Fringe analysis by envelope detection for measuring ultra-small displacement, Hui-Kang Teng¹, Kuo-Chen Lang¹, ¹*Department of Computer and Communication Engineering, Nan Kai University of Technology, Taiwan, ROC*

Th-P-23

Balanced detection with single photoreceiver, Kuo-Chen Lang¹, Hui-Kang Teng¹, ¹*Department of Computer and Communication Engineering, Nan Kai University of Technology, Taiwan, ROC*

Th-P-24

Characterization of CsLiB₆O₁₀ crystals grown in dry atmosphere, Yoshinori Takahashi^{1,2}, Masashi Yoshimura^{1,2}, Yusuke Mizobe^{1,2}, Yohei Shimizu^{1,2}, Takahiro Kawamura^{1,2}, Zhiming Lu^{1,2}, Yuji Fukushima^{1,2}, Takashi Moritani^{1,2}, Kazuto Matsuki³, Susumu Iida^{2,3}, Shinichi Imai^{2,3}, Y. Kaneda^{1,2,5}, Y. Mori^{1,2}, T. Sasaki^{1,2}, ¹*Graduate School of Engineering, Osaka University, Japan*, ²*JST-CREST, Japan*, ³*Advanced Mask Inspection Technology, Japan*, ⁴*Oxide Corporation, Japan*, ⁵*College of Optical Sciences, The University of Arizona, USA*

Th-P-25 **Student**

High performance UV laser drilling using digital scanner, Hyung-Suk Kuh¹, Kwang-Ryul Kim¹, Byoungdeog Choi¹, Hong-Jin Park², Won-Ha Heo³, Sung-Hak Cho⁴, ¹*School of Information and Communication Engineering, SungKyunKwan University, Korea*, ²*LTS, 38-13, Ojeon-dong, Uiwang-si, Gyeonggi-do, Korea*, ³*Duckyu, 159-12, Gunja-Dong, Siheung-Si, Gyeonggi-do, Korea*, ⁴*Korea Institute of Machinery and Materials, Korea*

Th-P-26 **Student**

High-efficiency second harmonic generation of a mode-locked picosecond Ti:sapphire laser with an external enhancement cavity, Yuma Takida¹, Tatsuya Ohira¹, Shingo Maeda¹, Hiroshi Kumagai¹, ¹*Graduate school of Engineering, Osaka City University, Japan*

Th-P-27 **Student**

Parametric oscillation of terahertz wave pumped by picosecond Ti:sapphire laser with MgO-doped LiNbO₃ installed in external enhancement cavity, Yuma Takida¹, Tatsuya Ohira¹, Shingo Maeda¹, Hiroshi Kumagai¹, Shigeki Nashima¹, ¹*Graduate school of Engineering, Osaka City University, Japan*

Th-P-28 **Student**

TiO₂/sapphire beam splitter for high-order harmonics, Yasutaka Sanjo¹, Masaki Murata¹, Yuji Tanaka¹, Horoshi Kumagai¹, Masaya Chigane², ¹*Graduate School of Engineering, Osaka City University, Japan*, ²*Osaka Municipal Technical Research Institute, Japan*

Nanomaterials and Nanostructures

Th-P-29 **Student**

Morphologic phase change of silver nano particle ink obtain by laser sintering, Michael Zenou^{1,2}, Amir Saar², Zvi Kotler¹, ¹*Orbotech Ltd., Israel*, ²*Hebrew University, Racah Institute Of Physics, Isarel*

Th-P-30 **Student**

Spherical titanium oxide particle fabrication by laser melting in liquid, Masayuki Ohira¹, Yoshie Ishikawa¹, Naoto Koshizaki², Qi Feng¹, ¹*Department of Advanced Materials Science, Faculty of Engineering, Kagawa University, Japan*, ²*Nanosystem Research Institute, National Institute of Advanced Industrial Science and Technology (AIST), Japan*

Th-P-31

Large quantity synthesis of boron carbide particles by laser melting in liquid for novel BNCT agent, Yoshie Ishikawa¹, Naoto Koshizaki², Qi Feng¹, ¹*Department of Advanced Materials Science, Faculty of Engineering, Kagawa University, Japan*, ²*Nanosystem Research Institute, National Institute of Advanced Industrial Science and Technology (AIST), Japan*

Th-P-32 **Student**

Three-dimensional carbon microstructures produced by a soft molding process based on two-photon microfabrication, Yuya Daicho^{1,2}, Terumasa Murakami¹, Tsuneo Hagiwara³, Shoji Maruo¹, ¹*Yokohama National University, Japan*, ²*CMET Inc., Japan*, ³*Tokyo Institute of Technology, Japan*

Others

Th-P-33

Inhibitory effect of Ov-16 (4-(3,4-dihydroxybenzoyloxymethyl) phenyl-O- β -D-glucopyranoside) on melanin synthesis: Potential role for tyrosinase signaling, Leong-Perng Chan¹, Shih-Hao Wang², Jing-Yao Liang^{3,4,5}, Da-Long Cheng⁶, Chia-Hua Liang³, ¹*Department of Otolaryngology-Head and Neck Surgery, Kaohsiung Medical University, Chung-Ho Memorial Hospital, Kaohsiung Medical University, Taiwan*, ²*Graduate Institute of Pharmaceutical Chemistry, China Medical University, Taiwan*, ³*Department of Cosmetic Science, Chia Nan University of Pharmacy and Science, Taiwan*, ⁴*Department of Urology, Kuo General Hospital, Taiwan*, ⁵*Institute of Biomedical Engineering, National Cheng Kung University, Taiwan*, ⁶*Department of Computer and Communication, SHU-TE University, Taiwan*

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