

# COLA 2021/2022

16th International Conference on Laser Ablation

April 24 – 29, 2022

Hybrid format  
Kunibiki, Matsue, Japan & online

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## *COLA 2021/2022 Preliminary Program*

*updated April 7, 2022*

<i>Chairs</i>	Koji Sugioka	<i>RIKEN, Japan</i>
	Yoshiki Nakata	<i>Osaka University, Japan</i>
	Nadezhda Bulgakova	<i>HiLASE, Czech Republic</i>
	Alberto Piqué	<i>Naval Research Laboratory, USA</i>
<i>Co-Chairs</i>	Aiko Narazaki	<i>AIST, Japan</i>
	Mitsuhiro Terakawa	<i>Keio University, Japan</i>

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## Plenary and Invited Talks

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### Plenary Talks

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**Susumu Noda**, *Kyoto University, Japan*

[Tu-PL-1 14:00](#) : Progress of photonic crystal surface-emitting lasers (PCSELS)

**Martin Wegener**, *Karlsruhe Institute of Technology (KIT), Germany*

[Tu-PL-2 14:45](#) : 3D laser nanoprinting

### Invited Talks

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**Jörn Bonse**, *Bundesanstalt für Materialforschung und -prüfung (BAM), Germany*

[We-I-6 15:00](#) : Laser-induced periodic surface structures: When Maxwell meets Marangoni

**Stela Canulescu**, *Technical University of Denmark, Denmark*

[Tu-I-5 16:00](#) : Laser-assisted synthesis of 2D quantum materials and heterostructures

**Maria Farsari**, *FORTH/IESL, Greece*

[Th-I-9 16:00](#) : 3D printing with light

**Costas Grigoropoulos**, *University of California, Berkeley, United States of America*

[Fr-I-11 11:00](#) : Laser processing and functionalization of two-dimensional layered thin films

**Fumihiko Kannari**, *Keio University, Japan*

[Mo-I-2 16:00](#) : Ultrafast burst imaging of multi-pulse laser processing by LA-STAMP scheme with variable temporal resolution and observation time window

**Seung-Ki Lee**, *Pusan National University, Republic of Korea*

[Fr-I-12 11:30](#) : Laser-assisted layer selective synthesis of two-dimensional materials and its application

**Roberto Osellame**, *CNR - Institute for Photonics and Nanotechnologies, Italy*

[We-I-7 16:00](#) : 3D structuring of femtosecond laser written photonic circuits for advanced reconfiguration capabilities

**Chris Schaffer**, *Cornell University, United States of America*

[Tu-I-4 9:00](#) : Optical tools for in vivo interrogation and manipulation of cellular interactions to study neurological disease

**Pere Serra**, *Universitat de Barcelona, Spain*

[Th-I-8 15:00](#) : Lifting materials, or how to print devices with light

**Teruki Sugiyama**, *National Yang Ming Chiao Tung University, Taiwan*

[Mo-I-1 9:00](#) : Enantioselectivity in polymorphic transition by femtosecond laser ablation

**Wei Xiong**, *Huazhong University of Science & Technology, China*

[Th-I-10 17:00](#) : Ultrafast laser micro-nano 4D printing based on hydrogel materials

Preliminary Program  
Preliminary Program  
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Preliminary Program

***Program***

# Oral Session

## April 25, Monday

### Opening

8:45 Opening Remarks

9:00 close

### Session 1.

### Laser Engineering of Material Properties

Chair: Y. Nakata, Osaka University

9:00 Mo-I-1 **Invited** C000088

**Enantioselectivity in polymorphic transition by femtosecond laser ablation,** Teruki Sugiyama<sup>1</sup>, Shun-Fa Wang<sup>1</sup>, Yu-Hau Ye<sup>1</sup>, <sup>1</sup>National Yang Ming Chiao Tung University, Taiwan

9:30 Mo-O-1 C000146

**Pulsed laser defect engineering of transition metal oxide spinels in liquid with single laser pulses,** Sven Reichenberger<sup>1</sup>, Swen Zerebecki<sup>1</sup>, Stephan Barcikowski<sup>1</sup>, <sup>1</sup>University Duisburg-Essen, Department of Technical Chemistry 1, Germany

9:45 Mo-O-2 C000053

**Investigation of the effects of pulse width modulation on the laser sintering of LATP for all-solid-state batteries,** Houssin Wehbe<sup>1</sup>, Lars O. Schmidt<sup>1</sup>, Maja W. Kandula<sup>1</sup>, Klaus Dilger<sup>1</sup>, <sup>1</sup>TU Braunschweig, Institute of Joining and Welding, Germany

10:00 Mo-O-3 C000083

**Promotion of growth of targeted crystal face via laser ablation,** Hiroshi Y. Yoshikawa<sup>1</sup>, Chi-Shiun Wu<sup>2,3</sup>, Hozumi Takahashi<sup>1</sup>, Mayu Yamaji<sup>2,3</sup>, Makoto Nakajima<sup>4</sup>, Masahi Yoshimura<sup>4</sup>, Mihoko Maruyama<sup>1,5,6</sup>, Yusuke Mori<sup>1</sup>, Teruki Sugiyama<sup>3</sup>, Seiichiro Nakabayashi<sup>2</sup>, <sup>1</sup>Graduate School of Engineering, Osaka University, Japan, <sup>2</sup>Department of Chemistry, Saitama University, Japan, <sup>3</sup>Department of Applied Chemistry, National Yang Ming Chiao Tung University, Taiwan, <sup>4</sup>Institute of Laser Engineering, Osaka University, Japan, <sup>5</sup>IACCS, Osaka University, Japan, <sup>6</sup>Graduate School of Life and Environmental Science, Kyoto Prefectural University, Japan

10:15 Mo-O-4 C000055

**High-power ultrashort laser pulse at relativistic intensity: Synthesis of exotic silicon polymorphs,** Ludovic Rapp<sup>1</sup>, Takeshi Matsuoka<sup>2</sup>, Konstantin Firestein<sup>3</sup>, Daisuke Sagae<sup>2</sup>, Keiichiro Mukai<sup>2</sup>, Kazuo Tanaka<sup>2</sup>, Eugene Gamaly<sup>1</sup>, Ryosuke Kodama<sup>2</sup>, Yusuke Seto<sup>4</sup>, Takahisa Syobu<sup>5</sup>, Aki Tominaga<sup>5</sup>, Bianca Haberl<sup>6</sup>, Toshinori Yabuuchi<sup>7</sup>, Tadashi Togashi<sup>7</sup>, Yuichi Inubushi<sup>7</sup>, Makina Yabashi<sup>7</sup>, Saulius Juodkazis<sup>8,9</sup>, Dmitri Golberg<sup>3</sup>, Andrei Rode<sup>1</sup>, Norimasa Ozaki<sup>2</sup>, <sup>1</sup>The Australian National University, Australia, <sup>2</sup>Osaka University, Japan, <sup>3</sup>Queensland University of Technology, Australia, <sup>4</sup>Kobe University, Japan, <sup>5</sup>Japan Atomic Energy Agency, Japan, <sup>6</sup>Oak Ridge National Laboratory, United States of America, <sup>7</sup>Japan Synchrotron Radiation Research Institute, Japan, <sup>8</sup>Swinburne University of Technology, Australia, <sup>9</sup>Tokyo Institute of Technology, Japan

10:30 Coffee Break

## Session 2.

## Student Session 1

Chair: M. Terakawa, Keio University

11:00 Mo-O-5 *Student* C000029

**Laser direct writing of graphene quantum dots using a femtosecond laser**, Shuichiro Hayashi<sup>1</sup>, Kaneto Tsunemitsu<sup>1</sup>, Mitsuhiro Terakawa<sup>1,2</sup>, <sup>1</sup>*School of Integrated Design Engineering, Keio University, Japan*, <sup>2</sup>*Department of Electronics and Electrical Engineering, Keio University, Japan*

11:15 Mo-O-6 *Student* C000096

**Axially-manipulated NV center formed by the polarized femtosecond laser pulses**, Kohei Kinouchi<sup>1</sup>, Ryusei Yanoshita<sup>1</sup>, Yasuhiko Shimotsuma<sup>1</sup>, Masanori Fujiwara<sup>2</sup>, Norikazu Mizuochi<sup>2</sup>, Masahiro Shimizu<sup>1</sup>, Kiyotaka Miura<sup>1</sup>, <sup>1</sup>*Department of Material Chemistry, Kyoto University, Japan*, <sup>2</sup>*Institute for Chemical Research, Kyoto University, Japan*

11:30 Mo-O-7 *Student* C000134

**Optimization of deep hole drilling of glass using a deep learning-based simulator**, Kohei Shimahara<sup>1</sup>, Shuntaro Tani<sup>1</sup>, Haruyuki Sakurai<sup>1</sup>, Yohei Kobayashi<sup>1</sup>, <sup>1</sup>*ISSP, Univ. Tokyo, Japan*

11:45 Mo-O-8 *Student* C000122

**Low and high repetition rate DLW in silicate oxide glass with embedded silver ions**, Wojciech Talik<sup>1</sup>, Krzysztof Dzierżęga<sup>1</sup>, Witold Zawadzki<sup>1</sup>, Szymon Pustelny<sup>1</sup>, Dominik Dorosz<sup>2</sup>, Nadia Pellerin<sup>3</sup>, <sup>1</sup>*Marian Smoluchowski Institute of Physics, Jagiellonian University, Poland*, <sup>2</sup>*Faculty of Materials Science and Ceramics, AGH University of Science and Technology, Poland*, <sup>3</sup>*GREMI, Université d'Orléans, France*

12:00 Mo-O-9 *Student* C000062

**Laser implantation of gold nanoparticles for photoluminescence enhancement of silicon nanocrystals**, Lukas Janos Richter<sup>1</sup>, Jürgen Ihlemann<sup>1</sup>, <sup>1</sup>*Institut fuer Nanophotonik Goettingen e. V., Germany*

12:15 Mo-O-10 *Student* C000039

**Atomically thin chalcogenide films for super-resolved direct laser nano-structuring.**, Arjun Karimbana Kandy<sup>1</sup>, Julien Lumeau<sup>1</sup>, Jean-Yves Natoli<sup>1</sup>, Konstantinos Iliopoulos<sup>1</sup>, <sup>1</sup>*Aix Marseille Univ, CNRS, Centrale Marseille, Institut Fresnel, France*

12:30 close

## LIVE Poster Session 1

*Large Exhibition Hall*

12:30 LIVE Poster Session 1 &amp; Lunch

14:00 close

## Session 3.

## Student Session 2

Chair: H. Yoshikawa, Osaka University

14:00 Mo-O-11 *Student* C000103

**Multi-time-scale dynamics of femtosecond laser-assisted transformations of metallic nanoparticle ensembles**, Balint Eles<sup>1</sup>, Paul Rouquette<sup>2</sup>, Jan Siegel<sup>3</sup>, Claude Amra<sup>2</sup>, Julien Lumeau<sup>2</sup>, Antonin Moreau<sup>2</sup>, Christophe Hubert<sup>1</sup>, Myriam Zerrad<sup>2</sup>, Nathalie Destouches<sup>1</sup>, <sup>1</sup>Lyon Univ, UJM-Saint-Etienne, CNRS, Institut d'Optique Graduate School, Laboratoire Hubert Curien UMR 5516, France, <sup>2</sup>Aix Marseille Univ, CNRS, Centrale Marseille, Institut Fresnel, France, <sup>3</sup>Laser Processing Group, Instituto de Óptica IO-CSIC, France

14:15 Mo-O-12 *Student* C000099

**Primary and secondary cavitation effects induced by optical breakdown near sharp-edge geometry**, Matej Senegacnik<sup>1</sup>, Kohei Kunimoto<sup>2</sup>, Satoshi Yamaguchi<sup>2</sup>, Koki Kimura<sup>2</sup>, Tetsuo Sakka<sup>2</sup>, Peter Gregoric<sup>1</sup>, <sup>1</sup>Faculty of Mechanical Engineering, University of Ljubljana, Slovenia, <sup>2</sup>Department of Energy and Hydrocarbon Chemistry, Kyoto University, Japan

14:30 Mo-O-13 *Student* C000139

**Generation of homogeneous stripes of LIPSS over large area on silicon surface**, Juraj Sladek<sup>1,2</sup>, Yoann Levy<sup>1</sup>, Thibault J.-Y. Derrien<sup>1</sup>, Nadezhda M. Bulgakova<sup>1</sup>, <sup>1</sup>HiLASE Centre, Institute of Physics of the Czech Academy of Sciences, Dolni Brezany, Czech Republic, <sup>2</sup>Faculty of Nuclear Sciences and Physical Engineering, Czech Technical University in Prague, Prague, Czech Republic

14:45 Mo-O-14 *Student* C000149

**Polishing of microtools using ultra-short pulses in BiBurst mode**, Kiran Michael<sup>1</sup>, Konrad Wegener<sup>1</sup>, <sup>1</sup>ETH Zurich, Switzerland

15:00 Mo-O-15 *Student* C000113

**Methods for uniform beam shaping and their effect on material ablation**, Lisa Ackermann<sup>1,2</sup>, Clemens Roeder<sup>1</sup>, Michael Schmidt<sup>1,2</sup>, <sup>1</sup>Institute of Photonic Technologies, Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany, <sup>2</sup>Erlangen Graduate School in Advanced Optical Technologies (SAOT), Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany

15:15 Mo-O-16 *Student* C000142

**Application of fs pulsed laser to clean archaeologically significant bones**, Md Ashiqur Rahman<sup>1,3,6</sup>, Germán F. de la Fuente<sup>1</sup>, José Miguel Carretero<sup>2</sup>, Evan Maina Maingi<sup>1,3,5</sup>, M<sup>3</sup> Pilar Alonso Abad<sup>3</sup>, Rodrigo Alonso Alcalde<sup>4</sup>, Rémy Chapoulie<sup>5</sup>, Nick Schiavon<sup>6</sup>, Luis A. Angurel<sup>1</sup>, <sup>1</sup>Instituto de Nanociencia y Materiales de Aragón (CSIC - University of Zaragoza), Spain, <sup>2</sup>Laboratorio de Evolución Humana and Unidad Asociada de I+D+i al CSIC "Vidrio y Materiales del Patrimonio Cultural (VIMPAC)", Departamento de Historia, Geografía y Comunicación, Universidad de Burgos, Spain, <sup>3</sup>Área de Historia del Arte and Unidad Asociada de I+D+i al CSIC "Vidrio y Materiales del Patrimonio Cultural (VIMPAC)", Departamento de Historia, Geografía y Comunicación, Universidad de Burgos, Spain, <sup>4</sup>Área de Didáctica y Dinamización, Museo de la Evolución Humana, Spain, <sup>5</sup>IRAMAT-CRP2A Laboratory UMR5060 CNRS, Bordeaux Montaigne University, France, <sup>6</sup>HERCULES Laboratory, University of Évora, Portugal

15:30 Coffee Break

## Session 4.

## Fundamentals of Laser-Matter Interactions

Chair: T. Makimura, University of Tsukuba

16:00 Mo-I-2 **Invited** C000037

**Ultrafast burst imaging of multi-pulse laser processing by LA-STAMP scheme with variable temporal resolution and observation time window,** Fumihiko Kannari<sup>1</sup>, <sup>1</sup>Keio University, Japan

16:30 Mo-O-17 C000160

**Dynamic observation of laser volume nanostructuring over the whole relaxation,** Huu Dat Nguyen<sup>1</sup>, Ciro D'Amico<sup>1</sup>, Cyril Mauclair<sup>1</sup>, Jean-Philippe Colombier<sup>1</sup>, Guillaume Kermouche<sup>2</sup>, Sergio Sao-Joao<sup>2</sup>, Stoian Razvan<sup>1</sup>, <sup>1</sup>Laboratory Hubert Curien, France, <sup>2</sup>Mines Saint-Étienne MSE - École des Mines de Saint-Étienne, France

16:45 Mo-O-18 C000024

**Evidence of plasma oxidation processes during pulsed laser deposition,** Stefan Andrei Irimiciuc<sup>1</sup>, Sergii Chertopalov<sup>2</sup>, Michal Novotny<sup>2</sup>, Ladislav Fekete<sup>2</sup>, Jiri Bulir<sup>2</sup>, Valentin Craciun<sup>1</sup>, Jan Lancok<sup>2</sup>, <sup>1</sup>National Institute for Lasers Plasma and Radiation Physics, Romania, <sup>2</sup>Institute of Physics of the Czech Academy of Sciences, Czech Republic

17:00 Mo-O-71 C000177

**Dual wavelength femtosecond laser-induced damage and ablation of silicon,** Alexander V. Bulgakov<sup>1,2</sup>, Juraj Sladek<sup>1,3</sup>, Jan Hrabovsky<sup>1,4</sup>, Inam Mirza<sup>1</sup>, Wladimir Marine<sup>1</sup>, Nadezhda M. Bulgakova<sup>1</sup>, <sup>1</sup>Institute of Physics AS CR, Czech Republic, <sup>2</sup>S.S. Kutateladze Institute of Thermophysics SB RAS, Russia, <sup>3</sup>Czech Technical University in Prague, Czech Republic, <sup>4</sup>Charles University in Prague, Czech Republic

17:15 Mo-O-72 **Student** C000077

**Semiclassical simulation of coupled electron-laser field dynamics in metal thin film under intense laser irradiation,** Mizuki Tani<sup>1,2</sup>, Tomohito Otobe<sup>2</sup>, Yasushi Shinohara<sup>1</sup>, Kenichi L. Ishikawa<sup>1</sup>, <sup>1</sup>The University of Tokyo, Japan, <sup>2</sup>QST, Japan

17:30 close

**April 26, Tuesday**

**Online Group Photo 1**

8:50 Online Group Photo 1

Session 5.

**Emerging Technologies in Laser Applications**

Chair: M. Terakawa, Keio University

9:00 Tu-I-4

**Invited**

C000164

**Optical tools for in vivo interrogation and manipulation of cellular interactions to study neurological disease, Chris Schaffer<sup>1</sup>, <sup>1</sup>Cornell University, United States of America**

9:30 Tu-O-19

C000165

**Plasmonics nanostructures mediated laser cell optoporation: From fundamental to gene delivery applications, Michel Meunier<sup>1</sup>, <sup>1</sup>Polytechnique Montreal, Canada**

9:45 Tu-O-69

C000166

**Laser based cleaning and in-situ verification of bio-loading for planetary protection, Andrew Robbins<sup>1</sup>, Sean Jergensen<sup>2</sup>, Meg Abraham<sup>1</sup>, Henry Helvajian<sup>1</sup>, <sup>1</sup>The Aerospace Corporation, United States of America, <sup>2</sup>University of California Los Angeles, United States of America**

10:00 Tu-O-21

C000025

**Silicone textured biointerfaces for breast implant applications, Valentina Dinca<sup>1</sup>, Anca Bonciu<sup>1</sup>, Simona Nistorescu<sup>1,2</sup>, Madalina Icriverzi<sup>3</sup>, Laurentiu Rusen<sup>1</sup>, Anca Roseanu<sup>3</sup>, Florin Grama<sup>4</sup>, <sup>1</sup>National Institute for Lasers, Plasma and Radiation Physics, Romania, <sup>2</sup>Faculty of Biology, University of Bucharest, Romania, <sup>3</sup>Institute of Biochemistry of the Romanian Academy, Romania, <sup>4</sup>Coltea Hospital, Romania**

10:15 Tu-O-22

C000184

**Two-step process of picosecond laser induced cavitation, Vid Agrez<sup>1</sup>, Jaka Mur<sup>1</sup>, Jaka Petelin<sup>1</sup>, Rok Petkovšek<sup>1</sup>, <sup>1</sup>University of Ljubljana, Faculty of Mechanical Engineering, Slovenia**

10:30 Coffee Break

April 26, Tuesday

## Session 6.

**Fundamentals of Laser-Matter Interactions**

Chair: Y. Sato, Osaka University

11:00 Tu-O-23 C000047

**Role of electron heat capacity and electron-phonon coupling factor in ultrafast laser ablation molecular dynamic models,** Ying Yin Tsui<sup>1</sup>, Z. Chen<sup>2</sup>, M. Z. Mo<sup>2</sup>, S. H. Glenzer<sup>2</sup>, V. Recoules<sup>3</sup>, L. Souillard<sup>3</sup>, A. Ng<sup>4</sup>, <sup>1</sup>University of Alberta, Canada, <sup>2</sup>SLAC National Accelerator Laboratory, USA, <sup>3</sup>CEA, DAM, DIF, France, <sup>4</sup>University of British Columbia, Canada

11:15 Tu-O-24 C000074

**Effects of plume accumulation and plasma shielding on the efficiency of laser ablation of metal targets with bursts of ultrashort laser pulses,** Alexey N. Volkov<sup>1</sup>, Michael A. Stokes<sup>1</sup>, Omid A. Ranjbar<sup>1</sup>, Zhibin Lin<sup>2</sup>, <sup>1</sup>University of Alabama, United States of America, <sup>2</sup>MKS Instruments, Inc., United States of America

11:30 Tu-O-25 C000185

**Ablation of polydimethylsiloxane elastomer using laser-plasma EUV radiation,** Kotaro Oguchi<sup>1</sup>, Erika Kira<sup>1</sup>, Hikari Urai<sup>1</sup>, Tetsuya Makimura<sup>1</sup>, <sup>1</sup>University of Tsukuba, Japan

11:45 Tu-O-26 C000081

**Laser scaling for generation of megatesla magnetic fields by microtube implosions,** Masakatsu Murakami<sup>1</sup>, Didar Shokov<sup>1</sup>, Javier Honrubia<sup>2</sup>, <sup>1</sup>Institute of Laser Engineering, Osaka University, Japan, <sup>2</sup>ETSI Aeronáutica y del Espacio, Universidad Politécnica de Madrid, Spain

12:00 Tu-O-73 C000233

**Oil-immersion microscopy observation of formation process of laser-induced periodic surface structures,** Shigeaki Matsuo<sup>1</sup>, Yuta Yanagisawa<sup>1</sup>, <sup>1</sup>Shibaura Institute of Technology, Japan

12:15 Tu-O-28 C000157

**Driving resonance absorption with Bessel beams in the bulk of dielectrics,** Kazem Ardaneh<sup>1</sup>, Mostafa Hassan<sup>1</sup>, Remi Meyer<sup>1</sup>, Benoit Morel<sup>1</sup>, Jesus Hoyo<sup>1</sup>, Luca Furfaro<sup>1</sup>, Luc Froehly<sup>1</sup>, Remo Giust<sup>1</sup>, Chen Xie<sup>1</sup>, Francois Courvoisier<sup>1</sup>, <sup>1</sup>FEMTO-ST Institute, CNRS, Univ. Bourgogne Franche-Comte, France

12:30 close

**LIVE Poster Session 2***Large Exhibition Hall*

12:30 LIVE Poster Session 2 &amp; Lunch

14:00 close

## Session 7.

## Plenary Session

Chair: K. Sugioka, RIKEN

14:00 Tu-PL-1 **Plenary** C000196**Progress of photonic crystal surface-emitting lasers (PCSELS)**, Susumu Noda<sup>1</sup>, <sup>1</sup>Kyoto University, Japan14:45 Tu-PL-2 **Plenary** C000009**3D laser nanoprinting**, Martin Wegener<sup>1</sup>, <sup>1</sup>Karlsruhe Institute of Technology (KIT), Germany

## Onsite Group Photo

15:30 Onsite Group Photo

15:40 Coffee Break

## Session 8.

## Pulsed Laser Deposition

Chair: D. Nakamura, Kyushu University

16:00 Tu-I-5 **Invited** C000234**Laser-assisted synthesis of 2D quantum materials and heterostructures**, Stela Canulescu<sup>1</sup>, <sup>1</sup>Technical University of Denmark, Denmark

16:30 Tu-O-68 C000174

**In situ monitoring of electrical resistivity during pulsed laser deposition of p-type copper halides films**, Jan Lancok<sup>1</sup>, Stefan Andrei Irimiciuc<sup>1,3</sup>, Sergii Chertopalov<sup>1</sup>, Jiří Bulíř<sup>1</sup>, Michal Novotný<sup>1</sup>, Valentin Craciun<sup>2</sup>, Martin Vrnata<sup>3</sup>, Přemysl Fitl<sup>2,3</sup>, Lenka Volfová<sup>1</sup>, <sup>1</sup>Institute of Physics of the Czech Academy of Sciences, Czech Republic, <sup>2</sup>National Institute for Laser, Plasma and Radiation Physics, Romania, <sup>3</sup>Department of Physics and Measurements, University of Chemistry and Technology, Prague, Czech Republic

16:45 Tu-O-30 C000032

**Thin films prepared by pulsed laser deposition: Model systems for studies using large facilities techniques**, Thomas Lippert<sup>1,2,3</sup>, Craig Lawley<sup>1</sup>, Daniele Pergolesi<sup>1</sup>, Anna Hartl<sup>1</sup>, <sup>1</sup>Paul Scherrer Institut, Switzerland, <sup>2</sup>International Institute for Carbon-Neutral Energy Research (WPI-I2CNER), Kyushu University, Japan, <sup>3</sup>Laboratory of Inorganic Chemistry, Department of Chemistry and Applied Biosciences, ETH Zürich, Switzerland

17:00 Tu-O-31 C000188

**CsPbBr<sub>3</sub> deposited by laser ablation: Effects of gas ambient and annealing temperature and on the film properties**, Anna Paola Caricato<sup>1,2</sup>, Maura Cesaria<sup>1</sup>, Gianluca Quarta<sup>1,3</sup>, Rachele Guascito<sup>4</sup>, Marcella Marra<sup>1,2</sup>, Chiara Provenzano<sup>5,2</sup>, Muhammad Rizwan Aziz<sup>1</sup>, Maurizio Martino<sup>1,2</sup>, Lucio Calcagnile<sup>1,3</sup>, <sup>1</sup>Dep. of Mathematics and Physics "Ennio De Giorgi" - Univ. of Salento, Italy, <sup>2</sup>INFN (National Institute of Nuclear Physics), Italy, <sup>3</sup>CEDAD - Dep. of Mathematics and Physics "Ennio De Giorgi" - Univ. of Salento, Italy, <sup>4</sup>DiSTEA - Univ. of Salento, Italy, <sup>5</sup>Dep. of Innovation Engineering - Univ. of Salento, Italy

17:15 Tu-O-32 C000189

**Understanding the PLD process and emergent properties of atomically-thin 2D quantum materials with in situ diagnostic controlled feedback**, David B Geohegan<sup>1</sup>, Sumner Harris<sup>1</sup>, Alex A. Puretzky<sup>1</sup>, Chris M. Rouleau<sup>1</sup>, Vasudevan Rajagopal Iyer<sup>1</sup>, Gerd Duscher<sup>2</sup>, Austin Houston<sup>2</sup>, Mina Yoon<sup>1</sup>, Liangbo Liang<sup>1</sup>, Yu-Chuan Lin<sup>3</sup>, Chenze Liu<sup>4</sup>, Yiling Yu<sup>5</sup>, Stela Canulescu<sup>6</sup>, Kai Xiao<sup>1</sup>, <sup>1</sup>Oak Ridge National Laboratory, USA, <sup>2</sup>Dept. of Materials Science and Engineering, University of Tennessee, USA, <sup>3</sup>Dept. of Materials Science and Engineering, Penn State University, USA, <sup>4</sup>IEN & IMat, Georgia Tech. School of Electrical and Computer Engineering, USA, <sup>5</sup>Dept. of Physics, Wuhan University, China, <sup>6</sup>DTU Fotonik, Department of Photonics Engineering, Technical Institute of Denmark, Denmark

17:30 close

**Online Group Photo 2**

17:30 Online Group Photo 2

**Banquet**

*TBA*

18:00 start

20:00 close

Preliminary Program

## April 27, Wednesday

### Free Discussion & Networking

TBA

9:00 start

14:00 close

### Session 9.

### Surface Micro- & Nano-Structuring

Chair: T. Yoshida, National Defense Academy

14:00 We-O-33

C000052

**Laser nano-patterning and nano-alloying by ultra-short laser pulses**, Saulius Juodkazis<sup>1,3</sup>, Jovan Maksimovic<sup>1</sup>, Molong Han<sup>1</sup>, Tomas Katkus<sup>1</sup>, Denver P Linklater<sup>2</sup>, Elena P Ivanova<sup>2</sup>, Soon Hock Ng<sup>1</sup>, <sup>1</sup>*Swinburne Uni. Technol., Australia*, <sup>2</sup>*RMIT Uni., Australia*, <sup>3</sup>*World Research Hub Initiative (WRHI), Tokyo Institute of Technology, Japan*

14:15 We-O-34

C000050

**Study on molten metal behavior and formation mechanism of micro-structure by high-speed scanning of angled CW laser irradiation**, Tatsuhiko Sakai<sup>1</sup>, Nozomi Taura<sup>2</sup>, Riku Saito<sup>3</sup>, Yasuhiro Okamoto<sup>2</sup>, Akira Okada<sup>2</sup>, <sup>1</sup>*Nippon Steel Corporation, Japan*, <sup>2</sup>*Graduate School of Natural Science and Technology, Okayama University, Japan*, <sup>3</sup>*Faculty of Engineering, Okayama University, Japan*

14:30 We-O-35

C000117

**Fast laser material processing with acousto-optic diffraction in liquids**, Salvatore Surdo<sup>1</sup>, Alessandro Zunino<sup>1,2</sup>, Martí Duocastella<sup>1,3</sup>, <sup>1</sup>*Istituto Italiano di Tecnologia, Italy*, <sup>2</sup>*University of Genoa, Italy*, <sup>3</sup>*Universitat de Barcelona, Spain*

14:45 We-O-36

C000107

**Generation of novel, complex, sub-micrometric morphologies on metallic surfaces by spatiotemporal femtosecond beam shaping**, Fotis Fraggelakis<sup>1</sup>, George Tsiibidis<sup>1</sup>, Emmanuel Stratakis<sup>1,2</sup>, <sup>1</sup>*Institute of Electronic Structure and Laser (IESL), Foundation for Research and Technology (FORTH), Greece*, <sup>2</sup>*Department of Physics, University of Crete, Greece*

15:00 We-I-6

Invited

C000011

**Laser-induced periodic surface structures: When Maxwell meets Marangoni**, Jörn Bonse<sup>1</sup>, Marek Mezera<sup>1</sup>, Camilo Florian<sup>2</sup>, Jörg Krüger<sup>1</sup>, Stephan Gräf<sup>3</sup>, <sup>1</sup>*Bundesanstalt für Materialforschung und -prüfung (BAM), Germany*, <sup>2</sup>*Princeton University, United States of America*, <sup>3</sup>*Friedrich Schiller Universität Jena, Germany*

15:30 Coffee Break

## Session 10.

**3D & Volume Processing**

Chair: M. Mizoshiri, Nagaoka University of Technology

16:00 We-I-7 **Invited** C000158

**3D structuring of femtosecond laser written photonic circuits for advanced reconfiguration capabilities**, Roberto Osellame<sup>1</sup>, <sup>1</sup>CNR - Institute for Photonics and Nanotechnologies, Italy

16:30 We-O-37 C000132

**Three-dimensional laser writing deep inside gallium arsenide**, Andong Wang<sup>1</sup>, Amlan Das<sup>1</sup>, Pol Sopena<sup>1</sup>, David Grojo<sup>1</sup>, <sup>1</sup>LP3-CNRS/Aix-Marseille University, France

16:45 We-O-38 C000087

**Hybrid femtosecond laser processing fabricating microfluidic SERS chip for ultrahighly sensitive biosensing**, Shi Bai<sup>1</sup>, Kotaro Obata<sup>1</sup>, Koji Sugioka<sup>1</sup>, <sup>1</sup>RIKEN Center for Advanced Photonics, Japan

17:00 We-O-39 C000020

**Selective laser-induced etching of fused silica for fabrication of a high-throughput micro free-flow electrophoresis device**, Jian Xu<sup>1</sup>, Aodong Zhang<sup>1</sup>, Xin Li<sup>1</sup>, Ya Cheng<sup>1</sup>, <sup>1</sup>East China Normal University, China

17:15 We-O-40 C000021

**Glass lab-on-a-chip platform fabricated by picosecond laser for testing tumor cells exposed to X-ray radiation**, Felix Sima<sup>1,2</sup>, Ioana Porosnicu<sup>1</sup>, Cristina Staicu<sup>1</sup>, Cristian Butnaru<sup>1</sup>, Florin Jipa<sup>1</sup>, Cristina Nita<sup>1</sup>, Elena Stancu<sup>1</sup>, Ion Tiseanu<sup>1</sup>, Emanuel Axente<sup>1</sup>, <sup>1</sup>National Institute for Laser, Plasma and Radiation Physics, Romania, Romania, <sup>2</sup>RIKEN Center for Advanced Photonics, Japan, Japan

17:30 close

## April 28, Thursday

### Session 11.

#### Fundamental Aspects of Laser Processing

Chair: G. Miyaji, Tokyo University of Agriculture and Technology

9:00 Th-O-41 C000127

**Modeling of femtosecond X-ray laser interactions with polymers**, Nikita Medvedev<sup>1</sup>, <sup>1</sup>*Institute of Physics, Czech Academy of Sciences, Czech Republic*

9:15 Th-O-42 C000018

**Investigation of laser-induced changes in structural and optoelectrical properties of pulsed laser deposited diamond-like carbon layers**, Frederic Antoni<sup>1</sup>, François Stock<sup>1</sup>, Fatima Zahrae Lahboub<sup>1</sup>, Dominique Muller<sup>1</sup>, Samar Hajjar-Garreau<sup>2</sup>, <sup>1</sup>*Laboratoire ICube - CNRS - Université de Strasbourg, France*, <sup>2</sup>*Institut de Science des Matériaux de Mulhouse - CNRS - Université de Haute Alsace, France*

9:30 Th-O-43 C000058

**Characterization and control of photoionization dynamics in lithium niobate**, Vincent Wanie<sup>1,2</sup>, Tian-Jiao Shao<sup>3,4</sup>, Philippe Lassonde<sup>2</sup>, Francesca Calegari<sup>1,5,6</sup>, François Vidal<sup>2</sup>, Heide Ibrahim<sup>2</sup>, Xue-Bin Bian<sup>3</sup>, François Légaré<sup>2</sup>, <sup>1</sup>*DESY, Germany*, <sup>2</sup>*INRS-ÉMT, Canada*, <sup>3</sup>*MRAMP-WIMP, China*, <sup>4</sup>*UCAS, China*, <sup>5</sup>*Universität Hamburg, Germany*, <sup>6</sup>*Centre for Ultrafast Imaging, Universität Hamburg, Germany*

9:45 Th-O-44 C000191

**Atomistic view of laser fragmentation of gold nanoparticles in liquids**, Leonid Zhigilei<sup>1</sup>, Hao Huang<sup>1,2</sup>, <sup>1</sup>*University of Virginia, United States of America*, <sup>2</sup>*Huazhong University of Science and Technology, China*

10:00 Th-O-45 C000013

**Three-temperature model for laser processing of silicon**, Prachi Venkat<sup>1</sup>, Tomohito Otobe<sup>1</sup>, <sup>1</sup>*Kansai Photon Science Institute, National Institutes for Quantum Science and Technology, Kyoto, Japan*

10:15 Th-O-46 C000076

**Thermal mode analysis of the multiple temperature model**, Hiroki Katow<sup>1</sup>, Kenichi L Ishikawa<sup>1</sup>, <sup>1</sup>*the University of Tokyo, Japan*

10:30 *Coffee Break*

## Session 12.

**Formation of Nanomaterials & Thin Films**

Chair: T. Tsuji, Shimane University

11:00 Th-O-47

C000060

**Luminescent carbon nanostructures synthesized by ultrasound assisted laser ablation in liquid media,**Emmanuel Haro-Poniatowski<sup>2</sup>, Luis Escobar-Alarcón<sup>1</sup>, Dora A. Solís-Casados<sup>3</sup>, Saúl Romero<sup>1</sup>,<sup>1</sup>Departamento de Física, Instituto Nacional de Investigaciones Nucleares Estado de México, México,<sup>2</sup>Physics Department Universidad Autonoma Metropolitana Iztapalapa CDMX, Mexico, <sup>3</sup>Centro Conjunto

de Investigación en Química Sustentable UAEM-UNAM, Facultad de Química, Universidad Autónoma del Estado de México, Mexico

11:15 Th-O-48

C000075

**Formation of nanoparticle complexes by double pulsed-laser-ablation,** Keita Katayama<sup>1</sup>, Ren Okada<sup>1</sup>,Takahiro Nakamura<sup>2</sup>, Yakehito Yoshida<sup>3</sup>, Tamao Aoki-Matsumoto<sup>1</sup>, Ikurou Umezu<sup>1</sup>, <sup>1</sup>Konan Univ., Japan,<sup>2</sup>Tohoku Univ., Japan, <sup>3</sup>Nat. Inst. Tech., Japan

11:30 Th-O-49

C000129

**Domain relaxation dynamics study in epitaxial  $K_{0.5}Na_{0.5}NbO_3$  ferroelectric thin films for memory applications,**Soumen Pradhan<sup>1</sup>, Martando Rath<sup>1</sup>, Adrian David<sup>2</sup>, Deepak Kumar<sup>2</sup>, Wilfrid Prellier<sup>2</sup>, M SRamachandra Rao<sup>1</sup>, <sup>1</sup>Nano Functional Materials Technology Centre and Materials Science Research Centre,Department of Physics, Indian Institute of Technology (IIT) Madras, India, <sup>2</sup>Laboratoire CRISMAT, CNRS

UMR 6508, ENSICAEN, Normandie Université, France

11:45 Th-O-50

C000092

**Synthesis of composite nanostructures by laser ablation in liquid for biomedical application,** MirkaFlimelova<sup>1</sup>, Yury V. Ryabchikov<sup>1,2</sup>, <sup>1</sup>HiLASE Centre Institute of Physics of the Czech Academy of Sciences,Czech Republic, <sup>2</sup>Department of Solid State Physics, P.N. Lebedev Physical Institute of the Russian Academy

of Sciences, Russia

12:00 Th-O-51

C000170

**Lead zirconate titanate thin films made by pulsed laser deposition on 4-inch silicon substrates,** AdrianIonut Bercea<sup>1</sup>, Cosmin Romanitan<sup>2</sup>, Cristina Craciun<sup>1</sup>, Luiza Maria Stingescu<sup>1</sup>, Mihaela Filipescu<sup>1</sup>, MariaDinescu<sup>1</sup>, <sup>1</sup>National Institute for Lasers, Plasma and Radiation Physics, Romania, <sup>2</sup>National Institute for

Research and Development in Microtechnologies (IMT-Bucharest), Romania

12:15 Th-O-52

C000012

**New 1.25 Joule pulse energy UV laser for ablation,** Burkhard Fechner<sup>1</sup>, Max Fischer<sup>1</sup>, Ralph Delmdahl<sup>1</sup>,<sup>1</sup>Coherent LaserSystems GmbH & Co KG, Germany

12:30 close

**LIVE Poster Session 3***Large Exhibition Hall*

12:30 LIVE Poster Session 3 &amp; Lunch

14:00 close

## Session 13.

**Laser Direct Writing**

Chair: Y. Hanada, Hiroasaki University

14:00 Th-O-53 C000163

**UV laser microprocessing of silicon by optically-trapped dielectric microlenses**, Camilo Florian<sup>1,2</sup>, Jan Siegel<sup>2</sup>, Craig B. Arnold<sup>1</sup>, <sup>1</sup>Princeton University, United States of America, <sup>2</sup>Consejo Superior de Investigaciones Científicas, Spain

14:15 Th-O-54 C000016

**Polishing additively manufactured parts using femtosecond lasers to reduce source roughness from more than 20  $\mu\text{m}$  down to less than 200 nm**, Nan Li<sup>1</sup>, Peixun Fan<sup>1</sup>, Qiuchi Zhu<sup>1</sup>, Bai Cui<sup>1</sup>, Jean-Francois Silvain<sup>2,1</sup>, Yongfeng Lu<sup>1</sup>, <sup>1</sup>University of Nebraska - Lincoln, United States of America, <sup>2</sup>ICMBC/CNRS, France

14:30 Th-O-67 C000240

**Large diameter millimeter-wave low-pass filter made of alumina with laser ablated anti-reflection coating**, R. Takaku<sup>1</sup>, Q. Wen<sup>2</sup>, S. Cray<sup>2</sup>, M. Devlin<sup>3</sup>, S. Dicker<sup>3</sup>, S. Hanany<sup>2</sup>, T. Hasebe<sup>4</sup>, T. Iida<sup>5</sup>, N. Katayama<sup>4</sup>, K. Konishi<sup>6</sup>, M. Kuwata-Gonokami<sup>1,6</sup>, T. Matsumura<sup>4</sup>, N. Mio<sup>1,6</sup>, H. Sakurai<sup>7</sup>, Y. Sakurai<sup>4,8</sup>, R. Yamada<sup>1</sup>, J. Yumoto<sup>6</sup>, <sup>1</sup>Department of Physics, The University of Tokyo, Japan, <sup>2</sup>School of Physics and Astronomy, University of Minnesota, USA, <sup>3</sup>University of Pennsylvania, USA, <sup>4</sup>Kavli Institute for the Physics and Mathematics of the Universe (WPI), The University of Tokyo, Japan, <sup>5</sup>Tasuku Inc. NAKANO CENTRAL PARK EAST 1F ICTCO, Japan, <sup>6</sup>Institute for Photon Science and Technology, The University of Tokyo, Japan, <sup>7</sup>Institute for Solid State Physics, The University of Tokyo, Japan, <sup>8</sup>Okayama University, Japan

14:45 Th-O-56 C000167

**Laser-induced forward transfer of graphene on flexible substrates for touch sensor application**, Adamantia Logotheti<sup>1</sup>, Filimon Zacharatos<sup>1</sup>, Dimitrios Kaltsas<sup>1</sup>, Amaia Pesquera<sup>2</sup>, Amaia Zurutuza<sup>2</sup>, Leonidas Tsetseris<sup>1</sup>, Ioanna Zergioti<sup>1</sup>, <sup>1</sup>National Technical University of Athens, Greece, <sup>2</sup>Graphenea Headquarters, Spain

15:00 Th-I-8 **Invited** C000045

**Lifting materials, or how to print devices with light**, Pere Serra<sup>1</sup>, Ernest Martí<sup>1</sup>, Blanca Mestre<sup>1</sup>, Martí Duocastella<sup>1</sup>, Juan Marcos Fernández-Pradas<sup>1</sup>, <sup>1</sup>Universitat de Barcelona, Spain

15:30 Coffee Break

## Session 14.

**3D Printing**

Chair: S. Matsuo, Shibaura Institute of Technology

16:00 Th-I-9 **Invited** C000172**3D printing with light**, Maria Farsari<sup>1</sup>, <sup>1</sup>*FORTH/IESL, Greece*

16:30 Th-O-57 C000115

**Multi-photon laser 3D printing of transparent and resilient glass ceramic free-form micro-optics**, Simonas Varapnickas<sup>1</sup>, Diana Laura Gonzalez Hernandez<sup>1</sup>, Greta Merkininkaitė<sup>2</sup>, Simas Sakirzanovas<sup>2</sup>, Saulius Juodkazis<sup>3</sup>, Darius Gailevicius<sup>1</sup>, Mangirdas Malinauskas<sup>1</sup>, <sup>1</sup>*Laser Research Center of Physics Faculty at Vilnius University, Lithuania*, <sup>2</sup>*Faculty of Chemistry and Geoscience at Vilnius University, Lithuania*, <sup>3</sup>*Optical Sciences Center and ARC Training Centre in Surface Engineering for Advanced Materials (SEAM), Faculty of Science, Engineering and Technology, Swinburne University of Technology, Australia*

16:45 Th-O-58 C000178

**Free-form proteinaceous line fabrication by femtosecond laser direct write: Line length dependency on pulse energy**, Daniela Serien<sup>1</sup>, Aiko Narazaki<sup>1</sup>, <sup>1</sup>*AIST, Japan*17:00 Th-I-10 **Invited** C000173**Ultrafast laser micro-nano 4D printing based on hydrogel materials**, Wei Xiong<sup>1</sup>, <sup>1</sup>*Huazhong University of Science & Technology, China*

17:30 close

## April 29, Friday

### Session 15.

#### Laser Microfabrication & Treatment

Chair: W. Yeh, Shimane University

9:00 Fr-O-59 C000044

**Quality and flexural strength of laser-cut glass,** Juozas Dudutis<sup>1</sup>, Laimis Zubauskas<sup>1</sup>, Eimantas Daknys<sup>1</sup>, Edgaras Markauskas<sup>1</sup>, Rasa Gvozdaite<sup>1</sup>, Gediminas Račiukaitis<sup>1</sup>, Paulius Gecys<sup>1</sup>, <sup>1</sup>*Center for Physical Sciences and Technology (FTMC), Lithuania*

9:15 Fr-O-60 C000054

**Wells fabrication by subaquatic indirect laser ablation in glass substrates,** Ana Isabel Gomez-Varela<sup>1</sup>, Raul Sanchez<sup>1</sup>, Bastián Carnero<sup>1</sup>, María Teresa Flores-Arias<sup>1</sup>, Carmen Bao-Varela<sup>1</sup>, <sup>1</sup>*Instituto de Materiais iMATUS, University of Santiago de Compostela, Spain*

9:30 Fr-O-61 C000186

**Application of laser-induced nanostructured metal surfaces,** Pierre Lorenz<sup>1</sup>, Joachim Zajadacz<sup>1</sup>, Elena Annalie Bez<sup>2</sup>, Franka Marquardt<sup>1</sup>, Roland Franz<sup>3</sup>, Gregory Lecrivain<sup>3</sup>, Sebastian Peter<sup>4</sup>, Gregor Hommes<sup>4</sup>, Martin Ehrhardt<sup>1</sup>, Marcel Himmerlich<sup>2</sup>, Mauro Tadorelli<sup>2</sup>, Klaus Zimmer<sup>1</sup>, <sup>1</sup>*Leibniz Institute of Surface Engineering (IOM), Germany*, <sup>2</sup>*CERN, European Organization for Nuclear Research, Switzerland*, <sup>3</sup>*Helmholtz-Zentrum Dresden-Rossendorf, Germany*, <sup>4</sup>*SKAN Deutschland GmbH, Germany*

9:45 Fr-O-62 C000095

**High-efficiency micro-drilling of glass by simultaneous multiple transient and selective laser processing using spatial light modulator,** Reina Yoshizaki<sup>1</sup>, Yusuke Ito<sup>1</sup>, Takumi Koike<sup>1</sup>, Wataru Hanakawa<sup>2</sup>, Akihiro Shibata<sup>2</sup>, Ikuo Nagasawa<sup>2</sup>, Tomokazu Sano<sup>3</sup>, Keisuke Nagato<sup>1</sup>, Naohiko Sugita<sup>1</sup>, <sup>1</sup>*The University of Tokyo, Japan*, <sup>2</sup>*AGC Inc., Japan*, <sup>3</sup>*Osaka University, Japan*

10:00 Fr-O-63 C000155

**Patterning of surface decorated kinesin motors by multi-photon laser processing and the effects on the sliding microtubules,** Ryuzo Kawamura<sup>1</sup>, Keisuke Meguriya<sup>1</sup>, Shiori Kikuchi<sup>1</sup>, Naritaka Kobayashi<sup>2</sup>, Sei-ichiro Nakabayashi<sup>1</sup>, Hiroshi Y Yoshikawa<sup>3</sup>, <sup>1</sup>*Saitama University, Japan*, <sup>2</sup>*University of Shiga Prefecture, Japan*, <sup>3</sup>*Osaka University, Japan*

10:15 Fr-O-64 C000136

**Removal of space debris with laser induced ablation,** Satoshi Wada<sup>1</sup>, Katsuhiko Tsuno<sup>1</sup>, Takayo Ogawa<sup>1</sup>, Norihito Saito<sup>1</sup>, Tadanori Fukushima<sup>1,2</sup>, Toshikazu Ebisuzaki<sup>1</sup>, Yusuke Nakamura<sup>3</sup>, Akihiro Sasoh<sup>3</sup>, <sup>1</sup>*RIKEN, Japan*, <sup>2</sup>*SKY Perfect JSAT Corporation, Japan*, <sup>3</sup>*Nagoya University, Japan*

10:30 *Coffee Break*

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Session 16.

**Laser Synthesis of Nanomaterials**

Chair: A. Narazaki, AIST

11:00 Fr-I-11 **Invited** C000198

**Laser processing and functionalization of two-dimensional layered thin films,** Yoonsoo Rho<sup>1</sup>, Costas Grigoropoulos<sup>1</sup>, <sup>1</sup>University of California, Berkeley, United States of America

11:30 Fr-I-12 **Invited** C000236

**Laser-assisted layer selective synthesis of two-dimensional materials and its application,** Seoung-Ki Lee<sup>1</sup>, <sup>1</sup>School of Materials Science and Engineering, Pusan National University, Republic of Korea

12:00 Fr-O-65 C000078

**Single-pulse laser dewetting to fabricate bimetallic nanoparticles on semiconductor film substrates,** Citlali Sanchez-Ake<sup>1</sup>, Josafat Alonso Segura-Zavala<sup>1</sup>, Marco Martínez-Fuentes<sup>1</sup>, Osmar Depablos-Rivera<sup>2</sup>, Tupak García-Fernández<sup>3</sup>, <sup>1</sup>Institute of Applied Sciences and Technology, National Autonomous University of Mexico, Mexico, <sup>2</sup>Facultad de Química, National Autonomous University of Mexico, Mexico, <sup>3</sup>Universidad Autónoma de Ciudad de México, Mexico

12:15 Fr-O-70 **Student** C000043

**The laser ablation in liquid prepared CeO<sub>2</sub> nanoparticles and the UV-absorption properties,** Mengqi Shi<sup>1</sup>, Yoshitaka Kitamoto<sup>1</sup>, Masahiko Hara<sup>1</sup>, Hiroyuki Wada<sup>1</sup>, <sup>1</sup>Tokyo Institute of Technology, Japan

12:30 close

**Closing**

12:30 Closing Remarks

12:45 close

# Poster Session

## Poster Sessions I & II, April 24–April 29

### Fundamentals of Laser-Material Interactions

- P-1 C000023  
**Tailoring pulsed laser deposition of p-type copper halides by in situ plasma diagnostic techniques**, Stefan Andrei Irimiciuc<sup>1</sup>, Sergii Chertopalov<sup>2</sup>, Michal Novotny<sup>2</sup>, Ladislav Fekete<sup>2</sup>, Jiri Bulir<sup>2</sup>, Jan Lancok<sup>2</sup>, Valentin Craciun<sup>1</sup>, <sup>1</sup>National Institute for Lasers Plasma and Radiation Physics, Romania, <sup>2</sup>Institute of Physics of the Czech Academy of Sciences, Czech Republic
- P-2 *Student* C000070  
**Investigation of femtosecond laser sub-threshold ablation and incubation effect on silicon and copper**, Ruoheng Zhang<sup>1</sup>, Robert Fedosejevs<sup>1</sup>, Vien Van<sup>1</sup>, Ying Yin Tsui<sup>1</sup>, <sup>1</sup>University of Alberta, Canada
- P-3 C000071  
**Hydrodynamic origin of splitting in laser-induced plumes expanding into a background gas**, Alexey N. Volkov<sup>1</sup>, Nathan Humphrey<sup>1</sup>, <sup>1</sup>University of Alabama, United States of America
- P-4 *Student* C000072  
**Morphological and structural change of diamond like carbon film on Si induced by picosecond laser irradiation**, Keisuke Takabayashi<sup>1</sup>, Kosuke Otake<sup>1</sup>, Khaidir Bin Khamaron<sup>1</sup>, Kazuki Mimura<sup>2</sup>, Takuro Tomita<sup>2</sup>, Takashi Takahashi<sup>3,4</sup>, Yohei Kobayashi<sup>4</sup>, Makoto Yamaguchi<sup>1</sup>, <sup>1</sup>Akita University, Japan, <sup>2</sup>Tokushima University, Japan, <sup>3</sup>OPELAND-OIL, Japan, <sup>4</sup>The University of Tokyo, Japan
- P-5 C000080  
**Numerical simulation of thin-film processing of the polymer sheets by the CO<sub>2</sub> laser**, Nobukazu Kameyama<sup>1</sup>, <sup>1</sup>Gifu Univ., Japan
- P-6 C000089  
**Development of optical fiber-based laser-induced breakdown spectroscopy technique for the elemental analysis of pulverized coal**, Hemalaxmi Rajavelu<sup>1</sup>, Nilesh J Vasa<sup>2</sup>, Satyanarayanan Seshadri<sup>3</sup>, <sup>1</sup>Project Fellow, Department of Engineering Design, Indian Institute of Technology Madras, India, <sup>2</sup>Professor, Department of Engineering Design, Indian Institute of Technology Madras, India, <sup>3</sup>Assistant Professor, Department of Applied Mechanics, Indian Institute of Technology Madras, India
- P-7 C000093  
**Machine learning employed in laser beam characterization**, Vojtech Vozda<sup>1</sup>, Jan Kybic<sup>2</sup>, Jan Hering, Tomas Burian<sup>1</sup>, Vera Hajkova<sup>1</sup>, Libor Juha<sup>1</sup>, Katerina Juranova<sup>1</sup>, Jaromir Chalupsky<sup>1</sup>, <sup>1</sup>Institute of Physics, Czech Academy of Sciences, Na Slovance 2, 182 21 Prague 8, Czech Republic, <sup>2</sup>Department of Cybernetics, Faculty of Electrical Engineering, Czech Technical University in Prague, Czech Republic
- P-9 C000118  
**Experimental study of mechanical stresses induced by femtosecond laser inside the bulk of fused silica glass**, Olga Koritsoglou<sup>1</sup>, Olivier Utéza<sup>1</sup>, Alexandros Mouskeftaras<sup>1</sup>, <sup>1</sup>Aix Marseille University, CNRS, LP3 UMR 7341, Campus de Luminy, Case 917, France
- P-10 *Student* C000144  
**The impact of metallic thin film thickness on LIPSS formation**, Panagiotis Lingos<sup>1</sup>, George Tsubidis<sup>1</sup>, Emmanuel Stratakis<sup>1</sup>, <sup>1</sup>Institute of Electronic Structure and Laser (IESL), Greece
- P-11 *Student* C000151  
**Decontamination of cultural heritage stained glass using short-pulsed lasers; heat accumulation factor**, Evan Maina Maingi<sup>1,2,3</sup>, Maria Pilar Alonso Abad<sup>1</sup>, Luis Alberto Angurel Lambán<sup>2</sup>, Md Ashiqur Rahman<sup>2</sup>, Remy Chapoulie<sup>3</sup>, Stephan Dubernet<sup>3</sup>, German F. de la Fuente<sup>2</sup>, <sup>1</sup>University of Burgos, Spain, <sup>2</sup>INMA-CSIC Zaragoza, Spain, <sup>3</sup>IRAMAT, Bordeaux Montaigne University, France
- P-12 C000159  
**Peculiarities of interaction of top-hat laser beams with transparent materials**, Vladimir P. Zhukov<sup>1,2</sup>, Nadezhda M. Bulgakova<sup>1</sup>, <sup>1</sup>HiLASE Centre, IoP CAS, Czech Republic, <sup>2</sup>Novosibirsk State Technical University, Russia

P-13 C000176  
**On the role of defect states in ultrashort laser interaction with bandgap materials**, Nadezhda M. Bulgakova<sup>1</sup>, Vladimir P. Zhukov<sup>1,2</sup>, Martin Zakerstein<sup>1</sup>, <sup>1</sup>*Institute of Physics CAS, Czech Republic*, <sup>2</sup>*Federal Research Center for Information and Computational Technologies, Russia*

P-14 *Student* C000220  
**Broad investigation of (ns) pulsed laser ablation in terms of hydrodynamic effects: Low melting point target vs. high melting point target**, Tariq Alharby<sup>1</sup>, Omar Musaev<sup>1</sup>, Paul Rulis<sup>1</sup>, <sup>1</sup>*University Of Missouri-Kansas City, United States of America*

P-15 C000224  
**Correlation between chemical bond changes and laser fluence in femtosecond laser processing of polydimethylsiloxane**, Hiroshi Ogawa<sup>1,2</sup>, Tatsunori Shibuya<sup>1</sup>, Yasuaki Moriai<sup>3,2</sup>, Daisuke Satoh<sup>1,2</sup>, Eichi Terasawa<sup>4,2</sup>, Sena Maru<sup>4,2</sup>, Masahito Tanaka<sup>1,2</sup>, Ryunosuke Kuroda<sup>2,1</sup>, <sup>1</sup>*RIMA, AIST, Japan*, <sup>2</sup>*OPERANDO-OIL, AIST, Japan*, <sup>3</sup>*Univ. Tokyo, Japan*, <sup>4</sup>*Waseda Univ., Japan*

P-16 *Student* C000229  
**Systematic numerical analysis of melting thresholds of semiconductors under nanosecond pulse laser irradiation**, Jiri Beranek<sup>1,2</sup>, Nadezhda M. Bulgakova<sup>1</sup>, Alexander V. Bulgakov<sup>1</sup>, <sup>1</sup>*HiLASE Centre, Institute of Physics of the Czech Academy of Sciences, Czech Republic*, <sup>2</sup>*Czech Technical University, Faculty of Nuclear Sciences and Physical Engineering, Czech Republic*

### Ultrafast Phenomena

P-18 C000038  
**2D Sb<sub>2</sub>Te<sub>3</sub> layers for ultrafast nonlinear optics**, Konstantinos Iliopoulos<sup>1</sup>, Richard-Nicolas Verrone<sup>1</sup>, Arjun Karimbana Kandy<sup>1</sup>, Andrea Campos<sup>2</sup>, Martiane Cabié<sup>2</sup>, Carine Perrin-Pellegrino<sup>3</sup>, Julien Lumeau<sup>1</sup>, Jean-Yves Natoli<sup>1</sup>, <sup>1</sup>*Aix Marseille Univ, CNRS, Centrale Marseille, Institut Fresnel, France*, <sup>2</sup>*Aix Marseille Univ, CNRS, Centrale Marseille, FSCM (FR1739), France*, <sup>3</sup>*Aix Marseille Univ, Univ Toulon, CNRS IM2NP, France*

P-19 *Student* C000046  
**THz time-domain spectroscopy for the detection of charge anisotropies on plasmas induced by ultrafast laser pulses in dielectrics**, Daiwei Zhang<sup>1</sup>, Ciro D'amico<sup>1</sup>, Damien Jamon<sup>1</sup>, Florent Bourquard<sup>1</sup>, Yannick Bleu<sup>1</sup>, Christophe Donnet<sup>1</sup>, Razvan Stoian<sup>1</sup>, <sup>1</sup>*Laboratoire Hubert Curien, UMR 5516, Université Jean Monnet, France*

P-20 *Student* C000066  
**Pulse width dependence of spatiotemporal electron excitation in fused silica by ultrashort laser pulse**, Takumi Koike<sup>1</sup>, Yusuke Ito<sup>1</sup>, Reina Yoshizaki<sup>1</sup>, Guoqi Ren<sup>1</sup>, Naohiko Sugita<sup>1</sup>, <sup>1</sup>*The University of Tokyo, Japan*

P-21 *Student* C000123  
**Application of finite element simulations to nanosecond laser ablation process**, Yutaka Tsumura<sup>1</sup>, Anna Paradowska<sup>1,2</sup>, Andrei Rode<sup>3</sup>, Steve Madden<sup>3</sup>, Ludovic Rapp<sup>3</sup>, Meera Mohan<sup>4</sup>, Gwenaelle Proust<sup>5,1</sup>, <sup>1</sup>*The University of Sydney, Australia*, <sup>2</sup>*Australian Nuclear Science and Technology Organisation, Australia*, <sup>3</sup>*School of Physics, Australian National University, Australia*, <sup>4</sup>*Transport for NSW, Australia*, <sup>5</sup>*Sydney Manufacturing Hub, Australia*

P-22 *Student* C000179  
**Collinear transmission pump-probe imaging of ultrashort laser pulse induced phenomena in silica glass**, Eichi Terasawa<sup>1,2</sup>, Daisuke Satoh<sup>2,3</sup>, Tatsunori Shibuya<sup>3</sup>, Yasuaki Moriai<sup>2,4</sup>, Hiroshi Ogawa<sup>2,3</sup>, Masahito Tanaka<sup>2,3</sup>, Kazuyuki Sakaue<sup>1,5</sup>, Masakazu Washio<sup>1</sup>, Yohei Kobayashi<sup>2,4</sup>, Ryunosuke Kuroda<sup>2,3</sup>, <sup>1</sup>*Waseda Research Institute for Science and Engineering, Waseda University, Japan*, <sup>2</sup>*OPERANDO-OIL, National Institute of Advanced Industrial Science and Technology (AIST), Japan*, <sup>3</sup>*RIMA, National Institute of Advanced Industrial Science and Technology (AIST), Japan*, <sup>4</sup>*The Institute for Solid State Physics, The University of Tokyo, Japan*, <sup>5</sup>*Photon Science Center, Graduate School of Engineering, The University of Tokyo, Japan*

P-23 C000219  
**High efficiency ablation of glass by laser induced plasma assisted ablation using GHz burst mode femtosecond laser pulses**, Kotaro Obata<sup>1</sup>, Shota Kawabata<sup>1,2</sup>, Yasutaka Hanada<sup>3</sup>, Godai Miyaji<sup>2</sup>, Koji Sugioka<sup>1</sup>, <sup>1</sup>*RIKEN Center for Advanced Photonics (RAP), Japan*, <sup>2</sup>*Tokyo University of Agriculture and Technology, Japan*, <sup>3</sup>*Hirosaki University, Japan*

### Pulsed Laser Deposition

- P-24 *Student* C000069  
**Formation of nanochannels in sapphire with ultrashort Bessel pulses**, Sebastian Lavin-Varela<sup>1</sup>, Steven Madden<sup>1</sup>, Kunlun Yan<sup>1</sup>, Martin Ploschner<sup>2</sup>, Andrei Rode<sup>1</sup>, Ludovic Rapp<sup>1</sup>, <sup>1</sup>Australian National Univ., Australia, <sup>2</sup>The Univ. of Queensland, Australia
- P-25 *Student* C000121  
**Influence of spark plasma sintered and reaction bonded SiC targets on pulsed laser deposition of 6H-SiC thin films**, Sree Harsha Choutapalli<sup>1</sup>, Prashantha Kumar H G<sup>1</sup>, Emmanuel P<sup>2</sup>, Nilesh J Vasa<sup>1</sup>, Jayaganthan R<sup>1</sup>, <sup>1</sup>Indian Institute of Technology Madras, Chennai, India, <sup>2</sup>Anna University, Chennai, India
- P-26 C000128  
**Signatures of correlated quantum transport in spintronic heterostructures**, M S Ramachandra Rao<sup>1</sup>, Sreya Suresh<sup>1</sup>, Sai Prashanth Sadhu<sup>1</sup>, Suraj T S<sup>2</sup>, Vidya Praveen Bhallamudi<sup>1</sup>, Werner Paulus<sup>3</sup>, <sup>1</sup>Indian Institute of Technology Madras, India, <sup>2</sup>National University of Singapore, Singapore, <sup>3</sup>University of Montpellier, France
- P-27 C000141  
**On carbon-based multilayer systems prepared by PLD**, Steffen Weissmantel<sup>1</sup>, Rene Bertram<sup>1</sup>, David Haldan<sup>1</sup>, <sup>1</sup>University of Applied Sciences Mittweida, Germany
- P-28 C000154  
**ZnO nanostructures grown on p-diamond for UV-photodetector applications**, M S Ramachandra Rao<sup>1</sup>, Subhajit Chatterjee<sup>1</sup>, Bellarmine F<sup>1</sup>, K L Ganapathi<sup>1</sup>, <sup>1</sup>Indian Institute of Technology Madras, India
- P-30 C000197  
**Automated platform for *in situ* diagnostic-controlled PLD synthesis and laser processing**, Sumner B. Harris<sup>1</sup>, Chris M. Rouleau<sup>1</sup>, Alex A. Puzetzyk<sup>1</sup>, Vasudevan Rajagopal Iyer<sup>1</sup>, Gerd Duscher<sup>2</sup>, Austin Houston<sup>2</sup>, Mina Yoon<sup>1</sup>, Liangbo Liang<sup>1</sup>, Yu-Chuan Lin<sup>3</sup>, Yiling Yu<sup>4</sup>, Kai Xiao<sup>1</sup>, David B. Geohegan<sup>1</sup>, <sup>1</sup>Center for Nanophase Materials Sciences, Oak Ridge National Laboratory, United States of America, <sup>2</sup>Dept. of Materials Science and Engineering, University of Tennessee, United States of America, <sup>3</sup>Dept. of Materials Science and Engineering, Penn State University, United States of America, <sup>4</sup>Dept. of Physics, Wuhan University, China
- P-31 C000203  
**Crystalline hydroxyapatite coating by eclipse type pulsed-laser deposition**, Hidehiko Yashiro<sup>1</sup>, Masayuki Kakehata<sup>1</sup>, <sup>1</sup>National Institute of Advanced Industrial Science and Technology (AIST), Japan
- P-32 *Student* C000205  
**Formation dynamics of SiO<sub>2</sub> nanoparticles produced by laser ablation in an ambient gas**, Reiji Koike<sup>1</sup>, Rio Suzuki<sup>1</sup>, Keita Katayama<sup>1</sup>, Mitsuhiro Higashihata<sup>1</sup>, Hiroshi Ikenoue<sup>1,2</sup>, Daisuke Nakamura<sup>1</sup>, <sup>1</sup>Kyushu Univ., Japan, <sup>2</sup>Gigaphoton NextGLP, Japan
- Laser Interaction in Liquids**
- P-33 C000048  
**Numerical simulation of a laser-induced bubble of new laser propulsion method using water**, Tomomasa Ohkubo<sup>1</sup>, Taiyo Senda<sup>1</sup>, Ei-ichi Matsunaga<sup>1</sup>, Yuji Sato<sup>2</sup>, <sup>1</sup>Tokyo University of Technology, Japan, <sup>2</sup>Joining and Welding Research Institute, Osaka University, Japan
- P-34 *Student* C000049  
**Laser ablation-induced crystal nucleation from melt**, Hozumi Takahashi<sup>1</sup>, Satomi Ebihara<sup>2</sup>, Teruki Sugiyama<sup>3</sup>, Seiichiro Nakabayashi<sup>2</sup>, Hiroshi Yoshikawa<sup>1</sup>, <sup>1</sup>Osaka Univ., Japan, <sup>2</sup>Saitama Univ., Japan, <sup>3</sup>National Yang Ming Chiao Tung Univ., Taiwan
- P-35 C000079  
**Synthesis and characterization of selenium nanoparticles obtained by femtosecond pulsed laser ablation in liquid media**, Emmanuel Haro-Poniatowski<sup>1</sup>, Luis Escobar-Alarcón<sup>2</sup>, José Luis Hernández-Pozos<sup>1</sup>, Luis G Mendoza-Luna<sup>3,1</sup>, Cesar A Guarín<sup>3,1</sup>, <sup>1</sup>Departamento de Física, Universidad Autónoma Metropolitana Iztapalapa, Mexico, <sup>2</sup>Departamento de Física, Instituto Nacional de Investigaciones Nucleares, Mexico, <sup>3</sup>Cátedras CONACYT - Departamento de Física, Universidad Autónoma Metropolitana Iztapalapa, Mexico
- P-36 C000090  
**Burst-mode laser excitation of weak- and bright plasma cavitation events**, Jaka Mur<sup>1</sup>, Vid Agrež<sup>1</sup>, Jaka Petelin<sup>1</sup>, Rok Petkovšek<sup>1</sup>, <sup>1</sup>University of Ljubljana, Slovenia

P-37 C000130  
**Laser beam control in air and liquid for the desired surface structuring**, Nail Inogamov<sup>1,2</sup>, Vasily Zhakhovsky<sup>1</sup>, Sergei Ashitkov<sup>3</sup>, Viktor Khokhlov<sup>2</sup>, Anton Ignatov<sup>1</sup>, Sergei Romashevskiy<sup>3</sup>,  
<sup>1</sup>All-Russian Research Institute of Automatics, Moscow, Russia, <sup>2</sup>Landau Institute for Theoretical Physics, Russian Academy of Sciences, Chernogolovka, Russia, <sup>3</sup>Joint Institute for High Temperatures, Russian Academy of Sciences, Moscow, Russia

P-38 C000145  
**Laser induced cavitation bubble near a finite similar sized boundary**, Vid Agrez<sup>1</sup>, Jure Zevnik<sup>1</sup>, Jaka Mur<sup>1</sup>, Žiga Logar<sup>1</sup>, Matevž Dular<sup>1</sup>, Rok Petkovšek<sup>1</sup>, <sup>1</sup>University of Ljubljana, Faculty of Mechanical Engineering, Slovenia

P-39 C000192  
**Thermodynamic maps and nanoparticle cooling rates in laser ablation of FeNi in liquid**, Leonid Zhigilei<sup>1</sup>, Chaobo Chen<sup>1</sup>, <sup>1</sup>University of Virginia, United States of America

P-40 C000207  
**Vibration behavior of AFM cantilever induced by the femtosecond laser impulse in water**, Takashi Araki<sup>1</sup>, Ryohei Yasukuni<sup>1</sup>, Yoichiro Hosokawa<sup>1</sup>, <sup>1</sup>Nara Institute of Science and Technology, Japan

P-150 C000239  
**Polypropylene and polyvinyl chloride nanoparticles generation using 355 nm laser ablation**, B. Honnorat<sup>1</sup>, M. Ravandeh<sup>1</sup>, J. Schäfer<sup>1</sup>, K.-D. Weltmann<sup>2</sup>, K. Wende<sup>1</sup>, <sup>1</sup>ZIK plasmatis, Leibniz-Institute for Plasma Science and Technology, Germany, <sup>2</sup>Leibniz-Institute for Plasma Science and Technology (INP Greifswald), Germany

### Lasers in Nanoscience

P-41 *Student* C000042  
**Study on fabrication and characterization of Gd<sub>2</sub>O<sub>3</sub>:Er,Yb upconversion nanoparticles by laser ablation in liquid**, Yuri Tei<sup>1</sup>, Haohao Wang<sup>2</sup>, Yoshitaka Kitamoto<sup>1</sup>, Masahiko Hara<sup>1</sup>, Hiroyuki Wada<sup>1</sup>, <sup>1</sup>Tokyo Institute of Technology, Japan, <sup>2</sup>Nanjing Agricultural University, China

P-43 *Student* C000091  
**Polymorph control of L-serine achieved by circularly polarized femtosecond laser irradiation at high repetition rate**, Wen-Chi Wang<sup>1</sup>, Shun-Fa Wang<sup>1</sup>, Teruki Sugiyama<sup>1</sup>, <sup>1</sup>National Yang Ming Chiao Tung University, Taiwan

P-44 *Student* C000097  
**A novel method for synthesizing Cu(I) coordination polymer using pulsed laser ablation in liquid**, Juhyeon Park<sup>1</sup>, Jiwon Kim<sup>1</sup>, Ahreum Min<sup>2</sup>, Myong Yong Choi<sup>1,2</sup>, <sup>1</sup>Department of Chemistry (BK21 FOUR), Research Institute of Natural Sciences, Gyeongsang National University, Korea, <sup>2</sup>Core-Facility Center for Photochemistry & Nanomaterials, Gyeongsang National University, Korea

P-45 *Student* C000120  
**Rational design and engineering of ZnS/Au-decorated f-MWCNT nanocomposites via pulsed laser techniques as electrochemical sensor for detection of toxic nitro compounds.**, Shreyanka Shankar Naik<sup>1</sup>, Seung Jun Lee<sup>1</sup>, Jayaraman Theerthagiri<sup>1</sup>, Yiseul Yu<sup>1</sup>, Myong Yong Choi<sup>1</sup>, <sup>1</sup>Gyeongsang National University, Korea

P-46 *Student* C000137  
**Atomic structure and element distribution of quinary high entropy alloy nanoparticles from laser fragmentation in liquids**, Varatharaja Nallathambi<sup>1,2</sup>, Sven Reichenberger<sup>1</sup>, Se-Ho Kim<sup>2</sup>, Baptiste Gault<sup>2</sup>, Dierk Raabe<sup>2</sup>, Stephan Barcikowski<sup>1</sup>, <sup>1</sup>Technical Chemistry I and Center for Nanointegration Duisburg-Essen (CENIDE), University of Duisburg-Essen, Germany, <sup>2</sup>Department of Microstructure Physics and Alloy Design, Max-Planck-Institut für Eisenforschung GmbH, Germany

P-47 *Student* C000209  
**Optical trapping of perylene-labeled polymers on black silicon**, Hazuki Kusano<sup>1</sup>, Ryota Takao<sup>1</sup>, Ken-ichi Yuyama<sup>1</sup>, Tatsuya Shoji<sup>2</sup>, Yasuyuki Tsuboi<sup>1</sup>, <sup>1</sup>Osaka City University, Japan, <sup>2</sup>Kanagawa University, Japan

P-48 *Student* C000215  
**Single droplet formation by optical tweezer in the mixture of an ionic liquid and water**, Maho Tanaka<sup>1</sup>, Ken-ichi Yuyama<sup>1</sup>, Yasuyuki Tsuboi<sup>1</sup>, <sup>1</sup>Osaka City University, Japan

P-49 *Student* C000216  
**Optical trapping of poly(N-isopropylacrylamide) using a silver substrate**, Maho Nishiguchi<sup>1</sup>, Maho Kubota<sup>1</sup>, Ken-ichi Yuyama<sup>1</sup>, Yasuyuki Tsuboi<sup>1</sup>, <sup>1</sup>Osaka City University, Japan

## Micro/Nano Structuring

- P-50 C000015  
**On-chip integrated lithium niobate waveguide amplifier**, Zhiwei Fang<sup>1</sup>, Junxia Zhou<sup>1</sup>, Zhaoxiang Liu<sup>1</sup>, Ya Cheng<sup>1</sup>, <sup>1</sup>East China Normal University, China
- P-51 C000059  
**Surface morphology at nanometric scale by temporal and polarization control of ultrashort laser pulses**, Anthony Nakhoul<sup>1,3</sup>, Anton Rudenko<sup>2</sup>, Claire Maurice<sup>3</sup>, Florence Garrelie<sup>1</sup>, Florent Pigeon<sup>1</sup>, Jean-Philippe Colombier<sup>1</sup>, <sup>1</sup>Univ Lyon, UJM-Saint-Etienne, CNRS, IOGS, Laboratoire Hubert Curien UMR5516, France, <sup>2</sup>Arizona Center for Mathematical Sciences and College of Optical Sciences, University of Arizona, United States of America, <sup>3</sup>Mines Saint-Etienne, Univ. Lyon, CNRS, UMR 5307 LGF, Centre SMS, France
- P-52 C000063  
**PLD-VLS grown ZnO nanowires for sensors applications**, Aurelian Marcu<sup>1</sup>, Razvan Mihalcea<sup>1</sup>, Ionut Nicolae<sup>1</sup>, Cristian Viespe<sup>1</sup>, Marius Dumitru<sup>1</sup>, <sup>1</sup>National Institute for Laser Plasma and Radiation Physics, Romania
- P-53 C000065  
**On the insignificant role of oxidation process on ultrafast high-spatial-frequency LIPSS formation on tungsten**, Priya Dominic<sup>1,2</sup>, Florent Bourquard<sup>1</sup>, Stephanie Reynaud<sup>1</sup>, Arnaud Weck<sup>2</sup>, Jean-Philippe Colombier<sup>1</sup>, Florence Garrelie<sup>1</sup>, <sup>1</sup>Jean Monnet University, France, <sup>2</sup>University of Ottawa, Canada
- P-54 C000102  
**Synthesis of Ti/TiO<sub>2</sub> micro/nanoparticles by ultrashort pulsed laser ablation in an aqueous medium.**, Jyoti Biswas<sup>1</sup>, Samuel Gonumakulapalle Lodi<sup>1</sup>, <sup>1</sup>Indian Institute of Technology Madras, Chennai, INDIA, India
- P-55 C000105  
**Periodic surface structure formation in solids via mid-IR ultrashort laser pulses**, Stella Maragkaki<sup>1</sup>, George D. Tsibidis<sup>1</sup>, Roland Flender<sup>2</sup>, Ludovit Haizer<sup>2</sup>, Zsuzsanna Pápa<sup>2</sup>, Zsuzsanna Márton<sup>2</sup>, Emmanuel Stratakis<sup>1,3</sup>, <sup>1</sup>Foundation for Research and Technology - Hellas (FORTH), Greece, <sup>2</sup>ELI-ALPS, Hungary, <sup>3</sup>Department of Physics, University of Crete, Greece
- P-56 C000109  
**Ablation characteristics on silicon from ultrafast laser radiation containing single MHz and GHz burst pulse**, Daniel Metzner<sup>1</sup>, Peter Lickschat<sup>1</sup>, Andy Engel<sup>1</sup>, Thomas Lampke<sup>2</sup>, Steffen Weißmantel<sup>1</sup>, <sup>1</sup>University of Applied Sciences Mittweida, Germany, <sup>2</sup>Chemnitz University of Technology, Germany
- P-57 C000111  
**Study on laser ablation of glass using MHz to GHz burst pulses**, Daniel Metzner<sup>1</sup>, Peter Lickschat<sup>1</sup>, Christian Kreisel<sup>3</sup>, Thomas Lampke<sup>2</sup>, Steffen Weißmantel<sup>1</sup>, <sup>1</sup>University of Applied Sciences Mittweida, Germany, <sup>2</sup>Chemnitz University of Technology, Germany, <sup>3</sup>ACSYS Lasertechnik GmbH, Germany
- P-59 C000119  
**Volumetric modification in fused silica: New insights with shaped pulses**, Martin Zukerstein<sup>1</sup>, Nadezhda M. Bulgakova<sup>1</sup>, Vladimir P Zhukov<sup>2,3,1</sup>, <sup>1</sup>HiLASE Centre, Institute of Physics ASCR, Czech Republic, <sup>2</sup>Federal Research Center for Information and Computational Technologies, Russia, <sup>3</sup>Novosibirsk State Technical University, Russia
- P-60 C000168  
**Homogeneous nanostructures on SiO<sub>2</sub> formed with femtosecond laser pulses and improvement of optical transmittance**, Minami Edakubo<sup>1</sup>, Yuya Haraguchi<sup>1</sup>, Hiroko Aruga Katori<sup>1</sup>, Godai Miyaji<sup>1</sup>, Lukas Janos Richter<sup>2</sup>, Jürgen Ihlemann<sup>2</sup>, <sup>1</sup>Tokyo University of Agriculture and Technology, Japan, <sup>2</sup>Institut für Nanophotonik Göttingen e.V., Germany
- P-61 C000171  
**Induction of periodic optical radiation pressure by four- and six beam interference pattern and material processing**, Yoshiki Nakata<sup>1</sup>, Koji Tsubakimoto<sup>1</sup>, Hiroyuki Shiraga<sup>1</sup>, Yuki Kosaka<sup>2</sup>, <sup>1</sup>Osaka University, Japan, <sup>2</sup>JGC Corporation, Japan
- P-62 C000183  
**Surface patterning by the transfer of a photomask with laser-induced reactive plasma etching**, Martin Ehrhardt<sup>1</sup>, Robert Heinke<sup>1</sup>, Pierre Lorenz<sup>1</sup>, Klaus Zimmer<sup>1</sup>, <sup>1</sup>Leibniz Institute of Surface Engineering (IOM), Germany

- P-63 *Student* C000217  
**Rapid processing method of superhydrophobic surface on steel by direct laser interference patterning**, Kyohei Watanabe<sup>1</sup>, Masaki Yamaguchi<sup>1</sup>, <sup>1</sup>*Shinshu Univ., Japan*
- P-65 *Student* C000237  
**Novel surface nanostructuring of crystalline silicon by GHz burst mode femtosecond laser pulses**, Shota Kawabata<sup>1,2</sup>, Kotaro Obata<sup>1</sup>, Shi Bai<sup>1</sup>, Godai Miyaji<sup>2</sup>, Koji Sugioka<sup>1</sup>, <sup>1</sup>*Department of Applied Physics, Tokyo University of Agriculture and Technology, Japan*, <sup>2</sup>*RIKEN Center for Advanced Photonics, RIKEN, Japan*
- Laser Micro/nano Machining**
- P-66 *Student* C000014  
**A study of fabrication of LIPSS on Si wafer using flat-top beam**, Junha Choi<sup>1,2</sup>, Young Gwan Shin<sup>1,2</sup>, Wonsuk Choi<sup>2</sup>, Sung-Hak Cho<sup>1,2</sup>, <sup>1</sup>*Department of Nano-Mechatronics, Korea University of Science and Technology, Korea*, <sup>2</sup>*Department of Nano-manufacturing Technology, Nano-Convergence Manufacturing Systems Research Division, Korea Institute of Machinery and Material, Korea*
- P-67 C000017  
**A general approach to high-precision micromachining of millimeter-size and zero-taper holes using femtosecond lasers**, Qiuchi Zhu<sup>1</sup>, Peixun Fan<sup>1</sup>, Nan Li<sup>1</sup>, Timothy Carlson<sup>1</sup>, Bai Cui<sup>1</sup>, Jean-Francois Silvain<sup>2,1</sup>, Jerry L Hudgins<sup>1</sup>, Yongfeng Lu<sup>1</sup>, <sup>1</sup>*University of Nebraska-Lincoln, United States of America*, <sup>2</sup>*ICMCB/CNRS, France*
- P-68 C000026  
**Internal modification morphologies in glasses irradiated by nano-second laser pulses**, Hsuan-Ya Hou<sup>1</sup>, Wei-Ting Tang<sup>1</sup>, Yi-Cheng Lin<sup>2</sup>, Pi-Ying Cheng<sup>1</sup>, Wen-Tse Hsiao<sup>2</sup>, Donyau Chiang<sup>2</sup>, <sup>1</sup>*National Yang Ming Chiao Tung University, Taiwan*, <sup>2</sup>*Taiwan Instrument Research Institute, Taiwan*
- P-69 *Student* C000034  
**A study on the burr formation of tungsten carbide by various laser parameters**, Young-Gwan Shin<sup>1,2</sup>, Wonsuk Choi<sup>1</sup>, Junha Choi<sup>1,2</sup>, Sung-Hak Cho<sup>1,2</sup>, <sup>1</sup>*Korea Institute of Machinery & Materials, Korea*, <sup>2</sup>*University of Science and Technology, Korea*
- P-70 *Student* C000036  
**Productivity analysis for USP single and multibeam processing of thin metallic foils**, Thilo Barthels<sup>1</sup>, Martin Reininghaus<sup>1</sup>, <sup>1</sup>*Fraunhofer ILT, Germany*
- P-71 *Student* C000041  
**Crack-free crown-glass drilling by short-pulse CO<sub>2</sub> laser**, Md. Ekhlasar Rahaman<sup>1</sup>, Kazuyuki Uno<sup>1</sup>, <sup>1</sup>*Integrated Graduate School of Medicine, Engineering and Agricultural Science, University of Yamanashi, Japan*
- P-74 C000100  
**Femtosecond laser direct writing of microchannel on PMMA**, Sanasam Sunderlal Singh<sup>1</sup>, Samuel Gonumakulapalle Lodi<sup>1</sup>, <sup>1</sup>*Indian Institute of Technology Madras, Chennai, India*
- P-75 C000104  
**Patterned Au<sub>2</sub>O<sub>3</sub> layer formation on Au surface under the atmospheric condition by F<sub>2</sub> laser irradiation**, Tsuyoshi Yoshida<sup>1</sup>, Masayuki Okoshi<sup>1</sup>, <sup>1</sup>*National Defense Academy, Japan*
- P-76 C000161  
**Laser-induced amorphous silicon crystallization by 532nm laser pulses**, Ching-Ching Yang<sup>1</sup>, Chih-Chung Yang<sup>1</sup>, Rou-Jhen Chen<sup>1</sup>, Yin-Ting Su<sup>1</sup>, Yu-Jen Hsiao<sup>2</sup>, Kuo-Cheng Huang<sup>1</sup>, Wen-Tse Hsiao<sup>1</sup>, <sup>1</sup>*Taiwan Instrument Research Institute, National Applied Research Laboratories., Taiwan*, <sup>2</sup>*Department of Mechanical Engineering, Southern Taiwan University of Science and Technology, Taiwan*
- P-77 C000199  
**257, 515-, and 1030-nm femtosecond laser ablation of CYTOP: Ablation efficiency and fluorescence**, Kazunari Ozasa<sup>1</sup>, Kotaro Obata<sup>1</sup>, Koji Sugioka<sup>1</sup>, <sup>1</sup>*RIKEN, Japan*
- P-78 C000200  
**Femtosecond laser processing with holographic three-dimensional focusing**, Honghao Zhang<sup>1</sup>, Yoshio Hayasaki<sup>1</sup>, <sup>1</sup>*Utsunomiya University, Japan*
- P-79 C000202  
**Effects of fast intensity modulation on the ultrafast laser ablation of fused silica**, Dai Yoshitomi<sup>1</sup>, Hideyuki Takada<sup>1</sup>, Yohei Kobayashi<sup>2</sup>, Aiko Narazaki<sup>1</sup>, <sup>1</sup>*AIST, Japan*, <sup>2</sup>*ISSP Univ. Tokyo, Japan*

P-80 *Student* C000210  
**Measuring sealing degree of welded glass substrates after ultrashort laser microwelding**, Jumpei Fujiwara<sup>1</sup>, Takayuki Tamaki<sup>1</sup>, <sup>1</sup>National Institute of Technology (KOSEN), Nara College, Japan

P-81 *Student* C000213  
**Structural and oxide driven coloration of copper substrates**, Graham Killaire<sup>1,2</sup>, Jaspreet Walia<sup>1,3</sup>, Pierre Berini<sup>1,2,3</sup>, Arnaud Weck<sup>1,2,4</sup>, <sup>1</sup>Centre for Research in Photonics, University of Ottawa, Canada, <sup>2</sup>Department of Physics, University of Ottawa, Canada, <sup>3</sup>School of Electrical Engineering and Computer Science, University of Ottawa, Canada, <sup>4</sup>Department of Mechanical Engineering, University of Ottawa, Canada

P-82 C000218  
**Multi-timescale observation of femtosecond laser drilling of zirconia ceramics**, Yanming Zhang<sup>1</sup>, Huijie Sun<sup>1</sup>, Yusuke Ito<sup>1</sup>, Naohiko Sugita<sup>1</sup>, <sup>1</sup>Graduate school of Engineering, The University of Tokyo, Japan

P-83 C000238  
**Laser ablation of mild steel by 50 W nanosecond pulsed laser: Effects of laser head length and laser scanning speed**, Mojtaba Karamimoghadam<sup>1,2</sup>, Andy J. Wilson<sup>2</sup>, Michael Fitzpatrick<sup>1</sup>, David Waugh<sup>1</sup>, Jonathan Lawrence<sup>3</sup>, <sup>1</sup>School of Mechanical, Aerospace and Automotive Engineering Faculty of Engineering, Environment and Computing, Coventry University, UK, <sup>2</sup>TWI Ltd, UK, <sup>3</sup>School of Engineering, Arden University, UK

### Laser Direct Write

P-84 *Student* C000035  
**Laser direct writing of electrically conductive structure on biodegradable polymer composite**, Rei Funayama<sup>1</sup>, Shuichiro Hayashi<sup>1</sup>, Rikuto Miyakoshi<sup>1</sup>, Mitsuhiro Terakawa<sup>1,2</sup>, <sup>1</sup>School of Integrated Design Engineering, Keio Univ., Japan, <sup>2</sup>Department of Electronics and Electrical Engineering, Keio Univ., Japan

P-85 *Student* C000051  
**Fabrication of hydrogel for dynamic and wavelength-selective optical switching by using multiphoton-photoreduction**, Hirofumi Tomikawa<sup>1</sup>, Yo Nagano<sup>1</sup>, Kaneto Tsunemitsu<sup>1</sup>, Hiroaki Onoe<sup>1</sup>, Mitsuhiro Terakawa<sup>1</sup>, <sup>1</sup>Keio Univ., Japan

P-86 *Student* C000084  
**Development of metal mesh transparent electrodes by laser photoreduction method**, Mai Hayase<sup>1</sup>, Masato Sumiyoshi<sup>1</sup>, Makoto Takishita<sup>1</sup>, Vygantas Mizeikis<sup>1</sup>, Atsushi Ono<sup>1</sup>, <sup>1</sup>Shizuoka University, Japan

P-87 *Student* C000086  
**Microfabrication of low refractive index hydrogel using femtosecond laser direct writing for biochip applications**, Ryuki Nagao<sup>1</sup>, Kodai Abe<sup>1</sup>, Kotaro Mukaiyama<sup>1</sup>, Sohei Yamada<sup>1</sup>, Yasutaka Hanada<sup>1</sup>, <sup>1</sup>Hirosaki Univ., Japan

P-88 C000110  
**Laser-induced forward transfer of Pb free solder paste for the digital assembly of electronic components**, Ioannis Theodorakos<sup>1</sup>, Marina Makrygianni<sup>1</sup>, Filimon Zacharatos<sup>1</sup>, Kostas Andritsos<sup>1</sup>, Manolis Sotiropoulos<sup>2</sup>, Panagiotis Papadopoulos<sup>2</sup>, Christos Spandonidis<sup>2</sup>, Ioanna Zergioti<sup>1</sup>, <sup>1</sup>School of Applied Mathematical and Physical Sciences, National Technical University of Athens, Greece, <sup>2</sup>Prisma Electronics SA, Greece

P-89 C000114  
**Laser printing and laser sintering as a digital approach for the conformal fabrication of micro-conductive patterns on patterned flexible substrates**, Ioannis Theodorakos<sup>1</sup>, Kostas Andritsos<sup>1</sup>, Filimon Zacharatos<sup>1</sup>, Ayala Kaba<sup>2</sup>, Semyon Melamed<sup>2</sup>, Fernando de la Vega<sup>2</sup>, Yoann Porte<sup>3</sup>, Patrick Too<sup>3</sup>, Ioanna Zergioti<sup>1</sup>, <sup>1</sup>School of Applied Mathematical and Physical Sciences, National Technical University of Athens, Greece, <sup>2</sup>PV Nano Cell Ltd., Israel, <sup>3</sup>FlexEnable Ltd., UK

P-90 *Student* C000125  
**Laser writing of etch-masks for Si solar cells by ultra-short laser pulses**, Jovan Maksimovic<sup>1</sup>, Soon Hock Ng<sup>1</sup>, Tomas Katkus<sup>1</sup>, Sajeev John<sup>2</sup>, Saulius Juodkazis<sup>1,3</sup>, <sup>1</sup>Optical Sciences Centre and ARC Training Centre in Surface Engineering for Advanced Materials, (SEAM), School of Science, Swinburne University of Technology, Australia, <sup>2</sup>Department of Physics, University of Toronto, Canada, <sup>3</sup>World Research Hub Initiative (WRHI), School of Materials and Chemical Technology, Tokyo Institute of Technology, Japan

P-91 *Student* C000133  
**Tuning the optical properties of liquid-printed microlenses by substrate reshaping**, Ernest Marti Jerez<sup>1,2</sup>, Juan Marcos Fernandez-Pradas<sup>1,2</sup>, Pere Serra<sup>1,2</sup>, Marti Duocastella<sup>1,2,3</sup>, <sup>1</sup>Universitat de Barcelona, Spain, <sup>2</sup>Institut of Nanocience and Nanotechnology, Spain, <sup>3</sup>Istituto Italiano di Tecnologia, Italy

P-92 *Student* C000138  
**Laser-induced forward transfer of high viscosity conductive nanoinks**, Blanca Mestre Tora<sup>1</sup>, Ernest Marti<sup>1</sup>, Marti Duocastella<sup>1,2</sup>, Pere Serra<sup>1</sup>, Juan Marcos Fernandez-Pradas<sup>1</sup>, <sup>1</sup>Universitat de Barcelona, Spain, <sup>2</sup>Istituto Italiano di Tecnologia, Italy

P-93 C000182  
**Bonding mechanism of polydispersed Cu<sub>2</sub>O nanospheres on Cu thin films by irradiating femtosecond laser pulses**, Mizue Mizoshiri<sup>1</sup>, Masateru Anzai<sup>1</sup>, Shohei Murayama<sup>1</sup>, Kien Vu Trung Nguyen<sup>1</sup>, Hideyuki Magara<sup>2</sup>, Takahiro Nakamura<sup>2</sup>, <sup>1</sup>Nagaoka Univ. of Tech., Japan, <sup>2</sup>Tohoku University, Japan

P-94 *Student* C000228  
**Cobalt precipitation from glyoxylic acid cobalt complex using femtosecond laser pulse-induced thermochemical reduction**, Kazuki Yamamoto<sup>1</sup>, Genki Ohmori<sup>1</sup>, Tomoji Ohishi<sup>2</sup>, Mizue Mizoshiri<sup>1</sup>, <sup>1</sup>Nagaoka Univ. of Tech., Japan, <sup>2</sup>Shibaura Inst. of Tech., Japan

### Laser 3D Processing

P-95 *Student* C000094  
**Structure and properties of M300 maraging steel fabricated by SLM for cold work tools application**, Marcin Benedyk<sup>1</sup>, Mariusz Król<sup>1</sup>, Tomasz Tański<sup>1</sup>, <sup>1</sup>Silesian University of Technology, Poland

P-96 *Student* C000147  
**Laser ablation of zirconia-toughened alumina at different inclination angles**, Jodok Weixler<sup>1</sup>, Yves Locher<sup>2</sup>, Konrad Wegener<sup>1</sup>, <sup>1</sup>ETH Zürich, Switzerland, <sup>2</sup>inspire AG, Switzerland

P-97 *Student* C000150  
**Effect of laser heat input control on fabrication of Ti-6Al-4V by spatter-less SLM in vacuum**, Yuta Mizuguchi<sup>1</sup>, Masahiro Ihama<sup>1</sup>, Yuji Sato<sup>2</sup>, Sasitorn Srisawadi<sup>3</sup>, Diritthi Tanprayoon<sup>3</sup>, Masahiro Tsukamoto<sup>2</sup>, <sup>1</sup>Grad. Sch. of Eng., Osaka Univ., Japan, <sup>2</sup>JWRI, Osaka Univ., Japan, <sup>3</sup>Nat'l. Met. and Mater. Tech. Ctr., Thailand

P-98 *Student* C000175  
**The effects of gas atmosphere, ambient pressure, and molten pool temperature on vapor plume structure and spatter dynamics in laser powder bed fusion**, Michael Stokes<sup>1</sup>, Saad A Khairallah<sup>2</sup>, Alexey N Volkov<sup>1</sup>, Alexander M Rubenchik<sup>2</sup>, <sup>1</sup>The University of Alabama, United States of America, <sup>2</sup>Lawrence Livermore National Laboratory, United States of America

P-99 *Student* C000223  
**Effect of particle size distribution on pure copper layer formation in a multi beam laser cladding system with pure copper powder and blue diode lasers**, Kento Morimoto<sup>1</sup>, Yuji Sato<sup>2</sup>, Keisuke Takenaka<sup>2</sup>, Yoshinori Funada<sup>3</sup>, Yoshihiko Hayashi<sup>4</sup>, Masahiro Tsukamoto<sup>2</sup>, <sup>1</sup>Graduate School of Engineering, Osaka University, Japan, <sup>2</sup>Joining and Welding Research Institute, Osaka University, Japan, <sup>3</sup>Industrial Research Institute of Ishikawa, Japan, <sup>4</sup>Osaka Fuji Corporation, Japan

### Laser Applications for Biology and Life Sciences

P-100 C000028  
**Fabrication of nanostructured surfaces with tunable wettability by MAPLE**, Alexandra Palla-Papavlu<sup>1</sup>, Simona Brajnicov<sup>1</sup>, Mihaela Filipescu<sup>1</sup>, Veronica Satulu<sup>1</sup>, Tatiana Tozar<sup>1</sup>, Cosmin Mustaciosu<sup>2</sup>, Maria Dinescu<sup>1</sup>, <sup>1</sup>National Institute for Lasers, Plasma, and Radiation Physics, Romania, <sup>2</sup>Horia Hulubei National Institute of Physics and Nuclear Engineering, Romania

P-101 *Student* C000101  
**Laser assisted fabrication of deterministic lateral displacement structures on P20 die steel masters for microfluidic particle separation**, Pavan Girish Pandit<sup>1</sup>, Samuel Gonumakulapalle Lodi<sup>1</sup>, <sup>1</sup>Indian Institute of Technology Madras, Chennai, INDIA, India

P-102 C000108  
**Multi-wavelength LIPSS generation on titanium alloy and comparative study of their effect on cell adhesions**, Xxx Sedao Sedao<sup>1,2</sup>, Alain Abou-Khalil<sup>1</sup>, Steve Papa<sup>3</sup>, Nicolas Compere<sup>2</sup>, Yoan Di Maio<sup>2</sup>, Alain Guignandon<sup>3</sup>, Virginie Dumas<sup>4</sup>, Alina Pascale Hamri<sup>2</sup>, <sup>1</sup>University of Lyon, Jean Monnet University, UMR 5516 CNRS, Laboratory Hubert Curien, France, <sup>2</sup>GIE Manutech-USD, France, <sup>3</sup>University of Lyon, Jean Monnet University, INSERM U1059-SAINBIOSE, France, <sup>4</sup>University of Lyon, National School of Engineers of Saint-Etienne, Laboratory of Tribology and Systems Dynamics, UMR 5513 CNRS, France

P-103 C000162  
**Micro/nano structure formation on egg surface using ultraviolet laser irradiation**, Rou-Jhen Chen<sup>1</sup>, Yi-Cheng Lin<sup>1</sup>, Shih-Feng Tseng<sup>2</sup>, Tien-Li Chang<sup>3</sup>, Wen-Tse Hsiao<sup>1</sup>, <sup>1</sup>Taiwan Instrument Research Institute, National Applied Research Laboratories., Taiwan, <sup>2</sup>Department of Mechanical Engineering, National Taipei University of Technology, Taiwan, <sup>3</sup>Department of Mechatronics Engineering, National Taiwan Normal University, Taiwan

P-105 C000201  
**Laser processing for mechanobiology study**, Takahisa Matsuzaki<sup>1</sup>, Sayaka Goto<sup>2</sup>, Seiichiro Nakabayashi<sup>2</sup>, Hiroshi Y Yoshikawa<sup>1</sup>, <sup>1</sup>Department of Applied Physics, Osaka University, Japan, <sup>2</sup>Department of Chemistry, Saitama University, Japan

P-106 *Student* C000206  
**Control of cell behavior on the surface of biomaterials by femtosecond laser irradiation**, Keisuke Takenaka<sup>1</sup>, Yuji Sato<sup>2</sup>, Masahiro Tsukamoto<sup>2</sup>, <sup>1</sup>Graduate School of Engineering, Osaka University, Japan, <sup>2</sup>Joining and Welding Research Institute, Osaka University, Japan

P-107 *Student* C000208  
**Optical trapping and patterning of amyloid fibrils of hen egg-white lysozyme**, Mai Miyazaki<sup>1</sup>, Yasuyuki Tsuboi<sup>1</sup>, Ken-ichi Yuyama<sup>1</sup>, <sup>1</sup>Graduate School of Science, Osaka City University, Japan

P-108 C000211  
**Estimation of adhesion strength of growth cone by femtosecond laser impulse**, Sohei Yamada<sup>1</sup>, Kentarou Baba<sup>2</sup>, Naoyuki Inagaki<sup>2</sup>, Yoichiro Hosokawa<sup>2</sup>, <sup>1</sup>Hirosaki university, Japan, <sup>2</sup>Nara Institute of Science and Technology, Japan

P-109 *Student* C000212  
**Formation of ultralong liposome tubes by a laser-induced microbubble**, Akemi Noguchi<sup>1</sup>, Chiaki Kojima<sup>1</sup>, Ken-ichi Yuyama<sup>1</sup>, Tatsuya Shoji<sup>2</sup>, Yasuyuki Tsuboi<sup>1</sup>, <sup>1</sup>Osaka City University, Japan, <sup>2</sup>Kanagawa University, Japan

P-110 *Student* C000222  
**Femtosecond laser perforation of plant cells for evaluation of cell stiffness**, Yuki Yamasaki<sup>1</sup>, Satoru Tugawa<sup>2</sup>, Kenshiro Ito<sup>1</sup>, Kazunori Okano<sup>1</sup>, Yoichiro Hosokawa<sup>1</sup>, <sup>1</sup>Division of Materials Science, Nara Institute of Science and Technology, Ikoma, Japan, <sup>2</sup>Faculty of Systems Science and Technology, Akita Prefectural University, Akita, Japan

## Laser-based Analytical Methods

P-111 C000098  
**Estimation of atomic composition of mineral species in powdered milk by laser-induced breakdown spectroscopy**, Koichi Sasaki<sup>1</sup>, Kazusa Maruyama<sup>1</sup>, <sup>1</sup>Hokkaido Univ., Japan

P-112 *Student* C000143  
**Quantitative analysis of Fe-based amorphous alloys by laser-induced breakdown spectroscopy using a high-resolution spectrometer**, Shweta Soni<sup>1</sup>, Alicia Marín Roldán<sup>1</sup>, Matej Veis<sup>1</sup>, Jan Viljanen<sup>2</sup>, Tomáš Rudinský<sup>1</sup>, Alen Fos<sup>3</sup>, Jan Škoviera<sup>3</sup>, Peter Švec<sup>2</sup>, Pavel Veis<sup>1</sup>, <sup>1</sup>Comenius University, FMPH, Slovakia, <sup>2</sup>Photonics Laboratory, Physics Unit, Tampere University, Finland, <sup>3</sup>DMP, Institute of Physics SAS, Slovakia

P-113 *Student* C000148  
**Laser-induced plasma diagnostics using an ultrahigh spectral resolution and sensitivity system based on the Fabry-Pérot etalon and an optical parametric amplifier**, Franciszek Sobczuk<sup>1</sup>, Krszysztof Dzierżęga<sup>1</sup>, Robin Flaugère<sup>2</sup>, Evgeny Stambulchik<sup>3</sup>, Bartłomiej Pokrzywka<sup>4</sup>, <sup>1</sup>Marian Smoluchowski Inst. of Phys., Jagiellonian Univ., Poland, <sup>2</sup>GREMI, UMR 7344, Univ. d'Orléans/CNRS, France, <sup>3</sup>Faculty of Phys., Weizmann Inst. of Science, Israel, <sup>4</sup>Inst. of Phys., Pedagogical Univ. in Kraków, Poland

P-115 C000235

**Understanding the performance of silicone rubber nano-composites adopting laser induced breakdown spectroscopy**, Aparna Neettiyath<sup>1,2</sup>, N. J. Vasa<sup>1</sup>, R. Sarathi<sup>2</sup>, <sup>1</sup>IIT Madras, India, <sup>2</sup>Brigham and Womens hospital, USA

### Smart Beam Shaping and Manipulation

P-116 *Student* C000073

**Effect of the radial beam mode on expansion of laser-induced plasma plumes and plasma shielding at nanosecond laser ablation**, Michael Stokes<sup>1</sup>, Omid A Ranjabar<sup>1</sup>, Zhibin Lin<sup>2</sup>, Alexey N Volkov<sup>1</sup>, <sup>1</sup>The University of Alabama, United States of America, <sup>2</sup>MKS Instruments, Inc, United States of America

P-117 C000195

**Dependence of laser power density on twin formation in single crystalline Si strip formed by micro chevron laser beam scanning method**, Wenchang Yeh<sup>1</sup>, <sup>1</sup>Shimane University, Japan

### Emerging Photon Sources and Applications

P-118 C000057

**The comparison of ablation process in laser processing between IR and UV/Vis lasers**, Jun Fujioka<sup>1,2</sup>, Hidehiko Yashiro<sup>2</sup>, Masayuki Kakehata<sup>2</sup>, Koichi Tsukiyama<sup>1</sup>, <sup>1</sup>Tokyo University of Science, Japan, <sup>2</sup>National Institute of Advanced Industrial Science and Technology, Japan

## Practical Applications of Laser Processing

- P-119 C000019  
**High transparent and conductive electrodes obtained by laser annealing of pulsed laser deposited diamond-like carbon thin films**, Francois Stock<sup>1</sup>, Frederic Antoni<sup>1</sup>, Fatima Zahrae Lahboub<sup>1</sup>, Stephane Roques<sup>1</sup>, Dominique Aubel<sup>2</sup>, Samar Hajjar-Garreau<sup>2</sup>, <sup>1</sup>Laboratoire ICube, Universite de Strasbourg, CNRS, France, <sup>2</sup>Institut de Sciences des Matériaux de Mulhouse, Universite de Haute-Alsace, CNRS, France
- P-120 C000022  
**Nitrites detection with sensors processed by MAPLE technique**, Mihaela Filipescu<sup>1</sup>, Cristina Craciun<sup>1,2</sup>, Florin Andrei<sup>1,3</sup>, Simona Brajnicov<sup>1</sup>, Alexandra Palla Papavlu<sup>1</sup>, Anca Bonciu<sup>1,2</sup>, Maria Dinescu<sup>1</sup>, <sup>1</sup>National Institute for Lasers, Plasma and Radiation Physics, Romania, <sup>2</sup>Faculty of Physics, University of Bucharest, Romania, <sup>3</sup>Faculty of Chemistry, University of Bucharest, Romania
- P-121 C000027  
**Simulated interaction of ns-UV radiation with a polymer dynamic release layer in laser-induced forward transfer**, Mihail Octavian Cernaianu<sup>1</sup>, Petru Ghenuche<sup>1</sup>, Thomas Lippert<sup>2,3</sup>, Alexandra Palla-Papavlu<sup>4</sup>, <sup>1</sup>Extreme Light Infrastructure – Nuclear Physics (ELI-NP) / Horia Hulubei National Institute of Physics and Nuclear Engineering, Romania, <sup>2</sup>Laboratory of Inorganic Chemistry, Department of Chemistry and Applied Biosciences, ETH Zurich, Switzerland, <sup>3</sup>Laboratory for Multiscale Materials Experiments, Paul Scherrer Institut, Switzerland, <sup>4</sup>National Institute for Lasers, Plasma, and Radiation Physics, Lasers Department, Romania
- P-122 C000033  
**Surface changes before ablation in laser doping of 4H-SiC**, Yasutsugu Usami<sup>1,2</sup>, Kaname Imokawa<sup>2</sup>, Ryoichi Nohdomi<sup>2</sup>, Atsushi Sunahara<sup>3</sup>, Hakaru Mizoguchi<sup>2</sup>, <sup>1</sup>Academic Research and Industrial collaboration Management Office of Kyushu University, Japan, <sup>2</sup>Research division Gigaphoton Inc., Japan, <sup>3</sup>Purdue University, United States of America
- P-123 C000040  
**Student**  
**Effects of pulse duration on the laser-induced crystallization of urea**, Yuka Tsuru<sup>1</sup>, Mihoko Maruyama<sup>1,2,3</sup>, Hiroshi Y Yoshikawa<sup>1</sup>, Katsuo Tsukamoto<sup>1,4</sup>, Kazufumi Takano<sup>3,5</sup>, Hiroaki Adachi<sup>5</sup>, Shigeyoshi Usami<sup>1</sup>, Masayuki Imanishi<sup>1</sup>, Masashi Yoshimura<sup>6</sup>, Yusuke Mori<sup>1</sup>, <sup>1</sup>Grad. Sch. of Eng., Osaka Univ., Japan, <sup>2</sup>IACCS, Osaka Univ., Japan, <sup>3</sup>Grad. Sch. of Life and Environ. Sci., Kyoto Pref. Univ., Japan, <sup>4</sup>Grad. Sch. of Sci., Tohoku Univ., Japan, <sup>5</sup>SOSHO Inc., Japan, <sup>6</sup>ILE, Osaka Univ., Japan
- P-124 C000056  
**Femtosecond laser ablation for precise and efficient cavity preparation in teeth for modern laser dentistry**, Ludovic Rapp<sup>1</sup>, Steve Madden<sup>1</sup>, Julia Brand<sup>2</sup>, Andrei Rode<sup>1</sup>, <sup>1</sup>The Australian National University, Australia, <sup>2</sup>University of Canberra, Australia
- P-125 C000061  
**Student**  
**Investigation of residual stress of steelwork after laser cleaning**, Jiawei Tu<sup>1</sup>, Anna Paradowska<sup>1,2</sup>, Andrei Rode<sup>3</sup>, Ludovic Rapp<sup>3</sup>, Steve Madden<sup>3</sup>, Meera Mohan<sup>4</sup>, Gwénaëlle Proust<sup>1,5</sup>, <sup>1</sup>School of Civil Engineering, USYD, Australia, <sup>2</sup>ACNS, ANSTO, Australia, <sup>3</sup>School of Physics, ANU, Australia, <sup>4</sup>Transport for NSW, Australia, <sup>5</sup>Sydney Manufacturing Hub, USYD, Australia
- P-126 C000067  
**Pulse energy stabilization to enhance precision of ultrafast laser material processing**, Pol Sopena<sup>1</sup>, Mario Garcia-Lechuga<sup>2,3</sup>, Andong Wang<sup>1</sup>, David Grojo<sup>1</sup>, <sup>1</sup>LP3 (UMR 7341), CNRS, Aix-Marseille University, France, <sup>2</sup>Departamento de Física Aplicada, Universidad Autónoma de Madrid, Spain, <sup>3</sup>Centro de Microanálisis de Materiales, Universidad Autónoma de Madrid, Spain
- P-128 C000082  
**Effect of laser peening with a solid-state plasma confinement layer having a shape-following ability**, Miho Tsuyama<sup>1</sup>, Yang Zhang<sup>1</sup>, Manabu Heya<sup>2</sup>, Hitoshi Nakano<sup>1</sup>, <sup>1</sup>Kindai University, Japan, <sup>2</sup>Osaka-sangyo University, Japan
- P-129 C000085  
**Student**  
**Ultrafast pulsed lasers for the treatment of contaminated heritage stonework**, Julia Brand<sup>1,2</sup>, Alison Wain<sup>1</sup>, Andrei Rode<sup>2</sup>, Stephen Madden<sup>2</sup>, Ludovic Rapp<sup>2</sup>, <sup>1</sup>CCCR - FAD, UC, Australia, <sup>2</sup>DQST - RSPHys, ANU, Australia

- P-130 C000106  
**Investigation of the laser cutting of lithium metal anodes under different process gases for all-solid-state batteries**, Lars O. Schmidt<sup>1</sup>, Houssin Wehbe<sup>1</sup>, Maja W. Kandula<sup>1</sup>, Klaus Dilger<sup>1</sup>, <sup>1</sup>TU Braunschweig, Institute of Joining and Welding, Germany
- P-131 C000131  
**Microstructure and properties of HVOF sprayed coatings remelted by laser**, Ewa Jonda<sup>1</sup>, Marek Sroka<sup>1</sup>, Małgorzata Dziekońska<sup>1</sup>, Wojciech Pakieła<sup>1</sup>, Tymoteusz Jung<sup>2</sup>, <sup>1</sup>Silesian University of Technology, Poland, <sup>2</sup>Łukasiewicz Research Network – Institute for Ferrous Metallurgy, Poland
- P-132 *Student* C000152  
**Ultrashort laser pulsed sintering of metallic nanoparticle inks on heat sensitive substrates**, Ayesha Sharif<sup>1</sup>, Nazar Farid<sup>1</sup>, Peter MC Glynn<sup>1</sup>, Gerard M O'Connor<sup>1</sup>, <sup>1</sup>NUI Galway, Ireland, Ireland
- P-133 C000153  
**Ultra-short laser-induced crystallization of semiconductors and metallic thin films**, Nazar Farid<sup>1</sup>, Ayesha Sharif<sup>1</sup>, Gerard M O'Connor<sup>1</sup>, <sup>1</sup>National University of Ireland Galway, Ireland, Ireland
- P-134 C000169  
**Utilization of low-energy long-pulses of Nd:YAG laser for high efficiency drilling of amorphous alloy foils**, Takeshi Tsuji<sup>1</sup>, Shota Yamamoto<sup>1</sup>, Shun Ikemoto<sup>1</sup>, Hiromasa Hara<sup>1</sup>, Motokmi Ohta<sup>1</sup>, Daisuke Nakamura<sup>2</sup>, <sup>1</sup>Shimane University, Japan, <sup>2</sup>Kyushu University, Japan
- P-135 C000181  
**Remote calcium deficiency identification in plant using laser induced breakdown spectroscopy method**, Sathiesh Kumar V<sup>1</sup>, Veerappan K<sup>1</sup>, <sup>1</sup>Department of Electronics Engineering, MIT Campus, Anna University, India
- P-136 *Student* C000193  
**Experimental investigation of cut quality in underwater fiber laser cutting of chromium steel**, Esmail Ghadiri Ghadiri<sup>1,2</sup>, B. Azarhoushang<sup>2</sup>, J. Wilde<sup>3</sup>, <sup>1</sup>Institute of Precision Machining (KSF), Hochschule Furtwangen University, Germany, <sup>2</sup>Department of Microsystems Engineering (IMTEK), University of Freiburg, Germany
- P-137 *Student* C000214  
**Ultra-short pulse laser ablation of a newly developed metal-like ceramics —A processability study**, Dirk Obergfell<sup>1</sup>, Esmail Ghadiri Ghadiri<sup>1</sup>, <sup>1</sup>Institute of Precision Machining (KSF), Hochschule Furtwangen University, Germany
- P-138 *Student* C000221  
**Pulse duration dependence of dry laser peening effects in the femtosecond-to-picosecond regime**, Itsuki Nishibata<sup>1</sup>, Masayuki Yoshida<sup>1</sup>, Yusuke Ito<sup>2</sup>, Naohiko Sugita<sup>2</sup>, Akio Hirose<sup>1</sup>, Tomokazu Sano<sup>1</sup>, <sup>1</sup>Osaka Univ., Japan, <sup>2</sup>Tokyo Univ., Japan
- P-139 C000225  
**High-speed visualization of concentration field associated with laser-induced crystallization process of an anthracene**, Mihoko Maruyama<sup>1,2,3</sup>, Yuka Tsuru<sup>2</sup>, Hiroshi Y. Yoshikawa<sup>2</sup>, Katsuo Tsukamoto<sup>2,4</sup>, Takashi Onuma<sup>5</sup>, Ryutarō Shimada<sup>5</sup>, Tomohiko Tateshima<sup>5</sup>, Kazufumi Takano<sup>3,6</sup>, Hiroaki Adachi<sup>6</sup>, Shigeyoshi Usami<sup>2</sup>, Masayuki Imanishi<sup>2</sup>, Masashi Yoshimura<sup>7</sup>, Yusuke Mori<sup>2</sup>, <sup>1</sup>ACCS, Osaka Univ., Japan, <sup>2</sup>Grad. Sch. of Eng., Osaka Univ., Japan, <sup>3</sup>Grad. Sch. of Life and Environ. Sci., Kyoto Pref. Univ., Japan, <sup>4</sup>Grad. Sch. of Sci., Tohoku Univ., Japan, <sup>5</sup>PHOTRON Ltd., Japan, <sup>6</sup>SOSHO Inc., Japan, <sup>7</sup>ILE, Osaka Univ., Japan
- P-140 C000230  
**Ferrimagnetic properties of xerogels doped with ZnFe<sub>2</sub>O<sub>4</sub> nanoparticles induced by femtosecond laser irradiation**, Seisuke Nakashima<sup>1</sup>, Yukio Kimura<sup>1</sup>, <sup>1</sup>Shizuoka University, Japan

## New Trends in Laser Processing

- P-141 C000031  
**Influence and avoidance of debris in scanning UV excimer laser treatments for bonding applications of CFRP**, Markus Veltrup<sup>1</sup>, Thomas Lukasczyk<sup>1</sup>, Bernd Mayer<sup>1,2</sup>, <sup>1</sup>Fraunhofer Institute for Manufacturing Technologies and Advanced Materials (IFAM), Germany, <sup>2</sup>University of Bremen, Faculty of Production Engineering, Germany
- P-142 *Student* C000124  
**Fabrication of non-enzymatic electrochemical sensor based on Zn@ZnO core-shell structures obtained via pulsed laser ablation for selective determination of hydroquinone**, Jiwon Kim<sup>1</sup>, Juhyeon Park<sup>1</sup>, Ahreum Min<sup>2</sup>, Myong Yong Choi<sup>1,2</sup>, <sup>1</sup>Gyeongsang National University, Korea, <sup>2</sup>Core-Facility Center for Photochemistry & Nanomaterials, Korea
- P-143 *Student* C000126  
**Design and tailoring of Pt/C electrocatalyst via pulsed laser ablation in various solvents and their electrochemical HER performance**, Yu Jeong Jeong<sup>1</sup>, Jayaraman Theerthagiri<sup>1,3</sup>, Seung Jun Lee<sup>2</sup>, Myong Yong Choi<sup>1,2</sup>, <sup>1</sup>Gyeongsang National University, Korea, <sup>2</sup>Core-Facility Center for Photochemistry & Nanomaterials, Korea, <sup>3</sup>Research Institute of Natural Sciences, Korea
- P-144 *Student* C000135  
**In-situ alloying of Au-Pt alloys in a pulsed laser technique as promising electrocatalysts for hydrogen evolution reaction**, Yiseul Yu<sup>1</sup>, Seung Jun Lee<sup>2</sup>, Jayaraman Theerthagiri<sup>3</sup>, Myong Yong Choi<sup>1,2</sup>, <sup>1</sup>Department of Chemistry, Gyeongsang National University, Korea, <sup>2</sup>Core-Facility Center for Photochemistry & Nanomaterials, Gyeongsang National University, Korea, <sup>3</sup>Research Institute of Natural Sciences, Gyeongsang National University, Korea
- P-145 *Student* C000156  
**Pulsed laser-assisted hybrid micro-scribing of Cu films**, Sooraj S<sup>1</sup>, Nilesh J Vasa<sup>1</sup>, <sup>1</sup>IIT MADRAS, India
- P-147 C000204  
**Laser processing of polytetrafluoroethylene resin by a mid-infrared quantum cascade laser**, Hidehiko Yashiro<sup>1</sup>, Masayuki Kakehata<sup>1</sup>, Tadataka Sato<sup>1</sup>, Naota Akikusa<sup>2</sup>, Tadataka Edamura<sup>2</sup>, <sup>1</sup>National Institute of Advanced Industrial Science and Technology (AIST), Japan, <sup>2</sup>Hamamatsu Photonics, Japan
- P-148 *Student* C000226  
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