

## Pre-conference, SUNDAY 6 NOVEMBER 2016

17:00 Registration

18:00 Get Together

## DAY1, MONDAY 7 NOVEMBER 2016

08:00 Registration

Hall 1

08:00 Opening remarks (Chair: Yoshitoki Okada)

08:00 Plenary

[P1-1] Takashi Sakamoto

Mayor of Itabashi city

08:20 Plenary

[P1-2] Holography in mechanical engineering

Junpei Tsujitsu

Tokyo Institute of Technology

10:20 Networking/Break/Exhibition at "Hall 1"

11:00 Plenary (Chair: Yoshio Kajiwaki)

[P1-3] Optical lattice clocks: seeking for a new second

Hiroyuki Katori

The University of Tokyo

12:00 Lunch at "MITSUBISHI Hall"

Hall 1

### Laser processing and its applications

Session Chair: Yoshio Kajiwaki (Osaka City Univ.)

10:10 Mechanical properties of nanostructured polymer (Invited)

[B1-1] Satomi Inaji

The University of Electro-Communications

11:01 Intermittent release of silica can form periodic surface

[B1-2] Rules on glass substrate technique in femtosecond laser study

Shigeki Nakano<sup>1</sup>, Shuichi Tachibana<sup>2</sup>

<sup>1</sup> Shibaura Institute of Technology, <sup>2</sup> The University of Tokushima

14:00 Laser micro processing by position control of a photoresist

[B1-3] Masaki

Toshioo Shimohara, Yasuhiro Takaya, Yasuhiro Mizutani

Osaka University

14:10 Versatile micro/nano-actuation scheme based on laser-

[B1-4] Induced modifications for optomechanical devices

Tao Kang, Yueshik Inoue

Osaka Polytechnic University (Osaka Univ. of Applied Science)

14:30 Parallel femtosecond laser processing with wave beam

[B1-5] 1000 beams

Takashi Homma, Yoshio Kajiwaki

Osaka City University

16:45 Networking/Break/Exhibition at "Hall 1"

Hall 1

### Optomechanics for Robotics

Session Chair: Katsunori Yamashita (Osaka University)

10:10 FEM-based dynamic characterization of a soft robot for

[B1-1] Intra-arterial navigation (Invited)

Shi-Hong Lee, Martin C.B. Young, Marco C.A. Cloos, Tim T.L. Lau, Hong-Chiu Fu, Chiu-Lee Cheung, Yixin Zhou, Sam-Wai Lam, Kai-Wai Lam

The University of Hong Kong

10:40 Dynamic characterization of a hexapod-structured

[B1-2] calibration device for multi-component force and moment transducers

Jan Sittler<sup>1,2</sup>, Marcus Peter<sup>1</sup>, Dirk Richter<sup>1</sup>, Ralf Gammert<sup>1</sup>, Rainer Tschudi<sup>1</sup>

<sup>1</sup> ISL Braunschweig, <sup>2</sup> Physikalisch-Technische Bundesanstalt (PTB)

10:50 Demonstration of a 3D vibration measurement with a

[B1-3] single-point laser Doppler vibrometer and a flexure

industrial robot

Theodore Zenger, Christian Bender

Clausthal University of Technology

10:10 Real-time 3D profiling of the deposited material in pliers

[B1-4] using laser optics technology

Daishi Iwata-Gajda<sup>1</sup>, Mehrez Mehrezabadi<sup>1</sup>, Faridk Jambri-Sharifi<sup>2</sup>

<sup>1</sup> University of Regina, <sup>2</sup> Syrian University

Hall 2

### Biomedical applications

Session Chair: Nathan Nguyen (Monash Univ.)

10:10 Biomedical applications using near-infrared

[C1-1] spectroscopy/imaging (Invited)

Jan-Claes Kim

Gangneung Institute of Science and Technology

11:01 Artificial reduction method in endoscopic OCT catheter

[C1-2] using double clad fiber (OCF)

Min-Woo Lee<sup>1</sup>, Tae-Eun Kim<sup>2</sup>, Sang-Pil Oh<sup>2</sup>, Hong-Jin Yoo<sup>2</sup>

<sup>1</sup> Hanyang University, <sup>2</sup> Korea Research Institute of Standards and Science

14:00 Image directing in optical coherence tomography based

[C1-3] on iterative multi-layer perception

Egyang-Chun Jin<sup>1</sup>, Sun-Ju Lee<sup>1</sup>, Kye-Hyung Lee<sup>2</sup>

<sup>1</sup> Korea Institute of Industrial Technology, <sup>2</sup> Korea Basic Science Institute

14:10 Fully fiber based endoscopic micro-OCT

[C1-4]

Jun Young Kim<sup>1</sup>, Jong Chan Kim<sup>2</sup>, Min-Woo Lee<sup>1</sup>, Joon-Woo Song<sup>1</sup>, Jin-Wan Kim<sup>2</sup>, Hong-Jin Yoo<sup>2</sup>

<sup>1</sup> Hanyang University, <sup>2</sup> Korea University Guro Hospital

14:30 Reconstruction of accurate 3-D sharp edges using split of

[C1-5] structured illumination imaging and data fusion

Manh-Trung Le<sup>1</sup>, Giang-Chia Chen<sup>2</sup>, Chih-Jen Lin<sup>2</sup>

<sup>1</sup> National Taipei University of Technology, <sup>2</sup> National Taiwan University

16:45 Networking/Break/Exhibition at "Hall 1"

Hall 2

### Optomechanical sensor and interferometry

Session Chair: Hongbin Heo (Hanyang Univ.)

10:10 In vivo intracranial pressure monitoring

[C2-1] using implantable optomechanical sensor (Invited)

Jong-Cheon Lee<sup>1</sup>, Haeil Park<sup>1</sup>, Do-Joon<sup>2</sup>, Wonhyuk Namikhan<sup>3</sup>, Adnan Babalichina<sup>4</sup>, Oliver Chen<sup>5</sup>, David Brinkman<sup>6</sup>, Hyunki Chae<sup>7</sup>

<sup>1</sup> California Institute of Technology, <sup>2</sup> OptiMedTech

10:40 High speed height measurement for mirror bumps by laser

[C2-2] scanning type confocal optical system

Tatsuya Hongo<sup>1,2</sup>, Shinjiro Ishihara<sup>2</sup>

<sup>1</sup> NAGASEE TOKO-CO., LTD., <sup>2</sup> Osaka City University

10:50 Improved back focal plane interferometry for monitoring

[C2-3] nanoparticle position

Shunsuke Mouri, Yusuke Horita, Masaki Mitsuhashi, Kiyochi Takemura, and Isamu Takahashi

The University of Tokyo

10:10 Optical detection of fine particulate defects by

[C2-4] autonomous scanning liquid probe (autofocal design of high resolution phase detection system)

Kazuki Tachibana, Shota Arai, Masaki Mitsuhashi, Kiyochi Takemura, Isamu Takahashi

The University of Tokyo

10:30 Deformation measurement of building phenomena using

[C2-5] 3D-spatial interferometer

Yasuhiko Arai

Kansai University

Hall 1

Communicative plenary

### ISOM event

Coordinator: Prof. Rainer Tschudi<sup>1</sup> / ISL Braunschweig

17:00 Opening introduction for the ISOM by the president

Prof. Rainer Tschudi

ISL Braunschweig

17:00 History of ISOT

Prof. Hyungsuk Cho

KIST

17:10 Japanese optomechanics association

Prof. Junpei Tsujitsu

Prof. Emeritus, Tokyo Institute of Technology

17:30 Optomechanics-10th year present, and future

Prof. Taro Tachibana

Prof. Emeritus, Tokyo University of Agriculture and Technology, IFD-30 association

17:40 Panel discussion for ISOM by all speakers

18:00 Welcome reception at "Hall 1"

Hall 1

**Adaptive optics**

Session Chair: **Gilvan S. Wright** (Hokkaido Univ.)

09:00 **Flow-actuated adaptive lenses** (Invited)

[09-1] **G. Balabani<sup>1</sup>, M. M. Spector<sup>2</sup>, S. Branner<sup>3</sup>, L. Finkler<sup>2</sup>, J.C. Serrano<sup>4</sup>, M. Abdo<sup>5</sup>, M. Zaitsev<sup>6</sup>, R. Trivedi<sup>7</sup>, J. Limbo<sup>8</sup>, W.C. Taylor<sup>9</sup>**  
 1 University of Freiburg, 2 Ernst-Jülicher University of Applied Sciences, 3 Institute for Microstructure Technology, 4 University Medical Center Freiburg

10:00 **Microscopy with adaptive lenses and multimode fibers**

[09-2] (Invited)  
 Jürgen W. Coenen, E. Philipp, D. Heule, N. Kuznetsov, L. Bažant  
 Technische Universität Dresden

10:00 **Liquid crystal lens with circularly-patterned light-modulating films**

[09-3] (Invited)  
 Maramon Kawamura<sup>1</sup>, Yuki Coda<sup>2</sup>, Susumu Imai<sup>3</sup>  
 1 Aichi University, 2 IZCEms Institute

10:01 **Tunable optical encryption using a fluid phase mask**

[09-4] David S. Schipf<sup>1</sup>, Wei-Chih Wang<sup>2\*</sup>  
 1 University of Washington, 2 National Tsing Hua University

11:00 **Networking/Event/Exhibition at "Hall 2"**

Hall 1

**New optomechanronic technologies**

Session Chair: **Shinya Wada** (Univ. Freiburg)

11:00 **Optics and motion in nature** (Invited)

[09-1] **S. Branner<sup>1,2\*</sup>**  
 1 Fraunhofer Institute for Applied Optics and Precision Engineering, 2 Ernst-Jülicher University of Applied Sciences

12:00 **Tracking DNA sound in nanowires and cells**

[09-2] **G. S. Wright**  
 Hokkaido University

12:11 **Determination of steering levels in an RGB mixed light source for AR/VR application using pattern search**

[09-3] HyungJae Kim, SeungJae Kim, Jungho Kim, SangJin Ha, Junhyuk Lee  
 KIST/CI

12:00 **Scanning electron microscope-driven image reconstruction for electron microscopy**  
 [09-4] **Andreas Beckmann<sup>1</sup>, Benjamin Beckmann<sup>1</sup>, Felix Brüggen<sup>2</sup>, Johannes Beckmann<sup>3</sup>**  
 1University of Siegen, 2University of Cologne, 3University of Göttingen

12:00 **Development of 3-D shape measurement method using ellipse fitting algorithm**

[09-5] Tetsuaki Higashida, Yasuhiko Aoi  
 Kansai University

12:45 **Lunch at "RESTAURANT Hall"**

Hall 1

**Computational imaging**

Session Chair: **Ryota Hasegawa** (Osaka Univ.)

14:00 **Compressive phase retrieval** (Invited)

[09-1] George Balasubramanian  
 Massachusetts Institute of Technology

14:00 **Simultaneous three-wavelength holographic multi-perspective imaging by multi-wavelength digital holography with dual reference arms**

[09-2] Taro Kato<sup>1</sup>, Izumi Imai<sup>2</sup>, SangWook Lee<sup>3</sup>, Takuro Ito<sup>4</sup>, Osamu Imai<sup>5</sup>, Yasuhiko Aoi<sup>6</sup>, Yasuyuki Ozeki<sup>7</sup>, Ken-ichi Goda<sup>8</sup>  
 1Tokyo Tech,  
 2 Kansai University, 3 National Institute of Informatics, 4 Tokyo Institute of Technology, 5 The University of Tokyo, 6 Japan Science and Technology Agency, 7 Explains Co., Ltd.

14:01 **Movement and behavior analysis of biological samples using a near infrared imaging system**

[09-3] Celina B. Ferra Duarriba, Maura Telenius, Masayuki Ito, Takahiro Chmi  
 Gwangju University

15:00 **Fluorescence using a complex amplitude single-pixel camera**

[09-4] Kazuo Ota, Yoshio Hayashi  
 Gwangju University

15:15 **Networking/Event/Exhibition at "Hall 2"**

15:30 **Poster session**

17:00 **Banquet on Sakata-koji**

Hall 2

**Optical trapping & Spectral imaging I**

Session Chair: **Yoshio Hayashi** (Osaka Univ.)

09:00 **Optical micro-trapping using a virtual watch filter**

[09-1] (Invited)  
 Indrajit Bhattacharya<sup>1</sup>, Lakshminarayanan Ramakrishna  
 1 University of Engineering & Management, 2 University of Calicut

**Special session I: Spectral imaging technology application** (Invited) (Osaka Univ.)

10:00 **Search of thermal imaging with uncooled camera** (Invited)  
 [09-1] Naohiro Hagen  
 Gwangju University

10:00 **Holographic sensing based on random diffraction** (Invited)  
 [09-2] Yoshio Hayashi  
 Osaka University

11:00 **Networking/Event/Exhibition at "Hall 2"**

Hall 2

**Spectral imaging 2 & microscopy**

Session Chair: **Naohiro Hagen** (Gwangju Univ.)

11:00 **Optimal merge number for hyper-spectral imaging using**

[09-1-1] **Isometric camera and imaging interferometer** (Invited)  
 Nigera Sugawara<sup>1</sup>, Mitsutoshi Yoshida<sup>2</sup>, Toshiro Saito<sup>3</sup>, Yoshitaka Nakayama<sup>4</sup>, Hideyo Yaniguchi<sup>5</sup>, Ichiro Ichimaru<sup>6</sup>  
 1 National Research Institute of Advanced Science, 2 Kagawa University, 3 AII ELECTRONIC Co. Ltd.

12:00 **Microspectroscopy using a camera for mid-infrared light**

[09-1-2] (Invited)  
 Ichiro Ichimaru  
 Kagawa University

12:00 **Color-coded LED microscopy: an effective platform for multi-wavelength microscopy on a mobile device** (Invited)  
 [09-2] Chulmin Lee  
 Seoul University

13:00 **Lunch at "RESTAURANT Hall"**

Hall 2

**Optical sensors**

Session Chair: **Christian Bender** (Tech. Univ. Clausthal)

14:00 **Filter optical sensors: sensors made out of glass** (Invited)

[09-1] Wolfgang Inhaupl, Martin Angermair, Christian Waltermann, Anna Lena Baumann  
 Fraunhofer IPT and Clausthal University of Technology

14:00 **3D minute force measurement by non-contact optical sensor**

[09-2] Tetsuya Nagahama, Koichi Komatsu, Syuhei Kanno, Etsuko Moritani, Kazuaki Kato  
 Hitachi Corporation

14:01 **Calibration of refractive index in microscope diameter measurement based on analysis of polarized sub-pixeling gallery mode**

[09-3] Shota Ota, Masaki Mochizuki, Kakeru Hayashi, Kiyoshi Takemura, Ichiro Takahashi  
 The University of Tokyo

15:00 **Optical water spray pressure sensor**

[09-4] Wei-Chih Wang<sup>1</sup>, Chun-Wen Wu<sup>2</sup>  
 1 National Tsing Hua University, 2 University of Washington, 3 National Cheng Kung University

15:15 **Networking/Event/Exhibition at "Hall 2"**

08:00 Registration

Hall 1

**Optical metrology**

Session Chair: Wei-Chih Wang (Univ. Washington, US)

- 08:30 **Model based optical metrology in lithography – inverse problem – (Invited)**  
[08-1] **Michiko Ise**  
Canon Inc.
- 10:00 **Fizeau interferometer with phase-shifting and phase-scanning measurement modes**  
[08-2] **Mye-Young Lim, Mye-Young Wang**  
National Taipei University of Technology
- 10:11 **Temporal phase unwrapping in digital metrology**  
[08-3] **Fahreddin Mohammadi, Jonathan Salinas**  
University of Waterloo
- 10:30 **Fabrication of moiré like structures using Talbot effect**  
[08-4] **Mitsuru Shimozaki, Yasuhito Mizutani, Yasuhito Takaya**  
Osaka University
- 10:41 **A tunable surface plasmon resonance substrate for in-process measurement of micro-structures**  
[08-5] **Deqing Kong, Masaki Wadahiko, Kiyoshi Takemura, Satomu Takahashi**  
The University of Tokyo

11:00 Networking/Break/Exhibition of "Hall 1"

Hall 1

**Special session 2: Optomechanics in biomedical engineering applications I**

organizer: Yeung Yam/The Chinese University of Hong Kong

Session Chair: Yeung Yam (Chinese Univ. Hong Kong)

- 11:30 **Determination of single cell state using optically induced electric field in a microfluidic platform (Invited)**  
[04-1] **Yuliang Zhao, Wm. J. Lu**  
City University of Hong Kong
- 12:00 **An advanced optical coordinate tracking system using wide-view optical optics and curved image markers for image-guided surgery (Invited)**  
[04-2] **Yoo Seung Chan<sup>1</sup>, Hyun Si Lee<sup>2</sup> and Min Young Kim<sup>1</sup>**  
<sup>1</sup> Kyungpook National University, <sup>2</sup> Kalyang Technology Ltd
- 12:30 **Cardiac and muscular activities of general medicine in upper limb rehabilitation using PNEI and BAC (Invited)**  
[04-3] **Geunhyun Jo, Seungyeon Lee, Seonho Jeong, and Jinsung An**  
Gangneung Institute of Science and Technology

13:00 Lunch at "MITSUBISHI Hall"

Hall 1

Session Chair: Yeung Yam (Chinese Univ. Hong Kong) & Min Young Kim (Kyungpook National Univ.)

- 14:01 **DMD-based high-speed axial scanning optical sectioning microscope with an electrically tunable lens (Invited)**  
[04-4] **D. P. Wang, Y. L. Meng, D. P. Zhang, C. L. Gu, L. C. Chen, Y. Yam**  
The Chinese University of Hong Kong
- 14:11 **Direct laser writing of helical microstructures with self-assembled magnetic nanoparticles coating for biomedical applications (Invited)**  
[04-5] **Mengshi Li<sup>1</sup>, Ben Wang<sup>1</sup>, Dongling Jin<sup>1</sup>, Tianyan Huang<sup>2</sup>, Weiling Guan<sup>2</sup>, and Ji Zhang<sup>1</sup>**  
<sup>1</sup> The Chinese University of Hong Kong, Hong Kong, <sup>2</sup> Peking University

**Special session 4: Optomechanics in biomedical engineering applications II**

organizer: Min Young Kim/Kyungpook National University

- 14:43 **Neuro-cortical hemodynamic pathway of pain by using functional near infrared spectroscopy (Invited)**  
[04-6] **Seung Hyun Lee, Sang Hyun Jo, Gihyeon Lee, Jinsung An**  
Gangneung Institute of Science and Technology

15:15 Networking/Break

Session Chair: Min Young Kim (Kyungpook National Univ.)

- 15:30 **Design of an MR-safe high-torque hydraulic stepper motor for MR-guided robotic interventions (Invited)**  
[04-7] **Zeyan Cao, Ziyang Cheng, Jialin He, Fu, Ke-Wai Kwok**  
University of Hong Kong
- 16:00 **A sensor-less lock-in method based on a Latham filter for surgical tracking system with optical tracker and internal vision sensor (Invited)**  
[04-8] **Hyun Min Oh, Yeung In-Jae and Min Young Kim**  
Kyungpook National University
- 16:30 **Toward PIC-based temperature independent laser/Ti:sapphire sensor for cardiac ablation catheters (Invited)**  
[04-9] **Bin Tang, Yanyan Fan, Fahreddin Mohammadi**  
Myeong University
- 17:00 **DMD-based random access scanning and its applications in two-photon microscopy (Invited)**  
[04-10] **Qiang Cong and Wei-Chi Chen**  
The Chinese University of Hong Kong

17:30 Closing

Hall 2

Hall 2

**Special session 2: Polarization technology**

organizer: Yukihiro Ohno/Hitsumachi University

Session Chair: Yukihiro Ohno (Hitsumachi Univ.)

- 08:30 **Measuring glucose concentration with scattering effect using visible Mueller polarimetry (Invited)**  
[02-1] **Su Long Gu, Jian Xiang Lin, Quan Hong Phan**  
National Cheng Kung University
- 10:00 **Surface anisotropy of rubbed PI and distribution of LC molecules in TN cell characterized by using ellipsometry (Invited)**  
[02-2] **Sang Yong Choi<sup>1</sup>, Sang Wn Park<sup>2</sup>, Sang Youl Kim<sup>1\*</sup>**  
<sup>1</sup> Ajou University, <sup>2</sup> Elixys Technology Co., Ltd.
- 10:30 **Generation of broadband optical vortices and ring-shaped optical lattices using axially symmetric polarization elements (Invited)**  
[02-3] **S. Oka<sup>1</sup>, H. Sakamoto<sup>2\*</sup>, K. Yamane<sup>2</sup>, H. Morikawa<sup>2</sup>, S. Morita<sup>2</sup>**  
<sup>1</sup> Hokkaido University, <sup>2</sup> Nagasaki University of Technology

11:00 Networking/Break/Exhibition of "Hall 2"

Hall 2

Session Chair: Gwanok Kim (Chonbuk National University)

- 11:30 **Ghost imaging ellipsometry (Invited)**  
[02-4] **Yasuhito Mizutani<sup>1</sup>, Yasuhito Takaya<sup>1</sup>, Yukihiro Ohno<sup>2</sup>**  
<sup>1</sup> Osaka University, <sup>2</sup> Hitsumachi University
- 12:00 **Principles and application of spectroscopic ellipsometry (Invited)**  
[02-5] **Invited**  
**Takumi Moriyma<sup>1</sup>, Natasya Palastova-Caboun<sup>2</sup>**  
<sup>1</sup> HORIBA TENCOR-TECHNO Co., Ltd, <sup>2</sup> HORIBA Ltd.
- 12:30 **Full polarimetric diagnosis of 191-nm immersion lithography equipment using a mask with thin plate polarizers and wide-view-angle  $\lambda/4$  plates**  
[02-6] **Hirotaka Nomura**  
Teichie Corporation
- 12:41 **Observation of sample with the simplified mode birefringence optical microscope**  
[02-7] **Shinya Ohno**  
National Institute of Technology, Gifu College
- 13:00 **Development of spectroscopic Stokes and Mueller polarimeter**  
[02-8] **Systems Shimada**  
Tokyo Instruments, Inc.

13:15 Lunch at "MITSUBISHI Hall"

Hall 2

Session Chair: Kazuhiko Oka (Hokkaido Univ.)

- 14:00 **Extraction method of polarization properties of the individual components of a layered system and its application (Invited)**  
[02-9] **Liuhua Jin**  
University of Tsukuba
- 14:30 **Dynamic spectroscopic ellipsometry theory and applications (Invited)**  
[02-10] **Gwanok Kim, Venuka Deshpande, Inho Choi, Ramachandran Kuru**  
Chonbuk National University

- 15:00 **Laser diode interferometer utilizing polarization technique (Invited)**  
[02-11] **Takamasa Suzuki, Samuul Choi, Osamu Suzuki**  
Niigata University

15:30 Networking/Break

Session Chair: Yasuhito Mizutani (Osaka Univ.)

- 15:41 **Spectroscopic ellipsometry – a versatile tool for sophisticated applications (Invited)**  
[02-12] **S. Hiron**  
SENTECH-Instruments GmbH
- 16:11 **Decomposition of partial Mueller matrix in simultaneously measure birefringence and depolarization characteristics in real time**  
[02-13] **Pradyota Mukherjee, Yukihiro Ohno**  
Hitsumachi University
- 16:30 **Single-chip Mueller matrix polarimetry using axially symmetric quarter-wave plate and channelled spectrum**  
[02-14] **Kazuhiko Ohno<sup>1</sup>, Yoshitaka Nakayama<sup>2</sup>, Naohiro Hagen<sup>1</sup>, Yukihiro Ohno<sup>1</sup>**  
<sup>1</sup> Hitsumachi Univ., <sup>2</sup> Ibaraki National University
- 16:41 **A partial Mueller matrix polarimeter using two photoelastic modulators and polarizer pairs**  
[02-15] **Min Nakata<sup>1</sup>\*, Shuichi Kamakura<sup>2</sup>, Yukihiro Ohno<sup>1</sup>**  
<sup>1</sup> Hitsumachi University, <sup>2</sup> Tokyo Polytechnic University

Sub: TOUR

- 08:00 Start
- 08:30 TOPICON reception
- 11:00 Materials Exhibition (see story (Dear! Lab.), EXER)
- 12:30 Exhibition of Japanese companies at Hiyoshi-Sabashi-Tokaiden