

# ADVANCE PROGRAM



# MOC '16

## 21st MICROOPTICS CONFERENCE

<http://www.comemoc.com/moc16/>

*Sponsored by  
the Japan Society of Applied Physics (JSAP)*

*Organized by  
Microoptics Group, JSAP*



Oct. 12 (Wed.) - Oct. 14 (Fri.), 2016

David Brower Center  
Berkeley, CA, USA

# MOC '16 Agenda At-A-Glance

October 12 (Wed.)		October 13 (Thu.)	
8:30	Registration Open	8:30	Registration Open
9:00		9:00	Plenary Session 2
9:30	Opening	9:30	Break
10:00	Plenary Session 1	10:00	Session 13A: New Waveguide Applications
10:30	Break	10:30	
11:00	Session 12A: Nano Material	11:00	
11:30		11:30	
12:00		12:00	
12:30	Lunch Break	12:30	Lunch Break
13:00		13:00	
13:30		13:30	
14:00	Session 12B: Functional Devices	14:00	Session 13B: Photonic Integration
14:30		14:30	
15:00		15:00	
15:30	Break	15:30	Session 13C: Poster
16:00	12C: Panel Session Optical Interconnects -- VCSEL Photonics vs. Silicon Photonics	16:00	
16:30		16:30	
17:00		17:00	
17:30		17:30	Break
18:00		18:00	Micro Concert
18:30		18:30	
19:00	Conference party	19:00	
19:30		19:30	
20:00		20:00	
20:30		20:30	

# MOC '16 Agenda At-A-Glance

<b>October 14 (Fri.)</b>	
8:30	Registration Open
9:00	Session 14A: Bio
9:30	
10:00	
10:30	Break
11:00	Session 14B: Novel Technologies
11:30	
12:00	
12:30	Lunch Break
13:00	
13:30	
14:00	Session 14C: Light Source Design & Applications
14:30	
15:00	
15:30	
16:00	Break
16:30	Session 14D: Post Deadline Paper
	Closing

# **Technical Program**

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The 21st MICROOPTICS CONFERENCE (MOC '16) will be held in United States of America, for the first time in MOC history, on October 12 - October 14, 2016. The MOC conference started in 1987 and has been held every two years in Japan. Since 2004, it has been held alternately overseas and in Japan every year except 2012. MOC'04 was held in Jena, Germany as its 10th anniversary, followed by MOC'06 in Seoul, South Korea, MOC'08 in Brussels, Belgium, MOC'10 in Hsinchu, Taiwan, and ECIO-MOC 2014 in Nice, France.

The MOC '16 is intended to provide a central forum for an update and review of scientific and technical information covering a wide range of the microoptics field from fundamental researches to systems and applications. The conference covers the following subjects; theory, modeling and design, materials and fabrication, measurement and sensing, passive devices, active devices, dynamic and functional devices, integration and packaging, Si photonics, and system and design conception.

The MOC '16 is organized by Microoptics Group, the Japan Society of Applied Physics, and is located at David Brower Center, Berkeley, CA, USA. We are looking forward to broad participation of the international microoptics research community, and particularly welcome participation of students and young scientists.

The latest information will be available on the following web site:

**<http://www.comemoc.com/moc16/>**

## **Plenary Talks**

Plenary session will be held in Goldman Theater on Wednesday, 12 October and Thursday, 13 October. The following papers are invited as the plenary talks.

**"Photonics beyond diffraction limit: Plasmon waveguide, cavities and integrated laser circuits"**

*Xiang Zhang, UC Berkeley, USA*

**"Retinal imaging laser eyewear with focus-free and augmented reality"**

*Mitsuru Sugawara, QDLaser, Inc., Japan*



## Panel Session

A panel session will be held on Wednesday, 12 October, which focuses on "**Optical Interconnects -- VCSEL Photonics vs. Silicon Photonics**".

### Organizers

Lukas Chrostowski, *Univ. British Columbia, Canada*

Connie J. Chang-Hasnain, *UC Berkeley, USA*

### Invited Talks

**"VCSELs and silicon photonics: Conflict or coexistence?"**

Ryohei Urata and Hong Liu, *Google, USA*

**"From chip to cloud: Optical interconnects in enterprise computing systems"**

Ashok Krishnamoorthy, *Oracle, USA*

**"Silicon photonics; What are the new developments?"**

Eli Yablonovitch, Christopher Lalau-Keraly,  
*UC Berkeley, USA*

**"VCSEL photonics for optical interconnects"**

Fumio Koyama, *Tokyo Tech, Japan*

**"Silicon photonics for optical interconnects"**

Y. K. Chen, *Nokia-Bell Labs, USA*

**"Silicon photonics and free space - saving energy "**

David Miller, *Stanford University, USA*

## Oral Presentation

Oral session is to be held in Goldman Theater. The presentation time (including discussion) will be 45 minutes for plenary talks, 30 minutes for invited papers, 15 minutes for regular papers, and 10 minutes for post deadline papers. All the speakers are requested to present the paper with a data projector. Prior to the starting time of the session, the speakers are asked to contact the session chairs and to confirm the connection between their computer and the projector.

## Poster Session

Poster session will be held in Hazel Wolf Gallery and Atrium Lobby in the afternoon of Thursday, 13 October. For the convenience of the participants, this session will be divided into two parts. The first half (15:15-16:15) is for authors with the paper of odd-number (13C-1, 13C-3, ...) and the second half (16:15-17:15) is for authors with the paper of even-number (13C-2, 13C-4, ...). Authors should stay by turns in the vicinity of the bulletin board for discussion. Each author is requested to display materials on a 110 cm wide and 120 cm high space on a tack board.

## Post Deadline Papers

A limited number of post deadline papers will be accepted for the post deadline oral session or the poster session.

Latest significant results obtained after the regular deadline are most welcome. Post deadline papers should be submitted electronically.

A detailed instruction as well as the paper template is available from the following Web site:

<http://www.comemoc.com/moc16/>

The deadline for submission is **September 26 (Mon.), 2016.**

## Official Language

The official language of MOC '16 is English.

## Photograph

No photographing is permitted during the oral and poster sessions.

## Social Events

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### Conference Party

In the evening of Wednesday, 12 October, Conference Party starts at 19:00 at Tamalpais Room and Terrace. All participants are invited to the party.

### Microconcert

"Microconcert" will be performed by Machida Philharmony Baroque Ensemble (MPB) at Goldman Theater, David Brower Center, 17:30-18:30, Thursday 13, October. All the attendees of MOC '16 and their accompanying family are invited to the Microconcert.

## Registration

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### Registration Fees

	Before/On Sept. 26	After Sept. 26
General	\$500	\$600
Student, Retiree	\$250	\$300

The conference fee includes admission to MOC '16.

Those who wish to attend MOC '16 should register online at:

<http://www.comemoc.com/moc16/>

### Financial Support for Students

Thanks to the support from Takano Eiichi Optical Science Funds, MOC '16 provides limited financial support for student presenters in MOC '16. The application was closed on Aug. 20.

### MOC '16 Registration Desk

2325-26 Shimokawai-cho, Asahi-ku,  
Yokohama 241-0806, Japan

Phone: +81-80-5412-0844, Fax: +81-45-954-2777

E-mail: [ogura@comemoc.com](mailto:ogura@comemoc.com)

# Technical Sessions

Wednesday, 12 October

Goldman Theater

## 9:30-9:45 Opening Remarks

Conference Co-chairs:

Connie J. Chang-Hasnain, *UC Berkeley*

Hirochika Nakajima, *Waseda University*

## 9:45-10:30 Plenary Session 1

Chair: Ming C. Wu, *UC Berkeley*

### Plenary **Photonics beyond diffraction limit: Plasmon waveguide, -1 cavities and integrated laser circuits** (Plenary)

9:45 Xiang Zhang, *UC Berkeley*

**Break (10:30-11:00)**

## 11:00-12:30 Session 12A: Nano Material

Chairs: Eli Yablonovitch, *UC Berkeley*

Young-Kai Chen, *Nokia-Bell Labs*

### 12A-1 **Highly efficient hybrid optoelectronic devices based on colloidal quantum dots** (Invited)

11:00 Chien-Chung Lin, *National Chiao Tung University*

### 12A-2 **Substrate-free ultrathin flexible UV photodetector on freestanding ZnO nanocrystal-nanofibrillated cellulose film**

11:30 Jingda Wu, Chen Zou, Lih Y. Lin, *University of Washington*

### 12A-3 **Rutile TiO<sub>2</sub> optical devices fabricated by laser-induced photothermal oxidation**

11:45 Youngho Jung, Gyungho Son, Kyunghan Choi, Kyoungsik Yu, *Korea Advanced Institute of Science and Technology*

### 12A-4 **Electroluminescence from Sb-doped ZnO microspheres-based homojunction**

12:00 Fumiaki Nagasaki, Yuki Fujiwara, Mitsuhiro Higashihata, Daisuke Nakamura, Tatsuo Okada, *Kyushu University*

### 12A-5 **High-Q GeSbS-based chalcogenide microresonator**

12:15 Jean-Etienne Tremblay<sup>1</sup>, Yung-Hsiang Lin<sup>1</sup>, Meer N. Sakib, Kyoungsik Yu<sup>1,2</sup>, Ming C.Wu<sup>1</sup>, <sup>1</sup>*UC Berkeley*, <sup>2</sup>*on leave from KAIST*

**Lunch (12:30-14:00)**

## 14:00-15:30 Session 12B: Functional Devices

Chairs: Xiang Zhang, *UC Berkeley*

Tomoyuki Miyamoto, *Tokyo Institute of Technology*

### 12B-1 **Advances in 2D and 3D optofluidic systems** (Invited)

14:00 Hans Zappe, *University of Freiburg*

### 12B-2 **Flow rate measurement of highly scattering liquid by MEMS laser Doppler velocimeter with an optical filtering plate**

14:30 Nobutomo Morita<sup>1</sup>, Fumiya Nakashima<sup>1</sup>, Naoya Fujimoto<sup>2</sup>, Tomoo Gomei<sup>2</sup>, Hirofumi Nogami<sup>3</sup>, Eiji Higurashi<sup>4</sup>, Renshi Sawada<sup>1</sup>, <sup>1</sup>*Kyushu University*, <sup>2</sup>*Aichi Tokei Denki Co., Ltd*, <sup>3</sup>*University of Tokyo*

# Technical Sessions

**Wednesday, 12 October**

## **12B-3 Optical actuation of a NEMS electric switch**

14:45 Kyungmok Kwon<sup>1</sup>, Kyunghan Choi<sup>1</sup>, Jeong Oen Lee<sup>2</sup>, Jun-Bo Yoon<sup>1</sup>, Kyoungsik Yu<sup>1</sup>, <sup>1</sup>*Korea Advanced Institute of Science and Technology*, <sup>2</sup>*California Institute of Technology*

## **12B-4 MEMS optical phased array for LIDAR**

15:00 Youmin Wang<sup>1</sup>, Kyoungsik Yu<sup>2</sup>, Ming C. Wu<sup>1</sup>, <sup>1</sup>*UC Berkeley*, <sup>2</sup>*on leave from KAIST*

## **12B-5 Observation of enhanced photoelastic modulation using silica phononic crystal cavity**

15:15 Ingi Kim, Satoshi Iwamoto, Yasuhiko Arakawa, *University of Tokyo*

**Break (15:30-16:00)**

## **16:00-19:00 12C: Panel Session**

### **Optical Interconnects**

#### **-- VCSEL Photonics vs. Silicon Photonics**

Chairs: Lukas Chrostowski, *University of British Columbia*  
Connie J. Chang-Hasnain, *UC Berkeley*

### **16:00 Opening address**

Lukas Chrostowski, *University of British Columbia*

### **12C-1 VCSELs and silicon photonics: Conflict or coexistence?**

16:10 (Invited)

Ryohei Urata, Hong Liu, *Google*

### **12C-2 From chip to cloud: Optical interconnects in enterprise computing systems** (Invited)

16:20 Ashok Krishnamoorthy, *Oracle*

### **12C-3 VCSEL photonics for optical interconnects** (Invited)

16:30 Fumio Koyama, *Tokyo Institute of Technology*

### **12C-4 Silicon photonics for optical interconnects** (Invited)

16:40 Young-Kai Chen, *Nokia Bell Labs*

### **12C-5 Silicon photonics; What are the new developments?**

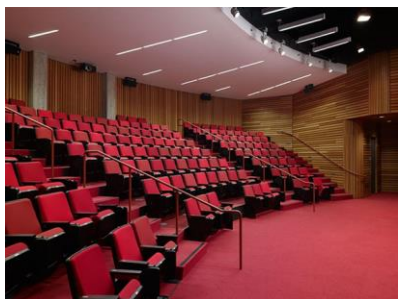
16:50 (Invited)

Eli Yablonovitch, Christopher Lalau-Keraly, *UC Berkeley*

### **12C-5 Silicon photonics and free space - saving energy** (Invited)

17:00 David Miller, *Stanford University*

### **17:30 Panel discussion**





# Technical Sessions

Wednesday, 12 October

Tamalpais Room

19:00-20:30 Conference Party



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# Technical Sessions

**Thursday, 13 October**

**Goldman Theater**

## **9:00-9:45 Plenary Session 2**

Chair: Tetsuya Mizumoto, *Tokyo Institute of Technology*

### **Plenary Retinal imaging laser eyewear with focus-free and -2 augmented reality (Plenary)**

9:00 Mitsuru Sugawara, *QDLaser, Inc.*

**Break (9:45-10:00)**

## **10:00-12:00 Session 13A: New Waveguide Applications**

Chairs: Zhechao Wang, *Ghent University*  
Mitsuru Sugawara, *QDLaser, Inc.*

### **13A-1 Proposal of non-volatile waveguide optical memory using magneto-optical recording**

10:00 Toshiya Murai, Yuya Shoji, Tetsuya Mizumoto, *Tokyo Institute of Technology*

### **13A-2 Polymer vertical Mach-Zehnder optical switch using vertical multimode interference couplers for flexible expansion of connectable vertical distant**

10:15 Yuichi Kimura, Kensho Ema, Yuichi Matsushima, Hiroshi Ishikawa, Katsuyuki Utaka, *Waseda University*

### **13A-3 On-chip electronic-photonic system (Invited)**

10:30 Vladimir M. Stojanović, *UC Berkeley*

### **13A-4 III-V nanopillars integrated to in-plane silicon waveguides**

11:00 Gilliard N. Malheiros-Silveira, Fanglu Lu, Indrasen Bhattacharya, Thai-Truong D. Tran, Hao Sun, Connie J. Chang-Hasnain, *UC Berkeley*

### **13A-5 Wavelength selective filter based Mach-Zehnder interferometric phase stabilization for high-frequency carrier generation**

11:15 Yuki Fujimura, Ryouhei Nakamura, Kazutoshi Kato, *Kyushu University*

### **13A-6 First demonstration of 300-GHz band wireless data transmission with arrayed photomixers**

11:30 Jun Haruki<sup>1</sup>, Goki Sakano<sup>1</sup>, Kazuki Sakuma<sup>1</sup>, Kazutoshi Kato<sup>1</sup>, Yuki Inubushi<sup>2</sup>, Yusuke Fujita<sup>2</sup>, Shintaro Hisatake<sup>2</sup>, Tadao Nagatsuma<sup>2</sup>, <sup>1</sup>*Kyushu University*, <sup>2</sup>*Osaka University*

### **13A-7 Modulation bandwidth enhancement of double transverse coupled cavity VCSELs**

11:45 Hameeda R Ibrahim<sup>1,2</sup>, Moustafa Ahmed<sup>2</sup>, Fumio Koyama<sup>1</sup>, <sup>1</sup>*Tokyo Institute of Technology*, <sup>2</sup>*Minia University*

**Lunch (12:00-13:30)**

## **13:30-15:00 Session 13B: Photonic Integration**

Chairs: Kiyoshi Yokomori, *JST*  
Tetsuya Mizumoto, *Tokyo Institute of Technology*

### **13B-1 III-V-on-silicon photonic integrated circuits (Invited)**

13:30 Zhechao Wang<sup>1</sup>, Gunther Roelkens<sup>1,2</sup>, <sup>1</sup>*Ghent University*, <sup>2</sup>*Technologiepark-Zwijnaarde*

# Technical Sessions

Thursday, 13 October

- 13B-2 Silicon-waveguide multi-wavelength modulator based on Michelson interferometer**  
14:00 Kaito Sekine, Kengo Miura, Yuya Shoji, Tetsuya Mizumoto, *Tokyo Institute of Technology*
- 13B-3 Ultra compact InP nanopillar phototransistor grown directly on silicon**  
14:15 Indrasen Bhattacharya, Wai Son Ko, Stephen Gerke, Connie Chang-Hasnain, *UC Berkeley*
- 13B-4 1550-nm InGaAs/InP nanopillar-LEDs on a silicon substrate**  
14:30 Saniya Deshpande, Indrasen Bhattacharya, Gilliard N. Malheiros Silveira, Willi Mantei, Kevin Cook, Connie Chang-Hasnain, *UC Berkeley*
- 13B-5 Enhancement of extinction ratio with reduction of undesired optical phase change by using balanced bridge structure in MZM**  
14:45 Yasunari Hanawa<sup>1</sup>, Yuya Yamaguchi<sup>1</sup>, Atsushi Kanno<sup>2</sup>, Tetsuya Kawanishi<sup>1,2</sup>, Masayuki Izutsu<sup>1</sup>, Hirochika Nakajima<sup>1</sup>, <sup>1</sup>Waseda University, <sup>2</sup>National Institute of Information and Communications Technology

Break (15:00-15:15)

## Hazel Wolf Gallery and Atrium Lobby

### 15:15-17:15 Session 13C: Poster

- (15:15-16:15) **Odd numbers: 1st half**  
(16:15-17:15) **Even numbers: 2nd half**

- 13C-1 Bandwidth limitation of arbitrary wavelength converter employing cascade of sum frequency mixing and difference frequency mixing in a periodically poled lithium niobate waveguide**  
Yutaka Fukuchi, Taichi Matsuura, *Tokyo University of Science*
- 13C-2 Arbitrary all-optical wavelength conversion using cascaded second-order nonlinear effect in a periodically poled lithium niobate device**  
Yutaka Fukuchi, Taichi Matsuura, *Tokyo University of Science*
- 13C-3 Design of optical isolator employing nonreciprocal radiation mode conversion for athermal operation**  
Salinee Choowitsakunlert<sup>1</sup>, Kouya Kobayashi<sup>1</sup>, Kenji Takagiwa<sup>1</sup>, Rardchawadee Silapunt<sup>2</sup>, Hideki Yokoi<sup>1</sup>, <sup>1</sup>Shibaura Institute of Technology, <sup>2</sup>King Mongkut's University of Technology Thonburi
- 13C-4 Optical isolator with Y<sub>2</sub>O<sub>3</sub> strip-loaded waveguide employing nonreciprocal radiation mode conversion**  
Kouya Kobayashi, Salinee Choowitsakunlert, Hideki Yokoi, *Shibaura Institute of Technology*
- 13C-5 Coupled mode theory and intermodal interference in optical waveguide directional couplers: comparison**  
Genichi Hatakoshi<sup>1</sup>, Kenichi Iga<sup>2</sup>, <sup>1</sup>Waseda University, <sup>2</sup>Tokyo Institute of Technology

# Technical Sessions

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*Thursday, 13 October*

- 13C-6 Output responses of resonant-type guided-wave optical acoustic emission sensors with different diaphragm thicknesses**  
Yusuke Kuga, Takuya Koyama, Masashi Ohkawa, Takashi Sato, *Niigata University*
- 13C-7 Design of polarization-independent optical triplexer employing crossing with slot waveguides**  
Yuta Inoue, Hideki Yokoi, *Shibaura Institute of Technology*
- 13C-8 Image correction method to enhance printing quality of electrophotography with LED print head**  
Wanchin Kim, Sangkoo Han, Suwhan Kim, Sungdae Kim, *Samsung Electronics Co. Ltd.*
- 13C-9 Spectral Structure in Multi-channel lasing with a cavity consisting of optical amplifier and AWG for linear cavity fiber sensing**  
Po-Jung Chen<sup>1,2</sup>, Hiroki Kishikawa<sup>1</sup>, Nobuo Goto<sup>1</sup>, Yi-Lin Yu<sup>2</sup>, Shien-Kuei Liaw<sup>2</sup>, <sup>1</sup>*Tokushima University*, <sup>2</sup>*National Taiwan University of Science and Technology*
- 13C-10 Internal-wavelength-locker based feedforward/feedback co-operative wavelength control for 100 ns wavelength switching**  
Ryoga Kimura, Yudai Tatsumoto, Hirokazu Onji, Takeshi Kuboki, Kazutoshi Kato, *Kyushu University*
- 13C-11 Mach-Zehnder wavelength-selective switch with wavelength-selective phase shifters**  
Kengo Miura, Yuya Shoji, Tetsuya Mizumoto, *Tokyo Institute of Technology*
- 13C-12 Circular symmetric phase mask for extending the depth of field without artifact appearing**  
Tomohiro Sekiguchi, Shinichi Komatsu, *Waseda University*
- 13C-13 Comparison between cubic phase mask and tangent phase mask in extending depth of field with high-quality imaging**  
Yasuaki Machida, Shinichi Komatsu, *Waseda University*
- 13C-14 Waveguide type optical circuit for recognition of optical 8QAM coded labels in photonic router**  
Tumendemberel Surenkhorol, Hiroki Kishikawa, Nobuo Goto, *Tokushima University*
- 13C-15 Compensation of QAM signal distortion attributed to low-extinction ratio dual-parallel Mach-Zehnder modulators**  
Yutaro Kodama<sup>1</sup>, Yuya Yamaguchi<sup>1</sup>, Atsushi Kanno<sup>2</sup>, Tetsuya Kawanishi<sup>1,2</sup>, Masayuki Izutsu<sup>1</sup>, Hirochika Nakajima<sup>1</sup>, <sup>1</sup>*Waseda University*, <sup>2</sup>*National Institute of Information and Communications Technology*
- 13C-16 Two-step digital holography by phase shifting based on polarization**  
Soki Hirayama, Shinichi Komatsu, *Waseda University*
- 13C-17 Examination for the appropriate modes of Laguerre-Gaussian beams for optical wireless communication**  
Aya Saito, Kayo Ogawa, *Japan Women's University*

# Technical Sessions

Thursday, 13 October

- 13C-18 Optical frequency stabilization within  $\pm 20$  MHz of distributed feedback laser controlled by novel feedback algorithm**  
Jun Tsuboi, Takeshi Kuboki, Kazutoshi Kato, *Kyushu University*
- 13C-19 High-speed and polarization-independent switching of 2x2 silicon Mach-Zehnder-type optical switch**  
Sho Asakawa, Yusuke Shimada, Daisuke Suehiro, Kana Shimizu, Yuichi Matsushima, Hiroshi Ishikawa, Katsuyuki Utaka, *Waseda University*
- 13C-20 Phase retrieval approach based on the transport of intensity equation by using liquid crystal phase shifter**  
Hsin-Feng Hsu, Hou-Ren Chen, Chyong-Hua Chen, Wen-Feng Hsieh, *National Chiao Tung University*
- 13C-21 Interrogation of a long-period fiber-grating temperature and strain sensor using a vertical-cavity surface-emitting laser**  
Toru Mizunami, Taichi Yamada, Nobutoshi Hamada, *Kyushu Institute of Technology*
- 13C-22 Refractive index sensor using optical square cavity on SOI for TM-polarization**  
Ken Fujiwara<sup>1</sup>, Manuel Mendez-Astudillo<sup>1</sup>, Hiroki Takahisa<sup>1</sup>, Hideaki Okayama<sup>1,2</sup>, Hirochika Nakajima<sup>1</sup>, <sup>1</sup>Waseda University, <sup>2</sup>Oki Electric Industry Co., Ltd.
- 13C-23 Temporal response of cavity-resonator-integrated guided-mode resonance filter**  
Junichi Inoue, Hiroki Okuda, Tomohiro Kondo, Shogo Ura, *Kyoto Institute of Technology*
- 13C-24 Photoluminescence properties of Au nanoparticles decorated ZnO film and ZnO microsphere**  
Taichi Fukuda, Sho Kawagoe, Mitsuhiro Higashihata, Daisuke Nakamura, *Kyushu University*
- 13C-25 Structural and photoluminescence characterizations of periodic ZnO microrods grown by hydrothermal using laser interference patterning**  
Masaaki Yamasaki<sup>1</sup>, Koji Oda<sup>1</sup>, I. A. Palani<sup>2</sup>, Daisuke Nakamura<sup>1</sup>, Mitsuhiro Higashihata<sup>1</sup>, Yoshiki Nakata<sup>3</sup>, Hiroshi Ikenoue<sup>1</sup>, N. J. Vasa<sup>4</sup>, <sup>1</sup>Kyushu University, <sup>2</sup>IIT Indore, <sup>3</sup>Osaka University, <sup>4</sup>IIT Madras
- 13C-26 Shape control of AIAs selective oxidation by intermixing of GaAs/AIAs hetero-interface**  
Tetsu Gi, Tomoyuki Miyamoto, *Tokyo Institute of Technology*
- 13C-27 High-contrast metasurface holograms**  
Pengfei Qiao, Thaibao Phan, Connie Chang-Hasnain, *UC Berkeley*
- 13C-28 Replication of glass microlens array using vitreous (PD) carbon mold**  
Jonghyun Ju, Seok-Min Kim, *Chung-Ang University*

Break (17:15-17:30)

Goldman Theater

17:30-18:30 Microconcert

Machida Philharmony Baroque Ensemble

# ♪ The 17th Microconcert ♪

- A Social Event of 21<sup>st</sup> Microoptics Conference (MOC'16) -

Thursday 13, October 2016, 17:30-18:30  
Goldman Theater, David Brower Center, Berkeley

By Machida Philharmony Baroque Ensemble (MPB)

## Program

- A. Vivaldi: "Alla Rustica"
- M. Hayakawa: "From Four Seasons in Japan",  
Cherry Blossoms, I'm Child of the Sea,  
Moon over Ruined Castle, Come on Spring !
- H. Nakamura/R. Ei: "Look at the sky as you walk through life"
- S. C. Foster: "Beautiful Dreamer"
- W. A. Mozart: "Divertimento" K.138
- G. F. Handel: "Concerto Grosso" Op.6-1

Solos:

Takako Yoshii (VI)  
Sanae Konno (VI)  
Mai Matsumoto (VI)  
Kazutaka Okasaka (VC)  
Hirochika Nakajima (Tenor)



Microconcert at Fukuoka, Japan

## Today's Members on Stage

Chair: Prof. Kenichi Iga  
Secretariat: Kaeko Fujii  
Solo Concertmistress & Coach: Takako Yoshii  
Violin: Takako Yoshii, Kaeko Fujii, Tomoko Iga,  
Sanae Konno, Tomomi Matsumoto, Mana Matsumoto  
Viola: Yoko Miyazaki, Tomoichi Konno  
Cello: Kazutaka Okasaka, Takuya Matsumoto  
Contrabass: Kenichi Iga  
Cembalo: Naomi Hanzawa  
Stage Manager: Akio Yoshii

*In addition to conference attendants, their family, UCB staff and*

Sponsor: MOC'16: <http://www.comemoc.com>

# ♪ 第 17 回 マイクロコンサート ♪

— 微小光学国際会議(MOC)2016 —

2016.10.13 (木) 17:30-18:30 (開場 17:00)  
ゴールドマン劇場, ブラウアーセンター, パークレイ

町田フィル・バロック合奏団 (MPB)

## プログラム

- ヴィヴァルディ：『アラ・ルスティカ』
- 早川 正昭：『日本の四季』より  
「花」「我は海の子」「荒城の月」「春よ来い」
- 中村 八大／永 六輔：『上を向いて歩こう』
- フォスター：『夢路より』
- モーツァルト：『ディヴェルティメント』 K.138
- ヘンデル：『合奏協奏曲』 作品 6-1



独奏：

- 吉井孝子 (VI)
- 今野早苗 (VI)
- 松本茉依 (VI)
- 岡坂和孝 (VC)
- 中島啓幾 (Tenor)

(20th MICROOPTICS CONFERENCE)

## 出演者

- 代表：伊賀健一
- 事務局：藤井賀江子
- ソロコンサートミストレス・指導：吉井孝子
- ヴァイオリン：吉井孝子, 藤井賀江子, 伊賀智子,  
今野早苗, 松本智美, 松本茉依
- ヴィオラ：宮崎洋子, 今野友一
- チェロ：岡坂和孝, 松本拓也
- コントラバス：伊賀健一
- チェンバロ：半澤尚美
- ステージマネージャー：吉井昭夫

*students, friends of MPB, and nearby residents are welcome, free of charge.*

主催：微小光学国際会議(MOC)2016

# Technical Sessions

Friday, 14 October

Goldman Theater

## 9:00-10:30 Session 14A: Bio

Chairs: Hans Zappe, *University of Freiburg*  
Yuichi Matsushima, *Waseda University*

### 14A-1 Extreme imaging and beyond (Invited)

9:00 Keisuke Goda<sup>1,2,3</sup>, *<sup>1</sup>University of Tokyo, <sup>2</sup>Japan Science and Technology Agency, <sup>3</sup>University of California, Los Angeles*

### 14A-2 High NA solid immersion lens based STED microscopy

9:30 Hyungbae Moon<sup>1</sup>, Won-Sup Lee<sup>1</sup>, Geon Lim<sup>1</sup>, Guk-Jong Choi<sup>1</sup>, Wan-Chin Kim<sup>2</sup>, No-Cheol Park<sup>1</sup>, *<sup>1</sup>Yonsei University, <sup>2</sup>Samsung Electronics Co., Ltd.*

### 14A-3 Novel biomaterials for photonic applications (Invited)

9:45 Sandra Van Vlierberghe<sup>1,2</sup>, Geert-Jan Graulus<sup>1,2</sup>, Jens De Pelsmaeker<sup>1,2</sup>, Heidi Ottevaere<sup>1</sup>, Peter Dubruel<sup>2</sup>, Hugo Thienpont<sup>1,2</sup>, *<sup>1</sup>Vrije Universiteit Brussel, <sup>2</sup>Ghent University*

### 14A-4 Microoptics integrated droplet-based microfluidics for high-throughput bio-detection

10:15 Jiseok Lim<sup>1</sup>, Philipp Gruner<sup>2</sup>, Manfred Konrad<sup>2</sup>, Jean-Christophe Baret<sup>2</sup>, *<sup>1</sup>Yeungnam University, <sup>2</sup>Max Planck Institute*

Break (10:30-11:00)

## 11:00-12:30 Session 14B: Novel Technologies

Chairs: Chien-Chung Lin, *National Chiao Tung University*  
Keisuke Goda, *University of Tokyo*

### 14B-1 Photonic quantum computing (Invited)

11:00 Jeremy O'Brien, *University of Bristol*

### 14B-2 Efficient high-speed readout in holographic memory by reusing transmitted reference beam

11:30 Yutaro Katano, Tetsuhiko Muroi, Nobuhiro Kinoshita, Norihiko Ishii, *NHK Science and Technical Research Laboratories*

### 14B-3 WSe<sub>2</sub> light-emitting diode coupled to optical bowtie antennas

11:45 Kevin Han<sup>1</sup>, Matin Amani<sup>1</sup>, Geun Ho Ahn<sup>1</sup>, Kyoungsik Yu<sup>2</sup>, Eli Yablonovitch<sup>1</sup>, Ali Javey<sup>1</sup>, Ming C. Wu<sup>1</sup>, *<sup>1</sup>UC Berkeley, <sup>2</sup>on leave from KAIST*

### 14B-4 Alignment of graded-index lens on silica-based PLC for sensor platform

12:00 Kei Watanabe, Yu Kurata, Ai-ichiro Sasaki, Mikitaka Itoh, *NTT Device Technology Labs*

### 14B-5 Optical single-sideband modulator using array- antenna-electrode and polarization-reversed structures

12:15 Hiroshi Murata, Yuuki Matsukawa, Toshiyuki Inoue, Yasuyuki Okamura, *Osaka University*

Lunch (12:30-14:00)



# Technical Sessions

Friday, 14 October

## 14:00-16:00 Session 14C: Light Source Design & Applications

Chairs: Fumio Koyama, *Tokyo Institute of Technology*  
Hajime Shoji, *Sumitomo Electric Ind., Ltd.*

### 14C-1 Integration of 420 optical elements for a multiterabit/s network-on-chip (Invited)

14:00 John E. Bowers, Chong Zhang, Shangjian Zhang, Jon D. Peters, *University of California, Santa Barbara*

### 14C-2 Monolithically integrated red, green, and blue LED pixels for micro-displays

14:30 Kunook Chung, Jingyang Sui, Brandon Demory, Pei-Cheng Ku, *University of Michigan*

### 14C-3 Analysis of radiative and nonradiative recombination current densities in InGaN blue LEDs and LDs

14:45 Genichi Hatakoshi<sup>1</sup>, Kenichi Iga<sup>2</sup>, <sup>1</sup>Waseda University, <sup>2</sup>Tokyo Institute of Technology

### 14C-4 Optical exposure technologies for electro-photography (Invited)

15:00 Wanchin Kim, Sungdae Kim, Jongwuk Ku, Sangkoo Han, Heonhee Lim, *Samsung Electronics Co. Ltd.*

### 14C-5 Numerical analysis of effect of transverse mode of phase locked VCSEL array using Talbot effect

15:30 Yuki Komori, Tomoyuki Miyamoto, *Tokyo Institute of Technology*

### 14C-6 Manipulation of VCSEL far-field distribution using integrated high-contrast grating mirror

15:45 Kun Li<sup>1</sup>, Yi Rao<sup>2</sup>, Chris Chase<sup>2</sup>, Weijian Yang<sup>1</sup>, Connie Chang-Hasnain<sup>1</sup>, <sup>1</sup>UC Berkeley, <sup>2</sup>Bandwidth 10 Inc.

Break (16:00-16:15)

## 16:15-16:45 Session 14D: Post Deadline Paper

Chairs: Ming C. Wu, *UC Berkeley*  
Tetsuya Mizumoto, *Tokyo Institute of Technology*

### 14D-1 Silicon photonics-based coherent optical subassembly (PD) (COSA) for compact coherent transceiver

16:15 Shin Kamei, Ken Tsuzuki, Kiyofumi Kikuchi, Shogo Yamanaka, Shuichiro Asakawa, Mitsuo Usui, Toshihiro Itoh, Yusuke Nasu, Shunichi Soma, Kotaro Takeda, Kentaro Honda, Yuriko Kawamura, Makoto Jizodo, Masayuki Takahashi, Hiroshi Fukuda, Takashi Saida, *NTT Device Innovation Center*

### 14D-2 A Photonic cavity for lasing and anti-lasing

(PD) Zi Jing Wong<sup>1</sup>, Ye-Long Xu<sup>1</sup>, Jeongmin Kim<sup>1</sup>, Kevin O'Brien<sup>1</sup>,  
16:30 Yuan Wang<sup>1,2</sup>, Liang Feng<sup>3</sup>, Xiang Zhang<sup>1,2</sup>, <sup>1</sup>UC Berkeley,  
<sup>2</sup>Lawrence Berkeley National Laboratory, <sup>3</sup>The State University of New York at Buffalo

## 16:45-17:00 Closing Remarks

Program Co-chairs:  
Ming C. Wu, *UC Berkeley*  
Tetsuya Mizumoto, *Tokyo Institute of Technology*

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## CONTACT

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## Conference Venue

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### David Brower Center, Berkeley, CA, USA

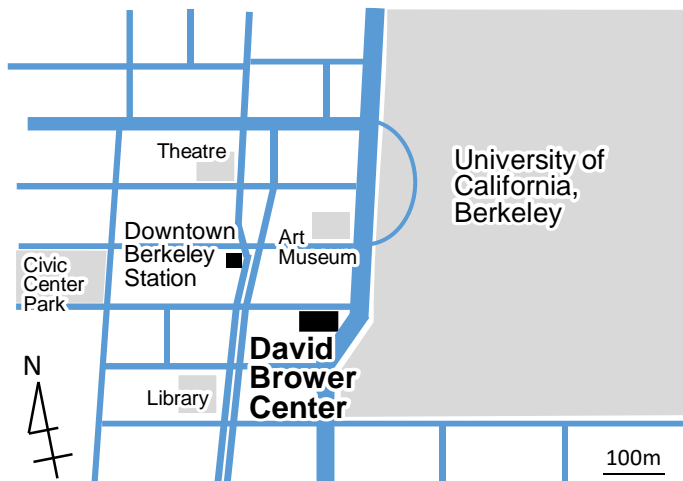
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<http://www.browercenter.org/>



# Access Map

## Map around Conference Site



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