MOC '16
21st MICROOPTICS CONFERENCE
http://www.comemoc.com/moc16/

Sponsored by
the Japan Society of Applied Physics (JSAP)
Organized by
Microoptics Group, JSAP

David Brower Center
Berkeley, CA, USA
# MOC '16 Agenda At-A-Glance

<table>
<thead>
<tr>
<th>October 12 (Wed.)</th>
<th>October 13 (Thu.)</th>
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<td>Time</td>
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<tr>
<td>8:30</td>
<td>Registration Open</td>
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<tr>
<td>9:00</td>
<td>Session 14A: Bio</td>
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<td>Session 14B: Novel Technologies</td>
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<td>12:30</td>
<td>Lunch Break</td>
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<td>14:00</td>
<td>Session 14C: Light Source Design &amp; Applications</td>
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<td>16:00</td>
<td>Break</td>
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<tr>
<td>16:30</td>
<td>Session 14D: Post Deadline Paper Closing</td>
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</tbody>
</table>
Technical Program

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

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

<table>
<thead>
<tr>
<th>Registration Fees</th>
<th>Before/On Sept. 26</th>
<th>After Sept. 26</th>
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<tbody>
<tr>
<td>General</td>
<td>$500</td>
<td>$600</td>
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<tr>
<td>Student, Retiree</td>
<td>$250</td>
<td>$300</td>
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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
# Technical Sessions

**Wednesday, 12 October**

**Goldman Theater**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Authors/Institutions</th>
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<tbody>
<tr>
<td>9:45-10:30</td>
<td>Plenary Session 1</td>
<td>Chair: Ming C. Wu, UC Berkeley</td>
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<tr>
<td>9:45</td>
<td>Plenary Session I</td>
<td>Plenary: Xiang Zhang, UC Berkeley</td>
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<td>10:30-11:00</td>
<td>Break</td>
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<tr>
<td>11:00-12:30</td>
<td>Session 12A: Nano Material</td>
<td>Chairs: Eli Yablonovitch, UC Berkeley, Young-Kai Chen, Nokia-Bell Labs</td>
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<tr>
<td>12A-1</td>
<td>Highly efficient hybrid optoelectronic devices based on colloidal quantum dots (Invited)</td>
<td>Chien-Chung Lin, National Chiao Tung University</td>
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<td>12A-2</td>
<td>Substrate-free ultrathin flexible UV photodetector on freestanding ZnO nanocrystal-nanofibrillated cellulose film</td>
<td>Jingda Wu, Chen Zou, Li H. Y. Lin, University of Washington</td>
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<td>12A-3</td>
<td>Rutile TiO₂ optical devices fabricated by laser-induced photothermal oxidation</td>
<td>Youngho Jung, Gyungho Son, Kyounghan Choi, Kyoungsik Yu, Korea Advanced Institute of Science and Technology</td>
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<td>12A-4</td>
<td>Electroluminescence from Sb-doped ZnO microspheres-based homojunction</td>
<td>Fumiaki Nagasaki, Yuki Fujiwara, Mitsuhiro Higashihata, Daisuke Nakamura, Tatsuoka Okada, Kyushu University</td>
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<td>12A-5</td>
<td>High-Q GeSbS-based chalcogenide microresonator</td>
<td>Jean-Etienne Tremblay, Yung-Hsiang Lin, Meer N. Sakib, Kyoungsik Yu, Ming C.Wu, UC Berkeley, on leave from KAIST</td>
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<tr>
<td>12B-1</td>
<td>Advances in 2D and 3D optofluidic systems (Invited)</td>
<td>Hans Zappe, University of Freiburg</td>
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<td>12B-2</td>
<td>Flow rate measurement of highly scattering liquid by MEMS laser Doppler velocimeter with an optical filtering plate</td>
<td>Nobutomo Morita, Fumiya Nakashima, Naoya Fujimoto, Tomoo Gomi, Hirofumi Nogami, Eiji Higurashi, Renshi Sawada, Kamata, Kazuhiko Uchida, University of Tokyo</td>
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<td>14:00-15:30</td>
<td>Session 12B: Functional Devices</td>
<td>Chairs: Xiang Zhang, UC Berkeley, Tomoyuki Miyamoto, Tokyo Institute of Technology</td>
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<td>12B-1</td>
<td>Advances in 2D and 3D optofluidic systems (Invited)</td>
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Technical Sessions

Wednesday, 12 October

12B-3 Optical actuation of a NEMS electric switch
14:45 Kyungmok Kwon1, Kyunghan Choi1, Jeong Oen Lee2, Jun-Bo Yoon1, Kyoungsik Yu1, 1Korea Advanced Institute of Science and Technology, 2California Institute of Technology

12B-4 MEMS optical phased array for LIDAR
15:00 Youmin Wang1, Kyoungsik Yu2, Ming C. Wu1, 1UC Berkeley, 2on 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

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? (Invited)
16:50 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
# Technical Sessions

**Thursday, 13 October**

**Goldman Theater**

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

**Chair:** Tetsuya Mizumoto, *Tokyo Institute of Technology*

**Plenary**

- **9:00** Retinal imaging laser eyewear with focus-free and augmented reality (Plenary)
  - 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.*

- **10:00** Proposal of non-volatile waveguide optical memory using magneto-optical recording
  - Toshiya Murai, Yuya Shoji, Tetsuya Mizumoto, *Tokyo Institute of Technology*

- **10:15** Polymer vertical Mach-Zehnder optical switch using vertical multimode interference couplers for flexible expansion of connectable vertical distant
  - Yuichi Kimura, Kengo Ema, Yuichi Matsushima, Hiroshi Ishikawa, Katsuyuki Utaka, *Waseda University*

- **10:30** On-chip electronic-photonic system (Invited)
  - Vladimir M. Stojanović, *UC Berkeley*

- **11:00** III-V nanopillars integrated to in-plane silicon waveguides
  - Gilliard N. Malheirois-Silveira, Fanglu Lu, Indrasen Bhattacharya, Thai-Truong D. Tran, Hao Sun, Connie J. Chang-Hasnain, *UC Berkeley*

- **11:15** Wavelength selective filter based Mach-Zehnder interferometric phase stabilization for high-frequency carrier generation
  - Yuki Fujimura, Ryuouhei Nakamura, Kazutoshi Kato, *Kyushu University*

- **11:30** First demonstration of 300-GHz band wireless data transmission with arrayed photomixers
  - Jun Haruki¹, Goki Sakano¹, Kazuki Sakuma¹, Kazutoshi Kato¹, Yuki Inubushi², Yusuke Fujita², Shintaro Hisatake², Tadao Nagatsuma²,¹*Kyushu University*,²*Osaka University*

- **11:45** Modulation bandwidth enhancement of double transverse coupled cavity VCSELs
  - Hameeda R Ibrahim¹², Moustafa Ahmed², Fumio Koyama¹,¹*Tokyo Institute of Technology*,²*Minia University*

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

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

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

- **13:00** III-V-on-silicon photonic integrated circuits (Invited)
  - Zhechao Wang¹, Gunther Roelkens¹²,¹*Ghent University*,²*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. Malheiroes Silva, 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 Hanawa1, Yuya Yamaguchi1, Atsushi Kanno2, Tetsuya Kawanishi1,2, Masayuki Izutsu1, Hirochika Nakajima1,1Waseda University, 2National 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
15:15
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
15:30
Yutaka Fukuchi, Taichi Matsuura, Tokyo University of Science

13C-3  Design of optical isolator employing nonreciprocal radiation mode conversion for athermal operation
15:45
Salinee Choowitsakunlert1, Kouya Kobayashi1, Kenji Takagiwa1, Rardchawadee Silapunt2, Hideki Yokoi1, 1Shibaura Institute of Technology, 2King Mongkut’s University of Technology Thonburi

13C-4  Optical isolator with Y2O3 strip-loaded waveguide employing nonreciprocal radiation mode conversion
16:00
Kouya Kobayashi, Salinee Choowitsakunlert, Hideki Yokoi, Shibaura Institute of Technology

13C-5  Coupled mode theory and intermodal interference in optical waveguide directional couplers: comparison
16:15
Genichi Hatakoshi1, Kenichi Igase2, 1Waseda University, 2Tokyo Institute of Technology
Technical Sessions
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 Chen1,2, Hiroki Kishikawa1, Nobuo Goto1, Yi-Lin Yu2, Shien-Kuei Liaw2, 1Tokushima University, 2National 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 Kodama1, Yuya Yamaguchi1, Atsushi Kanno2, Tetsuya Kawanishi1,2, Masayuki Izutsu1, Hirochika Nakajima1, 1Waseda University, 2National 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 ±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 2×2 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 Fujiwara1,4, Manuel Mendez-Astudillo1,4, Hiroki Takahisa1,4, Hideaki Okayama1,2, Hirochika Nakajima1, 1Waseda University, 2Oki 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, Mitsuhito Higashihata, Daisuke Nakamura, Kyushu University

13C-25 Structural and photoluminescence characterizations of periodic ZnO microrods grown by hydrothermal using laser interference patterning
Masaaki Yamasaki1, Koji Oda1, I. A. Palani2, Daisuke Nakamura1, Mitsuhito Higashihata1, Yoshiki Nakata2, Hiroshi Ikenoue1, N. J. Vasa2, Kyushu University, 1IIT Indore, 2Osaka University, 3IIT Madras

13C-26 Shape control of AlAs selective oxidation by intermixing of GaAs/AlAs 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 21st 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)

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, ブラウーセンター, バークレイ
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

出演者

独奏:
吉井孝子 (Vl)
今野早苗 (Vl)
松本茉依 (Vl)
岡坂和孝 (VC)
中島啓幾 (Tenor)

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、松本茉依、松本茉依
ヴァイオラ: 宮崎洋子、今野友一
チェロ: 岡坂和孝、松本俊也
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.
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 Goda1,2, 1University of Tokyo, 2Japan Science and
      Technology Agency, 3University of California, Los Angeles

14A-2  High NA solid immersion lens based STED microscopy
9:30  Hyungbae Moon1, Won-Sup Lee1, Geon Lim1, Guk-Jong
      Choi1, Wan-Chin Kim2, No-Cheol Park1, 1Yonsei University,
      2Samsung Electronics Co., Ltd.

14A-3  Novel biomaterials for photonic applications (Invited)
9:45  Sandra Van Vlierberghe1,2, Geert-Jan Graulus1,2, Jens De
      Pelsmaeker1,2, Heidi Ottevaere1, Peter Dubruel2, Hugo
      Thienpont1,2, 1Vrije Universiteit Brussel, 2Ghent University

14A-4  Microoptics integrated droplet-based microfluidics for
      high-throughput bio-detection
10:15  Jiseok Lim1, Philipp Gruner2, Manfred Konrad2, Jean-
      Christophe Baret2, 1Yonsei University, 2Max 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  WSe2 light-emitting diode coupled to optical bowtie
      antennas
11:45  Kevin Han1, Matin Amani1, Geun Ho Ahn1, Kyoungsik Yu2, Eli
      Yablonovitch1, Ali Javey1, Ming C. Wu1, 1UC Berkeley, 2on
      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 Hatakoshi1, Kenichi Iga2, 1Waseda University, 2Tokyo 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 Li1, Yi Rao2, Chris Chase2, Weijian Yang1, Connie Chang-Hasnain1, UC Berkeley, 2Bandwidth 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 (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, Kotoaki Takeda, Kentaro Honda, Yuriko Kawamura, Makoto Jizodo, Masayuki Takahashi, Hiroshi Fukuda, Takashi Saied, NTT Device Innovation Center

14D-2 A Photonic cavity for lasing and anti-lasing (Invited)
16:30 Yuan Wang1,2, Liang Feng3, Xiang Zhang1,2, UC Berkeley, Lawrence Berkeley National Laboratory, 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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Conference Venue

David Brower Center, Berkeley, CA, USA
2150 Allston Way, Suite 100, Berkeley, CA 94704
http://www.browercenter.org/
From SFO to David Brower Center

It takes about 1 hour from San Francisco International Airport to reach Downtown Berkeley by BART (Bay Area Rapid Transit).

San Francisco Int'l Airport Station

19th St. Oakland Station
(Transfer to Richmond Station line.)

Downtown Berkeley Station