### **Optical MEMS and Nanophotonics 2017** - 13th to 17th August 2017



| Sunday, 13th August |  |       | Ultra-low power wavelength conversion in a silicon microring resonator<br>» Hongjun Liu (Xi'an Institute of Optics and Precision Mechanics,<br>Chinese Academy of Science), Zhaolu Wang (Xi'an Institute of Optics   |  |
|---------------------|--|-------|--|--|
| 18:00               | Welcome Reception<br>Atrium, Marriott Hotel  | 09:30 | and Precision Mechanics, Chinese Academy of Science), and Nan<br>Huang (Xi'an Institute of Optics and Precision Mechanics, Chinese<br>Academy of Science)  |  |
| Monday,             | Monday, 14th August  |       | Fabrication of PbS Quantum dots and Silicon Device for Near-Infrared<br>detection<br>» Akio Higo (VDEC, The Univ. of Tokyo), Hai-bin Wang (RCAST, The Univ.  |  |
| 07:30               | Continental breakfast<br>Atrium  | 09:45 | of Tokyo), Takaya Kubo (RCAST, The Univ. of Tokyo), Naoto Usami (Dep.<br>of EEIS, The Univ. of Tokyo), Yuki Okamoto (Dep. of EEIS, The Univ. of<br>Tokyo), Kentaro Yamada (Dep. of EEIS, The Univ. of Tokyo), Hiroshi<br>Segawa (RCAST, The Univ. of Tokyo), Masakazu Sugiyama (RCAST, The |  |
| 08:20               | Welcome and opening remarks<br>Sierra/Cumbre/Vista   |       | Univ. of Tokyo), and Yoshio Mita (Dep. of EEIS, The Univ. of Tokyo)  |  |
|                     | Mo-K KEYNOTE: Prof. Michal Lipson<br>Sierra/Cumbre/Vista<br>Mo-1 Silicon Photonics<br>Sierra/Cumbre/Vista  | 10:00 | Coffee Break   |  |
| 08:30               |  | 10:30 | Mo-21 INVITED: Photonic materials and devices<br>Sierra/Cumbre/Vista   |  |
| 09:15               |  | 10.30 | Chair: Yves-Alain Peter  |  |
| 09.15               | Chair: Dan Marom   |       | Ultra-thin plasmonic metal nitrides: tailoring optical properties to<br>photonic applications<br>» Alexandra Boltasseva (Purdue), Harsha Reddy (Purdue), Deesha Shah<br>(Purdue), Nathaniel Kinsey (VCU), and Vladimir Shalaev (Purdue)  |  |
|                     | Analog Silicon Photonic MEMS Phase-Shifter with Double-Step<br>Electrostatic Actuation<br>» Hamed Sattari (École Polytechnique Fédérale de Lausanne (EPFL)),<br>Teodoro Graziosi (École Polytechnique Fédérale de Lausanne (EPFL)),<br>Marcell Kiss (École Polytechnique Fédérale de Lausanne (EPFL)), Tae<br>Joon Seok (Gwangju Institute of Science and Technology), Sangyoon<br>Han (Korea Advanced Institute of Science and Technology), Ming C. Wu<br>(Department of Electrical Engineering and Computer Sciences,<br>University of California, Berkeley), and Niels Quack (École Polytechnique<br>Fédérale de Lausanne (EPFL)) | 11:00 | Vacuum radiometry of an infrared nanoantenna-coupled tunnel diode<br>rectenna<br>» Paul Davids (Sandia National Labs)  |  |
| 09:15               |  | 11:30 | <b>Mo-2 Photonic materials and devices</b><br><i>Sierra/Cumbre/Vista</i><br>Chair: Yves-Alain Peter  |  |
|                     |  | 11:30 | Third Order Nonlinear Waveguide with CdSe Quantum Dots in PFCB<br>Nanocomposite Core<br>» Moran Bin Nun (the hebrew university of jerusalem), Yedidya Lior (the<br>hebrew university of jerusalem), and Dan Marom (heb)  |  |



| 11:45 | Tunable Room-Temperature Single-Photon Emission at Telecom<br>Wavelengths from Carbon Nanotube Quantum Defects<br>» Xiaowei He (Los Alamos National Lab), Htoon Han (Los Alamos<br>National Lab), and Stephen K. Doorn (Los Alamos National Lab) |   | 15:45                | Cryogenic testing of MOEMS deformable mirror for future optical<br>instrumentation<br>» Frederic Zamkotsian (Lab. Astrophysique Marseille (LAM)), Patrick<br>Lanzoni (Lab. Astrophysique Marseille (LAM)), Rudy Barette (Lab.<br>Astrophysique Marseille (LAM)), Michael Helmbrecht (Iris-AO), Franck |  |
|-------|--|---|----------------------|---|--|
| 12:00 | <b>Tunable Near IR High Sensitive Room Temperature Detector</b><br>» Avner Neubauer (The heb), Shira Yochelis (the hebrew university of<br>jerusalem), and Yossi Paltiel (the hebrew university of jerusalem)                                    |   |                      | Marchis (Iris-AO), and Alex Teichman (Iris-AO)<br>Aperture Arrays for Subnanometer Calibration of Optical Microscopes   |  |
| 12:15 | Broadband Mid-Infrared Silicon-on-Insulator Waveguide Devices<br>» Bowei DONG (National University of Singapore), Chengkuo Lee<br>(National University of Singapore), Hong Wang (Nanyang Technological   |   | 16:00                | » Craig Copeland (NIST CNST), Craig Mcgray (NIST PML), Jon Geist<br>(NIST PML), J. Alexander Liddle (NIST CNST), B. Robert Ilic (NIST CNS<br>and Samuel Stavis (NIST CNST)  |  |
|       | University), Xianshu Luo (Institute of Microelectronics (IME)), and Patrick Guo-qiang Lo (Institute of Microelectronics (IME))   |   | 16:15                | <b>Q-switched tunable solid-state laser using a MOEMS mirror</b><br>» Alan Paterson (University of Strathclyde), Ralf Bauer (University of  |  |
| 12:30 | Lunch<br>Atrium  |   | 10.15                | Strathclyde), Walter Lubeigt (University of Strathclyde), and Deepak<br>Uttamchandani (University of Strathclyde)   |  |
| 14:00 | <b>Mo-31 INVITED: MEMS Applications</b><br><i>Sierra/Cumbre/Vista</i><br>Chair: Frederic Zamkotsian  | · | Tuesday, 15th August |   |  |
| 14.00 | Enabling Trapped Ion Quantum Computing with MEMS Technology<br>» Jungsang Kim (Duke University), Stephen Crain (Duke University),  |   | 07:30                | Continental breakfast<br>Atrium   |  |
| 14:00 | Chao Fang (Duke University), James Joseph (Duke University), and<br>Peter Maunz (Sandia National Laboratories)   |   | 08:30                | <b>Tu-K KEYNOTE: Prof. Juerg Leuthold</b><br>Sierra/Cumbre/Vista  |  |
| 14:30 | <b>Developing X-ray photonic microsystems for Synchrotron Applications</b><br>» Jin Wang (Argonne National Laboratory)   |   | 00.15                | Tu-1 Tunable Plasmonics<br>Sierra/Cumbre/Vista  |  |
| 15:00 | Coffee break   |   | 09:15                | Chair: Niels Quack  |  |
| 15:30 | <b>Mo-3 Systems and applications</b><br><i>Sierra/Cumbre/Vista</i><br>Chair: Frederic Zamkotsian   |   | 09:15                | Tunable Optical Response and Purcell Enhancement of Gated<br>Plasmonic Structures<br>» Ruzan Sokhoyan (California Institute of Technology), Ghazaleh Kafaie<br>Shirmanesh (California Institute of Technology), Yu-jung Lu (California  |  |
| 15:30 | <b>Deep Silicon Etching for X-Ray Diffraction Devices Fabrication</b><br>» Houxun Miao (NIH), Mona Mirzaeimoghri (University of Maryland,<br>College Park/NIH), Lei Chen (NIST CNST), and Han Wen (NIH)  |   | 05.15                | Institute of Technology), Krishnan Thyagarajan (California Institute of<br>Technology), Ragip Pala (California Institute of Technology), and Harry<br>Atwater (California Institute of Technology)  |  |



| 09:30 | Active electromechanical resonance tuning of localized gap plasmons<br>» Brian Roxworthy (NIST CNST) and Vladimir Aksyuk (NIST CNST)  |       | Improved Infrared Detection Using Nanoantennas<br>» David Peters (Sandia National Laboratories), Michael B Sinclair<br>(Sandia National Laboratories), Michael Goldflam (Sandia National<br>Laboratories), Larry Warne (Sandia National Laboratories), Salvatore<br>Campione (Sandia National Labs), Jin Kim (Sandia National<br>Laboratories), Paul Davids (Sandia National Labs), Anna Tauke-pedretti<br>(Sandia National Laboratories), Joel Wendt (Sandia National<br>Laboratories), John Klem (Sandia National Laboratories), Samuel<br>Hawkins (Sandia National Laboratories), S. Parameswaran (Sandia<br>National Laboratories), Wesley Coon (Sandia National Laboratories),<br>Gordon Keeler (Sandia National Laboratories), and Torben Fortune<br>(Sandia National Laboratories) |  |
|-------|---|-------|---|--|
| 09:45 | Femtosecond Switching of Infrared Light using a Plasmonic Cadmium<br>Oxide Perfect Absorber<br>» Yuanmu Yang (Sandia National Labs), Kyle Kelley (North Carolina<br>State University), Edward Sachet (North Carolina State University),<br>Salvatore Campione (Sandia National Labs), T.S. Luk (Sandia National<br>Labs), Jon-paul Maria (Sandia National Labs), Michael Sinclair (Sandia<br>National Labs), and Igal Brener (Sandia National Labs) | 11:45 |   |  |
| 10:00 | Coffee break  |       |   |  |
| 10:30 | <b>Tu-2I INVITED: Plasmonic devices</b><br><i>Sierra/Cumbre/Vista</i><br>Chair: Igal Brener   | 12:00 | Fabrication of Large-area Optical Slot Antenna ArraysFor Studying<br>Spontaneous Emission Enhancement Of Transition Metal<br>Dichalcogenide<br>» Meng-chieh Yang (National Tsing Hua University), Cheng-Ting Liao   |  |
| 10:30 | <b>Large-scale plasmonic pixels and combinatorial colors</b><br>» Maiken Mikkelsen (Duke University)  |       | (National Tsing Hua University), Cheng Yue (National Tsing Hua<br>University), Ming-Chang M. Lee (National Tsing Hua University), ar<br>hsian Lee (National Tsing Hua University)   |  |
| 11:00 | Electromagnetic Coupling Mechanisms in Vertically Oriented Metallic<br>Plasmonic Inclusions<br>» Bruce Burckel (Sandia National Laboratories)   | 12:15 | <b>Dual-band Tunable Graphene-Based Filter</b><br>» Michael Goldflam (Sandia National Laboratories), Isaac Ruiz (Sandia<br>National Laboratories), Stephen Howell (Sandia National Laboratories),<br>and Thomas Beechem (Sandia National Laboratories)  |  |
| 11:30 | Tu-2 Plasmonic Devices<br>Chair: Igal Brener  | 12:30 | Lunch<br>Atrium   |  |
|       | Fabrication of plasmonic color filter by freestanding Metal-Insulator-<br>Metal gratings for MEMS tunable filter<br>» Masato Mitsudome (Toyohashi University of Technology), Kazuaki<br>Sawada (Toyohashi University of Technology), and Kazuhiro Takahashi<br>(Toyohashi University of Technology)   | 12:30 | Steering committee working lunch  |  |
| 11:30 |   | 14:00 | <b>Tu-3I INVITED: Dielectric metasurfaces</b><br><i>Sierra/Cumbre/Vista</i><br>Chair: Ming-Chang M. Lee   |  |



| 14:00   | Flat and Conformal Optics With Dielectric Metasurfaces<br>» Andrei Faraon (California Institute of Technology), Amir Arbabi<br>(University of Massachusetts Amherst), Seyedeh Mahsa Kamali<br>(California Institute of Technology), Ehsan Arbabi (California Institute of<br>Technology), and Yu Horie (California Institute of Technology)   | 16:0 | 00 | <b>Mode-group mixing device via complex phase masks printed on fiber tip</b><br>» Miri Blau (the hebrew university of jerusalem), Moriya Rosenfeld (the<br>hebrew university of jerusalem), Juan Carlos Alvarado Zacarias (College<br>of Optics and Photonics, University of Central Florida), Rodrigo<br>Amezcua Correa (The College of Optics and Photonics, University of<br>Central Florida), and Dan Marom (the hebrew university of jerusalem)   |
|---|---|------|----|--|
|   | Phase control through Huygens' metasurfaces<br>» David Czaplewski (Argonne National Laboratory), Haogang Cai<br>(Argonne National Laboratory), Tapashree Roy (Argonne National  |      | 00 | PS-1 Posters and Reception<br>Chair:   |
| 14:30 (Argonne National Laboratory), Fapasinee Roy (Argonne National<br>Laboratory), Karim Ogando (Argonne National Laboratory), Liliana Stan<br>(Argonne National Laboratory), and Daniel Lopez (Argonne National<br>Laboratory) |   |      |    | Picosecond pulse pumped wavelength conversion in silicon<br>nanowaveguides<br>» Zhaolu Wang (Xi'an Institute of Optics and Precision Mechanics,<br>Chinese Academy of Science), Hongjun Liu (Xi'an Institute of Optics and   |
| 15:00   | 15:00 Cofee break   |      |    | Precision Mechanics, Chinese Academy of Science), and Nan Huang<br>(Xi'an Institute of Optics and Precision Mechanics, Chinese Academy of  |
| 15:30   | <b>Tu-3 Dielectric metasurfaces and structures</b><br><i>Sierra/Cumbre/Vista</i><br>Chair: Ming-Chang M. Lee  |      |    | GaN Microring Waveguide Bonded to Si substrate by Polymer  |
|   | High-efficiency, low-aspect-ratio planar lens based on Huygens resonators   |      |    | » Ryohei Hashida (Tohoku University), Takashi Sasaki (Tohoku<br>University), and Kazuhiro Hane (Tohoku University)   |
| 15:30 » Haogang Cai (Argonne National Laboratory), David Czaplewski<br>(Argonne National Laboratory), Liliana Stan (Argonne National<br>Laboratory), and Daniel Lopez (Argonne National Laboratory)                               |   |      |    | Chromatic dispersion effects on optical forces in dielectric nano-<br>optomechanical devices<br>» Janderson Rodrigues (Instituto Tecnológico de Aeronáutica) and   |
| 15:45   | Frequency-mixing in GaAs dielectric metasurfaces<br>» Polina Vabishchevich (Sandia National Laboratories), Sheng Liu<br>(Sandia National Laboratories), Aleksandr Vaskin (Institute of Applied<br>Physics, Abbe Center of Photonics, Friedrich Schiller University Jena),<br>John L Reno (Center for Integrated Nanotechnologies, Sandia National<br>Laboratories), Gordon Keeler (Sandia National Laboratories), Michael B<br>Sinclair (Sandia National Laboratories), Isabelle Philippa Staude<br>(Institute of Applied Physics, Abbe Center of Photonics, Friedrich<br>Schiller University Jena), and Igal Brener (Sandia National Labs) |      |    | Vilson Almeida (Instituto Tecnológico de Aeronáutica)<br>Nanoscale Silicon Truncated Conical Photodetector at Subwavelength<br>Aperture for NSOM Applications<br>» Matityahu Karelits (Jerusalem College of Technology - Lev Academic<br>Center), Gilad Hirshfeld (Jerusalem College of Technology - Lev<br>Academic Center), Yaakov Mandelbaum (Jerusalem College of<br>Technology - Lev Academic Center), Avraham Chelly (Bar-Ilan University<br>(BIU)), and Avi Karsenty (Jerusalem College of Technology - Lev<br>Academic Center) |



### Two-axis MEMS scanner in a resonance operation for diagnosis of middle ear diseases

» Jaekwon Lee (Gwangju Institute of Science and Technology (GIST)), Sang-Jin Lee (Gwangju Institute of Science and Technology (GIST)), Seunghwan Moon (Gwangju Institute of Science and Technology), Yangkyu Park (Gwangju Institute of Science and Technology (GIST)), Kwanghyun Kim (Gwangju Institute of Science and Technology), and Jong-Hyun Lee (Gwangju Institute of Science and Technology (GIST))

#### Portable Multispectra Tunable Forensic Lens for Jadeite Analysis

» Kai-Wei Liao (National Tsing Hua University), Ru-chian Luo (National Tsing Hua University), and J. Andrew Yeh (National Tsing Hua University)

### Polarization Insensitive Metamaterial Perfect Absorber at Visible Frequencies

» Guoqiang Chen (National University of Singapore) and Guangya Zhou (National University of Singapore)

### Black Silicon Based Iris with Reduced Light Scattering and Reflection

» Yousuf Almoallem (University of Wisconsin - Madison), Mohammad Moghimi (University of Wisconsin - Madison), and Hongrui Jiang (University of Wisconsin - Madison)

#### Development of Selective Pattering Method of Biomolecules Using Photothermal Effect on Engineering Plastic Micro Wells

» Takehiro Nagashima (Keio University), Kan Yamada (Kyodo International Inc.), Yuta Chonan (Keio University), Ryo Sudo (Keio University), and Yoshihiro Taguchi (Keio University)

### Design of Tunable SPR on MEMS for Displays

» Yu-Tang Hu (National Tsing Hua University), Shih-chun Lo (National Tsing Hua University), Jason Pan (National Tsing Hua University), and Cheng-Yao Lo (National Tsing Hua University)

### Tunable Corner Cube Retroreflector (CCR) Fabricated with 3D Printing and Origami

» Yen-Hung Wang (National Taiwan University), Yu-Fan Chen (National Taiwan University), and Jui-che Tsai (National Taiwan University)

#### **Solid Non-Mechanical Discretely-Tunable Hard-Aperture Diaphragm** » Shun-Hao Yu (National Taiwan University), Jui-che Tsai (National

» Shun-Hao Yu (National Taiwan University), Jui-che Tsai (National Taiwan University), Chih-chieh Chang (National Taiwan University), and Jheng-hong Gu (National Taiwan University)

### Mouse tissue imaging using real-time Lissajous confocal endomicroscopic system

» Kyungmin Hwang (KAIST), Yeong-Hyeon Seo (KAIST), Daniel Kim (KAIST), Jinhyo Ahn (KAIST), Soyoung Lee (KAIST), Sangyong Jon (KAIST), Pilhan Kim (KAIST), and Ki-Hun Jeong (Korea Advanced Institute of Science and Technology/Department of Bio and Brain Engineering)

## Effectively Anticancer Drug Concentration Gradients by Using 3D Microfluidic Chip

» Yu-Sheng Lin (Sun Yat-Sen University)

#### CD-Like Centrifugal Microfluidic Device for Organophosphorus Pesticides (OPP) Sensing » Yu-Sheng Lin (Sun Yat-Sen University)

#### Temperature and distance dependence of plasmon enhanced InAs/InGaAs/GaAs dot-in-a-well near IR emission » Sharmin Haq (University of New Mexico)

# An Ultra-Fast Electrothermal Micromirror with Bimorph Actuators Made of Copper/Tungsten

» Dingkang Wang (University of Florida), Xiaoyang Zhang (University of Florida), Liang Zhou (University of Florida), Mengyue Liang (University of Florida, Tianjin University), Daihua Zhang (Tianjin University), and Huikai Xie (University of Florida)

#### Dynamical Range and Stability Enhancement in Electrically Fused Microknot Optical Resonators

» Alexandra Logvinova (Tel Aviv University), Gal Gottlieb (Tel Aviv University), Shir Shahal (Bar Ilan University), Moti Fridman (Bar-Ilan University (BIU)), and Yoav Linzon (Tel Aviv University)



#### Tunable Terahertz Bandpass Filter using MEMS Reconfigurable Metamaterial

» Kazuhide Ichikawa (The University of Tokyo), Zhengli Han (RIKEN), and Hiroshi Toshiyoshi (The University of Tokyo)

## Feasibility Study of the OCT Probe using MEMS Optical Scanner Array for High Speed Inspection

» Kwanghyun Kim (Gwangju Institute of Science and Technology),
 Seunghwan Moon (Gwangju Institute of Science and Technology),
 Jaekwon Lee (Gwangju Institute of Science and Technology (GIST)),
 Yangkyu Park (Gwangju Institute of Science and Technology (GIST)),
 Sang-Jin Lee (Gwangju Institute of Science and Technology (GIST)), and
 Jong-Hyun Lee (Gwangju Institute of Science and Technology (GIST))

## A Refractive Index Sensor Based on a Packaged Microfiber Coil Resonator

» Xuan Yi Lu (National Taiwan University) and Lon Wang (National Taiwan University)

#### High-throughput Fabrication of Surface Plasmon Resonance Fiber Probes Using Nanotransfer Printing Method

» CHIEN-FU LO (Graduate Institute of Photonics and Optoelectronics, and Department of Electrical Engineering National Taiwan University), Nien-tsu Huang (National Taiwan University), Chien-Lin Wu (National Taiwan University), and Lon Wang (National Taiwan University)

# Sub-10-Nanometer-Scale Laser Ablation on Hard Materials From Dielectric Near-Field Nanophotonics

» Yong Ho Kwon (University of Wisconsin-Madison), Hewei Liu (University of Wisconsin-Madison), Soongyu Yi (University of Wisconsin-Madison), Hao Bian (Xi'an Jiaotong University), Feng Chen (Xi'an Jiaotong University), Zongfu Yu (University of Wisconsin-Madison), and Hongrui Jiang (University of Wisconsin - Madison)

#### Selectively Controlling Plasmon-Driven Photochemical Reactions » Bijesh kafle (University of New Mexico), Terefe Habteyes (University of New Mexico), and Marisa Poveda (University of New Mexico)

Micromachined Drilling of Dielectric Substrates of Varying Bandgap using Laser Accelerated Particles

» Tirtha Mitra (University of Minnesota) and Joseph Talghader (University of Minnesota)

### Wednesday, 16th August

| 07:30 | Continental breakfast<br>Atrium  |
|-------|--|
| 08:30 | We-K KEYNOTE: Prof. John A. Rogers<br>Sierra/Cumbre/Vista  |
| 09:15 | <b>We-1 Flexible structures and devices</b><br><i>Sierra/Cumbre/Vista</i><br>Chair: Daniel Lopez   |
| 09:15 | <b>Tunable Gold Nano-Disks Array on Flexible Substrates</b><br>» Ibrahim Misbah (Univ. of Houston), Fusheng Zhao (Univ. of Houston),<br>and Wei Chuan Shih (Univ. of Houston)  |
| 09:30 | Antireflective Structures for Tunable Liquid-filled Lens<br>» SANGIN BAE (Korea Advanced Institute of Science and<br>Technology/Department of Bio and Brain Engineering), Youngseop Lee<br>(Korea Advanced Institute of Science and Technology/Department of<br>Bio and Brain Engineering), and Ki-Hun Jeong (Korea Advanced Institute<br>of Science and Technology/Department of Bio and Brain Engineering) |
| 09:45 | <b>Characteristics of ultra-thin MEMS mirror device on flexibe substrate</b><br>» Toshihiro Takeshita (AIST)   |
| 10:00 | Coffee break   |
| 10:30 | We-21 INVITED: Sensing systems<br>Sierra/Cumbre/Vista<br>Chair: Wibool Piyawattanametha  |



| 11:00Fourier Reconstruction of the Force Signal using a<br>Microelectromechanical Oscillator in the Casimir Regime<br>  | 10:30 | A Photonic MEMS Accelerometer with a Low-Finesse Hemispherical<br>Microcavity Readout<br>» Yiliang Bao (NIST), Feng Zhou (NIST), Thomas Lebrun (NIST), and<br>Jason Gorman (NIST)                   | 14:00 | <b>Reconfigurable MEMS Metamaterials</b><br>» Chengkuo Lee (National University of Singapore) and Chong Pei Ho<br>(The University of Tokyo)   |
|---|-------|---|-------|---|
| 11:30Sierra/Cumbre/Vista<br>Chair: Wibool PiyawattanamethaA New Extremely Small Sensor for Measuring a Blood Flow and a<br>Contact Pressure Simultaneously<br>* Ryo Inoue (Kyushu University), Hrofumi Nogami (Kyushu University),<br>Eiji Higurashi (The University), Hrofumi Nogami (Kyushu University),<br>Eiji Higurashi (The University of Tokyo), and Renshi Sawada (Kyushu<br>University)11:30Uncooled Infrared Sensor Using Torsional Resonator and Electrostatic<br>Detection<br>* Minoru Sasaki (Toyota Technological Institute)14:30* Ryo Inoue (Kyushu University), Hrofumi Nogami (Kyushu University),<br>Eiji Higurashi (The University of Tokyo), and Renshi Sawada (Kyushu<br>University)11:45Selective in-plane Fabry-Pérot gas sensor functionalized with polymer<br>* Philippe Jubinville (Polytechnique Montréal), Régis Guertin<br>(Polytechnique Montréal), Levin Erbligin (Polytechnique Montréal),<br>William Skene (University of Montréal), and Yves-Alain Peter<br>(Polytechnique Montréa),<br>Sergio Vilches (University of Freiburg). Simon Kretschmer (University<br>   | 11:00 | Microelectromechanical Oscillator in the Casimir Regime   | 14:30 | Sierra/Cumbre/Vista   |
| Incoded Infrared Sensor Using Torsional Resonator and Electrostatic<br>Detection<br>* Minoru Sasaki (Toyota Technological Institute)Eiji Higurashi (The University of Tokyo), and Renshi Sawada (Kyushu<br>University)11:30Selective in-plane Fabry-Pérot gas sensor functionalized with polymer<br>* Philippe Jubinville (Polytechnique Montréal), Régis Guertin<br>(Polytechnique Montréal), Levin Erbilgin (Polytechnique Montréal),<br>William Skene (University of Montréal), and Yves-Alain Peter<br>(Polytechnique Montréal)Development of Electrothermal Lens Actuator for Endoscopic Blood<br>Flow Sensor<br>* MASAAKI HASHIMOTO (Keio University) and Yoshihiro Taguchi (Keio<br>University)12:00Forward-looking OCT endomicroscope based on a compact Fourier-<br>plane piezo fiber scanner<br>* Sergio Vliches (University of Freiburg), Simon Kretschmer (University<br>of Freiburg), Caglar Ataman (University of Freiburg), and Hans Zappe<br>(University of Freiburg), Caglar Ataman (University of Freiburg), and Hans Zappe<br>(University of Freiburg), Caglar Ataman (University of Singapore), Fook Siong Chau<br>(National University of Singapore), and Guangya Zhou (National<br>University Amsterdam), Kartin Shaman (VU University Amsterdam),<br>Remco Verdoold (Philips Electronics Nederland B.V.), and Davide<br>Iannuzzi (VU University Amsterdam)12:30We-31 INVITED: Reconfigurable MEMS metamaterials<br>Serrar/Cumbre/Vista16:00Serrar/Cumbre/Vista | 11:30 | Sierra/Cumbre/Vista   | 14:20 | Contact Pressure Simultaneously   |
| ** Philippe Jubinville (Polytechnique Montréal), Régis Guertin<br>(Polytechnique Montréal), Levin Erbilgin (Polytechnique Montréal),<br>William Skene (University of Montréal), and Yves-Alain Peter<br>(Polytechnique Montréal)14:45Flow Sensor<br>* MASAAKI HASHIMOTO (Keio University) and Yoshihiro Taguchi (Keio<br>University)12:00Forward-looking OCT endomicroscope based on a compact Fourier-<br>plane piezo fiber scanner<br>of Freiburg), Caglar Ataman (University of Freiburg), and Hans Zappe<br>(University of Freiburg), Caglar Ataman (University of Freiburg), and Hans Zappe<br>(University of Freiburg), Caglar Ataman (University of Singapore), Fook Siong Chau<br>(National University of Singapore), and Guangya Zhou (National<br>University of Singapore), and Guangya Zhou (National<br>University of Singapore), and Guangya Zhou (National<br>University of Singapore)MEMS micromirror based light sheet generator for biomedical imaging<br>* Ralf Bauer (University of Strathclyde) and Deepak Uttamchandani<br>(University of Strathclyde)12:30Lunch<br>AtriumIsingapore), Fook Siong Chau<br>(National University of Singapore), and Guangya Zhou (National<br>University of Singapore)15:30Coffee break14:40We-31 INVITED: Reconfigurable MEMS metamaterials<br>Sierra/Cumbre/VistaWe-4 Micromirror Scanners<br>Sierra/Cumbre/VistaWe-4 Micromirror Scanners<br>Sierra/Cumbre/Vista  | 11:30 | Detection   | 14:30 | Eiji Higurashi (The University of Tokyo), and Renshi Sawada (Kyushu   |
| plane piezo fiber scannerM. Balf Bauer (University of Strathclyde) and Deepak Uttamchandani<br>(University of Freiburg), Caglar Ataman (University of Freiburg), and Hans Zappe<br>(University of Freiburg)15:00* Ralf Bauer (University of Strathclyde) and Deepak Uttamchandani<br>(University of Strathclyde)12:15ENDOSCOPE ZOOM OPTICS USING ALVAREZ LENSES<br>* Yongchao Zou (National University of Singapore), Fook Siong Chau<br>(National University of Singapore), and Guangya Zhou (National<br>University of Singapore)15:15Batch production of silicon fiber-top cantilever devices<br>* Jan Rector (VU University Amsterdam), Steven Beekmans (VU<br>University Amsterdam), Martin Slaman (VU University Amsterdam),<br>Remco Verdoold (Philips Electronics Nederland B.V.), and Davide<br>lannuzzi (VU University Amsterdam)12:30Lunch<br>Atrium15:30Coffee break14:00We-31 INVITED: Reconfigurable MEMS metamaterials<br>Sierra/Cumbre/Vista16:00Sierra/Cumbre/Vista  | 11:45 | » Philippe Jubinville (Polytechnique Montréal), Régis Guertin<br>(Polytechnique Montréal), Levin Erbilgin (Polytechnique Montréal),<br>William Skene (University of Montréal), and Yves-Alain Peter | 14:45 | Flow Sensor<br>» MASAAKI HASHIMOTO (Keio University) and Yoshihiro Taguchi (Keio  |
| 12:15ENDOSCOPE ZOOM OPTICS USING ALVAREZ LENSES<br>» Yongchao Zou (National University of Singapore), and Guangya Zhou (National<br>University of Singapore), and Guangya Zhou (National<br>University of Singapore)Batch production of silicon fiber-top cantilever devices<br>» Jan Rector (VU University Amsterdam), Steven Beekmans (VU<br>University Amsterdam), Martin Slaman (VU University Amsterdam),<br>Remco Verdoold (Philips Electronics Nederland B.V.), and Davide<br>lannuzzi (VU University Amsterdam)12:30Lunch<br>Atrium12:30We-31 INVITED: Reconfigurable MEMS metamaterials<br>Sierra/Cumbre/Vista14:00Sierra/Cumbre/Vista   | 12:00 | <b>plane piezo fiber scanner</b><br>» Sergio Vilches (University of Freiburg), Simon Kretschmer (University<br>of Freiburg), Caglar Ataman (University of Freiburg), and Hans Zappe                 | 15:00 | » Ralf Bauer (University of Strathclyde) and Deepak Uttamchandani   |
| 12:30     Atrium     15:30     Coffee break       We-31     INVITED: Reconfigurable MEMS metamaterials     We-4     Micromirror Scanners       14:00     Sierra/Cumbre/Vista     16:00     Sierra/Cumbre/Vista  | 12:15 | ENDOSCOPE ZOOM OPTICS USING ALVAREZ LENSES<br>» Yongchao Zou (National University of Singapore), Fook Siong Chau<br>(National University of Singapore), and Guangya Zhou (National                  | 15:15 | » Jan Rector (VU University Amsterdam), Steven Beekmans (VU<br>University Amsterdam), Martin Slaman (VU University Amsterdam),<br>Remco Verdoold (Philips Electronics Nederland B.V.), and Davide |
| 14:00 Sierra/Cumbre/Vista 16:00 Sierra/Cumbre/Vista   | 12:30 |   | 15:30 | Coffee break  |
|   | 14:00 | Sierra/Cumbre/Vista   | 16:00 | Sierra/Cumbre/Vista   |



| 16:0 | An electromagnetic two-axis micro scanner with dual radial magnetic<br>fields<br>» Yangkyu Park (Gwangju Institute of Science and Technology (GIST)),<br>Seunghwan Moon (Gwangju Institute of Science and Technology<br>(GIST)), Jaekwon Lee (Gwangju Institute of Science and Technology<br>(GIST)), Kwanghyun Kim (Gwangju Institute of Science and Technology),<br>Sang-Jin Lee (Gwangju Institute of Science and Technology (GIST)), and<br>Jong-Hyun Lee (Gwangju Institute of Science and Technology (GIST)) | 17:15  | Fabric<br>length<br>» Ken<br>Unive<br>Ltd),<br>Sasak<br>(Pana<br>(Toho |
|------|--|--------|--|
|      | Two-axis quasistatic gimbal-less microscanner with concentrically tilted stationary comb electrodes  | Thursd | <b>ay,</b> 17th /  |
| 16:1 |  | 07:30  | <b>Conti</b><br>Atriun   |
|      | (GIST)), Kwanghyun Kim (Gwangju Institute of Science and Technology<br>(GIST)), Sang-Jin Lee (Gwangju Institute of Science and Technology<br>(GIST)), and Jong-Hyun Lee (Gwangju Institute of Science and  | 08:30  | <b>Th-K</b><br>Sierra,   |
| -    | Technology (GIST)) A Compact MEMS-Based Wide-Angle Optical Scanner   | 09:15  | <b>Th-1</b><br><i>Sierra,</i><br>Chair:                                |
| 16:3 | » Bruce Yang (University of Florida), Liang Zhou (University of Florida),<br>O Xiaoyang Zhang (University of Florida), Dingkang Wang (Dingkang<br>Wang), Sanjeev Koppal (University of Florida), and Huikai Xie (University<br>of Florida)   | 09:15  | <b>Inject</b><br>» Ke H<br>(Unive                                      |
| 16:4 | MEMS 3-Dimensional Scanner for Handheld Confocal Microscope16:45» Tianbo Liu (Montana State University) and David Dickensheets<br>(Montana State University)   |        | Integr<br>mech<br>» Zark<br>Heijde<br>(Eindł                           |
| 17:0 | Characterization and Reliability Study of a MEMS Mirror Based on<br>Electrothermal Bimorph Actuation<br>We Haoran Wang (University of Florida), Huikai Xie (University of Florida),<br>Daihua Zhang (Tianjin University), Xiaoyang Zhang (University of<br>Florida), and Liang Zhou (University of Florida)  | 09:30  | Unive<br>Techr<br>Miche<br>(Eindł<br>Unive<br>Techr                    |

### abrication of Varifocal Scanner Integrated with Piezoresistive Focal ength and Angle Sensors

Kenta Nakazawa (Tohoku University), Takashi Sasaki (Tohoku

University), Hiromasa Furuta (Panasonic Industrial Devices SUNX Co., Ltd), Jiro Kamiya (Panasonic Industrial Devices SUNX Co., Ltd), Hideki Sasaki (Panasonic Industrial Devices SUNX Co., Ltd), Toshikazu Kamiya (Panasonic Industrial Devices SUNX Co., Ltd), and Kazuhiro Hane (Tohoku University)

|   | Thursday | , 17th August   |
|---|----------|---|
|   | 07:30    | Continental breakfast<br>Atrium   |
| / | 08:30    | <b>Th-K KEYNOTE: Prof. Oskar Painter</b><br>Sierra/Cumbre/Vista   |
|   | 09:15    | <b>Th-1 Cavity optomechanical devices</b><br><i>Sierra/Cumbre/Vista</i><br>Chair: Vladimir Aksyuk   |
| y | 09:15    | Injection Locking of Optomechanical Oscillators via Acoustic Waves<br>» Ke Huang (University of New Mexico) and Mani Hossein-Zadeh<br>(University of New Mexico)  |
| , | 09:30    | Integrated spectrometer and displacement sensor based on<br>mechanically tunable photonic crystals<br>» Zarko Zobenica (Eindhoven University of Technology), Rob W. Van Der<br>Heijden (Eindhoven University of Technology), Maurangelo Petruzzella<br>(Eindhoven University of Technology), Francesco Pagliano (Eindhoven<br>University of Technology), Tian Xia (Eindhoven University of<br>Technology), Leonardo Midolo (Eindhoven University of Technology),<br>Michele Cotrufo (Eindhoven University of Technology), Yongjin Cho<br>(Eindhoven University of Technology), Frank W.m. Van Otten (Eindhoven<br>University of Technology), and Andrea Fiore (Eindhoven University of<br>Technology) |



| Optomechanical Spring Effect Readout in Resonant Micro-Optical<br>Sagnac Gyroscopes: Design And Scaling Analysis<br>» Alejandro Grine (Sandia National Laboratories), Aleem Siddiqui<br>(Sandia National Laboratories), Darwin Serkland (Sandia National<br>Laboratories), Matt Eichenfield (Sandia National Laboratories), Michael<br>Shaw (Sandia National Laboratories), Michael Wood (Sandia National<br>Laboratories), Daryl Dagel (Sandia National Laboratories), Erica Douglas<br>(Sandia National Laboratories), Thomas Friedman (Sandia National<br>Laboratories), Lawrence Koch (Sandia National Laboratories),<br>Christopher Hains (Sandia National Laboratories), Gordon Keeler<br>(Sandia National Laboratories), and Christopher Nordquist (Sandia<br>National Laboratories) | 11:15   | A Novel Silicon Microsphere Based Optical Fiber Probe for Refractive<br>Index Sensing Applications<br>» Shih-Shin Chang (National Taiwan University), Jian-Hong Chen<br>(National Taiwan University), Guan-Hung chen (National Taiwan<br>University), and Lon Wang (National Taiwan University)   |
|---|---|---|
|   | 11:30   | Photothermal Intracellular Delivery with Self-Aligned Cell Seeding<br>» Tianxing Man (University of California, Los Angeles), Xiongfeng Zhu<br>(University of California, Los Angeles), Yu Ting Chow (University of<br>California, Los Angeles), Tingyi Liu (University of California, Los<br>Angeles), Ximiao Wen (University of California, Los Angeles), Michael<br>Teitell (University of California, Los Angeles), and Pei-Yu Chiou<br>(University of California, Los Angeles)   |
|   | 11:45   | Closing remarks<br>Sierra/Cumbre/Vista  |
| lation  | 12:00   | Lunch<br>Atrium   |
| nern California), Ningfeng Huang<br>ravind Krishnan (University of<br>University of Southern California),<br>rn California), Shao-hua Wu  |   |   |
| sensing   |   |   |
| -   |   |   |
|   | aling Analysis<br>aboratories), Aleem Siddiqui<br>vin Serkland (Sandia National<br>dia National Laboratories), Michael<br>), Michael Wood (Sandia National<br>ational Laboratories), Erica Douglas<br>nas Friedman (Sandia National<br>ia National Laboratories),<br>Laboratories), Gordon Keeler | Aling Analysis<br>aboratories), Aleem Siddiqui<br>vin Serkland (Sandia National<br>dia National Laboratories), Michael<br>), Michael Wood (Sandia National<br>ational Laboratories), Erica Douglas<br>nas Friedman (Sandia National<br>ia National Laboratories),<br>Laboratories), Gordon Keeler<br>Christopher Nordquist (Sandia11:30Ilation11:45Ilation11:45Ilation12:00g and nanoparticle motion<br>hern California), Ningfeng Huang<br>ravind Krishnan (University of<br>University of Southern California),<br>rm California), Shao-hua Wu<br>nd Michelle Povinelli (University of<br>sensing11:45guential Sensing of Mass Diffusion11:45 |