

### **3<sup>rd</sup> International Workshop on Image Sensors and Imaging Systems (IWISS2016)**

*-Frontier of image sensors based on conceptual breakthroughs inspired by applications-*

**Sponsored** by Group of Information Photonics (IPG) +CMOS Working Group, the Optical Society of Japan

**Co-sponsored** by Technical Group on Information Sensing Technologies (IST), the Institute of Image Information and Television Engineers (ITE)

**In cooperation with** IEEE SSCS Japan Chapter and innovative Photonics Evolution Research Center (iPERC)

**Date: November 17 (THR) and 18 (FRI), 2016**

**Access:** see Tamachi Campus at <http://www.titech.ac.jp/english/maps/index.html>

**Address:** 3-3-6 Shibaura, Minato-ku, Tokyo, 108-0023 JAPAN

**Official language:** English

***The latest information of registration, poster paper submission, and advance program:***

<http://www.i-photonics.jp/meetings.html#20161117IWISS>

**Overview:** In this workshop, people from various research fields, such as image sensing, imaging systems, optics, and image processing, come together to discuss the future and frontiers of image sensor technologies. For the continuous progress and diversity in the engineering of image sensors and imaging systems, state-of-the-art and emerging technologies will be explored. The symposium is composed of invited talks, a poster session, and reception. **We are accepting approximately 20 poster papers. Submission of papers for the poster presentation starts in September, and the deadline is on September 23, 2016.** Awards will be given to the selected excellent paper presented by an ITE member. We encourage everyone to submit latest original work. **Every participant needs pre-registration by October 31, 2016. On-site registration is NOT accepted.** Only poster session is an open session organized by ITE.

**Scope:**

- Image sensor technologies
- Imaging systems and image sensor applications
- Related process and circuit technologies
- Next-generation technologies for image sensors and imaging systems

**Join and enjoy the workshop!**

Chair (IPG): Prof. Hirotsugu Yamamoto (Utsunomiya Univ., Japan)

Chair (ITE): Prof. Shigetoshi Sugawa (Tohoku Univ., Japan)

Vice-Chair (IPG): Prof. Hiroyuki Suzuki (Tokyo Institute of Technology, Japan)

Vice-Chair (ITE): Prof. Keiichiro Kagawa (Shizuoka Univ., Japan)

Technical Program Chair: Prof. Min-Woong Seo, Prof. Keita Yasutomi (Shizuoka Univ., Japan), and Prof. Shoji Kawahito (Shizuoka University, Japan)

Student Volunteering Chair: Mr. Futa Mochizuki (Shizuoka Univ., Japan)

### ***Pre-registration for audience:***

**Pre-registration is necessary** because the number of seats is limited.

**Send e-mail to [iwiss2016@idl.rie.shizuoka.ac.jp](mailto:iwiss2016@idl.rie.shizuoka.ac.jp) with the following information by Oct. 31.**

- (1) Your name
- (2) Affiliation
- (3) Title: Prof./ Dr./ Mr./ Ms. (choose one)
- (4) Regular/ Student (choose one)
- (5) E-mail address (Official e-mail is preferred)
- (6) Join reception party (3,000-yen for students/ 5,000-yen for the regular): Yes/ No (choose one)

### ***Registration fee:***

Audience (regular): ~7,000-yen (~64USD)

Audience (student): ~4,000-yen (~36USD)

Poster presenter (regular): ~6,000-yen (~55USD)

Poster presenter (student): ~3,000-yen (~27USD)

**NOTE) Please pay registration and reception fees on site.**

### ***Paper submission to the poster session:***

**Entry your paper at the following URL:**

[https://www.ite.or.jp/ken/form/index.php?tgs\\_regid=94d97064b092ac99fcd9b1309cee0facf153beb7632e278e3458bb7be8839ce7&tgid=ITE-IST&lang=eng](https://www.ite.or.jp/ken/form/index.php?tgs_regid=94d97064b092ac99fcd9b1309cee0facf153beb7632e278e3458bb7be8839ce7&tgid=ITE-IST&lang=eng)

**(Use the above English page for the paper entry. DO NOT follow the Japanese instructions at the bottom of the page.)**

**Paper entry deadline: Sep. 23(Fri), 2016** (Only title, authors, and short abstract are required)

**Manuscript submission deadline: Oct. 21(Fri), 2016** (2-page English proceeding is required)

**A few excellent posters presented by ITE members will be awarded. Please consider to become a member of ITE before the workshop.**

**Poster award:**

**One excellent paper will be awarded among the papers presented by ITE members.**

**NOTE) Poster presenters whose paper is accepted do NOT need pre-registration.**

**Program:**

NOTE) The titles in this version are tentative.

**Nov. 17 (THR)**

**9:00 Registration opens**

**9:40-9:50 Opening remarks** by IPG Chair (Prof. Hirotsugu Yamamoto, Utsunomiya Univ., Japan)

**9:50-10:30 Plenary talk** (40-min)

**9:50-10:30** [Invited] Ion implantation technology for image sensors (Prof. Nobukazu Teranishi, Dr. Genshu Fuse\*, and Dr. Michiro Sugitani\*, Shizuoka Univ./ Univ. of Hyogo, \*Sumitomo Heavy Industries Ion Technology Co., Ltd., Japan)

**10:30-12:00 Stack technology** (90-min)

**10:30-11:00** [Invited] 3D-stacking architecture for low-noise high-speed image sensors (Prof. Shoji Kawahito, Shizuoka Univ., Japan)

**11:00-11:30** [Invited] A Dead-time free global shutter stacked CMOS image sensor with in-pixel LOFIC and ADC using pixel-wise connections (Prof. Rihito Kuroda, Mr. Hidetake Sugo, Mr. Shunichi Wakashima, and Prof. Shigetoshi Sugawa, Tohoku Univ., Japan)

**11:30-12:00** [Invited] 3D stacked image sensor featuring low noise inductive coupling channels (Prof. Masayuki Ikebe, Dr. Daisuke Uchida, Dr. Yasuhiro Take\*, Prof. Tetsuya Asai, Prof. Tadahiro Kuroda\*, and Prof. Masato Motomura, Hokkaido Univ., \*Keio Univ., Japan)

**12:00-13:20 Lunch** (80-min)

**13:20-14:50 Low-light and photon counting imaging** (90-min)

**13:20-13:50** [Invited] Low-noise CMOS image sensors towards single-photon detection (Prof. Min-Woong Seo, Prof. Keiichiro Kagawa, Prof. Keita Yasutomi, and Prof. Shoji Kawahito, Shizuoka Univ., Japan)

**13:50-14:20** [Invited] Bioluminescence imaging in living animals (Prof. Takahiro Kuchimaru, Prof. Tetsuya Kadonosono, Prof. Shinae Kizaka-Kondoh, Tokyo Inst. of Tech., Japan)

**14:20-14:50** [Invited] Restoration of a Poissonian-Gaussian color moving-image sequence (Prof. Takahiro Saito and Mr. Takashi Komatsu, Kanagawa Univ., Japan)

**14:50-15:00 Break** (10-min)

**15:00-16:30 Low power imaging** (90-min)

**15:00-15:30** [Invited] Always-on CMOS image sensor: energy-efficient circuits and architecture (Prof. Jaehyuk Choi, Sungkyunkwan Univ., Korea)

**15:30-16:00** [Invited] Low-voltage high-dynamic-range CMOS imager with energy harvesting (Prof. Chih-Cheng Hsieh and Mr. Albert Yen-Chih Chiou, National Tsing Hua Univ., Taiwan)

**16:00-16:30** [Invited] Power-efficient Delta Readout Scheme utilizing Multi-Column-Parallel SAR ADCs (Mr. Hyun-June Kim, Mr. Sun-Il Hwang, and Prof. Seung-Tak Ryu, KAIST, Korea)

**16:30-18:00 Poster session** as ITE Open Session (90-min)

**16:30-18:00** Poster session

**18:00-18:10 Break** (10-min)

*(Continued to the next page)*

**18:10-20:00 Reception** (110-min)

**18:10-20:00** Reception

Poster award

**Nov. 18 (FRI)**

**10:00-11:30 Time-resolved imaging** (90-min)

**10:00-10:30** [Invited] Various ultra-high-speed imaging and applications by Streak camera (Mr. Koro Uchiyama, Hamamatsu Photonics K. K., Japan)

**10:30-11:00** [Invited] Time-of-flight image sensors toward micrometer resolution (Prof. Keita Yasutomi and Prof. Shoji Kawahito, Shizuoka Univ., Japan)

**11:00-11:30** [Invited] Toward the ultimate speed of silicon image sensors: from 4.5 kfps to Gfps and more (Prof. Goji Etoh, Osaka Univ., Japan)

**11:30-13:00 Lunch** (90-min)

**13:00-14:00 Optical and biomedical imaging-I** (60-min)

**13:00-13:30** [Invited] Studies on adaptive optics and application to the biological microscope (Prof. Masayuki Hattori, National Inst. for Basic Biology, Japan)

**13:30-14:00** [Invited] Application of light-sheet microscopy to cell and development biology (Prof. Shigenori Nonaka, National Inst. for Basic Biology, Japan)

**14:00-14:20 Break** (20-min)

**14:20-15:50 Optical and biomedical imaging-II** (90-min)

**14:20-14:50** [Invited] Non-contact video based estimation for heart rate variability spectrogram using ambient light by extracting hemoglobin information (Prof. Norimichi Tsumura, Chiba Univ. , Japan)

**14:50-15:20** [Invited] Development of ultraviolet- and visible-light one-shot spectral domain optical coherence tomography and in situ measurements of human skin (Mr. Heijiro Hirayama or Mr. Sohichiro Nakamura, FUJIFILM Corp., Japan)

**15:20-15:50** [Invited] Extremely compact hyperspectral camera for drone and smartphone (Prof. Ichiro Ishimaru, Kagawa Univ., Japan)

**15:50-16:00 Closing remarks** by ITE Information Sensing Chair (Prof. Shigtoshi Sugawa, Tohoku Univ., Japan)

<Contact for any question about IWISS2016>

E-mail: iwiss2016@idl.rie.shizuoka.ac.jp

(Keiichiro Kagawa, Shizuoka University)