The VLSI Symposia seeks to transform lifestyles through new challenges in semiconductor technology and circuits for the new normal

TOKYO, Japan (APRIL 27, 2021) – The 2021 Symposia on VLSI Technology & Circuits have announced their technical program, which highlights the theme *"VLSI Systems for Lifestyle Transformation."* Due to continuing concerns over the global COVID-19 pandemic, the Symposia will be held on a worldwide accessible schedule from June 13th – 19th with a fully virtual format.

Despite the difficulties of COVID-19, VLSI development continues to advance at a fast rate. The latest in innovative and life enhancing circuits and technologies will be presented at VLSI Symposia 2021.

The Symposia program provides a unique perspective on the microelectronics industry by integrating the technology ecosystem of converging industry trends – machine learning, IoT, artificial intelligence, wearable/implantable biomedical applications, big data, cloud / edge computing, virtual reality (VR) / augmented reality (AR), robotics, and autonomous vehicles – with the advanced circuit design and application platforms that will realize the future promise of "ubiquitous intelligence."

The weeklong virtual conference will feature technical presentations, plenary sessions, panel discussions, joint focus sessions, and Short Courses presented in an online format.

Plenary Sessions (June 15 & 16):
The Symposia will open with plenary sessions. The Technology plenary talks include *"Pandemic Challenges, Technology Answers,"* by Dr. Siyoung Choi, President, GM of Foundry Business, Device Solutions Division, Samsung Electronics; and *"Materials to Systems in Semiconductor Manufacturing and Beyond,"* by Dr. Om Nalamasu, SVP and CTO, Applied Materials, Inc. President, Applied Ventures, LLC.

The Circuits plenary talks include *"Fugaku and A64FX: the First Exascale Supercomputer and its Innovative Arm CPU,"* by Prof. Satoshi Matsuoka, director at RIKEN Center for Computational Science; and *"A New Era of Tailored Computing,"* by Mr. Mark Papermaster, chief technology officer and executive vice president of Technology and Engineering at Advanced Micro Devices, Inc.

Focus Sessions (June 15, 16, 17, 18, 19):
As part of the Symposia's close integration of Technology and Circuits, a series of joint focus sessions present contributed papers from the Technology and Circuits programs. These focus sessions will cover topics such as *"Compute-In-Memory," "Image Sensors," "Circuit and*

Technology for Quantum Computing," "Advanced Heterogeneous and 3D Integration," and *"Photonics Interconnect and Compute."*

In addition to the joint focus sessions, there will be a circuit focus session highlighting recent advances in *"Energy-Efficient Machine Learning Processors"* and two technology focus sessions for *"New Processes and Materials for Future Logic Devices"* and *"Advanced Memory Technology"*.

Panel Sessions (June 17, 18):

The Technology panel session on June 17th, moderated by Prof. Takayuki Ohba, Tokyo Institute of Technology, addresses the question: "3D/Heterogeneous integration: Are we running towards a Thermal Crisis?"

The Circuits panel session will also be held on June 17th. The session, titled "New Generation Chip Makers vs. the Incumbents", will be moderated by Prof. Naveen Verma from Princeton University.

The joint panel session on June 18th is "The New Normal… How will it change work, life and education?" moderated by Dr. Kazuo Yano, Hitachi. The session aims to forecast not only the VLSI industry but also the related social environment in the post-pandemic era.

Short Courses (June 14):

The Technology Short Course - *"Advanced Process and device technology toward 2nm-CMOS and emerging memory"* - will cover a range of topics, including advanced CMOS, 3D transistors, interconnects and contacts, a review of memory challenges, and metrology challenges.

The Joint Technology/Circuits Short Course – *"Enabling a Future of Even More Powerful Computing,"* will address future directions of technology and circuits for high-performance computers, GPU-based AI accelerator, supercomputers for deep learning, in-memory, neuromorphic, quantum, and quantum-inspired computers.

The Circuits Short Course – *"Advanced Circuits and Systems for Internet-of-Things (IoT) Sensors"* will cover key design aspects of IoT sensors, including a broad spectrum of CMOS/non-CMOS sensor design, power management and for energy harvesting, low-power analog/RF/digital circuits, physical attack protections for security. Two complete IoT sensor systems will also be showcased by a computer vision sensor system and a battery-free BLE sensor system.

Forum (June 19):

The Symposia program will include the Forum – a series of presentations focusing on "*Technologies for POST Covid-19 era,"* led by experts in the field who will guide participants in discussions on the contributions of technology and circuits. This year, 8 speakers are invited from 4 different genres, (1) Medical/healthcare, (2) Communication, (3) Security, and (4) Smart manufacturing/Logistics. In addition to the on-demand presentations, panel-style live session is scheduled on June 19th, which will be moderated by Chris van Hoof, imec.

Demonstration Session:
The popular demonstration session will be an on-demand pre-recorded video session. All the accepted demonstration videos will be posted online on the conference virtual platform, and viewers can click through them and post comments, providing interaction between the authors and virtual attendees.

Workshops (June 13):
Held before the main Symposia technical sessions begin, these workshops provide additional learning opportunities for participants. Topics of the workshops include:
• *"AI/Machine Learning for Circuit Design and Optimization"*
• *"PPAC Analysis and System-Technology Co-optimization for 3D Memory-on-Logic IC, Many-core SOC and AI Computing Applications"*
• *"Deep Analysis Can Compress the Time to Design Optimum Analog/Mixed-Signal Circuits"*
• *"Materials Introductions - A path forward for all devices"*

The Symposium on VLSI Technology & Circuits will be held virtually from June 13th-19th, 2021, with Short Courses held on June 14 and a special Forum on June 17th. The two Symposia have been held together since 1987, providing an opportunity for the world's top device technologists, circuit and system designers to exchange leading-edge research on microelectronics technology, with alternating venues between Hawaii and Japan. A single registration enables participants to attend both Symposia.

Sponsoring Organizations
The Symposium on VLSI Technology is sponsored by the Japan Society of Applied Physics and the IEEE Electron Devices Society, in cooperation with the IEEE Solid State Circuits Society.

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Further Information and Registration
Visit: http://www.vlsisymposium.org.

Media Contact
 (Japan and Asia)
Secretariat for VLSI Symposia c/o JTB Communication Design, Inc.
Celestine Shiba Mitsui Bldg., 3-23-1 Shiba, Minato-ku, Tokyo 105-8335, Japan
E-mail: vlsisymp@jtbcom.co.jp

(North America and EU)
BtB Marketing Chris Burke BtB Marketing, co-Media Relations Director
E-mail: chris.burke@btbmarketing.com