

**Short Course 1**  
**“Material and Device Evolution**  
**for Artificial Intelligence”**

**Tuesday, March 13, 2018**

Moderator: Masashi Aono, Keio Univ.

10:00 **Energy Efficient Neural Algorithm Training and Execution with Analog Crossbar Accelerators**

Matthew John Marinella, Sandia National Laboratories

11:15 **Nonvolatile Memory for Deep Learning: from Materials to Algorithm**

Doo Seok Jeong, Korea Institute of Science and Technology/  
Hanyang Univ.

12:30 Lunch Break

Moderator: Doo Seok Jeong, Hanyang Univ.

13:45 **Neuromorphic Computing with Nanoscale Spin-Torque Oscillators**

Mathieu Riou, CNRS/Thales Lab

15:00 **Amoeba-Inspired Problem Solvers**

Masashi Aono, Keio Univ.

16:15 **Basics and Application of Quantum Annealing**

Shu Tanaka, Waseda Univ.

**Short Course 2**  
**“Device and System Technology Trends**  
**Toward Rebooting Computing”**

**Tuesday, March 13, 2018**

Moderator: Cheol Seong Hwang, Seoul National Univ.

- 10:00 **Opportunities and Challenges in Energy-Efficient Computing**  
An Chen, IBM Research
- 11:15 **Negative Capacitance Transistor for Steep Subthreshold Slope**  
Masaharu Kobayashi, The Univ. of Tokyo
- 12:30 Lunch Break
- Moderator: Masaharu Kobayashi, The Univ. of Tokyo
- 13:45 **Design of Photoresist for Scaling Down Lithographic Patterning Technology**  
Satoshi Fujimura, TOKYO OHKA KOGYO Co., Ltd.
- 15:00 **Memristive Devices and Arrays for IoT Applications**  
Qiangfei Xia, Univ. of Massachusetts Amherst
- 16:15 **Vertical Resistance Switching Memory for Data Storage and Cognitive Computing**  
Cheol Seong Hwang, Seoul National Univ.

## **Tutorial 1**

### **“MEMS Design and Processing for SDGs”**

**Tuesday, March 13, 2018**

Moderator: Yoshio Mita, The Univ. of Tokyo

- 8:45 **CMOS-MEMS Circuit Technology of Integrated Smart Sensors**  
Matthieu Denoual, GREYC-ENSICAEN / LIMMS-CNRS-IIS
- 10:00 **Piezoelectric MEMS and Their Energy Harvesting Applications**  
Isaku Kanno, Kobe Univ.
- 11:15 **Micro/Nano Fabrications for Biophysics and Organ-on-a-Chip Applications**  
Ryuji Yokokawa, Kyoto Univ.

## **Tutorial 2**

### **“Machine Learning as A Means of Your Research and Development”**

**Tuesday, March 13, 2018**

Moderator: Hiro Akinaga, AIST

- 13:45 **脳型人工知能ハードウェア開発の現状と課題**  
森江 隆 (九州工業大学)
- 15:00 **エッジ・クラウドAIの動向と省電力AIエンジンのアーキテクチャについて**  
大淵 栄作 (株式会社デジタルメディアプロフェッショナル)
- 16:15 **適用例から学ぶ機械学習の応用**  
太田 英司 (MathWorks Japan)