The Conference Theme

Electron Devices and Intellectualization of Everything

Advanced Program

6/29

Tutorials (in Japanese)

Chair: Hirobumi Watanabe

9:30-10:30 **H/W Technology for Cognitive Computing**
Koji Hosokawa
(IBM Japan)

Short Break (10:30-10:40)

10:40-11:40 **Development of Spintronics and Device Application**
Yasuo Ando
(Tohoku University)

Opening

13:00-13:10 **Opening Remarks by Yasuhisa Omura (Kansai University)**

Keynote Speeches

Chair: Mutsumi Kimura

13:10-13:50

K-1 **(p.18)** **Silicon Neuronal Networks**
- another approach to intelligent systems -
Takashi Kohno
(University of Tokyo)

Short Break (13:50-14:00)

Session A (Silicon Devices)

Chairs: Naoto Matsuo / Yukiharu Uraoka

14:00-14:40 - Invited -

A-1 **(p.22)** **Silicon-based Micro Thermoelectric Generator Fabricated by CMOS Compatible Process**
Takanobu Watanabe
(Waseda University)

14:40-15:00

A-2 **(p.24)** **An 800-MHz 8-bit High Speed SAR ADC in 16nm FinFET Process**
Keisuke Okuno, Koji Obata, Takumi Kato and Koji Sushihara
(Panasonic Corporation)

Short Break (15:00-15:10)

15:10-15:30

A-3 **(p.26)** **Image Sensor with New Trench-gated Phototransistor**
Katsuyuki Sakurano, Takaaki Negoro, Kazuhiro Yoneda, Yasukazu Nakatani, Katsuhiko Aisu, Yoshinori Ueda and Hirobumi Watanabe
(Ricoh)

15:30-15:50

A-4 **(p.28)** **Low-Power CMOS LNA for 900-MHz LoRa Application Through Parallel-RC Feedback**
Cheng-Shian Shiau and Jeng-Rern Yang
(Yuan Ze University, Taiwan)

Short Break (15:50-16:00)

Poster Session

Short Presentation – 2min. each (6/29, 16:00-17:40)

Chairs: A:TBD, B:Takatoshi Kato, C: Yuichi Ando

PA-01 (p.32) **Study of the inverter circuit with DNA/Si-MOSFET**
Hibiki Nakano[1], Naoto Matsuo[1], Tadao Takada[1], Kazushige Yamana[1], Akira Heya[1], Tadashi Sato[2] and Shin Yokoyama[2]
([1]University of Hyogo, [2]Hiroshima University)

PA-02 (p.34) **Physical Mechanisms of Short-Channel Effects of Lateral Double-Gate Tunnel FET**
Yoshiaki Mori[1], Shingo Sato[1], Yasuhisa Omura[1] and Abhijit Mallik[2]
([1]Kansai University, [2]University of Calcutta)

PA-03 (p.36) **Study on Underwater Wireless Power Transfer via Electric Coupling with a submerged electrode**
Mitsuhiro Urano, Kazuki Ata and Akira Takahashi
(National Institute of Technology, Nara College)

PA-04 (p.38) **Wireless Power Transmission to Thin-Film Devices**
Keigo Misawa, Yuki Yamamoto and Mutsumi Kimura
(Ryukoku University)

PA-05 (p.40) **Evaluation of Thin-Film Biostimulating Device using Thin-Film Transistors**
Kohei Miyake, Keisuke Tomioka, and Mutsumi Kimura
(Ryukoku University)

PA-06 (p.42) **Angular dependence of nonparabolicity factor of silicon band structure**
Fujimoto Nobuya, Akira Hiroki and Shin Hiratoko
(Kyoto Institute of Technology)

PA-07 (p.44) **Evaluation platform for the security of in-vehicle systems**
Yoshiya Ikezaki, Yusuke Nozaki and Masaya Yoshikawa
(Meijo University)

PC-01 (p.60) **Nanostructure Fabrication through a Microwire of Local Anodization**

Takahiro Fukumoto, Yasuo Kimura, Masataka Moriya, Yoshinao Mizugaki, Toshiro Ogino, Daisuke Tadaki, Ma Teng, Ayumi Hirano-Iwata and Michio Niwano

(CREST)

PC-02 (p.62) **Cross-Point Device using In-Ga-Zn-O Semiconductor for Synapse Element in Neural Network**

Ryo Tanaka, Yuki Koga, Keisuke Ikushima, Kenta Umeda, Toshimasa Hori, Tomoharu Yokoyama, Koki Watada, Daiki Yamakawa, Mutsumi Kimura and Tokiyoshi Matsuda

(Ryukoku University)

PC-03 (p.64) **Creation and study of memristors based on $CuCl_2$**

Roman Rozanov, Konstantin Tsarik, Anna Volkova and Vladimir Nevolin

(National Research University of Electronic Technology, Russia)

PC-04 (p.66) **Effects of He plasma treatment on zinc oxide thin film transistors**

Shotaro Shinya, Toyokazu Kaneko, Masatoshi Koyama, Toshihiko Maemoto and Shigehiko Sasa

(Osaka Institute of Technology)

PC-05 (p.68) **Room-Temperature Forming of Ga-Sn-O Film for Thin-Film Transistors**

Ryo Takagi, Kenta Umeda, Mutsumi Kimura and Tokiyoshi Matsuda

(Ryukoku University)

PC-06 (p.70) **Multilevel resistance switching phenomena observed in the Cu (Ti)/HfO_2/Au device**

Hayato Yoshida, Tomohiro Shimizu, Takeshi Ito, and Shoso Shingubara

(Kansai University)

PC-07 (p.72) **Planar Device using In-Ga-Zn-O Semiconductor for Synapse Element in Neural Network**

Daiki Yamakawa, Yuki Koga, Keisuke Ikushima, Kenta Umeda, Toshimasa Hori, Tomoharu Yokoyama, Koki Watada, Ryo Tanaka, Mutsumi Kimura and Tokiyoshi Matsuda

(Ryukoku University)

PC-08 (p.74) **Characteristic Evaluation of Ga-Sn-O Films deposited using Mist Chemical Vapor Deposition**

Ryugo Okamoto, Hiroki Fukushima, Mutsumi Kimura and Tokiyoshi Matsuda

(Ryukoku University)

PC-09 (p.76) **Magnetoresistance Effect of Ga-Sn-O Film deposited using Mist Chemical Vapor Deposition**

Ryuki Nomura, Asuka Fukawa, Kota Imanishi, Hiroki Fukushima, Ryugo Okamoto, Mutsumi Kimura and Tokiyoshi Matsuda

(Ryukoku University)

PC-10 (p.78) **A Fast Microwave Correlated Imaging Method Based on Strip Division in Large Scenes**

Yuanyue Guo, Jie Deng and Dongjin Wang

(USTC, China)

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Session B (Compound Devices)

Chairs: Masaaki Kuzuhara / Hiroyuki Sakai

9:30-10:10 – Invited –

C-1 **(p.82)** **MEMS Mirrors for automotive applications**
Toshiyuki Tsuchiya
(Kyoto University)

Short Break (10:10-10:20)

10:20-11:00 – Invited –

B-1 **(p.84)** **Recent Topics of Vertical GaN Power Devices**
Tohru Oka
(TOYODA GOSEI)

11:00-11:40 – Invited –

B-2 **(p.86)** **Characterization of lightly-doped n- and p-type homoepitaxial GaN on free-standing substrates**
Masahiro Horita[1] and Jun Suda[2]
([1]Kyoto University, [2]Nagoya University)

11:40-12:00

B-3 **(p.88)** **Effect of Reverse Bias Annealing on the Properties of AlGaN/GaN MIS-HEMTs with Recessed-gate Structure**
Wataru Gamachi, Koutarou Ishii, Joel Asubar, Hirokuni Tokuda and Masaaki Kuzuhara
(University of Fukui)

Lunch (12:00-13:00)

13:00-13:20

B-4 (p.90) **Investigation of Thermal Runaway of Reverse-Biased Silicon Carbide Schottky Barrier Diode**
Minoru Nakagawa, Seigo Mori, Yuichiro Nanen, Masatoshi Aketa, Hirokazu Asahara and Takashi Nakamura
(ROHM)

13:20-13:40

B-5 (p.92) **Reduced Current Collapse in Multi-Fingered AlGaN/GaN MOS-HEMTs with Dual Field Plate**
Ryota Yamaguchi, Yudai Suzuki, Joel Asubar, Hirokuni Tokuda and Masaaki Kuzuhara
(University of Fukui)

13:40-14:00

B-6 (p.94) **Characterization of AlGaN/GaN HEMTs with Directly Regrown AlGaN Barrier Layer**
Keito Kanatani, Satoshi Yoshida, Akio Yamamoto and Masaaki Kuzuhara
(University of Fukui)

14:00-14:20

B-7 (p.96) **Comparison of Ni/Au and Pd/Au Ohmic Contacts to p-GaN**
Masataka Sasada, Aki Sasakura, Norifumi Takashima, Hirokuni Tokuda and Masaaki Kuzuhara
(University of Fukui)

Short Break (14:20-14:30)

Session C (Emerging Devices)

Chairs: Minoru Noda / Mutsumi Kimura

14:30-15:10 – Invited –

C-2 (p.100) **Wearable, Healthcare Sensor Sheets**
Kuniharu Takei
(Osaka Prefecture University)

15:10-15:30

C-3 (p.102) **A Novel SAW Resonator with Incredible High-Performances**
Hideki Iwamoto, Tsutomu Takai, Yuichi Takamine, Masahiro Hiramoto and Masayoshi Koshino
(Murata)

Short Break (15:30-15:40)

15:40-16:00

C-4 (p.104) **Hall Effect in Thin-Film Transistor - Sensitivity Dependence on Applied Voltage -**
Takaaki Matsumoto[1], Akito Yoshikawa[1], Tokiyoshi Matsuda[1], Mutsumi Kimura[1], Tokuro Ozawa[2], Koji Aoki[2] and Chih-Che Kuo[2]
([1]Ryukoku University, [2]AU Optronics Corporation)

16:00-16:20

C-5 (p.106) **MEMS based fabrication of conformal electrode pairs for thermotunneling cooling**
Amit Banerjee, Yoshikazu Hirai, Toshiyuki Tsuchiya and Osamu Tabata
(Kyoto University)

16:20-16:40

C-6 (p.108) **Sensitivity of piezoelectric MEMS ultrasonic sensors using sol-gel PZT films prepared through various pyrolysis temperatures**
Shota Nakajima, Jo Shiomi, Kaoru Yamashita and Minoru Noda
(Kyoto Institute of Technology)

Short Break (16:40-16:50)

Poster Viewing Session

16:50-18:00 at Poster Room

Closing

18:00-18:20 Award and Closing: Mutsumi Kimura (Ryukoku University)