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Technical Program of 22nd International Workshop on Junction Technology (IWJT2025)

June 5(Thursday)

9:30 **Opening Remarks**
Satoshi Shibata (General Chair)
Tsunenobu Kimoto (JSAP)
Tetsuo Narita (Program Chair)

Technical Session [S1] Image Sensor

Chairman: Takashi Sakamoto , Phillipe Rodriguez

9:50 **S1-1 INV** **Overview of Pixel Scaling Technology in CMOS Image Sensors for Imaging and SensingApplications** 1
Kenji Tatani
[Sony Semiconductor Solutions Corporation, Japan]

10:20 **S1-2 CNT** **Novel production concept of CH$_2$F-molecular-ion implanted Si epitaxial wafer for highly sensitive 3D-stacked CMOS image sensors** 4
Ryo Hirose, Koji Kobayashi, Sho Nagatomo, Takeshi Kadono, Kazunari Kurita
[SUMCO Corporation, Japan]

10:40 **S1-3 CNT** **Metallic impurity gettering behavior of hydrocarbon-molecular-ion-implanted epitaxial silicon wafer during the pn-junction diode fabrication process** 8
Sho Nagatomo [Under 35], Takeshi Kadono, Ryo Hirose, Koji Kobayashi,
Shun Sasaki and Kazunari Kurita
[SUMCO Corporation, Japan]

11:00 **Coffee Break, Exhibition** (20 min)

Technical Session [S2] Annealing 1

Chairman: Ryuichi Miura , Yoshihiro Sato

11:20 **S2-1 CNT** **Impact of Cumulative Pulsed Laser Irradiation on Recrystallization of Amorphized C$_3$H$_5$-molecular-ion-implanted Silicon Substrate Surface** 12
Koji Kobayashi [Under 35], Ryosuke Okuyama, Takeshi Kadono, Ayumi Onaka-Masada,
RyoHirose, Akihiro Suzuki, Sho Nagatomo, Yoshihiro Koga, and Kazunari Kurita
[SUMCO Corporation, Japan]

11:40 **S2-2 CNT** **Impact of Rapid Thermal Annealing on tensily-strained phosphorous-doped Si for advanced FD-SOI nodes** 16
Theo Cabaret, Eva Dos Reis, Valerie Lapras, Nicolas Gauthier, Joel Kanyandekwe
[Univ. Grenoble Alpes, CEA-LETI, France]

12:00 **Group Photo, Committee Meeting with Lunch** (90 min)

Keynote 1 [KN1]

Chairman: Satoshi Shibata

13:30 **KN-1** **Statistical Analysis of Subthreshold Current in Cryo-CMOS Transistors** 20
Toshiro Hiramoto, Tomoko Mizutani, Kiyoshi Takeuchi, Takuya Saraya,
Hiroshi Oka[1], Takahiro Mori[1], Masaharu Kobayashi
[Institute of Industrial Science, Japan
[1] University of Tokyo,[1] AIST, Japan]

Session 3 [S3] Annealing 2

Chairman: Akira Uedono , Hideki Sakurai

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Satoshi Fujii, Soma Shimabukuro, Akira Uedono[1]
[National Institute of Technology, Okinawa College, [1]University of Tsukuba, Japan]

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D. Ullrich[1,2], J. Szivós[1], B. Dénes[1], Z. Deli[1], Z. Bozóki[1],
S. Lenk[2], Z. Zolnai[1], G. Nádudvari[1] ,Laszlo Balogh1 [Under 35]
[[1] Semilab Semiconductor Physics Labratory Ltd, Hungry
[2] Department of Atomic Physics, Institute of Physics, Budapest University of Technology and Economics, Hungry]

15:05 **S3-3 CNT** **Flash-Assisted Flash Lamp Annealing Technology for High (Re-) Activation of Epitaxial Si:P Layers** 29
Yuma Ueno [Under 35], Hideaki Tanimura, Katsuhiro Mitsuda, Shinichi Kato
[SCREEN Semiconductor Solutions Co. Ltd, Japan]

15:25 **Coffee Break, Exhibition** (20 min)

Session 4 [S4] Doping & Contact 1

Chairman: Osamu Nakatsuka , Anabela Veloso

15:45 **S4-1 INV** **Advances in Plasma Doping Applications to Enable Novel Device Scaling** 32
Deven Raj
[Applied Materials Inc., United States]

16:15 **S4-2 CNT** **Influence of dopant and Si:B cap on Ni(Pt)-based silicidation of SiGe:B for next generation PMOS FDSOI devices** 34
Helen Grampeix, Théo Cabaret, Justine Lespiaux, Patrice Gergaud, Nicolas Gauthier,
Philippe Rodriguez
[Univ. Grenoble Alpes, CEA-LETI, France]

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Lucas Badeau, Nicolas Coudurier, Patrice Gergaud, Jean-Michel Hartmann,
Vincent Reboud, Philippe Rodriguez
[Univ. Grenoble Alpes, CEA-LETI, France]

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Rinus T.P. Lee, Kenichi Imakita, Gyana Pattanaik, Ryota Yonezawa, Kai-Hung Yu, Joshua Mayersky, Hidenao Suzuki, Cory Wajda
[TEL Technology Center, United States]

17:25 **Preparation**

18:00 **Conference Banquet** (120 min)

June 6 (Friday)

Keynote 2 [KN2]

Chairman: Yoshiaki Kikuchi, Hiro Ito

9:20 **KN-2** **CMOS 2.0: The next compute scaling paradigm** 44
Julien Ryckaert
[imec, Belgium]

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Jean-Luc Everaert[1], Kiroubanand Sankaran[1], Alex Merkulov[1],
Keisuke Yamamoto[3,4], Paola Favia[1], Robert Langer[1], Min-Soo Kim[1],
Naoto Horiguchi[1] and Roger Loo[1,5]
[[1] imec, Belgium
[2] KU Leuven, Department of Materials Engineering, Belgium
[3] Kumamoto University, Japan
[4] Kyushu University, Japan
[5] Ghent University, Department of Solid State Sciences, Belgium]

10:35 **Coffee Break, Exhibition** (20 min)

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Chairman: Hiroki Okamoto, Hi-Deok Lee

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Kiwamu Sakuma, Kazuhiro Matsuo, Yoko Yoshimura, Yuta Kamiya,
Daisuke Hagishima, Makoto Fujiwara and Masumi Saitoh
[KIOXIA Corporation, Japan]

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Yen Jin Pui [Under 35] and Wen-Luh Yang
[Semiconductor Measurement Lab, Department of Electronic Engineering, College of
Information and Electrical Engineering Feng Chia University, Taiwan]

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Elisa Vianello
[CEA-Leti, Univ. Grenoble Alpes, France]

12:30 **Lunch** (60 min)

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Chairman: Tsuyoshi Ishikawa, Takamasa Kawanago

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Beyond 2D Materials with New Degrees of Freedom 61
Hiroki Ago
[Faculty of Engineering Sciences and Center for Semiconductors and Device Ecosystem
(CSeDE), Kyushu University, Japan]

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[Institute of Science Tokyo, Japan]

Technical Session [S8] Power Device 1

Chairman: Tsuyoshi Ishikawa, Takamasa Kawanago

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Hu Shu En[1],Baquer Mazhari[2], Edward Yi Chang[1]
[[1] International College of Semiconductor Technology, National Yang-Ming Chiao Tung University, Taiwan
[2] Department of Electrical Engineering, Indian Institute of Technology, India]

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[[1] Industry Academia Innovation School, National Yang Ming Chiao Tung University, Taiwan
[2] Department of Materials Science and Engineering, National Yang Ming Chiao Tung University, Taiwan
[3] International College of Semiconductor Technology, National Yang Ming Chiao Tung University, Taiwan
[4] Semicondutor Research Center, Hon Hai Research Institute, Taiwan]

15:00 Coffee Break, Exhibition (2F) (20 min)

Technical Session [S9] Power Device 2

Chairman: Tetsuo Narita, Yoji Kawasaki

15:20 **S9-1 CNT** **All Ion-implanted Vertical GaN Planar-Gate MOSFETs Fabricated on 4-inch Substrates** 75
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Akira Nakajima[2], Shinsuke Harada[2], and Shinya Takashima[1]
[[1] Advanced Technology Lab., Fuji Electric Co., Ltd., Japan
[2] National Institute of Advanced Industrial Science and Technology, Japan]

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Tadakatsu Ohkubo[4], Shoji Ishibashi[5], Kacper Sierakowski[6],
and Michal Bockowski[6]
[[1] Institute of Pure and Applied Science, University of Tsukuba, Japan
[2] Advanced Technology Lab., Fuji Electric Co., Ltd., Japan
[3] Institute of Multidisciplinary Research for Advanced Materials, Tohoku University, Japan
[4] National Institute for Materials Science, Japan
[5] Research Center for Computational Design of Advanced Functional Materials, National Institute of Advanced Industrial Science and Technology, Japan
[6] Institute of High Pressure Physics, Polish Academy of Sciences, Poland]

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[[1] School of Eng., Institute of Science, Japan
[2] ANVOS Analytics, Inc., Japan
[3] WOW alliance, Institute of Science, Japan]

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Seiya Sakakura, Katsumi Rikimaru, Tatsuya Shiraishi
[Toshiba Electronic Devices and Strage Corporation, Japan]

16:40 **Short Break (10 min)**

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Chairman: Takuji Hosoi, Yasuhiko Matsunaga

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[Nagoya Institute of Technology, Japan
[1] Nagoya University, Japan
[2] SHI-ATEX Co. Ltd, Japan]

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[Sumitomo Electric Industries, Ltd., Japan]

17:50 **Preparation of Closing and Award Ceremony** (10 min)

18:00 **Award Ceremony and Closing Remarks** (15 min)

Special Workshop on Celebrating IWJT's Silver Jubilee and the FET Centennial

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Chairman: S. Shishiguchi

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Hiroshi Iwai
[International College of Semiconductor Technology National Yang Ming Chiao Tung University, and Institute of Science Tokyo, Japan]

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Bunji Mizuno
[UJTLab., Japan]

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John Ogawa Borland
[J.O.B. Technologies, United States]

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Chairman: B. Mizuno