

Program

October 6 (Tuesday)

13:30-14:30 Registration

14:30-14:45 Opening Remarks

Prenary-1, Session A1 (Si)

Chair: *Koji Sueoka (Okayama Pref. Univ., Japan)*

14:45 ~ 16:30

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| 14:45 | Pr-1 | Global Trend of Semiconductor Silicon Technology
<i>Koji Izunome (GlobalWafers Japan, Japan)</i> |
| 15:30 | A-1 | Interaction between Nitrogen- and Oxygen-Related Vacancy Defects during Rapid Thermal Annealing and Their Effect on Bulk Microdefect (BMD) Profiles in Czochralski Silicon Wafers
<i>Dawid Kot (IHP, Germany)</i> |
| 16:00 | A-2 | Characteristics of CH ₂ F ⁺ molecular-ion-implanted silicon epitaxial wafer
<i>Ryo Hirose (SUMCO, Japan)</i> |
| 16:30 | | Coffee Break |
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Session P1 (Short Presentation for Posters)

Chair: *Haruo Sudo (GlobalWafers Japan, Japan)*

16:50 ~ 17:45

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| 16:50 | P-1 | DFT evaluation of gettering efficiency by oxygen-vacancy and carbon self-interstitial complexes in Si wafers
<i>Iori Takeda (Okayama Pref. Univ., Japan)</i> |
| | P-2 | A Hakoniwa Perspective on Cu, Ni, and Fe atoms Gettering in Silicon Single Crystals
<i>Eiji Kamiyama (GWJ/Okayama Pref. Univ., Japan)</i> |
| 16:55 | P-3 | High-Efficiency Planarization of Si(100) Wafer by Catalyst-Referred Etching with Alkaline Solution
<i>Takao Goto (The University of Osaka, Japan)</i> |
| | P-4 | Annihilation Behavior of Void Defects in Si (100) and (110) Wafers during Rapid Thermal Processing in Oxidizing and Non-Oxidizing Atmospheres
<i>Takuya Kusunoki (Okayama Pref. Univ./GWJ, Japan)</i> |
| 17:00 | P-5 | Comparison of dislocation behavior due to thermal shock in [100] and [110] CZ-Si Crystal growth
<i>Shoma Tsukada (Shinshu University, Japan)</i> |
| | P-6 | Real-time detection of crystal diameter during necking process in CZ-Si crystal growth
<i>Takuma Murase (Shinshu University, Japan)</i> |
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- 17:05 P-7 Numerical analysis of temperature and stress distributions during the necking process of CZ silicon single crystal growth under various growth conditions
Rei Saito (Shinshu University, Japan)
- P-8 Evaluation of the Surface morphology of SiGeC Thin Films Deposited on Slightly Inclined Si(110) Wafers
Yuta Fujimoto (Univ. of Yamanashi, Japan)
- 17:10 P-9 Effect of GaSb Substrate on the Growth of Ge_{0.5}Sn_{0.5} Thin Films
Koji Ozawa (Okayama Pref. Univ., Japan)
- P-10 Enhanced Luminescence of GeSn Films by RTA-Induced Strain Relaxation
Yuta Goto (NIMS, Japan)
- 17:15 P-11 Study on Surface Texture Structure of Bottom Silicon for Perovskite/Si Tandem Photovoltaics
Yukito Soejima (Meiji University, Japan)
- P-12 Crystal growth and substrate fabrication of 100 mm AlN single crystal
Shogen Matsumoto (Crystal IS, Inc., USA)
- 17:20 P-13 Controlled Epitaxial Growth of TaS₂ on Graphene-Based Substrates
Clara Rebanal Castro (Universidad Autónoma de Madrid, Spain)
- P-14 Fabrication of heteroepitaxial diamond grown on Ir/sapphire substrates using the epitaxial lateral overgrowth method
Yusuke Morita (The University of Osaka, Japan)
- 17:25 P-15 Fabrication of CaSi₂ thin films on c-face sapphire using MBE and close-spaced evaporation methods
Yutaka Maki (Univ. of Yamanashi, Japan)
- P-16 Mist CVD Growth of Cu-Doped α -In₂O₃ Films and Their Electrical characterization
Tarou Iizuka (Kogakuin Univ, Japan)
- 17:30 P-17 Evaluation of Polishing Damage in Mg₂Si Single Crystals by X-ray Rocking Curve Measurement
Kotaro Tetsu (Ibaraki University, Japan)
- P-18 Physics-Constrained Bayesian Spectroscopic Ellipsometry Framework for Reliable Semiconductor Thin-Film Characterization
Rogie Maghinay Madula (Nara Institute of Science and Technology, Japan)
- 17:35 P-19 Computational exploration and characterization of stable atomic configurations in Si–Ge, Si–Sn, and Ge–Sn
Hibiki Bekku (Okayama Pref. Univ., Japan)
- P-20 Molecular Dynamics simulation of Physical Vapor Transport Crystal Growth on Off-Cut Silicon Carbide Substrates
Shuto Araki (ROHM Co., Ltd, Japan)
- 17:40 P-21 Search for Stable Atomic Configurations in CGeSn and CSiSn Alloys Using First-Principles Calculation and naive-Bayes Combinatorial Optimization
Ryoken Tsuji (Okayama Pref. Univ., Japan)

P-22 Reduction of Error Accumulation in Machine-Learning Prediction of
Sequential Semiconductor Processes Based on Spatial Error Structures

Kentaro Kutsukake (*Nagoya University, Japan*)

Session P-1 (Poster Session)

17:45 ~ 19:30

October 7 (Wednesday)

Session B-1, B-2 (Power)

Chair: Yasuhisa Sano (*The University of Osaka, Japan*)

9:30 ~ 12:00

- 9:30 B-1 Ion-Cut Layer Transfer: From Silicon Foundations to Wide- and Ultra-Wide Bandgap Semiconductors
Julie Widiez (CEA-Leti, France)
- 10:00 B-2 Full-spectrum, high-performance commercial GaN power on 300 mm-scalable QST® substrate
Vladimir Odnoblyudov (Qromis, Inc., USA)
- 10:30 **Coffee Break**
- 11:00 B-3 Defect Characterization for Advanced Power Device Development
Tomoyuki Uchida (Toray Research Center, Japan)
- 11:30 B-4 Evaluation of Dislocations in GaN Crystals by Multi-beam Excited Synchrotron XRT and TEM
Yongzhao Yao (Mie University, Japan)
- 12:00 **Lunch Break**

Session B-3 (Power)

Chair: Hidekazu Tsuchida (*CRIEPI, Japan*)

13:30 ~ 15:30

- 13:30 B-5 Status of 200 mm and Progress Toward 300 mm 4H-SiC Substrates: Technology Development and Application Outlook
Can Zhu (SICC, China)
- 14:00 B-6 Adaptable metrology for accelerated SiC growth process development
Slobodan Mitic (PVA TePla, Germany)
- 14:30 B-7 Origins of defects and their evolution in bulk and epitaxial 4H-SiC crystals
Michael Dudley (Stony Brook University, USA)
- 15:00 B-8 Defect formation in Czochralski silicon crystal heavily doped with phosphorus
Kazuhisa Torigoe (SUMCO, Japan)
- 15:30 **Coffee Break**

Session P2 (Short Presentation for Posters)

Chair: Ryota Suewaka (*SUMCO, Japan*)

15:50 ~ 16:50

- 15:50 P-23 Quantitative analysis of impurities in Si by bound exciton two-electron transition photoluminescence
Michio Tajima (Institute of Space and Astronautical Science/JAXA, Japan)

- P-24 Device-Level Extraction of Mode-Resolved Phonon Energies in Germanium by Fourier-Transform Photocurrent Spectroscopy
Rahmat Hadi Saputro (AIST, Japan)
- 15:55 P-25 YOLO-Based Detection of Threading Dislocations in SiC Wafers Using Synchrotron X-ray Topography
Yuhui Huang (Waseda University, Japan)
- P-26 Complementary Characterization of Crystal Defects in 4H-SiC Wafers Using Synchrotron X-ray Topography and Photoluminescence Imaging
Jiayi Liang (Waseda University, Japan)
- 16:00 P-27 Development of a Soft X-Ray Surface Scattering System at NanoTerasu
Kazuhiko Omote (Rigaku Corporation, Japan)
- P-28 Operando Nanobeam X-ray Diffraction Analysis of Channel-Region Strain in Gate-All-Around Nanosheet Field-Effect Transistors
Yuto Hashikura (The Univ. of Osaka, Japan)
- 16:05 P-29 Optical Property Modulation of n-Ge by High-Speed Continuous-Wave Laser Annealing and Si Alloying
Yuta Goto (NIMS, Japan)
- P-30 Self-Supervised Morphology-Based Organization of SEM Images of Surface Defects on Unpatterned Silicon Wafers
Hironori Banba (Kyushu Institute of Technology/GWJ, Japan)
- 16:10 P-31 DC-DLTS Investigation of Thermally Activated Defects in Nitrogen-Containing Float-Zone Silicon
Kohaku Abe (Toyota Tech. Inst., Japan)
- P-32 Revealing the Mechanism of Mobility Improvement in RPD-Deposited IWO:H Thin Films via Temperature-Dependent Scattering Analysis
Zhi Zhong Chen (Toyota Tech. Inst., Japan)
- 16:15 P-33 Segregation Coefficient of Ag Impurity Doped in Melt-grown Mg₂Si
Kousuke Shimano (Ibaraki University, Japan)
- P-34 Composition Dependence of Structural Stability and Local Lattice Distortion in NbAlN Alloys
Takahiro Kawamura (Mie University, Japan)
- 16:20 P-35 Evaluation of the mechanical strength and anisotropy of β -Ga₂O₃ and Si crystals using nanoindentation
Shotaro Gonda (Shinshu University, Japan)
- P-36 Static Characteristics of In₂O₃ Thin Film Transistors with a Channel Layer Thickness of 10 nm Deposited by Mist CVD
Haruki Ishikawa (Kogakuin Univ, Japan)
- 16:25 P-37 Theoretical study of dependence of bandgaps of SiSn, GeSn, and SiGe on atomic configurations
Koji Sueoka (Okayama Pref. Univ., Japan)
- P-38 TCAD Analysis of the On-State Performance of Ge-Channel Nanosheet pFETs: Impact of Carrier Velocity Saturation
Atsushi Takahashi (Toyota Tech. Inst., Japan)

- 16:30 P-39 Influence of Stacking Configuration on the Strain States of Embedded Ge Nanodot Multilayers
Yuta Ito (Meiji University, Japan)
- P-40 Multivalley Band Structure Evolution in Ge Nanosheets: Effective-Mass Modulation and Valley-Energy Shifts
Tatsuro Maeda (AIST, Japan)
- 16:35 P-41 Development of Transfer Process for Ge Epitaxial Film from Si(001) onto Al₂O₃(0001) substrate
Mahiro Tanaka (Nagoya University, Japan)
- P-42 Influence of the H₂O Molar Ratio during Synthesis on the Structural and Optical Properties of Methylated Germanane
Hiromu Kudo (Meiji University, Japan)
- 16:40 P-43 Investigation of surface roughness of Si plasma etching for X-ray Bragg optical devices
Shotaro Matsumura (S-Surface Technologies Co. Ltd, Japan)
- P-44 Temperature-Dependent Structural Evolution of PEALD Ga₂O₃ Thin Films During Post-Deposition Annealing
Ichiro Hayamizu (Toyota Tech. Inst., Japan)
- 16:45 P-45 Luminescence Properties of Rice Husk-Derived Si Nanocrystals Prepared by Magnesiothermic Reduction Using Product-Derived Moderators
Taisei Matsushita (Toyama Pref. Univ., Japan)

Session P-2 (Poster Session)

16:50 ~ 18:35

October 8 (Thursday)

Prenary-2, Session C (LSTC)

Chair: *Ryo Yokogawa (Hiroshima Univ. Japan)*

8:45 ~ 12:00

8:45	Pr-2	State-of-the-Art Epitaxy and Integration for Gate-All-Around Nanosheet Transistors <i><u>Shogo Mochizuki</u> (IBM, USA)</i>
9:30	C-1	Technology Trends in GAA/CFET Devices and R&D Initiatives at LSTC <i><u>Toshiro Hiramoto</u> (The University of Tokyo, Japan)</i>
10:00	C-2	Study of SiGe/Si superlattice structure for realizing Si(110) NS channel <i><u>Koji Usuda</u> (Meiji Univ. Japan)</i>
10:30		Coffee Break
11:00	C-3	Surface Stability of Si(551) during Alkaline Cleaning for Future CMOS Applications <i><u>Akinobu Teramoto</u> (Hiroshima Univ. Japan)</i>
11:30	C-4	Development of Silicon Substrates for Beyond 2nm Logic Devices <i><u>Koji Matsumoto</u> (SUMCO, Japan)</i>
12:00		Photo Session
12:00		Lunch Break
13:30		Optional Tour
18:30		Banquet
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20:30		

October 9 (Friday)

Session A2 (Si)

Chair: *Takayoshi Shimura (Waseda University, Japan)*

9:30 ~ 10:30

9:30 A-3 Probing the strain at the nanoscale using x-ray nanoprobe: from Si to 2D materials

Hanfei Yan (*Brookhaven National Laboratory, USA*)

10:00 A-4 On-Orbit Evaluation of White Spot Defects in CMOS Image Sensors: Results from SPHERE-1 EYE Satellite

Nobuya Nakazaki (*Sony Semiconductor Solutions, Japan*)

10:30 **Coffee Break**

Session D1 (Info)

Chair: *Remi Konagaya (Sony Semiconductor Solutions, Japan)*

11:00 ~ 12:00

11:00 D-1 Transforming Atomic-Scale Simulations with Universal Machine Learning Potentials: Case Studies in Semiconductor Materials and Process Development

Yuta Aoki (*Matlantis, Japan*)

11:30 D-2 Material and device process co-optimization in semiconductor manufacturing by cross-company overall process-digital twins

Shota Seki (*AIxtal, Japan*)

12:00 **Lunch Break**

Session D2 (Info)

Chair: *Kentaro Kutsukake (Nagoya University, Japan)*

13:30 ~ 14:30

13:30 D-3 Enhancement of Crystal Growth Modeling with Machine Learning and Defect Analysis for 300 mm Cz Silicon

Andrey Smirnov (*STR Belgrade, Serbia*)

14:00 D-4 Metrology Informatics for Semiconductor Materials: Applications in Optical Characterization and Electron Microscopy

Shigetaka Tomiya (*Nara Institute of Science and Technology, Japan*)

14:30-14:45 Closing Remarks