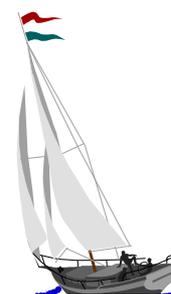


PROGRAM

The Forum on the Science and Technology of Silicon Materials 2003

Nov. 25 (Tue.)- 27 (Thu.)

Registration Desk Opening : Nov. 25, 11 a.m.



Nov. 25, Tue.

A. General

1. Impact of basic research of crystal defects on silicon material technology

K. Sumino

Prof. Emeritus, Tohoku University

13:00-13:45

B. Quality and Technology Required for the Wafers in the Coming Generation

2. Wafer quality requirements from the next generation processes and devices

Tetsuo Fukuda, Seiichiro Kobayashi, and Masanori Yoshise

Electronic Devices Group, Fujitsu Limited

13:45-14:30

3. Device physics and technology of strained-Si MOSFETs

S. Takagi, T. Tezuka, N. Sugiyama, T. Mizuno, T. Numata, Y. Moriyama,

K. Usuda, S. Nakaharai, J. Koga, A. Tanabe, N. Hirashita and *T. Maeda

MIRAI Project,

Association of Super-Advanced Electronics Technology (ASET),

**National Institute of Advanced Industrial Science and Technology (AIST)*

14:30-15:15

Coffee Break

15:15-15:30

C. Production Wafers Tomorrow: Epitaxial and Annealed Wafers

4. Improvement of Si substrate properties by nitrogen doping

Andreas Huber

Wacker Siltronic, R&D group

15:30-16:15

5. The control of grown-in defect in nitrogen-doped Czochralski-grown silicon for the application to annealed wafer and epitaxial wafer

Katsuhiko Nakai, Yasumitsu Ohta, Hideki Yokota, Atsushi Ikari, and

Masahiro Tanaka

Wacker NSCE Corporation

16:15-16:45

6. Epitaxial silicon wafers with high gettering capability for low temperature device processing

Yasumitsu Ohta, Katsuhiko Nakai, Koichi Kitahara, and Atsushi Ikari

Wacker NSCE Corp.

16:45-17:15

7. Gettering of metallic impurities in silicon (title tentative)
 A.A. Istratov
University of California, Berkeley 17:15-18:00
- Free Time 18:00-18:30
Banquet 18:30-20:30
- Surfside Refreshment I: Hayama Marina 20:30-
 (optional)

Nov. 26, Wed.

D. Gettering, Oxygen Precipitation, Passivation of Defects

8. Internal gettering of metal impurities by oxide precipitates: Current status and physical modeling of gettering
 Koji Sueoka
 Department of System Engineering, Okayama Prefectural University 08:30-09:00
9. Substrate-boron-optimized epi-wafer without backside SiO₂ seal (p/p0 epi-wafer): Simultaneous achievement of high gettering ability by boron and reduction of in-process boron contamination
 K. Tanahashi, H. Yamada-Kaneta, *T. Fukuda, and *H. Mori
*Fujitsu Laboratories Ltd., *Fujitsu Ltd.* 09:00-09:30
10. Tuning oxygen concentration at low- and high-temperature IG process and boron concentration in epitaxial wafer for the gettering of metal impurities
 Mohammad B. Shabani,* Y. Shiina, and Y. Shimanuki
Sumitomo Mitsubishi Silicon Corp. 09:30-10:00
- Coffee Break 10:00-10:15
11. High-sensitivity determination of copper in silicon crystal by photoluminescence and the structure of the copper PL center
 Minoru Nakamura and Susumu Murakami
Hitachi Research Laboratory, Hitachi, Ltd. 10:15-10:45
12. Gettering technique for the cutting-edge LSI manufacturing
 Nobuyoshi Hattori, Kazuhito Matsukawa, Hideki Naruoka, and Yasuhiro Kimura
Renesas Technology Corp. 10:45-11:15
13. Defect passivation by cyanide treatment and improvement of silicon device characteristics
 Hikaru Kobayashi, Osamu Maida, and Masao Takahashi
*Institute of Scientific and Industrial Research, Osaka University, and CREST,
 Japan Science and Technology Corporation* 11:15-11:45

Get-Together Photo

11:45-12:15

Lunch

12:15-13:30

E. Light-mass Element Impurities and Intrinsic Point Defects

14. Optical properties of oxygen precipitates and dislocations in silicon

Simona Binetti

INFM and Department of Material Science

University of Milano-Bicoca

13:30-14:15

15. Study of N-doping effect on Si crystal growth by first-principles calculations combined with thermodynamical theory

Hiroyuki Kageshima, Akihito Taguchi, and *Kazumi Wada

NTT Basic Research Laboratories

**Massachusetts Institute of Technology*

14:15-14:45

16. Observation of latent defects in Si using positron annihilation spectroscopy

Fuminobu Hori¹, Satoko Nakagawa¹ and Ryuichiro Oshima^{1,2}

¹ *Research Institute for Advanced Science & Technology,*

Osaka Prefecture University

² *Osaka Nuclear Science Association*

14:45-15:15

Coffee Break

15:15-15:30

17. Effects of hydrogen on atomic motion in semiconductors

Yoshifumi Yamashita, Yoichi Kamiura, and Takeshi Ishiyama

Faculty of Engineering, Okayama University

15:30-16:00

18. The effect of impurities on the grown-in defects in CZ-Si crystals, (B, C, N, O, Sb, As, P)

Kozo Nakamura, Ryota Suewaka, Toshiaki Saishoji, and Junsuke Tomioka

Komatsu Electronic Metals Co. Ltd.

16:00-16:30

F. 3-min INTRODUCTIONS FOR POSTERS

16:30-18:00

Dinner

18:00-19:30

G. POSTER SESSION

19:30-21:30

Surfside Refreshment II: Chojagasaki Beach

21:30-

(optional)

Nov. 27, Thu.

H. SOI Wafer Technologies and Strained Silicon Wafers

19. SOI – current status and trend in the future

Atsushi Ogura

NEC Corporation, Silicon Systems Research Laboratories

09:00-09:30

20. Recent progress in SIMOX wafer technology for LSIs fabricated with internal-thermal-oxidation (ITOX) process
Tsutomu Sasaki, Keisuke Kawamura, Seiji Takayama, Tetsuo Maeda, Yoichi Nagatake, and Atsuki Matsumura
Wacker NSCE Corporation 09:30-10:00
21. Vacancy-type defects in SOI wafers probed by a monoenergetic positron beam
A. Uedono¹, A. Ogura², N. Hattori², J. Kudo², and T. Nishikawa²
Institute of Applied Physics, University of Tsukuba¹, STARC² 10:00-10:30
- Coffee Break 10:30-10:45
22. Photoluminescence characterization of defects in superficial layers of SOI wafers
Michio Tajima
Institute of Space and Astronautical Science 10:45-11:15
23. Evaluation and control of electrically active defects in strained-silicon wafer
Hiroshi Nakashima
Advanced Science and Technology Center for Cooperative Research, Kyushu University 11:15-11:45
24. Efficient emission from erbium in strained silicon
Yoichi Kamiura, Takeshi Ishiyama, Mamoru Yoshida, and Yoshifumi Yamashita
Faculty of Engineering, Okayama University 11:45-12:15
- Lunch 12:15-13:30
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- I. Breakthroughs for Future Silicon Devices and New Material Design**
25. Phonon and spin engineering in silicon
Kohei M. Itoh
Keio University and CREST-JST 13:30-14:15
26. An investigation of thermal conductivity of isotope silicon and its application to crystal growth
Koichi Kakimoto, Atsushi Murakawa, and Hideo Ishii
Research Institute for Applied Mechanics, Kyushu University 14:15-15:00
27. Materials design of silicon based spintronics materials
H. Katayama-Yoshida
Institute of Scientific and Industrial Research, Osaka University 15:00-15:45
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- Closing Remarks**
H. Yamada-Kaneta
Fujitsu Laboratories Ltd. 15:45-16:00
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