

PROGRAM

【July 9th, Wednesday】

Opening Session (13:00-13:10)

Plenary Session (13:10-14:00)

Chair : T. Kita (Kobe University)

Plenary 13:10 (50min +poster) ... 1
Device physics fundamentals for silicon, GaAs and GaN
Y. Ohno
e-Device, Inc.

Session We1: Electron devices (14:00-15:00)

Chair : T. Kita (Kobe University)

We1-1 [Invited] 14:00 (30min+poster) ... 5
Room-temperature terahertz oscillators using resonant tunneling diodes
M. Asada and S. Suzuki
Tokyo Institute of Technology

We1-2 14:30 (3min+poster) ... 9
Comparison of delay times in III-V MOSFETs with various channel materials
Y. Yajima, R. Ohama, S. Fujikawa and H. I. Fujishiro
Tokyo University of Science

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Improved electron transport characteristic of InSb-QW structure with $\text{Al}_{0.25}\text{In}_{0.75}\text{Sb}$ / $\text{Al}_{0.15}\text{In}_{0.85}\text{Sb}$ stepped buffer layer for strain reduction
T. Taketsuru, D. Tsuji, T. Maeda, S. Fujikawa and H. I. Fujishiro
Tokyo University of Science

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Analysis for energy states of 2DEG in $\text{In}_x\text{Ga}_{1-x}\text{As}$ PHEMTs
Y. Nishio, N. Hirayama and Y. Takanashi
Tokyo University of Science

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Epitaxial layer transferred n-type and p-type III-V field-effect transistors on Si/SiO₂ substrates
K. Takei*, **, H. Ko**, M. Madsen**, R. Kapadia**, H. Fang**, J. Nah**, S. Chuang** and A. Javey**
*Osaka Prefecture University, **University of California, Berkeley

We1-6 14:42 (3min+poster) ... 19
Metal-oxide-semiconductor field-effect transistors based on ultrathin InN
M. Oseki*, K. Okubo*, A. Kobayashi*, J. Ohta* and H. Fujioka**,**
* The University of Tokyo, **JST

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Contact resistances depending on AlGaIn layer thickness for AlGaIn/GaN HEMT structures
Y. Takei*, M. Okamoto*, W. Saito**, K. Tsutsui*, K. Kakushima*, H. Wakabayashi*, Y. Kataoka* and H. Iwai*
*Tokyo Institute of Technology, **Toshiba Corp.

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Effects of base resistance on on-characteristics in 4H-SiC BJTs
S. Asada, T. Okuda, T. Kimoto and J. Suda
Kyoto University

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Evaluation of the mobility degradation by electron irradiation of Si _{1-x} Ge _x S/D p-MOSFETs at higher Ge concentration			
T. Goto*, H. Ishimoto*, M. Izawa*, T. Nakashima**, M. Yoneoka*, I. Tsunoda*, K. Takakura*, M.B. Gonzalez***, E. Simoen**** and C. Claeys****, *****			
*Kumamoto National College of Technology, **Chuo Denshi Kogyo Co. Ltd., ***Institut de Microelectronica de Barcelona, ****imec, *****KU Leuven			
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Electrical characteristics of C ₆₀ doped HEMT structures			
J. Nishinaga and Y. Horikoshi			
National Institute of Advanced Industrial Science and Technology			
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Threshold voltage control in organic thin-film transistors by oxygen plasma treatment			
Y. Kimura*, M. Kitamura*,** and Y. Arakawa**			
*Kobe University, **The University of Tokyo			

Break (15:00-15:15)

Session We2: Growth and process (15:15-16:15)

Chairs : J. Suda (Kyoto University)

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Y. Sano			
Osaka University			
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T. Okuda, T. Kimoto and J. Suda			
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Nagoya Institute of Technology			
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M. Oda**, K. Kaneko**, T. Hitora* and S. Fujita**			
*ROCA K.K. , **Kyoto University			
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H. Ishimoto*, K. Ishibashi*, R. Aida*, I. Tsunoda*, K. Takakura* and K. Murakami**			
* Kumamoto National College of Technology, **Japan Gas Chemi			
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M. Izawa, H. Ishimoto, T. Goto, R. Aida, K. Ishibashi, I. Tsunoda, K. Takakura and K. Murakami			
Kumamoto National College of Technology			

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Application of radical assisted sputtering to formation of complex metal oxide crystalline thin films H. Isshiki*, F. Kondo*, Y. Terada*, K. Sakaguchi*, T. Kimura*, T. Sugawara** and Y. Jiang** *The University of Electro-Communications, **Shincron Co. Ltd.			
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Impact of perfection on one-monolayer thick InN in hexagonal GaN N. Watanabe, D. Tajimi, T. Onuma, Hashimoto, K. Kusakabe, K. Wang, T. Yamaguchi, A. Yoshikawa and T. Honda Kogakuin University			

Session We3: Characterization (16:15-16:54)

Chairs : J. Suda (Kyoto University)

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Carrier concentration dependence of band structure in catalyst-free MBE-VLS grown Si-doped GaAs nanowires on (111)Si substrate A. Suzuki*, A. Fukuyama*, H. Suzuki*, K. Sakai*, J. Paek**, M. Yamaguchi** and T. Ikari* *University of Miyazaki, **Nagoya University			
We3-10	16:42 (3min+poster)	...	75
Two-step photon absorption via quantum states in InAs/GaAs quantum dot solar cells T. Kada*, S. Asahi*, T. Kaizu*, T. Kita*, R. Tamaki**, K. Miyano** and Y. Okada** *Kobe University, **The University of Tokyo			
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Effect of Si doping in quantum dot solar cells S. Naitoh, T.Hoshi and Y. Okada The University of Tokyo			
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Reduction of thermal carrier escape in an intermediate-band solar cell using a dot-in-well structure S. Asahi, H. Teranishi, N. Kasamatsu, T. Kada, T. Kaizu and T. Kita Kobe University			

Break (16:54-17:09)

Poster Session I (We1, We2, We3) (17:09-19:00)

Dinner (19:00-20:00)

Rump Session (20:00-21:30)

“Mind and Vision for Scientists”

Organizer: E. Yamaguchi (*Kyoto University*)

Panelists: H. Iijima (*Doshisha University*)
T. Ito (*Mie University*)
M. Doumen (*Tokyo Institute of Technology*)
Y. Nanishi (*Ritsumeikan University*)

【July 10th, Thursday】

Session Th1: 2D materials and group-IV semiconductors (8:30-9:24)

Chair : S. Naritsuka (*Meijo University*)

- Th1-1 [Invited] 08:30 (30min+poster)** ... 83
Growth of graphene nanoribbons on vicinal SiC surfaces by molecular beam epitaxy
S. Tanaka*, T. Kajiwara*, A. Visikovskiy*, T. Iimori**, F. Komori** and K. Nakatsuji***
*Kyushu University, **The University of Tokyo, ***Tokyo Institute of Technology
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Study of coulomb drag in double-layer graphene with *h*-BN tunnel dielectric
A. Fujimoto, T. Roy*, L. Liu**, S. de la Barrera***, B. Chakrabarti*,****, Z. R. Hesabi*, C. A. Joiner*, R. M. Feenstra***, G. Gu** and E. M. Vogel*
Osaka Institute of Technology, *Georgia Tech, **University of Tennessee, ***Carnegie Mellon University, ****University of Texas at Dallas
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T. Ito, T. Akiyama and K. Nakamura
Mie University
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K. Yamashita*, T. Nakahata*, T. Hayakawa*, Y. Sakurai*, T. Yamao*, H. Yanagi** and S. Hotta*
*Kyoto Institute of Technology, **Nara Institute of Science and Technology
- Th1-5 09:09 (3min+poster) ... 93
Low pressure chemical vapor deposition of hexagonal boron nitride films
N. Umehara, I. Kuwahara, T. Kouno, H. Kominami, Y. Nakanishi and K. Hara
Shizuoka University
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Dependence of SiC formation by carbonization of Si surface using CO gas on experimental conditions
M. Deura, I. Yonenaga and H. Fukuyama
Tohoku University
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Effective use of methane gas for isotopically-controlled diamond growth
T. Teraji*, T. Taniguchi*, K. Watanabe*, S. Koizumi*, Y. Koide* and J. Isoya**
*NIMS, **University of Tsukuba
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Effect of surface roughness for Au induced lateral crystal growth in amorphous Ge
K. Nakashima, T. Sakai, K. Moto, K. Takakura and I. Tsunoda
Kumamoto National College of Technology
- Th1-9 09:21 (3min+poster) ... 101
Influence of electron beam irradiation for Au induced lateral crystallization in a-Ge on SiO₂
H. Okamoto, K. Moto, S. Sakiyama, T. Sakai, K. Nakashima, M. Yoneoka, K. Takakura and I. Tsunoda
Kumamoto National College of Technology

Session Th2: II-VI and III-V materials (9:24-10:12)

Chair : F. Ishikawa (Ehime University)

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Fabrication of the transparent and c-axis oriented ZnO thin film by molecular precursor method T. Shibukawa, H. Nagai, I. Takano, T. Honda and M. Sato Kogakuin University		
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Two dimensional growth of homoepitaxial ZnO thin films on Zn-polar ZnO substrates H. Iwasaki, T. Nakamura, T. Yoshimura, A. Ashida and N. Fujimura Osaka Prefecture University		
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The roles of excited species on chemical vapor deposition of ZnO films using N ₂ / O ₂ remote plasma generated near atmospheric pressure Y. Nose, T. Kiguchi, T. Yoshimura, A. Ashida, T. Uehara and N. Fujimura Osaka Prefecture University		
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SnO _x thin films fabricated by atmospheric pressure mist chemical vapor deposition T. Uchida*, T. Kawaharamura** and S. Fujita* *Kyoto University, **Kochi University of Technology,		
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Fabrication of sulfide thin films by mist chemical vapor deposition R. Takagi, K. Kaneko and S. Fujita Kyoto University		
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Growth of zinc sulfide thin films by mist chemical vapor deposition Y. Yamasaki, K. Uno, R. Muratsuji and I. Tanaka Wakayama University		
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Synthesis of semiconductor/oxide hybrid nanowire F. Ishikawa* and H. Hibi** *Ehime University, **Osaka University		
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Evaluation of thermal stability of α -(Al _x Ga _{1-x}) ₂ O ₃ films Y. Ito, Sam-Dong Lee, K. Akaiwa, K. Kaneko and S. Fujita Kyoto University		
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Investigation of Ga-In-O films grown on α -Al ₂ O ₃ substrates by mist CVD K. Tanuma*, T. Hatakeyama*, T. Onuma**, T. Yamaguchi* and T. Honda* *Kogakuin University, **Tokyo National College of Technology		
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Deposition of β -Ga ₂ O ₃ films by atmospheric pressure plasma enhanced CVD T. Kiguchi*, Y. Nose*, T. Uehara** and N. Fujimura* *Osaka Prefecture University, **Sekisui Integrated Research Inc.		

Th2-11	09:54 (3min+poster)	...	123
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Y. Tominaga, Y. Tomiyasu and Y. Kadoya			
Hiroshima University			
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H. Iha, Y. Hirota, S. Yamauchi, N. Yamamoto, T. Maruyama and S. Naritsuka			
Meijo University			
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Formation of InAs/GaAs quantum dots using two-temperature growth sequence			
J. Kwoen, M. Kakuda, Y. Ota, K. Watanabe, S. Iwamoto and Y. Arakawa			
The University of Tokyo			
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Reduced wetting layer and enhanced photoluminescence of InAs quantum dots with AlAs cap grown on (113)B GaAs by molecular beam epitaxy			
X. M. Lu*, S. Matsubara*, Y. Nakagawa*, **, T. Kitada* and T. Isu*			
*The University of Tokushima, **Nichia Corporation			
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Growth of GaPN using tertiarybutylhydrazine as a nitrogen new precursor			
C. Oguro, N. Urakami, H. Sekiguchi and A. Wakahara			
Toyohashi University of Technology			
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W. Ding*, G. Morioka*, A. Suzuki*, H. Suzuki*, A. Fukuyama*, M. Yamaguchi** and T. Ikari*			
*University of Miyazaki, **Toyota Technological Institute			

Break (10:12-10:27)

Poster Session II (Th1, Th2) (10:27-12:00)

Lunch (12:00-13:00)

Session Th3: Nitride materials (13:00-14:39)

Chair : Y. Honda (Nagoya University)

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Y. Mori, M. Imade, M. Maruyama and M. Yoshimura			
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H. Takatsu*, M. Juta*, T. Sumi*, A. Kitamoto*, M. Imade*, M. Yoshimura*, M. Isemura** and Y. Mori*			
*Osaka University, **Itochu Plastics Inc			

Th3-3	13:33 (3min+poster)	...	139
ZnAl ₂ O ₄ interlayer for suppressing impurity out-diffusion in HVPE growth of GaN on ZnO substrate			
J. Yoo*, J. Chang**, J. Lee**, S. Choi**, H. Lee***, S. Kim***, T. Tanikawa*, R. Katayama* and T. Matsuoka*			
*Tohoku University, **Korea Maritime and Ocean University, ***Panxal co., Ltd.			
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Influence of thermal cleaning on free-standing GaN surface			
S. Okada*, H. Miyake*, K. Hiramatsu*, R. Miyagawa**, O. Eryu** and T. Hashizume***			
*Mie University, **Nagoya Institute of Technology, ***Hokkaido University			
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T. Iwabuchi*, S. Kuboya*, T. Tanikawa**, K. Shojiki*, R. Katayama**, T. Hanada**, A. Minato***, T.Fukuda*** and T. Matsuoka**,**			
*Tohoku University, **JST, ***Fukuda Crystal Laboratory			
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T. Ozaki, M. Funato, and Y. Kawakami			
Kyoto University			
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T. Aisaka, T. Tanikawa, T. Kimura, K. Shojiki, S. Kuboya, T. Hanada, R. Katayama and T. Matsuoka			
Tohoku University			
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The optical characteristic evaluation of the Ga and N polarity interface at double polarity selective area growth GaN by MOVPE			
K. Kuze, Y. Fujita, H. Mimura, Y. Inoue and T. Nakano			
Shizuoka University			
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K. Ueyama , K. Atsumi , H. Mimura , Y. Inoue , T. Aoki and T. Nakano			
Shizuoka University			
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M. Iwakawa, H. Takakura, M. Tomita, D. Kambayashi, Y. Mizuno, T. Maruyama and S. Naritsuka			
Meijo University			
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Study of selective growth for beam-induced lateral epitaxy of GaN by RF-MBE			
N. Yamamoto, H. Kato, Y. Hirota, H. Iha, T. Yasue, T. Maruyama and S. Naritsuka			
Meijo University			
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K. Yamashita, Y. Honda and H. Amano			
Nagoya University			
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T. Hirasaki, Y. Watanabe, M. Ishikawa, H. Murakami, Y. Kumagai and A. Koukitu			
Tokyo University of Agriculture and Technology			

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Suppression of metastable-phase inclusion in MOVPE-grown N-polar (000-1) InGaN/GaN multiple quantum wells K. Shojiki*, J. H. Choi*, T. Iwabuchi*, N. Usami***, T. Tanikawa*.,**, S. Kuboya*, T. Hanada*,**, R. Katayama*,** and T. Matsuoka*,** *Tohoku University,**JST, ***Nagoya University			
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Fabrication of red, green, and blue light emitting diodes using MOVPE-grown N-polar (000-1) InGaN on sapphire substrate K. Shojiki*, J. H. Choi*, T. Tanikawa*,**, S. Kuboya*, T. Hanada*,**, R. Katayama*,** and T. Matsuoka*,** * Tohoku University,**JST			
Th3-17	14:15 (3min+poster)	...	167
Blue-green light emitting diodes using pn-GaInN homojunction-type structure K. Narutani*, T. Yamaguchi*, K. Wang**, T. Araki**, Y. Nanishi**, L. Sang***, M. Sumiya***, S. Fujioka*, T. Onuma*,**** and T. Honda* *Kogakuin University, **Ritsumeikan University, ***NIMS, ****Tokyo National College of Technology			
Th3-18	14:18 (3min+poster)	...	169
Growth of GaN and InN on α -In ₂ O ₃ /Sapphire by RF-MBE N. Masuda*, T. Kobayashi*, T. Araki*, Y. Nanishi*, M. Oda** and T. Hitora** *Ritsumeikan University, **ROCA			
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Theoretical study on structural stability of InN grown by pressurized-reactor MOVPE Y. Kangawa*, T. Hamada*, T. Kimura**, ***, R. Katayama**, ***, T. Matsuoka**, ***, and K. Kakimoto* *Kyushu University, **Tohoku University, ***JST			
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Estimation of thermochemical data for the growth of group-III nitrides by the combination of first principles and statistical thermodynamic N. Takekawa, H. Murakami, Y. Kumagai and A. Koukitu Tokyo University of Agriculture and Technology			
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Luminescent properties of InGaN/GaN multiple quantum wells on semipolar {1-101} and {2-201} facets formed using selective-area growth of Eu-doped GaN T. Kojima*, S. Takano*, R. Hasegawa*, D. Timmerman*, A. Koizumi*, M. Funato**, Y. Kawakami** and Y. Fujiwara* *Osaka University, **Kyoto University			
Th3-23	14:33 (3min+poster)	...	179
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 Preparation of Europium-doped GaN and AlGa_xN films grown by radical-nitrogen-assisted compound-source MBE
 S. Yodate, Y. Koyama and S. Shirakata
 Ehime University

Break (14:39-14:54)

Session Th4: Topological insulators and magnetic materials (14:54-16:00)

Chair : S. Sasaki (NTT Basic Research lab.)

- Th4-1 [Invited] 14:54 (30min+poster) ... 183**
High resolution AREPS study of dirac-cone surface states in topological insulators
S. Souma and T. Takahashi
 Tohoku University
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 Magnetic tunnel junctions with amorphous CoFeSiB free layer for highly sensitive magnetic sensor devices
 D. Kato, K. Fujiwara, M. Oogane, H. Naganuma, T. Nishikawa* and Y. Ando
 Tohoku University, *Konica Minolta Technology Center, Inc.
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 Magnetization reversal mode switching and its application
 S. Kanai*, H. Sato*, M. Yamanouchi*, S. Ikeda*, Y. Nakatani**, F. Matsukura* and H. Ohno*
 *Tohoku University, **The University of Electro-Communications
- Th4-4 15:30 (3min+poster) ... 189
 Ferromagnetic resonance spectra of CoFeB-MgO magnetic tunnel junction measured by homodyne detection
 E. Hirayama, S. Kanai, K. Sato, M. Yamanouchi, H. Sato, S. Ikeda, F. Matsukura and H. Ohno
 Tohoku University
- Th4-5 15:33 (3min+poster) ... 191
 CoFeB and Ta capping layer thicknesses dependence of magnetic properties for MgO/CoFeB/Ta stacks
 K. Watanabe, S. Ishikawa, H. Sato, S. Ikeda, M. Yamanouchi, S. Fukami, F. Matsukura and H. Ohno
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【July 11th, Friday】

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“ *Silicon Photonics: – Future Prospects of Silicon-based Photodevices–* ”

Chair : Y. Ishikawa (*The University of Tokyo*)

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The University of Tokyo

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***NTT Corporation, **The University of Tokyo**

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***Kyoto University, **Osaka Prefecture University**

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T. Nakamura*, Y. Urino* and Y. Arakawa**

***PETRA, **The University of Tokyo**

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N. Nishiyama and S. Arai

Tokyo Institute of Technology

Closing Session (16:15-16:25)