

# Second International Symposium on Atomically Controlled Fabrication Technology

November 25-26, 2009  
Osaka University Nakanoshima Center, Osaka, Japan

## Wednesday, 25 November 2009

9:20AM **Opening Remark**

K. Yamauchi

*Osaka University*

### Session 1: "Advanced analyses on surface or interface nanostructures"

9:30AM 1.1 **Invited** – Nanoscale analysis and control of atoms and molecules on hydrogenated silicon surfaces using STM, photons and modeling

G. Dujardin, A. Bellec,  
G. Comtet, A. J. Mayne  
and D. Riedel

*Université Paris-Sud*

10:20AM 1.2 **Invited** – What can be imaged for metal nanostructures by near-field microscopy?  
-Visualization of localized optical fields and plasmonic wavefunctions-

H. Okamoto

*NINS*

10:50AM 1.3 Control of the Functionalities of Molecular Nanosystems and their Device Applications

Y. Kuwahara<sup>1,3</sup>, A. Saito<sup>1,2,3</sup>  
and M. Akai-Kasaya<sup>1</sup>

<sup>1</sup>*Osaka University*

<sup>2</sup>*JST, PRESTO*

<sup>3</sup>*SPring-8/RIKEN*

11:30AM **Lunch**

### Session 2: " Computational design of processing, materials, and devices "

12:45PM 2.1 **Invited** – Spin orbit driven magnetic spirals emerging at surfaces

M. Heide<sup>1,2</sup>, G. Bihlmayer<sup>1</sup>,  
P. Ferriani<sup>3</sup>, B. Zimmermann<sup>1</sup>  
and S. Blugel<sup>1</sup>

<sup>1</sup>*FZ Jülich*

<sup>2</sup>*Osaka University*

<sup>3</sup>*University of Hamburg*

13:35PM 2.2 **Invited** – Noncollinear Magnetism on Nanoscale Structures

T. Oda and M. Tsujikawa

*Kanazawa University*

14:05PM 2.3 First-principles Theoretical Study of Energy Level Alignment at Metal/Organic Interfaces

Y. Morikawa<sup>1</sup>, K. Toyoda<sup>1,2</sup>  
S. Yanagisawa<sup>1</sup> and I. Hamada<sup>3</sup>

<sup>1</sup>*Osaka University*

<sup>2</sup>*Panasonic*

<sup>3</sup>*Tohoku University*

14:35PM **Coffee Break**

14:50PM **Poster Session**

18:00PM **Banquet**

## Thursday, 26 November 2009

### Session 3: " Process technologies for advanced electronic devices "

9:30AM 3.1 **Invited** – Selected Topics on Atomically Controlled Fabrication Technology for Nano-electronic Devices

M. -F. Li

*Fudan University*

10:20AM 3.2 **Invited** – Recent Progress of SiC Power Device, and Power Electronics Innovation

H. Okumura

*AIST*

10:50AM 3.3 Advanced Gate Stack Technology for SiC-MOS Power Devices

H. Watanabe<sup>1</sup>, Y. Kagei<sup>1</sup>,  
K. Kozono<sup>1</sup>, T. Kirino<sup>1</sup>,  
Y. Watanabe<sup>1</sup>, S. Mitani<sup>2</sup>,  
Y. Nakano<sup>2</sup>, T. Nakamura<sup>2</sup>,  
T. Hosoi<sup>1</sup> and T. Shimura<sup>1</sup>

<sup>1</sup>*Osaka University*

<sup>2</sup>*ROHM CO., LTD.*

11:30AM **Lunch**

### Session 4: "Thin film deposition and electronic materials"

12:45PM 4.1 **Invited** – Surface reactions controlled by dielectric barrier discharge at atmospheric pressure for high performance large-scale production

M. Eichler<sup>1</sup>, M. Thomas<sup>1</sup>,  
J. Borris<sup>1</sup>, B. Michel<sup>2</sup>  
and C. -P. Klages<sup>1,2</sup>

<sup>1</sup>*Fraunhofer Institute  
for Surface  
Braunschweig*

13:35PM 4.2 **Invited** – High-rate depositions of microcrystalline silicon thin films for photovoltaic applications

T. Toyama

*Osaka University*

14:05PM 4.3 New Formation Process of Solar Grade Si Materials Based on Atmospheric Pressure

K. Yasutake, H. Ohmi,  
K. Inagaki and H. Kakiuchi,

*Osaka University*

14:35PM **Coffee Break**

### Session 5: "Advanced surface processing and related technologies"

14:50PM 5.1 **Invited** – Rapid Fabrication of Ultra Precision Surfaces

P. Shore

*Cranfield University*

15:40PM 5.2 **Invited** – Actinic Mask Inspection System for EUVL

H. Kinoshita

*University of Hyogo*

16:10PM 5.3 Achievements and challenges in atomically controlled surfacing

K. Yamauchi

*Osaka University*

16:50PM **Ceremony for Young Researcher's Awards & Closing Remarks** K. Yamauchi

*Osaka University*

## Poster Session

P1 (Invited)	Controlled polymerization and depolymerization between fullerene molecules for ultra-high density data storage Transport	M. Nakaya <sup>1</sup> , Y. Kuwahara <sup>2</sup> , M. Aono <sup>1</sup> and T. Nakayama <sup>1,3</sup>	<sup>1</sup> NIMS <sup>2</sup> Osaka University <sup>3</sup> University of Tsukuba
P2 (Invited)	Laser lithography of spectral and angular filters for optical beams	V. Mizeikis <sup>1</sup> , S. Juodkazis <sup>2</sup> , K. Staliunas <sup>1</sup> and H. Misawa <sup>1,3</sup>	<sup>1</sup> Shizuoka University <sup>2</sup> Hokkaido University <sup>3</sup> UPC
P3	Optical Transmission Property of Sub-micrometer Hole-pair Structure in metallic Thin Film Fabricated by Focused Ion Beam	Y. Oshikane <sup>1</sup> , M. Esaki <sup>1</sup> , T. Goto <sup>1</sup> , Y. Nakano <sup>1</sup> , H. Inoue <sup>1</sup> , M. Nakano <sup>1</sup> and T. Kataoka <sup>1</sup>	<sup>1</sup> Osaka University
P4	Absolute Surface Figure Measurement by PS/PDI with Two Optical Fibers – Requirement for positional Accuracy of Optical System -	T. Matsuura, K. Ueda, Y. Oshikane, H. Inoue, M. Nakano, K. Yamauchi and T. Kataoka	Osaka University
P5	Ananlysis for Reproduction and Control of the Morpho-butterfly's Specific Colors	J. Murase <sup>1</sup> , A. Saito <sup>1,2,3</sup> , M. Yonezawa <sup>1</sup> , M. Akai-Kasaya <sup>1</sup> , and Y. Kuwahara	<sup>1</sup> Osaka University <sup>2</sup> SPring-8/RIKEN <sup>3</sup> JST/PRESTO
P6	Analysis of Elemental Contrast by Synchrotron-Radiation-based Scanning Tunneling Microscopy	A. Saito <sup>1,2,3</sup> , T. Tanaka <sup>1</sup> , H. Notsu <sup>1</sup> , Y. Takagi <sup>4</sup> , G. Ohzeki <sup>1</sup> , Y. Tanaka <sup>2</sup> , Y. Kohmura <sup>2</sup> , M. Akai-Kasaya <sup>1</sup> , T. Ishikawa <sup>2</sup> , Y. Kuwahara <sup>1,2</sup> and M. Aono <sup>5</sup>	<sup>1</sup> Osaka University <sup>2</sup> SPring-8/RIKEN <sup>3</sup> JST/PRESTO <sup>4</sup> Inst. for Molecular Sci. <sup>5</sup> NIMS
P7	Construction of Tunneling-electron-induced Light Detection System for Evaluating Molecular nanosystems	A. Fujiki <sup>1</sup> , Y. Miki <sup>1</sup> , M. Akai-Kasaya <sup>1</sup> , A. Saito <sup>1,2,3</sup> , and Y. Kuwahara <sup>1,3</sup>	<sup>1</sup> Osaka University <sup>2</sup> JST/PRESTO <sup>3</sup> SPring-8/RIKEN
P8	Anisotropy of Electric conduction in the organic single Crystal measured by Double-tip STM	Y. Miki <sup>1</sup> , N. Takahashi <sup>1</sup> , M. Akai-Kasaya <sup>1</sup> , A. Saito <sup>1,2,3</sup> , and Y. Kuwahara <sup>1,3</sup>	<sup>1</sup> Osaka University <sup>2</sup> JST/PRESTO <sup>3</sup> SPring-8/RIKEN
P9	Selective Adsorption of (3-Aminopropyl) triethoxysilane Molecules along Step Edges of Atomically Flat Si (111) Surface	H. Sakane, A Yoshimatsu, T. Shigetoshi, J. Uchikoshi, M. Morita and K. Arima	Osaka University
P10	Precise Control of Soluble GeO <sub>2</sub> Layers on Ge Single Crystal Surfaces	K. Dei, T. Kawase, J. Uchikoshi, M. Morita and K. Arima	Osaka University
P11	Measurement of Metal nanoparticles by measuring System for Particles Using Light Scattering Method	Y. Matsumura <sup>1</sup> , H. An <sup>1</sup> and K. Endo <sup>2</sup>	<sup>1</sup> Osaka Electro-Communication University <sup>2</sup> Osaka University
P12	Clean GaN(0001) Substrate Surface Structures and Their Properties	A.N. Hattori <sup>1</sup> , F. Kawamura <sup>2</sup> , M. Yoshimura <sup>2</sup> , Y. Kitaoka <sup>3</sup> , Y. Mori <sup>2</sup> , K. Hattori <sup>4</sup> , H. Daimon <sup>4</sup> , and K. Endo <sup>1</sup>	<sup>1,2,3</sup> Osaka University <sup>4</sup> NAIST
P13	Lateral manipulation of Cu Atoms on Cu(110)-O Surface With Low Temperature Atomic Force Microscopy	Y. Kinoshita, T. Satoh, K. Tenjin, Y. J. Li, Y. Naitoh, M. Kageshita and Y. Sugawara	Osaka University
P14	Investigation of Force Sensitivity for Atomic-Resolution Imaging by Phase Modulation Atomic Force Microscopy With Low Temperature Atomic Force Microscopy with Q-control in Liquid	N. Kobayashi <sup>1</sup> , Y. J. Li <sup>1,2</sup> , Y. Naitoh <sup>1,2</sup> , M. Kageshima <sup>1,2</sup> , and Y. Sugawara <sup>1,2</sup>	<sup>1</sup> Osaka University <sup>2</sup> JST/CREST
P15	Theory of Multifrequency Method in FM-AFM	Z. Ma, Y. Naitoh, Y. J. Li, and Y. Sugawara	Osaka University

P16	Local structure and electronic properties of graphene	S. Mammadov, Y. Naitoh, M. Kageshima, and Y. Sugawara	<i>Osaka University</i>
P17	In-situ TEM observation of graphite formation using Cobalt oxide nanocrystals	T. Yahiro and Y. Takai	<i>Osaka University</i>
P18	Tensile Deformation Observation with Cathodoluminescence Spectroscopy for Silicon Oxide Thin Film	N. Goami <sup>1</sup> , N. Yamashita <sup>1</sup> , T. Namazu <sup>1</sup> , S. Kakinuma <sup>2</sup> , K. Nishikata <sup>3</sup> , N. Naka <sup>2</sup> , K. Matsumoto <sup>3</sup> , and S. Inoue <sup>1</sup>	<sup>1</sup> <i>University of Hyogo</i> <sup>2,3</sup> <i>HORIBA, Ltd.</i>
P19	Tensile Elongation measurement Device for Thin Film Specimen	T. Namazu, H. Fujii, and S. Inoue	<i>University of Hyogo</i>
P20	Non-volatile memory Switching using Atomically Controlled MgO/Co <sub>3</sub> O <sub>4</sub> heterostructured Nanowires	K. Nagashima <sup>1</sup> , T. Yanagida <sup>1,2</sup> , K. Oka <sup>1</sup> , M. Taniguchi <sup>1,2</sup> and T. Kawai <sup>1</sup>	<sup>1</sup> <i>Osaka University</i> <sup>2</sup> <i>JST/PRESTO</i>
P21 (Invited)	Inversed Surface micelle Formation via Amphiphilic Block Copolymer Monolayer hybridized with Low-Molecular-Weight Amphiphile	S. Nagano, T. Kinumatsu, and T. Seki	<i>Nagoya University</i>
P22 (Invited)	Synthesis and catalytic application of shape controlled Ni(OH) <sub>2</sub> nano-plates with SiO <sub>2</sub> shell	K. Aranishi <sup>1</sup> , Y. Yamada <sup>2</sup> , T. Umegaki <sup>1</sup> , Q. Xu <sup>1</sup> , N. Kuriyama <sup>1</sup> and S. Fukuzumi <sup>2</sup>	<sup>1</sup> <i>AIST</i> <sup>2</sup> <i>Osaka University</i>
P23	Non-volatile Memory Applications in a 12 nm-sized Au Nanoparticle Array Fabricated by Preciously Controlled Colloidal Self-Assembly	S. Saito, T. Hosoi, H. Watanabe and N. Zettu	<i>Osaka University</i>
P24	High-mobility organic single crystal transistors with Submicrometer channels	M. Akai-Kasaya <sup>1,3</sup> , T. Fujiwara <sup>1</sup> , A. Saito <sup>1,3</sup> , J. Takeya <sup>2,3</sup> and Y. Kuwahara <sup>1</sup>	<sup>1,2</sup> <i>Osaka University</i> <sup>3</sup> <i>JST/PRESTO</i>
P25	Characterization of Hf based High-k dielectric films by NEXAFS	T. Yamamoto <sup>1,2</sup> , S. Ogawa <sup>1</sup> , J. Tsuji <sup>1</sup> , T. Hosoi <sup>2</sup> , T. Shimura <sup>2</sup> and H. Watanabe <sup>2</sup>	<sup>1</sup> <i>Toray Research Center Inc.</i> <sup>2</sup> <i>Osaka University</i>
P26	Selective Adsorption of Ti-binding Ferritin on Thin Ti Film with Various Oxidation Treatment	T. Hashimoto <sup>1</sup> , K. Gamo <sup>1</sup> , M. Fukuta <sup>2</sup> , B. Zheng <sup>2</sup> , N. Okamoto <sup>2</sup> , I. Yamashita <sup>2</sup> , Y. Uraoka <sup>2</sup> , N. Zetsu <sup>1</sup> , T. Hosoi <sup>1</sup> , T. Shimura <sup>1</sup> and H. Watanabe <sup>1</sup>	<sup>1</sup> <i>Osaka University</i> <sup>2</sup> <i>NAIST</i>
P27	Thermal Instability of Effective Work Function of Metal/HfLaSiO Gate Stacks	H. Arimura, Y. Oku, M. Saeki, N. Kitano, T. Hosoi, T. Shimura and H. Watanabe	<i>Osaka University</i>
P28	Fundamental understanding of thermally grown GeO <sub>2</sub> /Ge MOS characteristics	T. Hosoi, I. Hideshima, G. Okamoto, K. Kutsuki, T. Shimura and H. Watanabe	<i>Osaka University</i>
P29	Initial Stages of High-temperature CaF <sub>2</sub> Epitaxial Growth On Si(001): Surface X-ray Diffraction Study	S. M. Suturin <sup>1</sup> , T. Shimura <sup>2</sup> , N. S. Sokolov <sup>1</sup> , A. G. Banshchikov <sup>1</sup> , R. N. Kyutt <sup>1</sup> , O. Sakata <sup>3</sup> , J. Harada <sup>4</sup> , M. Tabuchi <sup>5</sup> and Y. Takeda <sup>5</sup>	<sup>1</sup> <i>Ioffe Institute</i> <sup>2</sup> <i>Osaka University</i> <sup>3</sup> <i>Spring-8/JASRI</i> <sup>4</sup> <i>Rigaku Co.</i> <sup>5</sup> <i>Nagoya University</i>
P30	Improved SiC-MOS Interfaces Formed by Thermal Oxidation of Plasma Nitrided SiC surfaces	Y. Kagei <sup>1</sup> , T. Kirino <sup>1</sup> , S. Mitani <sup>2</sup> , Y. Nakano <sup>2</sup> , T. Nakamura <sup>2</sup> , T. Hosoi <sup>1</sup> , T. Shimura <sup>1</sup> and H. Watanabe	<sup>1</sup> <i>Osaka University</i> <sup>2</sup> <i>ROHM Co., Ltd.</i>
P31	Impact of Carbon Impurity on Electrical Properties of TiN/HfSiON/SiO <sub>2</sub>	M. Saeki, H. Arimura, Y. Oku, N. Kitano, T. Hosoi, T. Shimura and H. Watanabe	<i>Osaka University</i>
P32	Direct immobilization of DNA oligomers onto an aminosilane-attached SiO <sub>2</sub> surface	Y. Okumoto, T. Hirokane, T. Furukawa, J. Uchikoshi, K. Arima and M. Morita	<i>Osaka University</i>

P33	Electroluminescence in Metal-Oxide-Semiconductor Tunneling Diodes on Silicon-on-Insulator and Bulk Si Substrates	K. Matsumura, R. Yamada, J. Uchikoshi, K. Arima and M. Morita	<i>Osaka University</i>
P34	Observation of local dielectric degradation of thermal oxides on 4H-SiC using conductive AFM	K. Kozono <sup>1</sup> , S. Mitani <sup>2</sup> , Y. Nakano <sup>2</sup> , T. Nakamura <sup>2</sup> , T. Hosoi <sup>1</sup> , T. Shimura <sup>1</sup> and H. Watanabe <sup>1</sup>	<sup>1</sup> <i>Osaka University</i> <sup>2</sup> <i>ROHM Co., Ltd.</i>
P35	Structural and electrical properties of GeON dielectrics formed by high-density plasma nitridation of ultrathin thermal GeO <sub>2</sub>	K. Kutsuki, G. Okamoto, T. Hosoi, T. Shimura and H. Watanabe	<i>Osaka University</i>
P36	Impact of gate electrode deposition process on effective work function of poly-Si/TiNHfSiO gate stacks	Y. Oku <sup>1</sup> , H. Arimura <sup>1</sup> , M. Saeki <sup>1</sup> , N. Kitano <sup>1,2</sup> , M. Kosuda <sup>2</sup> , T. Hosoi <sup>1</sup> , T. Shimura <sup>1</sup> and H. Watanabe <sup>1</sup>	<sup>1</sup> <i>Osaka University</i> <sup>2</sup> <i>Canon ANELVA</i>
P37	Formation of Three-Dimensional Shape in Silicon by Photo-etching with <i>N</i> -Fluoropyridinium Salts Si Substrated	K. Tsukamoto <sup>1</sup> , J. Uchikoshi, S. Goto <sup>1</sup> , T. Nagai <sup>2</sup> , K. Adachi <sup>2</sup> , K. Arima <sup>1</sup> and M. Morita <sup>1</sup>	<sup>1</sup> <i>Osaka University</i> <sup>2</sup> <i>Daikin Industries, Ltd.</i>
P38	Electrical Characteristics of Ge-based MIS Devices with Ge <sub>3</sub> N <sub>4</sub> Dielectrics Formed by Plasma	G. Okamoto, K. Kutsuki, T. Hosoi, T. Shimura and H. Watanabe	<i>Osaka University</i>
P39	First-principles study of magnetic ordering of an Al infinite single-row atomic wire	T. Ota, K. Hirose and T. Ono	<i>Osaka University</i>
P40	First-Principles Study on Oxidation Mechanism at Ge/GeO <sub>2</sub> Interface	S. Saito, T. Hosoi, H. Watanabe and T. Ono	<i>Osaka University</i>
P41	Electron transport through nanostructures in magnetic fields: A practical scheme in the real-space finite-difference formalism	S. Sahara, K. Hirose, and H. Goto	<i>Osaka University</i>
P42	First-principles molecular-dynamics simulation of reaction in CVD Si epitaxial thin film growth process? hydrogen coverage dependence on incident radical temperature?	K. Inagaki, R. Kasai, K. Hirose and K. Yasutake	<i>Osaka University</i>
P43	PtRu Anode Catalysts for Direct Methanol Fuel Cells: A Density Functional Study	W.T. Cahyanto <sup>1,2</sup> , E.S. Dy <sup>3</sup> , S. Aspera <sup>1</sup> , R. Belkada <sup>1</sup> , H. Nakanishi <sup>1</sup> , E. Gyenge <sup>4</sup> , and H. Kasai <sup>1</sup>	<sup>1</sup> <i>Osaka University</i> <sup>2</sup> <i>UNSOED</i> <sup>3</sup> <i>NCR Institute for Fuel</i> <sup>4</sup> <i>University of British Columbia</i>
P44	A study of incident hydrogen atom behaviors into the Pd (111) surface via quantum methods	N. Ozawa, H. Nakanishi, and H. Kasai	<i>Osaka University</i>
P45	Nonadiabatic first-principles calculations coupled with correlation effects	M. Kojo and K. Hirose	<i>Osaka University</i>
P46	Electronic structure of quantum dots: Direct energy minimization in the real-space finite-difference scheme	H. Goto and K. Hirose	<i>Osaka University</i>
P47	Tuning PT Surface Reactivity Using Ligand Effects and Strain on Pt /Cr and Pt/Ni Systems: Applications to Fuel Cell Cathode Catalyst Design	M.C.S. Escaño, H. Nakanishi and H. Kasai	<i>Osaka University</i>
P48	Reaction Pathway for Hydronium Ion on Pt(111) surface in Oxygen Reduction	D.N. Son, H. Nakanishi and H. Kasai	<i>Osaka University</i>
P49	Electronic Structure Study of Pt/Nio/Pt Capacitor-like System	A. Sarhan, H. Nakanishi and H. Kasai	<i>Osaka University</i>
P50	NO Adsorption on Pt4 Tetramers Coated gamma-Al <sub>2</sub> O <sub>3</sub> (111) Surface	F. Oemry <sup>1</sup> , M.C.S. Escaño <sup>1</sup> , H. Kishi <sup>1</sup> , S. Kunikata <sup>1</sup> , H. Nakanishi <sup>1</sup> , H. Kasai <sup>1</sup> , H. Maekawa <sup>2</sup> , K. Osumi <sup>2</sup> and Y. Tashiro <sup>2</sup>	<sup>1</sup> <i>Osaka University</i> <sup>2</sup> <i>Isuzu Advanced Engineering Center Ltd.</i>
P51	The Binding Energy: A Molecular Assembly Perspective	H. S. Kuncoro <sup>1</sup> , R.Belkada <sup>1</sup>	<sup>1</sup> <i>Osaka University</i>

	on Small Water Cluster System	M. David <sup>1</sup> , E. S. Dy <sup>2</sup> , H. Nakanishi <sup>1</sup> , H. K. Dipojono <sup>3</sup> and H. Kasai <sup>1</sup>	<sup>2</sup> <i>NRC Institute for Fuel Cell Innovation</i> <sup>3</sup> <i>Institut Teknologi Bandung</i>
P52	Electric field effects for adsorption properties of BF4-anions on graphene	Y. Kunisada, H. Kishi, F. Oemry, H. Nakanishi, and H. Kasai	<i>Osaka University</i>
P53	Kondo resonance and magnetic properties of two magnetic Atoms on a metal surface: QMC simulation	N. T. M. Hoa, M. David, W. A. Diño, H. Nakanishi, and H. Kasai	<i>Osaka University</i>
P54	A First-Principles Study of Hydrazine on Pt(111) surface	H. Yonekura, M. K. Agusta, W. A. Diño, H. Nakanishi, and H. Kasai	<i>Osaka University</i>
P55	Adsorption of Lithium on Montmorillonite: A Density Functional Theory (DFT) Study	T. D. K. Wungu <sup>1,2</sup> , S. M. Aspera <sup>1</sup> , H. K. Dipojono <sup>2</sup> , M. David <sup>1</sup> , H. Nakanishi <sup>1</sup> and H. Kasai <sup>1</sup>	<sup>1,2</sup> <i>Osaka University</i>
P56	Adsorption structures in the reductive process of NO molecule on noble metals: Rh, Pd, and Pt	T. D. K. Wungu <sup>1,2</sup> , S. M. Aspera <sup>1</sup> , M. David <sup>1</sup> , H. K. Dipojono <sup>2</sup> , H. Nakanishi <sup>1</sup> and H. Kasai <sup>1</sup>	<sup>1</sup> <i>Osaka University</i> <sup>2</sup> <i>Institut Teknologi Bandung</i>
P57	Spectroscopic profiles of the interference between the Kondo effect and the spin ordering effect by the RKKY Interaction	E. Minamitani, H. Nakanishi, W. A. Diño and H. Kasai	<i>Osaka University</i>
P58	Quantum states of lithium atom motion on a graphene	Y. Kubota, N. Ozawa, H. Nakanishi and H. Kasai	<i>Osaka University</i>
P59	Epitaxial growth of Si at low temperature ( $\leq 400^{\circ}\text{C}$ ) by atmospheric-pressure plasma enhanced chemical	A. Goto, D. Kamada, H. Kakiuchi, K. Yasutake and H. Ohmi	<i>Osaka University</i>
P60	Direct Formation method of patterned germanium film on glass	T. Mori, H. Kakiuchi, Y. Yasutake and H. Ohmi	<i>Osaka University</i>
P61	Low-temperature Si epitaxial growth by atmospheric Pressure plasma CVD	T. Ohnishi, K. Goto, H. Ohmi H. Kakiuchi and K. Yasutake	<i>Osaka University</i>
P62	Characterization of room-temperature silicon oxide films deposited with high rates in atmospheric-pressure VHF	K. Nakamura, Y. Yamaguchi, K. Yokoyama, K. Higashida, H. Ohmi, H. Kakiuchi and K. Yasutake	<i>Osaka University</i>
P63	Study on the growth of microcrystalline Si films at low temperatures in atmospheric- pressure VHF plasma	K. Tabuchi, K. Ouchi, H. Ohmi, K. Kakiuchi and K. Yasutake	<i>Osaka University</i>
P64	Development of a mirror manipulator for Advanced Kirkpatrick-Baez optics	M. Fujii <sup>1</sup> , S. Matsuyama <sup>1</sup> , T. Wakioka <sup>1</sup> , H. Mimura <sup>1</sup> , Y. Sano <sup>1</sup> , Y. Nishino <sup>2</sup> M. Yabashi <sup>3</sup> , K. Tamasaku <sup>2</sup> , T. Ishikawa <sup>2</sup> and K. Yamauchi <sup>1,4</sup>	<sup>1,4</sup> <i>Osaka University</i> <sup>2</sup> <i>Spring-8/RIKEN</i> <sup>3</sup> <i>Spring-8/JASRI</i>
P65	Development of electroforming process for fabricating ultraprecise mirror	H. Mimura, H. Ishikura, S. Matsuyama, Y. Sano, and K. Yamauchi	<i>Osaka University</i>
P66	Development of Achromatic X-ray imaging system with 4 aspherical mirrors	S. Matsuyama <sup>1</sup> , M. Fujii <sup>1</sup> , T. Wakioka <sup>1</sup> , H. Mimura <sup>1</sup> , Y. Sano <sup>1</sup> , Y. Nishino <sup>2</sup> M. Yabashi <sup>3</sup> , K. Tamasaku <sup>2</sup> , T. Ishikawa <sup>2</sup> and K. Yamauchi <sup>1</sup>	<sup>1</sup> <i>Osaka University</i> <sup>2</sup> <i>Spring-8/RIKEN</i>
P67	Development of surface gradient integrated profiler - High Precision profile measurement of a small radius lens ?	T. Ueno <sup>1</sup> , S. Tachibaanada <sup>1</sup> , Y. Higashi <sup>2</sup> , J. Uchikoshi <sup>1</sup> and K. Endo <sup>1</sup>	<sup>1</sup> <i>Osaka University</i> <sup>2</sup> <i>KEK</i>

P68	A Novel Wavefront Control Method for Hard X-ray Sub-10-nm Focusing	T. Kimura <sup>1</sup> , S. Handa <sup>1</sup> , H. Mimura <sup>1</sup> , D. Yamakawa <sup>1</sup> , H. Yokoyama <sup>1</sup> , Y. Sano <sup>1</sup> , K. Tamasaku <sup>2</sup> , Y. Nishino <sup>2</sup> M. Yabashi <sup>3</sup> , T. Ishikawa <sup>2,3</sup> and K. Yamauchi <sup>1,4</sup>	<sup>1,4</sup> <i>Osaka University</i> <sup>2</sup> <i>Spring-8/RIKEN</i> <sup>3</sup> <i>Spring-8/JASRI</i>
P69	Abrasive-Free Chemical Planarization of 4H-SiC 8°off Wafer Using a Catalyst	T. Okamoto <sup>1</sup> , Y. Sano <sup>1</sup> , K. Tachibana <sup>1</sup> , K. Arima <sup>1</sup> , A. N. Hattori <sup>1</sup> , K. Yagi <sup>2</sup> , J. Murata <sup>1</sup> , S. Sadakuni <sup>1</sup> , and K. Yamauchi <sup>1</sup>	<sup>1</sup> <i>Osaka University</i> <sup>2</sup> <i>Ebara Corp.</i>
P70	Improvement of Schottky Diode Properties on GaN (0001) Surface Using Damage-free Planarization	J. Murata <sup>1</sup> , Y. Shirakawa <sup>1</sup> , Y. Sano <sup>1</sup> , S. Sadakuni <sup>1</sup> , K. Yagi <sup>2</sup> , T. Okamoto <sup>1</sup> , and K. Yamauchi <sup>1</sup>	<sup>1</sup> <i>Osaka University</i> <sup>2</sup> <i>Ebara Corp.</i>
P71	Atmospheric pressure plasma liquid deposition of copper nanoparticles on poly(4-vinylpyridine)-grafted-poly(tetrafluoroethylene) surface and their autocatalytic properties	H. Akyama, K. Yamamura and N. Zettsu	<i>Osaka University</i>
P72	High-Precision Correction of Thickness Distribution of AT-Cut Quartz Crystal Wafer by Pulse-Modulated Atmospheric Pressure Plasma Etching	M. Ueda, M. Nagano, N. Zettsu, M. Shibahara and K. Yamamura	<i>Osaka University</i>
P73	Improvement of Thickness Uniformity of Thick-SOI by Numerically Controlled Local Wet Etching	K. Ueda, M. Hosoda, M. Nagano, N. Zettsu, and K. Yamamura	<i>Osaka University</i>
P74	Fabrication of High-Precision Elliptical Mirror Substrate for Neutron Focusing by Numerically Controlled Local Wet Etching	M. Nagano <sup>1</sup> , F. Yamaga <sup>1</sup> , Y. Yamamoto <sup>1</sup> , N. Zettsu <sup>1</sup> , D. Yamazaki <sup>2</sup> , K. Soyama <sup>2</sup> and K. Yamamura <sup>1</sup>	<sup>1</sup> <i>Osaka University</i> <sup>2</sup> <i>JAEA</i>
P75	Development of planarization method for gallium nitride using photoelectrochemical process	S. Sadakuni <sup>1</sup> , J. Murata <sup>1</sup> , K. Yagi <sup>2</sup> , Y. Sano <sup>1</sup> , K. Arima <sup>1</sup> , A. Hattori <sup>3</sup> , T. Okamoto <sup>1</sup> , H. Mimura <sup>1</sup> and K. Yamauchi <sup>1</sup>	<sup>1,3</sup> <i>Osaka University</i> <sup>2</sup> <i>Ebara Corp.</i>
P76	Fabrication of discrete array of metallocodielectric nanoshells controllable their surface plasmonic properties	S. Uchida, K. Yamamura and N. Zettsu	<i>Osaka University</i>
P77	Dicing of SiC wafer by Plasma Chemical Vaporization Machining with wire electrode	K. Aida, Y. Sano, K. Yamamura, H. Mumura, S. Matsuyama and K. Yamauchi	<i>Osaka University</i>
P78	Improvement of Thickness Uniformity of SOI (Silicon on Insulator) Layer by Numerically Controlled Sacrificial Oxidation Using Arrayed Atmospheric-Pressure Plasma	S. Kamisaka, Y. Sano, K. Yoshinaga, H. Mimura, S. Matsuyama and K. Yamauchi	<i>Osaka University</i>
P79	Evaluation of Schottky Barrier Diodes on Surface of Processed 4H-SiC(0001)	Y. Shirasawa, Y. Sano T. Okamoto and K. Yamauchi	<i>Osaka University</i>