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FB1-3	Study on 3D Self-aligned Assembly Using Chips with Etched Edge and SAM for Liquid Confinement	Yong Liu[1,2,3], Jaber Derakhshandeh[1], Yao Gao[3], Kenneth June Rebibis[1], Ingrid De Wolf[1,3], Pei Li[2], [1]IMEC / Belgium, [2]East China Research Institute of Electronic Engineering / China, [3]KULeuven / Belgium	**280**

FB2: Emerging Technologies-3

10:50-12:30 Friday, April 20

FB2-1	Fabrication of Microchannel-TEM Grid for in situ Liquid Observation of Interfacial Chemical Reaction	Keito Miwa, Hiroyuki Kuwae, Kosuke Sakamoto, Shuichi Shoji, Jun Mizuno, Waseda University / Japan	**284**
FB2-2	High Density Flex-Cable and Interconnection Technologies for Large Silicon Detector Modules	Thomas Blank[1], P. Pfistner[1], B. Leyrer[1], M. Caselle[1], C. Simons[2], C.J. Schmidt[2], M. Weber[2], [1]Karlsruhe Institute of Technology, [2]Gesellschaft für Schwerionenforschung / Germany	**288**
FB2-3	Development of Mountable Electromagnetic Induction Type MEMS Generator	Minami Kaneko, Kaito Mishima, Kazuya Kudo, Kazuki Ebisawa, Ken Saito, Fumio Uchikoba, Nihon University / Japan	**293**
FB2-4	An Evaluation and Comparison of Cross-Sensitivities of Various Different Types of Screen Printed Ag/AgCl Reference Electrodes	John Karl Atkinson, University of Southampton / UK	**299**

FB3: Emerging Technologies-4

13:30-15:10 Friday, April 20

FB3-1	Flexible Substrate with Movable Device Island Supported by Serpentine Interconnect for Mounting Ultra-thin Silicon Chips	Takeshi Kobayashi, Toshihiro Takeshita, Yusuke Takei, Ryohei Takei, National Institute of Advanced Industrial Science and Technology / Japan	**304**
FB3-2	Fully-printed Vertical Interconnections with Tapered Contact Holes Formed by Vapor-annealing Technique	Yasuyuki Kusaka, Shusuke Kanazawa, Hirobumi Ushijima, National Institute of Advanced Industrial Science and Technology / Japan	**306**

FB3-3	Reliability Analysis of SiP Module Board Level Bending Test	Wei-Hong Lai, Shao-Chen Yen, Hsin-Chih Shih, Meng-Kai Shih, David Tarng, Chih-Pin Huang, Advanced Semiconductor Engineering / Taiwan	**308**
FB3-4	Void Reduction in Reflow Soldering Processes by Sweep Stimulation of PCB Substrate	Viktoria Rawinski, Ersa / Germany	**313**

FB4: Medical & Healthcare-2

15:30-17:35 Friday, April 20

FB4-1 <Session Invited>	Peripheral Nerve Detection Probe by Raman Spectroscopy	Yasuaki Kumamoto, Tetsuro Takamatsu, Kyoto Prefectural University of Medicine / Japan	**N/A**
FB4-2 <Session Invited>	Smart Environment Sensor for Healthcare Applications	Naotsugu Ueda, Ryosuke Sakai, Hiroyuki Mino, OMRON / Japan	**N/A**
FB4-3	Fundamental Study to Evaluate Walking Skill for Visually Impaired Person	Hiroaki Inoue[1], Shunji Shimizu[1], Toshiya Tsubota[1], Tatsuo Hisaoka[1], Yoshikazu Seki[2], [1]Tokyo University of Science, Suwa, [2]National Institute of Advanced Industrial Science and Technology / Japan	**317**
FB4-4	Noncontact Heart Rate Measurement System on Single Board Computer	Daisaku Ikoma[1], Yuya Abe[1], Naoki Kawazu[1], Hideharu Toda[1], Masatoshi Sato[2], Hisashi Aomori[1], [1]Chukyo University, [2]Tamagawa University / Japan	**321**
FB4-5	Development of an Automatic Urine Monitoring Device using Cross-selectivity Sensing Principle	Benjamin Ioller, Norihisa Miki, Keio University / Japan	**324**

FC1: Materials and Processes: emerging technology

9:00-10:40 Friday, April 20

FC1-1	Optimum Rotation Angle for Mitigating Differential Skew Induced by Glass Cloth in PCBs	Chenyu Wang, Kengo Iokibe, Yoshitaka Toyota, Okayama University / Japan	**328**
FC1-2	Highly Sensitive Wearable Strain Sensors Using Copper Nanowires and Elastomers	Chunrui Liu, Songjia Han, Zunming Du, Yiqun Liu, Chuan Liu, Sun Yat-sen University / China	**333**
FC1-3	A Study on Mechanical Properties of Thinned Single Crystal Silicon Wafer: effect of size and direction	Sangmin Lee[1], Jae-Han Kim[2], Takayuki Ohba[3], Young Suk Kim[3,4], Taek-Soo Kim[1], [1]Korea Advanced Institute of Science and Technology, [2]Korea Atomic Energy Research Institute / Korea, [3]Tokyo Institute of Technology, [4]DISCO / Japan	**339**
FC1-4	Bonded Strength and Reliability under High Temperature and Humid Environment for Silver Alloy Bonding Wire	Jun Cao[1,2], Han Hua[1], [1]HeNan Polytechnic University, [2]HeNan YOUK Electronic Material / China	**341**

FC2: Materials and Processes: polymer materials

10:50-12:30 Friday, April 20

FC2-1	TSV Liner Dielectric Technology with Spin-on Low-k Polymer	Sungho Lee, Yohei Sugawara, Masato Ito, Hisashi Kino, Tak Fukushima, Tetsu Tanaka, Tohoku University / Japan	**346**
FC2-2	Solderability Evaluation of Printed Silver Solder Pad for Wafer-Level Packaging	Mian Tao[1], Jeffery C. C. Lo[1], Ying-Hong Liou[2], Peter Chiu[2], S. W. Ricky Lee[1], [1]Hong Kong University of Science & Technology, [2]DETEKT Technology / Hong Kong	**350**
FC2-3	Gang-bonding CoC Assembly by NCF-TCB Using Newly Developed Bonding Force Leveling Film	Yuta Koseki, Kazutaka Honda, Tomonori Minegishi, Tsuyoshi Ogawa, Hitachi Chemical / Japan	**355**
FC2-4	Underfill Fatigue Life Enhancement by Means of Rubber and Elastomer Additives	Hiroshi Yamaguchi, Toshiaki Enomoto, Toshiyuki Sato, Namics / Japan	**359**

FC3: Power Electronics Integration-1

13:30-15:10 Friday, April 20

FC3-1 <Session Invited>	Power Device Applications of Ga2O3	Kentaro Kaneko[1], Takashi Shinohe[2], Shizuo Fujita[1], [1]Kyoto University, [2]FLOSFIA / Japan	**N/A**
FC3-2	SiC Power Module for Motor Driving System	Chun-Kai Liu[1], Chih-Ming Tzeng[1], Rong-Chang Fang[1], Chih-Wei Li[2], James Goo[3], [1]Industrial Technology Research Institute, [2]LINGSEN Precision, [3]Shihlin Electric / Taiwan	**363**
FC3-3	Failure Mode Verification of Power IGBT under Different Thermal Stress Application Conditions in Power Cycling Test Environment	Qun Yuan[1], Ryo Endoh[2], Tetsuya Ima[3], Yasushi Kajita[4], Yafei Luo[1], [1]Mentor Graphics Japan, [2]Toray Research Center, [3]Yamaha Motor, [4]Nagoya Municipal Industrial Research Institute / Japan	**367**
FC3-4	Metallization Technology of SiC Power Module in High Temperature Operation	Tomohito Iwashige[1], Kazuhiko Sugiura[1], Takeshi Endo[1], Kazuhiro Tsuruta[1], Yuichi Sakuma[2], Seigo Kurosaka[2], Yukinori Oda[2], Chuantong Chen[3], Shijo Nagao[3], Katsuaki Suganuma[3], [1]Denso, [2]C. Uyemura, [3]Osaka University / Japan	**371**

FC4: Power Electronics Integration-2

15:30-17:35 Friday, April 20

FC4-1 <Session Invited>	Semiconductor Package Technologies in J-Devices for Automotive Application	Akio Katsumata, Akito Yoshida, Akinori Ono, Nobuaki Oie, Toru Takahashi, Fumihiko Taniguchi, J-Devices / Japan	**N/A**
FC4-2	A highly Integrated Copper Sintered SiC Power Module for Fast Switching Operation	Bao Ngoc An[1], Dai Ishikawa[2], Thomas Blank[1], Helge Wurst[1], Horst Demattio[1], Benjamin Leyrer[1], Johannes Kolb[3], Torsten Scherer[1], Ansgar Simon[4], Marc Weber[1], [1]Karlsruhe Institute of Technology / Germany, [2]Hitachi Chemical / Japan, [3]Schaeffler Technologies, [4]Infineon Technologies / Germany	**375**
FC4-3	Cu-Sn Based Die Attach Material for Power Semiconductor with Stress Control	Hiroaki Ikeda, Shigenobu Sekine, Ryuji Kimura, Koichi Shimokawa, Keiji Okada, Hiroaki Shindo, Tatsuya Ooi, Rei Tamaki, Napra / Japan	**381**
FC4-4	A Nearly-perfect Ag Joints Prepared by Novel Ag to Ag Direct Bonding	Hao Zhang, Seungjun Noh, Norio Asatani, Yukiharu Kimoto, Aiji Suetake, Shijo Nagao, Tohru Sugahara, Katsuaki Suganuma, Osaka University / Japan	**387**
FC4-5	A High Efficient Synchronous Rectifier for Next Generation Automotive Alternator Applications	K. S. Kao, H. H. Lin, W. K. Han, S. T. Wu, C. M. Tseng, T. J. Yu, P. K. Chiu, Y. T. Lin, S. F. Hsu, J. Y. Chang, T. C. Chang, Industrial Technology Research Institute / Taiwan	**391**

FD1: Interconnection

9:00-10:40 Friday, April 20

FD1-1	Ga-based Submicron Particle and Applications	Hseng-ming Liao, Che-yu Yeh, Shih-kang Lin, National Cheng Kung University / Taiwan	**396**
FD1-2	Introduction of Sub-2-micron Cu Traces to EnCoRe Enhanced Copper Redistribution Layers for Heterogeneous Chip Integration	Hiroshi Kudo, Yuuki Aritsuka, Masaya Tanaka, Ryohei Kasai, Jyunichi Suyama, Mitsuhiro Takeda, Yumi Okazaki, Haruo Iida, Daisuke Kitayama, Kouji Sakamoto, Takamasa Takano, Miyuki Akazawa, Hiroaki Sato, Shouhei Yamada, Satoru Kuramochi, DNP / Japan	**399**
FD1-3	Photonic-sintering of Submicron/nano Silver Particles with Low Density Irradiations	Po-Hsiang Chiu, Guo-Lun Huang, Jenn-Ming Song, National Chung Hsing University / Taiwan	**405**
FD1-4	Mechanical Properties of Sn-Bi-In-Ga Low Melting Temperature Solder Alloys	Chih-han Yang[1], Shiqi Zhou[2], Hiroshi Nishikawa[2], Shih-kang Lin[1], [1]National Cheng Kung University / Taiwan, [2]Osaka University / Japan	**409**

FD2: Materials and Processes: bonding technology

10:50-12:30 Friday, April 20

FD2-1	Development of Nanocomposite Pastes for Low-Temperature Low-Pressure Bonding	Ting-Jui Wu, Jen-Hsiang Liu, Jenn-Ming Song, National Chung Hsing University / Taiwan	**411**
FD2-2	Investigation of Aluminum Patterned Electrodeposition Process from $AlCl_3$-[EMIm]Cl Ionic Liquid for Microsystems Application	Muhammad Salman Al Farisi[1], Silvia Hertel[2], Maik Wiemer[2], Thomas Otto[2,3], [1]Tohoku University / Japan, [2]Fraunhofer Institute for Electronic Nano Systems, [3]Chemnitz University of Technology / Germany	**415**
FD2-3	Reliability Performance of 30μm-pitch Solder Micro Bump Fluxless Bonding Interconnections	Shin-Yi Huang, Tao-Chih Chang, Yu-Min Lin, Su-Ching Chung, Su-Yu Fun, Industrial Technology Research Institute / Taiwan	**419**

FD3: Materials and Processes: advanced process

13:30-15:10 Friday, April 20

FD3-1 <Session Invited>	New Market Trend in CMP Equipment / Material for the "More than Moore" era	Yasuhiko Takeno[1], Kazuya Okamoto[2], [1]Global Net, [2]Yamaguchi University / Japan	**423**
FD3-2	Investigation of the Laser Ablation Threshold for Optimizing Laser Direct Structuring in the 3D-MID Technology	Li Wang, Robert Suess-Wolf, Michael Ulm, Joerg Franke, Friedrich-Alexander University Erlangen-Nuremberg / Germany	**426**
FD3-3	Rapid Laser Drilling on Thick Ceramic Substrates for SiP Applications	Shih-jeh Wu[1], Hsiang-Chen Hsu[1,2], Wen-Fei Lin[1], Boen Houng[1], Yeh Chang[1], [1]I-Shou University, [2]St. John's University / Taiwan	**430**
FD3-4	Investigation of the Differences in Nanometric Grinding of SiC and Si by Molecular Dynamics	Miaocao Wang[1], Fulong Zhu[1], Yixin Xu[1], Sheng Liu[1,2], [1]Huazhong University of Science and Technology, [2]Wuhan University / China	**434**

FD4: Materials for Nanophotonics Devices

15:30-17:35 Friday, April 20

FD4-1 <Session Invited> *50min.*	Nanophotonics: a frontier cultivated by microassembly	Hideki T. Miyazaki, National Institute for Materials Science / Japan	**N/A**
FD4-2	Organic/Inorganic Interfacial Microstructures Achieved by Fast Atom Beam Bombardment and Vacuum Ultraviolet Irradiation	Tilo Hongwei Yang[1,2], C. Robert Kao[1], Akitsu Shigetou[2], [1]National Taiwan University / Taiwan, [2]National Institute for Materials Science / Japan	**438**

FE1: Thermal Management-1

9:00-10:40 Friday, April 20

FE1-1	Study on Moving Nozzle Effects on Spray Cooling of Electronics	Omar Lamini, Chang-Ying Zhao, Shanghai Jiao Tong University / China	**443**
FE1-2	Advanced Boiling Cooling Technology Using a Compact Vessel with a Low Water Level	Noriyuki Unno[1], Kazuhisa Yuki[1], Risako Kibushi[1], Koichi Suzuki[2], [1]Tokyo University of Science Yamaguchi, [2]Tokyo University of Science / Japan	**448**
FE1-3	Conjugate Heat Transfer Analysis of a Thin Liquid Cooling Heat Sink Using Free Software	Thomas Schiano[1,2], Ryohei Hirose[1], Keisuke Iida[1], Miho Seike[1], Tomoyuki Hatakeyama[1], Shinji Nakagawa[1], [1]Toyama Prefectural University / Japan, [2]Université Paris-Saclay / France	**452**
FE1-4	Relationship between Natural Convection Cooling Performance and Tilt Angle of Thin Enclosure	Shun Yonezuka[1], Takashi Fukue[1], Mamoru Kikuchi[1], Kouichi Hirose[1], Qiang-Sheng Wang[1], Wakana Hiratsuka[1], Yuji Okada[2], Chiaki Sakaki[2], [1]Iwate University, [2]EIZO / Japan	**456**

FE2: Thermal Management-2

10:50-12:30 Friday, April 20

FE2-1	Heat Flow Sensor Created by Printed Circuit Board Manufacturing Process	Yukikatsu Ozaki[1], Hirohito Matsui[1], Motoki Shimizu[2], [1]SOKEN, [2]DENSO / Japan	**459**
FE2-2	Relationship between Thermal Resistance and Shape of Copper Pads in Densely Mounted Board	Yoshinori Aruga[1], Koichi Hirasawa[1], Takayuki Yamabe[1], Hirotoshi Aoki[1], Tomoyuki Hatakeyama[2], Shinji Nakagawa[2], Masaru Ishizuka[2], [1]KOA, [2]Toyama Prefectural University / Japan	**465**
FE2-3	Thermal Resistance Evaluation in High Heat Flux Electronics	Risako Kibushi[1], Kazuhisa Yuki[1], Noriyuki Unno[1], Kohei Yuki[2], Toshio Tomimura[3], Tomoyuki Hatakeyama[4], Masaru Ishizuka[4], [1]Tokyo University of Science, Yamaguchi, [2]Tohoku University, [3]Kumamoto University, [4]Toyama Prefectural University / Japan	**471**
FE2-4	Investigation of Design Parameters of 1-Dimensional Thermal Conductivity Measurement System for Shortening Measurement Time of Thermal Conductivity by Steady - Temperature - Prediction - Method (STPM)	Kohei Urata, Jumpei Hatakeyama, Koichi Hirose, Michimasa Uchidate, Takashi Fukue, Iwate University / Japan	**475**

FE3: Optoelectronics

13:30-15:10 Friday, April 20

FE3-1 <Session Invited>	Toward Cointegration of Silicon and Polymer for Optical Interconnect Modules	Okihiro Sugihara, Utsunomiya University / Japan	**N/A**
FE3-2 <Session Invited>	Multimode / Single-mode Polymer Waveguides for Optical Wiring from the Chip to On-Board	Takaaki Ishigure, Keio University / Japan	**N/A**
FE3-3 <Session Invited>	High-density Broadband 400Gb/s on-PKG Silicon Photonics TRx	Tsuyoshi Aoki[1], Shigeaki Sekiguchi[1], [1]PETRA, [2]Fujitsu, [3]Fujitsu Laboratories / Japan	**N/A**
FE3-4	Process Development and Reliability of Sintered High Power Chip Size Packages and Flip Chip LEDs	Alexander Hanss[1], Maximilian Schmid[1], Sri Krishna Bhogaraju[1], Fosca Conti[2], Gordon Elger[1], [1]Technische Hochschule Ingolstadt / Germany, [2]University of Padova / Italy	**479**

Poster Session

P01	Effect of W Addition for Cu Diffusion Barrier Property of Electroless CoB Films Formed on SiO_2	Takaki Iseri[1], Shusuke Shindo[1], Tomohiro Shimizu[1], Takeshi Ito[1], Moriji Matsumoto[2], Shoso Shingubara[1], [1]Kansai University, [2]JCU / Japan	**485**
P02	Batch Microwave Plasma Cleaning for Robustification of Automotive Devices	Ghizelle Jane Estrada Abarro, Rod Delos Santos, Darwin De Lazo, Alvin Denoyo, Ariel Tan, Manny Ramos, ON Semiconductor Philippines / Philippines	**N/A**
P03	Multi-chip Gang Bonding Technology Using the Thermo-compression Bonder for Si Substrate	Noboru Asahi, Yoshihito Mizutani, Koichi Imai, Hiroto Tanaka, Yasunori Hashimoto, Toshiyuki Jinda, Mikio Kawakami, Katsumi Terada, Toray Engineering / Japan	**496**
P04	Loop Height Assessment for Automotive Package	Mohd Izzuddin Suboh, Mohamad Syahirul Syafiq Ali, Infineon Technologies (Malaysia) / Malaysia	**500**
P05	Material Characterization in TSV Fabricated by Supercritical Carbon Dioxide Electroplating	Ho-Chiao Chuang[1], Guan-Wei Jiang[1], Ai-Ho Liao[2], [1]National Taipei University of Technology, [2]National Taiwan University of Science and Technology / Taiwan	**506**
P06	Flexible and Transparent Silver-grid Over-coated with PEDOT: PSS electrode prepared by gravure offset printing	Masato Ohsawa, Natsuki Hashimoto, ULVAC / Japan	**509**
P07	A Study of the Anodizing of Titanium for Dye-sensitized Solar Cells	Yu-Wen Chen, Chih-Ming Chen, National Chung Hsing University / Taiwan	**514**
P08	Preparation of Vitamin C Doped Polymers for Physical Characteristics Using Electrospinning Process	Sheng-Hung Shih, Chun-Yi Chen, Cho-Liang Chung, I-Shou University / Taiwan	**518**
P09	Enhancement of Electrical Conductivity Developed in an Epoxy-based Adhesive with Silver Flakes Loading	Tomohito Negishi, Masahiro Inoue, Gunma University / Japan	**522**
P10	Preparation of Superhydrophobic Silicon-Based Net-like Hollow Nanostructure Using Electrospinning	Jui-Wen Liang, Wen-Yu Wang, Cho-Liang Chun, I-Shou University / Taiwan	**526**
P11	Variation in Electrical Conductivity of Air-curable Copper Pates Composed of a Phenolic-based Binder during Soaking in Several Environments	Kenta Kawarai, Masahiro Inoue, Gunma University / Japan	**530**
P12	Creation and Functional Control of Metal Nanoparticle-Polymer Interface by Laser Plasma EUV Light Excitation	Kiyokazu Yasuda, Nozomi Tanaka, Nao Wada, Hiroaki Nishimura, Osaka University / Japan	**535**
P13	First Principles Calculation of the Structure and Quantum Capacity of Acidic Functional Groups on Graphene-based Capacitor	Bochen Li, Takeyasu Saito, Naoki Okamoto, Osaka Prefecture University / Japan	**539**
P14	A Fracture Analysis of Different Cu Electroplated Layers on Ni-metallized Polyimide Film	Yi-Hsuan Chen, Shan-Ting Tsai, Chih-Ming Chen, National Chung Hsing University / Taiwan	**543**
P15	Variations in Electrical Resistivity of Stretchable Printed Wires Composed a Polyurethane-based Binder Containing Silver Fillers under Cyclic Tensions	Yuta Hosono, Masahiro Inoue, Gunma University / Japan	**548**
P16	Coupling Model and Non-contact Measurement Approach by Near-field Technology	Sheng-Wei Guan[1], Chih-Wen Kuo[1], Cheng-Tao Li[2], Sung-Mao Wu[2], [1]National Sun Yat-sen University, [2]National University of Kaohsiung / Taiwan	**550**
P17	Effect of Au Thickness on Bonding Reliability for Silver Coated Au Bonding Wire	Xianqing Yang, HeNan Polytechnic University / China	**N/A**

P18	Feasibility Study of All-SiC Pressure Sensor Fabrication without Deep Etching	Fengwen Mu[1], Yechao Sun[2,4], Haiping Shang[2], Yinghui Wang[2,3,4], Tadatomo Suga[1,3], Weibing Wang[2,4], Dapeng Chen[2,4], [1]The University of Tokyo / Japan, [2]Institute of Microelectronics of Chinese Academy of Sciences, [3]Kunshan Branch, Institute of Microelectronics of Chinese Academy of Sciences, [4]University of Chinese Academy of Sciences / China	**558**
P19	Reduction of Parasitic Capacitance of Flexible Tactile Sensors	Tatsuho Nagatomo, Norihisa Miki, Keio University / Japan	**562**
P20	Electrodeposition of ZnS and Evaluation of Its Optical Property	Naohiro Matsuda, Naoki Okamoto, Takeyasu Saito, Osaka Prefecture University / Japan	**566**
P21	Synthesis and Thermal Conductivity of Carbon Nanotube (CNT) / Polymer Composites	Chih-Feng Wang[1], Pei-Kang Huang[1], Yi-Jung Tsai[1], Chih-Lin Wu[1], Yan-Yu Chang[1], Kuo-Jung Lee[1], Ping-Feng Yang[2], [1]I-Shou University, [2]Advanced Semiconductor Engineering / Taiwan	**570**
P22	Synthesis and Thermal Conductivity of Expanded Graphite (EG) / Polymer Composites	Chih-Feng Wang[1], Pei-Rung Hung[1], Chih-Lin Wu[1], Yi-Jung Tsai[1], Yan-Yu Chang[1], Kuo-Jung Lee[1], Ping-Feng Yang[2], [1]I-Shou University, [2]Advanced Semiconductor Engineering / Taiwan	**572**
P23	Development of Novel AlN Filler for High Thermal Conductivity Packaging Material	Yukihiro Kanechika, Akimasa Kuramoto, Yutaka Fukunaga, Yasushi Imoto, Yoshitaka Inaki, Saiko Fujii, Meng Wan, Teruhiko Nawata, Masahide Ueda, Tokuyama / Japan	**574**
P24	Evaluation of Thermal Resistance of Various Thermal Grease	Shinya Seki, Ryo Endoh, Masaaki Takeda, Toray Research Center / Japan	**576**
P25	Evaluation of Thermal Cycle Stress in SiC Power Devices by Raman Spectroscopy	Tomoyuki Uchida, Ryuichi Sugie, Toray Research Center / Japan	**579**
P26	Thermal Conductivity Measurement of Diamond and β-Ga_2O_3 Thin Films by a 3ω Method	Shinichiro Suzuki[1,2], Shinya Ohmagari[2], Yusuke Akutsu[1], Naoki Okamoto[1], Takeyasu Saito[1], Hitoshi Umezawa[2], Yoshiaki Mokuno[2], [1]Osaka Prefecture University, [2]National Institute of Advanced Industrial Science and Technology / Japan	**583**