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FA2-2 <Session Invited> 50min.	Advanced Packaging Technology Solutions and Hybrid Design Platform for Chiplets Integration	Lihong Cao, ASE (US) / USA	-

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13:20-15:00 Friday, April 21

FA3-1 <Session Invited> 50mn.	Evolution of BEOL Technology with Scaling	Kazuyoshi Ueno, Shibaura Institute of Technology / Japan	-
FA3-2 <Session Invited>	Overview and Progress of the Chiplet Integration Platform Consortium	Meiten Koh[1], Yoichiro Kurita[2], Yasuhiro Morikawa[3], Ichiro Kono[4], Takafumi Fukushima[5], Katsuaki Suganuma[6], [1]Taiyo Ink MFG., [2]Tokyo Institute of Technology, [3]ULVAC, [4]AOI Electronics, [5]Tohoku University, [6]Osaka University / Japan	-
FA3-3 <Session Invited>	Wafer-Level Chiplets Integration Platform	Wei-Chung Lo, Industrial Technology Research Institute / Taiwan	-

FA4: Chiplet-3

15:20-17:00 Friday, April 21

FA4-1 <Session Invited>	Chiplet Technologies for HPC and AI	Dale McHerron, IBM / USA	-
FA4-2 <Session Invited>	The Emergence of Chiplet Interconnect Technology: Breaking Boundaries Between FEOL and BEOL	Fumihiro Inoue, Yokohama National University / Japan	-
FA4-3 <Session Invited> 50min.	3D Super Chip Concept to Build a New Era of Chiplet and Heterogeneous Integration	Takafumi Fukushima, Tohoku University / Japan	-

FB1: Optoelectronics-1

9:00-10:40 Friday, April 21

FB1-1 <Session Invited> 50min.	IOWN Brought by Photonics-Electronics Convergence Devices	Yuzo Ishii, NTT / Japan	-
FB1-2 <Session Invited> 50min.	Nanophotonics Toward On-chip Photonic Integration	A. Shinya[1,2], S. Kita[1,2], K. Ikeda[1,2], K. Nozaki[1,2], T. Ishihara[4], S. Matsuo[1,3], M. Notomi[1,2], [1]NTT Nanophotonics Center, [2]NTT Basic Research Laboratories, [3]NTT Device Technology Laboratories, [4]Nagoya University / Japan	-

FB2: Optoelectronics-2

10:50-12:30 Friday, April 21

FB2-1 <Session Invited> 50min.	Current Status and Future Prospects of Optical Interconnection Based on Si Photonics Technology	Kazuhiko Kurata, AIO Core / Japan	-
FB2-2	Quantum Dot Color Conversion Film with Enhanced Color Rendering Performance	Yuanjie Cheng, Jeffery C. C. Lo, Xing Qiu, Hua Xu, Mian Tao, S. W. Ricky Lee, Hong Kong University of Science & Technology / Hong Kong	135

FB2-3	A Novel 3D Structure with 2D Addressable VCSEL Arrays and Laser Diode Driver for Solid-State LiDAR	Hirohisa Yasukawa[1], Kiyohisa Sakai[1], Masashi Nakazawa[1], Gyongsok Song[1], Hideki Watanabe[1], Yasutaka Higa[1], Rintaro Koda[1], Yoshio Konishi[2], Hayato Kamizuru[2], Hayato Iwamoto[1], [1]Sony Semiconductor Solutions, [2]Sony Semiconductor Manufacturing / Japan	**137**

FB3: Ag Sintering Interconnect

13:20-15:00 Friday, April 21

FB3-1	Novel Al /AlN Bonding by Micro-Sized Ag Particles Sinter Joining in Low Temperature Low Pressure Air Conditions	Chuantong Chen[1], Yang Liu[1], Minoru Ueshima[2], Katsuaki Suganuma[1], [1]Osaka University, [2]Daicel / Japan	**139**
FB3-2	Effect of Aging and Thermal Shock on the Reliability of Silver Sintered Die Attach for SiC Power Devices	Wangyun Li[1], Chuantong Chen[1], Yang Liu[1], Minoru Ueshima[2], Takeshi Sakamoto[2], Katsuaki Suganuma[1], [1]Osaka University, [2]Daicel / Japan	**141**
FB3-3	A Novel and Cost-Effective Ag/Si Composited Paste With Highly Stable Microstructure Maintaince in Thermal Shock Cycles	Y. Liu[1], C. Chen[1], M. Ueshima[2], T. Sakamoto[2], T. Naoe1, H. Nishikawa1, K. Suganuma[1], [1]Osaka University, [2]Daicel / Japan	**143**
FB3-4	Microstructure and Property of Ag Sintered Joint Doping with AlN Nanoparticles	Jianhao Wang, Shogo Yodo, Hiroaki Tatsumi, Hiroshi Nishikawa, Osaka University / Japan	**145**

FB4: Cu Interconnect

15:20-17:00 Friday, April 21

FB4-1 <Session Invited>	TGV Cu Metallization on Glass Technology Trend	Tetsuya Onishi, Grand Joint Technology / Hong Kong	**-**
FB4-2	Enhanced Reactivity of Electroless Cu Interconnection by Surface Oxidation Pretreatment	Y. C. Lin[1], C. H. Shen[1], C. Y. Hung[1], P. S. Shih[1], J. H. Huang[1], C. L. Kao[2], Y. S. Lin[2], Y. C. Hung[2], C. R. Kao[1], [1]National Taiwan University, [2]Advanced Semiconductor Engineering Group / Taiwan	**147**
FB4-3	Molecular Dynamics Simulation of Cu-Cu Solid-State Bonding under Various Bonding Parameters	Hiroaki Tatsumi[1], C.R. Kao[2], Hiroshi Nishikawa[1], [1]Osaka University / Japan, [2]National Taiwan University / Taiwan	**149**
FB4-4	Study of Cu Micro-via by TOF-SIMS and STEM	Masahiko Nishijima[1], Ming-Chun Hsieh[1], Zhang Zheng[1], Aiji Suetake[1], Hiroshi Yoshida[1], Rieko Okumuara[1], Chuantong Chen[1], Hidekazu Homma[2], Koji Kita[2], Katsuaki Suganuma[1], [1]Osaka University, [2]Okuno Chemical Industries / Japan	**151**

FC1: High-Speed, beyond 5G and mmWave

9:00-10:40 Friday, April 21

FC1-1	Design of Dual-Band Antenna in Package with Steerable Beam for 5G mmWave Communication Systems	Sheng-Chi Hsieh, Hong-Sheng Huang, Wen-Chun Hsiao, Cheng-Yu Ho, Chen-Chao Wang, Advanced Semiconductor Engineering / Taiwan	**153**
FC1-2	Effect of Ni Additive on Electroless Cu Quality for High Density Interconnect PCB Substrate	Zheng Zhang[1], Ming-Chun Hsieh[1], Masahiko Nishijima[1], Aiji Suetake[1], Hiroshi Yoshida[1], Rieko Okumuara[1], Chuantong Chen[1], Hidekazu Homma[2], Koji Kita[2], Katsuaki Suganuma[1], [1]Osaka University, [2]Okuno Chemical Industries / Japan	**155**
FC1-3	Fabrication of High-speed Signal Transmission Rigid Substrate by Silver-seed Copper Plating Technique	Rei Tamura, Norimasa Fukazawa, Wataru Fujikawa, DIC / Japan	**157**
FC1-4	Electroless Plating on Coiled Algae to Copper Microcoils and Their Terahertz Electromagnetic Wave Absorption	Keita Arikiyo[1], Tomokazu Iyoda[1,2], Koji Kita[1], Joonhaeng Kang[1], Yukihiro Tanida[3], Naoya Kurahashi[3], Masahiro Koide[4], Toshichika Ooki[4], [1]Okuno Chemical Industries, [2]Doshisha University, [3]Kyoto Prefectural Technology Center for Small and Medium Enterprises, [4]Panac / Japan	**159**

FC2: Sensing Device

10:50-12:30 Friday, April 21

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FC2-2	Bluetooth Wireless Mouthguard Sensor for Real-time Measurement of Saliva Glucose as Oral Information	Kohji Mitsubayashi[1], Gentaro Kawase[1], Kenta Iitani[1], Takahiro Arakawa[2], Dzung Viet Dao[3], [1]Tokyo Medical and Dental University, [2]Tokyo University of Technology / Japan, [3]Griffith University / Australia	163
FC2-3	Development of a Compact Module for Deep-body Temperature Measurement	Shoya Fukui, Nobuaki Hashimoto, Suwa University of Science / Japan	165
FC2-4	LPWA Based Module for Forest Fire Detection	Eunsol Jo, Cheong-Ha Jung, Gu-Sung Kim, Kangnam University / Republic of Korea	167

FC3: Emerging 3D Integration Technologies

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FC3-1	Compensation of the Warpage of CVD Diamond Wafers Using Intermediate Layers for Surface Activated Bonding	Junsha Wang, Tadatomo Suga, Meisei University / Japan	169
FC3-2	Direct Bonding of Germanium and Diamond Substrates by Hydrophilic Bonding	Yuki Minowa[1,2], Takashi Matsumae[1], Masanori Hayase[2], Yuichi Kurashima[1], Hideki Takagi[1], [1]National Institute of Advanced Industrial Science and Technology, [2]Tokyo University of Science / Japan	171
FC3-3	Protection of Activated Au Surface using Self-assembled Monolayer for Room Temperature Bonding	Kai Takeuchi[1], Junsha Wang[2], Tadatomo Suga[2], Beomjoon Kim[3], Eiji Higurashi[1], [1]Tohoku University, [2]Meisei University, [3]the University of Tokyo / Japan	173
FC3-4	Effect of Tafel Slope on the Difference Deposition Rate at 2CD (Circle Diameter) Wafer	A. Akita, D. Hashimoto, M. Kiso, S. Hashimoto, C. Uyemura / Japan	175

FD1: Thermal Management-1

9:00-10:40 Friday, April 21

FD1-1	Fine Fin Structure Suitable for SiC Inverter Cooling with Subcooled Flow Boiling	Hitoshi Yoshimura[1], Kazuhisa Yuki[2], Noriyuki Unno[2], Takuro Nakaoka[1], Mutsuaki Goto[1], [1]DENSO, [2]Sanyou-Onoda City University / Japan	177
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FD2: Thermal Management-2

10:50-12:30 Friday, April 21

FD2-1	Double-sided <111>-oriented Nanotwinned Copper Foils for Thermal Interface Materials in High Power Electronics	Guan-You Shen, Chih Chen, National Yang-Ming Chiao Tung University / Taiwan	183
FD2-2	Verification Method of the Thermal Interface Resistance by Using Silicon Bare-die	Qun Yuan, Wasanthamala Badalawa, Yoshitaka Aoki, SIEMENS / Japan	185
FD2-3	The Large-area TIM Using Sn-Cu-Ni-Sb Quaternary IMC Joint Material	Hiroaki Ikeda, Shigenobu Sekine, Napra / Japan	187
FD2-4	Pattern Design of SiC-TEG Heater Chip with Uniform Temperature Distribution Applied in Power Module Packaging	Fupeng Huo[1], Ye Wang[2], Chuantong Chen[1], Peihao Geng[1], Luobin Zhang[3], Yoshiji Yamaguchi[4], Katsuaki Suganuma[1], [1]Osaka University / Japan, [2]Beihang University / China, [3]Harbin Institute of Technology / China, [4]Yamato Scientific / Japan	189

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FD3-2	Evaluation of Thermal Resistance Reduction by Thinning Substrate of β-Ga_2O_3 SBD	Shota Seki[1], Tsuyoshi Funaki[1], Jun Arima[2], Minoru Fujita[2], Jun Hirabayashi[2], Kazuyoshi Hanabusa[2], [1]Osaka University, [2]TDK / Japan	193
FD3-3	Investigation Regarding Temperature Prediction Accuracy of Discrete Power Semiconductor Package Models	Koji Nishi, Ashikaga University / Japan	195

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FE1-2	Interfacial Intermetallic Compounds of Bi_2Te_3/Cu Joint Using SAC305 Solder and Nano-Ag Paste	Seongwoo Pak, Hiroaki Tatsumi, Jianhao Wang, Hiroshi Nishikawa, Osaka University / Japan	**199**
FE1-3	Electromigration in Tin-Bismuth Planar Solder Joints	Prabjit Singh[1], L. Palmer[1], M. Hamid[1], T. Wassick[1], R. F. Aspandiar[2], B. Franco[2], H. Fu[3], Richard Coyle[4], Faramarz Hadian[5], V. Vasudevan[6], A. Allen[7], K. Howell[8], K. Murayama[9], H. Zhang[10], A. Lifton[11], M. Ribas[11], M. Sarangapani[12], T. Munson[13], S. Middleton[13], [1]IBM, [2]Intel / USA, [3]iNEMI / China, [4]Nokia, [5]Physics Dept., [6]Dell Technologies, [7]HP / USA, [8]Nihon Superior, [9]Shinko Electric Industries / Japan, [10]Indium / USA, [11]MacDermid Alpha Electronics Solutions / USA & India, [12]Heraeus Materials Singapore / Singapore, [13]Foresite / USA	**201**
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FE2-2	Interfacial Reaction Between Silver and Solid Indium	I. C. Fang, F. L. Chang, C. C. Chang, C. R. Kao, National Taiwan University / Taiwan	**207**
FE2-3	The Influence of Bi Content on Joint Properties Using Sn-Bi-Zn-In Alloy	H. Nakawaki[1], H. Tatsumi[1], C. Yang[2], S. Lin[2], H. Nishikawa[1], [1]Osaka University / Japan, [2]National Cheng Kung University / Taiwan	**209**
FE2-4	Investigation of Bi and In Elemental Addition in Solder Paste for DRAM Module Reliability Enhancement	Yun-Ting Hsu[1], Yung-Sheng Zou[1], Yi-Yu Chen[1], Min-Hua Chung[1], Chong-Leong Gan[1], Fatima Macalalad[1], Shriram Harihara Subramanian[2], [1]Micron Memory Taiwan / Taiwan, [2]Micron Technology / USA	**211**

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FE3-1	Hybrid SnBi/SAC Low-Temperature Solder Bump	Albert T. Wu[1], Jui-Lin Chao[1], Yu-Yuan Lai[1], Chang-Meng Wang[2], [1]National Central University, [2]Shenmao Technology / Taiwan	**213**
FE3-2	The Effects of Solution Treatment and Room Temperature Ageing on Mechanical Properties of Sn-37wt%Bi and Sn-57wt%Bi	Xiaozhou Ye[1], Lei Tao[1], Stuart D. McDonald[1], Xin Fu Tan[1], Keith Sweatman[2], Kazuhiro Nogita[1], [1]The University of Queensland / Australia, [2]Nihon Superior / Japan	**215**
FE3-3	Impact Strength of Sn58Bi and Sn45Bi2.6Zn0.5In Solder Joints After Isothermal Aging	Zhi Jin[1], Shunsuke Fujiwara[2], Junichi Takenaka[2], Koichi Hagio[2], Hiroshi Nishikawa[1], [1]Osaka University, [2]Nihon Genma MFG. / Japan	**217**

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FE4-2	1/1 µm Line and Space Cu Wiring with Organic Dielectric Through High Electrical Reliability	Yu Shoji, Takuma Nishimura, Hisashi Ogasawara, Keika Hashimoto, Yuki Masuda, Hitoshi Araki, Masao Tomikawa, Toray Industries / Japan	**221**
FE4-3	Novel Temporary Bonding/Debonding System Enabling Advanced Packaging Process	Emi Miyazawa, Tetsuya Enomoto, Yuta Akasu, Shogo Sobue, Yuki Nakamura, Saeko Ogawa, Takashi Kawamori, Resonac / Japan	**223**
FE4-4	Liquid Compression Mold Underfill Designed for One-Step Encapsulation in Overmold Process	Yuto Shigeno, Yukihiro Ikeda, Kyota Aoyama, Tsuyoshi Kamimura, NAMICS / Japan	**225**

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P06	Interconnection Properties of Epoxy-based Conductive Adhesives by Chemically Controlled Sintering of Silver Micro-fillers	Takanori Fukushima, Masahiro Inoue, Gunma University / Japan	**237**
P07	Die Bond Track Copper Debris Formation Mechanism Study	Wang Yue[1], Wang Haiyan[2], Chen YanTao[1], Deng Yong[1], [1]Leshan-Phoenix Semiconductor, [2]SH Electronics ChengDu / China	**N/A**
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P10	Effects of Temperature and Humidity on The Surface and Mechanical Properties of Beta-chitin/PCL Nanofibers Prepared by Electrospinning	C. Y. TSAI, K. H. WU, C. L. CHUNG, I-SHOU University / Taiwan	**245**
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P12	Rapid Silver Sinter Joining Technology for Large Area Chips	Luobin Zhang[1,2], Chuantong Chen[1], Fupeng Huo[1], Wangyun Li[1], Katsuaki Suganuma[1], [1]Osaka University / Japan, [2]Harbin Institute of Technology (Shenzhen) / China	**249**
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P21	Analytical Study on Stress and Strain of Power Chip Laminated Structure	Luan X.H.[1], Ding L.G.[2], Li X.M.[2], Zhang H.J.[2], Li K.W.[2], Zhou L.Z.[1], Wu F.S.[1], [1]Huazhong University of Science and Technology, [2]Chengdu perfect technology / China	**267**
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