Wednesday, May 11

	Room A	Room B	Room C	Room D	Room E
10:30 12:10	**WA1: iNEMI Session** Chairs: Y. Tomita, Intel, K. Yasuda, Osaka University **WA1-1** Fine Pitch Circuit Pattern Inspection Capability Study for Fan-out Wafer/Panel Level Packaging Feng Xue[1], Zhihua Zou[2], Charles Reynolds[1], Tom Wassick[1], Glenn Pomerantz[1], Anna Lucy Santos[3], Neil Tang[3], Alison Yu-Ting Lin[4], Jing-Sian Huang[4], Masahiro Tsuriya[5], [1]IBM / Singapore & USA, [2]Intel / USA, [3]AT&S / China, [4]Unimicron / Taiwan, [5]iNEMI / Japan **WA1-2** Novel Method for Measuring High Temperature Hygroscopic Swelling Ian Chin[1], Wei Keat Loh[1], Mohd Zulkifly Bin Abdullah[2], [1]Intel Microelectronics, [2]Universiti Sains Malaysia / Malaysia **WA1-3** Voids in First-Level Interconnects and Their Impact on Solder Joint Reliability Kor Oon Lee[1], Kiyoshi Oi[2], Sze Pei Lim[3], Yvonne Yeo[4], Keith Sweatman[5], Toshiaki Ono[6], Kei Murayama[2], Steven R. Martell[6], Haruo Shimamoto[7], Masahiro Tsuriya[8], [1]Intel / Malaysia, [2]Shinko Electric Industries / Japan, [3]Indium / Malaysia, [4]IBM / Singapore, [5]Nihon Superior / Japan, [6]Nordson Test & Inspection / Japan & USA, [7]AIST, [8]iNEMI / Japan **WA1-4** Low Temperature Interconnects in 1st Level Packaging and Its Challenges Charles Arvin[1], Sze Pei Lim[2], David Locker[3], Wei Keat Loh[4], Keith Sweatman[5], Francis Lee[6], Masahiro Tsuriya[7], [1]IBM / USA, [2]Indium / Singapore, [3]US DoD / USA, [4]Intel / Malaysia., [5]Nihon Superior / Japan, [6]Unimicron / Taiwan, [7]iNEMI / Japan	**WB1: Advanced Packaging 1** Chairs: M. Fujino, AIST, F. Inoue, Yokohama National University **WB1-1** Micro-flake Ag Paste Sinter Joining on Bare DBA Substrate for High Temperature SiC Power Modules Chuantong Chen, Zheng Zhang, Yang Liu, Katsuaki Suganuma, Osaka University / Japan **WB1-2** Embedded Power GaN Components Inside a PCB for Apace Applications Toni Youssef[1], Thomas Loher[2], Stephane Azzopardi[1], [1]Safran Tech / France, [2]Fraunhofer IZM / Germany **WB1-3** Surface Modification Effect on Ultrasonic Bonding for Aluminum Pad Arrays Pin-Kuan Li[1], Yang-Chun Fan[1], Wallace Chuang[2], Eckart Schellkes[2], Kiyokazu Yasuda[3], Jenn-Ming Song[1,3], [1]National Chung Hsing University, [2]Robert Bosch Taiwan / Taiwan, [3]Osaka University / Japan **WB1-4** Sequential Plasma Activation Bonding of Sapphire using SiO_2 Intermediate Layer Kai Takeuchi[1,2], Tadatomo Suga[1], [1]Meisei University, [2]the University of Tokyo / Japan	**WC1: LED Session 1** Chairs: M. Aoyagi, Kumamoto University, Y. Morikawa, ULVAC **WC1-1 <Session Invited>** Photoluminescence Properties of Eu(III) Complexes with an Asymmetric Diphosphine Dioxide Ligand for Potential Uses in LED, Security, and Sensing Devices H. Iwanaga, Toshiba / Japan **WC1-2 <Session Invited>** *(50min.)* Development of Photoelectric Conversion Transistor Consisting of High-power LED and Si Solar Cell Ken-ichiro Okamoto[1], Kensho Okamoto[1], Kazunori Morishita[1], Atsushi Okuno[2], [1]Kyoto University, [2]Green Planets / Japan	**WD1: Emerging Technology 1** Chairs: T. Aoki, IBM Japan, T. Kasahara, Hosei University **WD1-1** Microfluidic Electrogenerated Chemiluminescenece Device Using a Wide-Energy-Gap Material Nanami Ichinohe[1], Ryoichi Ishimatsu[2], Jun Mizuno[3], Takashi Kasahara[1], [1]Hosei University, [2]Kyushu University, [3]Waseda University / Japan **WD1-2** Red Microfluidic Electrogenerated Chemiluminescence Device Using Tetraphenyldibenzoperiflanthene as a Guest Molecule Seiya Yamamoto[1], Ryoichi Ishimatsu[2], Koji Okada[1], Emiri Kato[1], Jun Mizuno[3], Takashi Kasahara[1], [1]Hosei University, [2]Kyushu University, [3]Waseda University / Japan **WD1-3** Green Microfluidic Electrogenerated Chemiluminescence Device Using 9,10-Diphenylanthracene as a Host Material Emiri Kato[1], Ryoichi Ishimatsu[2], Jun Mizuno[3], Takashi Kasahara[1], [1]Hosei University, [2]Kyushu University, [3]Waseda University / Japan **WD1-4** Orange-Red Electrogenerated Chemiluminescence Cells Using Titanium Dioxide Nanoparticles Annealed at Different Temperatures Ryo Kawasaki[1], Ryoichi Ishimatsu[2], Koji Okada[1], Jun Mizuno[3], Takashi Kasahara[1], [1]Hosei University, [2]Kyushu University, [3]Waseda University / Japan	**WE1: Adhesives and Polymer Materials** Chairs: K. Hasegawa, JSR, T. Nonaka, Huawei Technologies Japan **WE1-1** Effect of High Temperature and High Humidity Environment on Adhesion Strength of High *Tg* Epoxy Resin and Copper Joint X. Zhao, H. Mitsugi, I. Shohji, T. Kobayashi, Gunma University / Japan **WE1-2** Deformation Characteristics of Micron-level Thin Adhesive Layer for Bumpless Build Cube (BBCube) Integration Technology T. Kudo[1,2], T. Funaki[1,2], N. Araki[1,3], T. Nakamura[1], T. Ohba[1], [1]Tokyo Institute of Technology, [2]Murata Manufacturing, [3]DAICEL / Japan **WE1-3** Surface Modification of a Polymer Film for Electronic Packaging Using Vacuum Ultraviolet Irradiation Taro Arimoto, Masaki Miura, Fumitoshi Takemoto, USHIO / Japan
12:10 13:00	**Lunch Time**				
13:00 13:40	**Award Ceremony**				
13:40 13:50	**Break**				
13:50 15:20	**Poster Short Presentation** Chairs: T. Kasahara, Hosei University, S. Takyu, LINTEC				
15:20 16:20	**Break / In-person poster session only for on-site participants**				
16:20 17:20	**Keynote Lecture:** Advances in WBG Power Device Packaging by Sinter Joining and Thermal Management Katsuaki Suganuma, Osaka University Chairs: T. Aoki, IBM Japan, T. Hatakeyama, Toyama Prefectural University				
18:00 19:30	**Welcome Reception**				

■Poster Session

On-line poster session : 10:30, May 11 - 17:20, May 13, 2022 (In-person poster session only for on-site participants : 15:20 - 16:20, May 11)
Poster short presentation session : 13:50 - 15:20, May 11, 2022

P01	A Study of Electromigration Effect According to Interposer Area Effect Cheong-Ha Jung, Jung-Rae Park, Seong Won Seo, Eunsol Jo, Gu-sung Kim, Kangnam University / South Korea
P02	Study on Miniaturization of Planar UWB Monopole Antenna with Electromagnetic Coupling Stub Structure Chikayo Hata, Nobuyasu Takemura, Nippon Institute of Technology / Japan
P03	Development of Wearable Measuring Technology for Deep-Body Temperature Fukui Shoya, Nobuaki Hashimoto, Suwa University of Science / Japan
P04	Formation of Specially Shaped Plating Film by Nickel–Copper Alloy Electrodeposition T. Kobayashi, A. Kubo, I. Shohji, Gunma University / Japan
P05	Development of Sn Solder Plating Containing Cellulose Nanofiber T. Kobayashi, A. Kogure, I. Shohji, Gunma University / Japan
P06	Joining Dissimilar Materials Using Three- Dimensional Electrodeposited Film T. Kobayashi, K. Yamazaki, I. Shohji, Gunma University / Japan
P07	Study on the Method for Predicting Surface Contact Ratio Using ECR K. Fujimi, T. Hatakeyama, S. Nakagawa, R. Kibushi, M. Ishizuka, Toyama Prefectural University / Japan
P08	Interfacial Reactions in the Sn-3.0Ag-0.5Cu/C194 Couples Xin-Bin Hu, Jun Wen, Yee-wen Yen, National Taiwan University of Science and Technology / Taiwan
P09	Stress and Reliability Challenges of Underfills in Large-Size Fan-Out Multichip Module Packages Wen-Yu Teng, Jackson Lee, Hsin-Ming Tseng, Liang Yih Hung, Don Son Jiang, Yu-Po Wang, Siliconware Precision Industries / Taiwan
P10	Study of Measurement Index on the Polymer-to-Metal Direct-adhesion for Package Carrier Yu-Cheng Pai, Chan-Yu Yeh, Wen-Yu Teng, Andrew Kang, Yu-Po Wang, Siliconware Precision Industries / Taiwan
P11	Effect of Binder Chemistry on Bonding Properties of a Flexible Conductive Adhesive Containing Silver-plated Aluminum Fillers Takanori Fukushima, Masahiro Inoue, Gunma University / Japan
P12	Electrical Conductivity Development of Carbon Nanotube Filled Electrically Conductive Pates During Curing Subaru Tsujimura, Masahiro Inoue, Gunma University / Japan
P13	Effect of Interfacial Chemistry on Electrical Reliability of Copper-filled Electrically Conductive Adhesives Daisuke Otajima, Yukari Matsunami, Masahiro Inoue, Gunma University / Japan
P14	High-Density Mounting Technologies for Printed Circuit Boards in Large-Capacity 3.5-inc HDDs Kota Tokuda, Keiko Kaji, Kiyokazu Ishizaki, Toshiba Electronic Devices & Storage / Japan
P15	Preliminary Study on Segmentation of Printed Wiring Board Images by use of Standard Deviation Filter and SVM Shogo Eda, Hotaka Takizawa, University of Tsukuba / Japan
P16	Reduction of Sheet Resistance and Improvement of Radiation Efficiency by Annealing Treatment of ITO Transparent Antenna Yuri Yamada, Fukuro Koshiji, Yoji Yasuda, Takayuki Uchida, Katsumi Yamada, Tokyo Polytechnic University / Japan
P17	Improved Inkjet Printing of Polydimethylsiloxane Droplets Ning Tu, Jeffery C.C. Lo, S.W. Ricky Lee, The Hong Kong University of Science and Technology / China
P18	A Study of Silicon-based Oxide Fluorescent Nanofibers by Electrospinning Yu-Ching Chao, Chi-Chieh Li, Cho-Liang Chung, I-SHOU University / Taiwan
P19	Materials Informatics Technology for Using Bio-Based Materials Tomio Iwasaki, Hitachi / Japan
P20	Analysis of Micro LED Chip After Laser Transfer Kensuke Inoue[1], Ryuichi Sugie[1], Takahiro Shibamori[1], Takanori Naijo[1], Ryo Endoh[1], Aki Ushiku[1], Eiji Mori[2], [1]Toray Research Center, [2]Toray Engineering / Japan

Thursday, May 12

	Room A	Room B	Room C	Room D	Room E
10:00 11:00	**Keynote Lecture:** The Hard-tech Evolution for The Future of Computing – Bits/Neurons/Qubits Shintaro Yamamichi, IBM Japan Chairs: K. Hasegawa, JSR, Y. Orii, Nagase				
11:00 11:10	**Break**				
11:10 12:50	**TA1: LED Session 2** Chairs: T. Aoki, IBM Japan, K. Yasuda, Osaka University **TA1-1 <Session Invited>** Eu-doped GaN-Based Red LED for Next-Generation Micro-LED Displays Yasufumi Fujiwara, Shuhei Ichikawa, Dolf Timmerman, Jun Tatebayashi, Osaka University / Japan **TA1-2<Session Invited>** Quantitative Evaluation of SARS-CoV-2 Inactivation Using a DUV-LEDs Takeo Minamikawa, Tokushima University / Japan **TA1-3<Session Invited>** *(50min.)* microLED Display Manufacturing by Fluidic Assembly Paul Schuele, eLUX / USA	**TB1: Interconnection -Solder related** Chairs: M. Aoyagi, Kumamoto University, T. Ohba, Tokyo Institute of Technology **TB1-1** Mechanical Properties of Sn-Bi-Ag low-temperature Pb-free Solders Chih-han Yang[1], Yu-chen Liu[1], Yuki Hirata[2], Hiroshi Nishikawa[2], Shih-kang Lin[1], [1]National Cheng Kung University / Tainan, [2]Osaka University / Japan **TB1-2** The Transient Liquid Phase Bonding by Ultrasonic-Assisted Soldering of Cu Contained Sn-58Bi Solder Paste for High-Temperature Packaging Applications Kyung-Yeol Kim, Eun Ha, Taejoon Noh, Seung-boo Jung, Sungkyunkwan University / Korea **TB1-3** A Study on Strengthening Mechanisms in Sn-0.7Cu via Microstructural Observation, Elemental Distribution, and Grain-Size Analysis Yu-An Shen, Yu-Hong Ouyang, Feng Chia University / Taiwan **TB1-4** Sn-Based Solder Design Using Machine Learning Approach Yu-chen Liu, Chih-han Yang, Shih-kang Lin, National Cheng Kung University / Taiwan	**TC1: Materials for Hybrid Bonding** Chairs: K. Hasegawa, JSR, T. Nonaka, Huawei Technologies Japan **TC1-1 <Session Invited>** A New Thin Adhesive for Cu-Cu Hybrid Bonding Yasuhisa Kayaba, Yuzo Nakamura, Wataru Okada, Satoshi Inada, Kazuo Kohmura, Mitsui Chemicals / Japan **TC1-2** Polishing Diamond Substrates using Gas Cluster Ion Beam (GCIB) Irradiation for the Direct Bonding to Power Devices Junsha Wang[1], Kai Takeuchi[1], Izumi Kataoka[2], Tadatomo Suga[1], [1]Meisei University, [2]IIPT / Japan **TC1-3** Low-Temperature Chemical Vapor Deposition of SiCN for Hybrid Bonding Koki Onishi[1], Tomoya Iwata[1], Hitoshi Habuka[1], Fuya Nagano[2,3], Fumihiro Inoue[1], [1]Yokohama National University / Japan, [2]Katholieke Universiteit Leuven, [3]imec / Belgium **TC1-4** Copper-Copper Ultrasonic Bonding by Using Blue Laser-Sintered Copper Nanoparticles S. Kishida[1], Y. Takada[1], Z. Yinan[1], J.-M. Song[1,2], K. Yasuda[1], [1]Osaka University / Japan, [2]National Chung Hsing University / Taiwan	**TD1: Emerging Technology 2** Chairs: A. Shigetou, NIMS, J. Mizuno, Waseda University **TD1-1** Stretchable Printed Circuit Board for Wireless Light-Sensing System Teppei Araki[1,2], Kou Li[3], Naoko Kurihira[1], Yuko Kasai[1,2], Daichi Suzuki[2], Satsuki Yasui[3], Yukio Kawano[3,4,5], Tsuyoshi Sekitani[1,2], [1]Osaka University, [2]National Institute of Advanced Industrial Science and Technology, [3]Tokyo Institute of Technology, [4]Chuo University, [5]National Institute of Informatics / Japan **TD1-2** Glove-Shaped Wearable Device Using Flexible MEMS Sensor Ayana Mizutani [1], Seiichi Takamatsu [1], Toshihiro Itoh [1], Zymelka Maria [1], Takeshi Kobayashi [2], [1]The University of Tokyo, [2]National Institute of Advanced Industrial Science and Technology / Japan **TD1-3** Strain-Induced Change in the Photonic Properties of Dumbbell-Shaped Graphene Nanoribbon Structures Jowesh Avisheik Goundar, Ken Suzuki, Hideo Miura, Tohoku University / Japan **TD1-4** Study on Wiring and Mounting Structures for Smart Suits with Actuators Takuma Takagi, Junya Nakagawa, Seiichi Takamatsu, Toshihiro Itoh, The University of Tokyo / Japan	**TE1: Thermal Management 1** Chairs: T. Hatakeyama, Toyama Prefectural University, H. Sakamoto, Huawei Technologies Japan **TE1-1** Efficient Heat Dissipation From β-Ga_2O_3 Film Directly Bonded on Diamond Substrate T. Matsumae, Y. Kurashima, H. Takagi, H. Umezawa, H. Watanabe, T. Ito, E. Higurashi, National Institute of Advanced Industrial Science and Technology / Japan **TE1-2** Subcooled Boiling in a Liquid Chamber for High Heat Flux Cooling Kodai Murabe, Noriyuki Unno, Kazuhisa Yuki, Koichi Suzuki, Sanyo-Onoda City University / Japan **TE1-3** Heat transfer Performance of Two-Phase Immersion Cooling by Breathing Phenomena with Different Pore Structures of Lotus Copper M. Terada[1], K. Yuki[1], N. Unno[1], R. Kibushi[2], T. Ogushi[3], M. Murakami[3], T. Numata[3], T. Ide[3], H. Nomura[4], [1]Sanyo-Onoda City University, [2]Toyama Prefectural University, [3]Lotus Thermal Solution, [4]Osaka University / Japan **TE1-4** Design Optimization of Fin Shape of Heat Sinks for Enhanced Cooling Performance Hikaru Igarashi, Masanori Hirota, Makoto Yoshida, Tomoyuki Miyashita, Waseda University / Japan
12:50 13:40	**Lunch Time**				
13:40 14:40	**Keynote Lecture:** System and Interconnect of the Supercomputer Fugaku Yuichiro Ajima, Fujitsu Chairs: Y. Orii, Nagase, S. Takyu, LINTEC				
14:40 14:50	**Break**				
14:50 16:30	**TA2: Heterogeneous Integration Roadmap-1** Chairs: Y. Orii, Nagase, K. J. Pearsall, EPS **TA2-1 <Session Invited>** Heterogeneous Integration Roadmap Overview William Chen[1], WR Bottoms[2], Ravi Mahajan[3], [1]HIR & ASE, [2]3MTS, [3]Intel / USA **TA2-2 <Session Invited>** High Performance Computing & Data Center Kanad Ghose[1], Dale Becker[2], [1]Binghamton University, [2]IBM / USA **TA2-3 <Session Invited>** Integrated Photonics Amr Almy[1], WR Bottoms[2], [1]University of Toronto / Canada, [2]3MTS / USA **TA2-4 <Session Invited>** Thermal Management Madhu Iyenger[1], Azmat Malik[2], Weihua Tang[3], [1]Google, [2]Acuventures, [3]Intel / USA	**TB2: Interconnection - Reliability** Chairs: T. Aoki, IBM Japan, F. Inoue, Yokohama National University **TB2-1** Terminal Reaction Behaviors in Micro Bumps: Comparison of Ti and Cr Adhesion Layers Chen-Wei Kao, Po-Yu Kung, Chih-Chia Chang, C. R. Kao, National Taiwan University / Taiwan **TB2-2** Bending Fatigue of Laser-sintered Copper Films on Plasma Bombarded PI Substrate Wei-Hang Cheng[1], Cing-Wun Jheng[1], Ming-Tsang Lee[2], Jenn-Ming Song[1], [1]National Chung Hsing University, [2]National Tsing Hua University / Taiwan **TB2-3** Reliability Evaluation on Ag Sintering Die Attach for SiC Power Modules During Long-term Thermal Aging/cycling Y. Liu[1], C. Chen[1], M. Ueshima[2], T. Sakamoto[2], T. Naoe[1], H. Nishikawa[1], K. Suganuma[1], [1]Osaka University, [2]Daicel / Japan **TB2-4** Environmental Reliability Evaluation of the Ultrasonic Bonded Metal with High-Temperature Test Taejoon Noh, Kyung-Yeol Kim, Dong-Gil Kang, Seung-Boo Jung, Sungkyunkwan University / Korea	**TC2: Novel Materials and Printed Electronics** Chairs: Y. Sato, AGC, S. Takyu, LINTEC **TC2-1 <Session Invited>** Process Informatics for Si and SiC Wafers Using AI/ML Kentaro Kutsukake, RIKEN / Japan **TC2-2** Novel Thermosetting Low Dk/Df Film and Its Performance Meiten Koh[1], Kazuyoshi Yoneda[1], Kazutaka Nakada[1], Shoya Sekiguchi[2], Shoko Mishima[2], Nobuhiro Ishikawa[2], Toshiyuki Ogata[2], [1]Taiyo Ink MFG., [2]Taiyo Holdings / Japan **TC2-3** Solderability Analysis of Inkjet-Printed Silver Pads with SAC Solder Joints Qian Jiang, Ning Tu, Jeffery C. C. Lo, S. W. Ricky Lee, The Hong Kong University of Science and Technology / China **TC2-4** Control of Mechanical and Electrical Properties of Stretchable Wires Printed with Conductive Pastes Composed of a Polyurethane-based Binder Masahiro Inoue, Hikaru Watanabe, Gunma University / Japan	**TD2: Emerging Technology 3** Chairs: M. Fujino, AIST, A. Shigetou, NIMS **TD2-1** Development of a Novel Biomaterial for Spinal Implant Purpose Kazuma Kishimoto[1], Shuichi Shoji[1], Jun Mizuno[1,2], [1]Waseda University, [2]Suwa University of Science / Japan **TD2-2** A New Halogen-Free Vapor Phase Coating for High Reliability & Protection of Electronics in Corrosive and Other Harsh Environments Rakesh Kumar, Frank Ke, Dustin England, Angie Summers, Lamar Young, Specialty Coating Systems / USA **TD2-3** Comparing Various Test Environments for Conformal Coating Evaluation P. Singh[1], L. Palmer[1], M. Smith[2], D. S. Citrin[3], A. Locquet[3], D. Hampannavar[4], H. Fu[5], M. M. Khaw[6], K-L Tan[6], C. Xu[7], J. Kaufman[7], M. Pudas[8], H. Schweigart[9], S. Strixner[9], M. R. Meier[9], C. Wang[10], H. Akbari[11], [1]IBM, [2]3M, [3]Georgia Tech / USA, [4]HP / India, [5]iNEMI / China, [6]Keysight / Malaysia, [7]Nokia / USA, [8]Picosun / Finland, [9]Zestron Europe / Germany, [10]Zestron China / China, [11]Schlumberger / France **TD2-4** Real-Time Monitoring and Diagnosis of Die Attach Structure Deterioration by Using Acoustic Emission Method Zheng Zhang[1], Aiji Suetake[1], Chuantong Chen[1], Osamu Katayama[2], Hiroshi Ishino[2], Takeshi Endo[2], Kazuhiko Sugiura[2], Kazuhiro Tsuruta[2], Katsuaki Suganuma[1], [1]Osaka University, [2]MIRISE Technologies / Japan	**TE2: Thermal Management 2** Chairs: H. Nishikawa, Osaka University, H. Sakamoto, Huawei Technologies Japan **TE2-1** Parameter Identification of Microprocessor's Heat Transfer Path and Voltage Regulator Efficiency K. Nishi, Ashikaga University / Japan **TE2-2** A Thermal Network Model of a Printed Circuit Board Considering the Thermal Contraction Flow Caused by Thermal Vias Masato Honda, Tomoyuki Hatakeyama, Shinji Nakagawa, Risako Kibushi, Masaru Ishizuka, Toyama Prefectural University / Japan **TE2-3** Evaluation of Amount of Heat Through Each Component of SiC Package Using CFD Analysis T. Konishi, R. Kibushi, T. Hatakeyama, S. Nakagawa, M. Ishizuka, Toyama Prefectural University / Japan
16:30 16:50	**Break**				
16:50 18:30	**TA3: Heterogeneous Integration Roadmap-2** Chairs: Y. Orii, Nagase, K. J. Pearsall, EPS **TA3-1 <Session Invited>** Supply Chain Kitty Pearsal[1], Paul Trio[2], [1]EPS President, [2]SEMI / USA **TA3-2 <Session Invited>** 2D - 3D & Interconnect Ravi Mahajan[1], Subramanian Iyer[2], Rajasekaran Swaminathan[3], [1]Intel, [2]UCLA, [3]AMD / USA **TA3-3 <Session Invited>** Package Co-Design Jose Shutt-Aine, University of Illinois / USA **TA3-4 <Session Invited>** Next Generation Ultra High Band and Low Loss Chiplet Interconnection Trends Toshihiko Nishio, SBR Technology / Japan	**TB3: Interconnection - Metalization/ Interposer** Chairs: F. Inoue, Yokohama National University, T. Ohba, Tokyo Institute of Technology **TB3-1** Partially filled TGV based on Double Sides Cu Conformal Electroplating Process for MEMS Vacuum Packaging Yixu Wang[1], Shenlin Ma[1], Xiaoqin Liu[2], Jiahao Zhao[2], [1]Xiamen University, [2]Tsinghua University / China **TB3-2** Characteristic Analysis of a Multi-chip Embedded Interposer Carrier Using a Wafer-Level Fan-Out Process Ching Kuan Lee[1], Wen-Hung Liu[1], Shu-Yi Chang[1], Ren-Shin Cheng[1], Yu-Min Lin[1,3], Hsiang-En Ding[1], Wei-Lan Chiu[1], Tao-Chih Chang[1], Chia-Hsin Lee[2], Chang-Chun Lee[3], [1]Industrial Technology Research Institute, [2]National Yang Ming Chiao Tung University, [3]National Tsing Hua University / Taiwan	**TC3: Metal Pastes** Chairs: H. Nishikawa, Osaka University, K. Yasuda, Osaka University **TC3-1** A Drop-In High-Temperature Lead-Free Solder Paste that Outperforms High-Pb Pastes in Power Discrete Applications Hongwen Zhang, Sze Pei Lim, Samuel Lytwynec, Tyler Richmond, Tybarius Harter, Indium / USA **TC3-2** Effect of Binders on the Performance of Copper Sintering Pastes Rodolfo Saccon, Alice Benin, Sri Krishna Bhogaraju, Gordon Elger, Technische Hochschule Ingolstadt / Germany **TC3-3** Effect of Sintering Temperature for Die-shear Strength of Non-pressure Sintering Copper Paste on Metal Plating Dai Ishikawa[1], Thomas Blank[2], Helge Wurst[2], Felix Steiner[2], Hideo Nakako[1], [1]Showa Denko Materials / Japan, [2]Karlsruhe Institute of Technology / Germany **TC3-4** Theoretical Study on Insulation Reliability of Copper Circuits on Silver-Seed Layer Hiroyuki Hagiwara[1], Shota Niibayashi[1], Norimasa Fukazawa[1], Wataru Fujikawa[1], Jun Shirakami[1], Yudai Yoshimura[1], Kaishi Miyazaki[2], Isao Shitanda[2], [1]DIC, [2]Tokyo University of Science / Japan	**TD3: Emerging Technology 4** Chairs: M. Fujino, AIST, S. Takyu, LINTEC **TD3-1** Development of MEMS Structures for Miniature Organic Rankine Cycle System M. Kaneko, K. Takeda, M. Aibara, F. Uchikoba, Nihon University / Japan **TD3-2** Artificial Spinal Cord IC with Pulse-Type Hardware Neural Networks Mimicking Function of The Spinal Cord Kenji Takeda, Mikihito Hayakawa, Motokuni Ishibashi, Takumi Ishihama, Minori Ishihara, Megumi Aibara, Minami Kaneko, Ken Saito, Fumio Uchikoba, Nihon University / Japan **TD3-3** Color Change Characteristics of Plasma Indicators by Vacuum Ultraviolet Irradiation Akihiro Shimizu[1], Shinichi Endo[1], Seisaku Ohshiro[2], [1]Ushio, [2]Sakura Color Products / Japan	**TE3: Hi-speed, Wireless, 5G & Beyond 5G** Chairs: M. Aoyagi, Kumamoto University, K. Hasegawa, JSR **TE3-1 <Session Invited>** RF Filter device & Module Packaging Technology Trend Tetsuya Onishi, Grand Joint Technology / Hong Kong **TE3-2** Electrical Performance Analysis for Bridge Die Package Solution Po Chih Pan, Fu Cheng Chu, Hung Chun Kuo, Ming Fong Jhong, Chih Yi Huang, Chen Chao Wang, Advanced Semiconductor Engineering / Taiwan **TE3-3** A Differentially Fed Dual-polarized Antenna-in-Package Based on Stacked TGV Interposers for 5G Application Gengtao Zhang[1], Haojie Chen[1], Yang Yang[1], Shenglin Ma[2], Yufeng Jin[1], [1]Shenzhen Graduate School of Peking University, [2]Xiamen University / China **TE3-4** Low Dk / Df Dielectric Material for 5G Applications Hirotatsu Ikarashi, Toshiyuki Sato, Shin Teraki, Masaki Yoshida, Hiroshi Ozaki, NAMICS / Japan

Friday, May 13

	Room A	Room B	Room C	Room D	Room E
10:00 11:00	**Keynote Lecture:** Ultrafast Laser Nanojoining and Its Applications in the Micro-nano Device Interconnection Guisheng Zou, Tsinghua University Chairs: A. Shigetou, NIMS, K. Yasuda, Osaka University				
11:10 12:50	**FA1: Pan Pacific Session** Chairs: C. E. Bauer, TechLead, S. Takyu, LINTEC **FA1-1 <Session Invited>** The Dirty Dozen - 12 Common Mistakes Made When Cleaning Circuit Assemblies Mike Konrad, Aqueous Technologies / USA **FA1-2 <Session Invited>** Can Tech Heal All that Ails Healthcare? Matthew K. Hudes, bdlBilologx / USA **FA1-3 <Session Invited>** TBD Charles E. Bauer, TechLead / USA	**FB1: Advanced Packaging 2** Chairs: Y. Sato, AGC, T. Ohba, Tokyo Institute of Technology **FB1-1** Advanced Under-Bump-Metal Scaling Solder Micro-Bump Interconnect Down to 10μm Pitch Takahiro Tanaka[1], Masaru Hatabe[1], Hironori Yamada[1], Zhaozhi Li[2], Yoshihiro Tomita[2], [1]Ishihara Chemical / Japan, [2]Intel / USA **FB1-2** Chemical Bonding Copper and Epoxy Through Self-Assembled Layer Shuaijie Zhao[1], Chuantong Chen[1], Minoru Ueshima[2], Motoharu Haga[2], Katsuaki Suganuma[1], [1]Osaka University, [2]Daicel / Japan **FB1-3** Reliability of Sintered Cu Joint on Cu Substrate with or without Ag Metallization Ming-chun Hsieh[1], Aiji Suetake[1], Zheng Zhang[1], Rieko Okumura[1], Kei Anai[2], Katsuaki Suganuma[1], [1]Osaka University, [2]Mitsui Mining & Smelting / Japan **FB1-4** High Thermal Stability Cu-to-Cu Joints Fabricated by Using Ga-based Paste Tzu-hsuan Huang[1], Yu-chen Liu[1], Cheng-en Cheng[2], Chien-wei Huang[1], Chih-han Yang[1], Chih-feng Lin[1], Cheng-chi Wang[2], Shih-kang Lin[1], [1]National Cheng Kung University, [2]Innolux / Taiwan	**FC1: Power Electronics 1** Chairs: M. Inoue, Gunma University, Y. Morikawa, ULVAC **FC1-1** Effect of Substrate Thinning and Junction-Side Cooling on Thermal Properties of Ga_2O_3 Diodes F. Wilhelmi[1,2], Y. Komatsu[3], S. Yamaguchi[4], Y. Uchida[4], R. Nemoto[4], A. Lindemann[1], [1]Magdeburg University, [2]ZF Group / Germany, [3]ZF Japan, [4]Novel Crystal Technology / Japan **FC1-2** Reliability of Silicone and Epoxy Resin Encapsulated Power Modules in HV-H3TRB Tests with Thin-Resin Coated Dice Felix Steiner[1], Helge Wurst[1], Benjamin Leyrer[1], Dai Ishikawa[2], Hideo Nakako[2], Thomas Blank[1], [1]Karlsruhe Institute of Technology / Germany, [2]Showa Denko Materials / Japan **FC1-3** Effect of Gate Pad Layout on Thermal Impedance of SiC-MOSFET F. Kato, S. Sato, H. Hozoji, M. Ikegawa, A. Sakai, K. Watanabe, S. Harada, H. Sato, National Institute of Advanced Industrial Science and Technology / Japan **FC1-4** Cu-Sintering on Organic Packages for Power Modules Hans-Jürgen Albrecht[1], Dirk Busse[1], Alexander Dahlbüdding[1], Aaron Hutzler[2], Olaf Rämer[3], Ichiro Ota[4], Hideo Nakako[4], Florian Pape[4], Dewi Nilasari[5], [1]budatec, [2]BondPulse, [3]Fraunhofer Gesellschaft / Germany, [4]Showa Denko Materials / Japan, [5]Isola Group / Germany	**FD1: Metallic and Inorganic Surface Investigation** Chairs: K. Hasegawa, JSR, A. Shigetou, NIMS **FD1-1** Electrochemical Analysis of Initial Oxide Layers on Copper Surface Chi-Hsuan Lin[1], Wei-Ting Chen[1], Yu-Cheng Ke[1], Jenn-Ming Song[1,2], Kiyokazu Yasuda[2], [1]National Chung Hsing University / Taiwan, [2]Osaka University / Japan **FD1-2** Mechanical and Interfacial Properties Characterization of Physical Vapor Deposited Metallic Films After Rapid Thermal Annealing for Packaging Applications Kuo-Shen Chen, Tzu-Hui Yang, Yu-Ching Lee, National Cheng-Kung University / Tainan **FD1-3** Platinum Interconnections for Harsh Environment Applications Using Atmospheric Pressure Sputtering J. Bickel[1,3], M. Schneider-Ramelow[2,3], K.-D. Lang[2,3], R. Gesche[4], H.-D. Ngo[1,2], [1]University of Applied Sciences, [2]Fraunhofer IZM, [3]Technische Universitat Berlin, [4]Beaplas / Germany **FD1-4** Post Deposition Treatment of Thin Film HfO_2 Dielectric for Increased Performance in MIM Capacitors Alaric-Yohei Kawai Pétillot, Shuichi Shoji, Jun Mizuno, Waseda University / Japan	**FE1: Design, Modeling, and Reliability 1** Chairs: M. Aoyagi, Kumamoto University, H. Nishikawa, Osaka University **FE1-1** Package Signal Propagation Delay Characterization for DDR5 Shinyoung Park[1], Vinod Arjun Huddar[2], [1]Rambus / Korea, [2]Rambus / India **FE1-2** PCB Channel Optimization Techniques for High-Speed Differential Interconnects Li Wern Chew, Cheng Yu Tan, Ming Dak Chai, Yun Rou Lim, Intel Microelectronics (M) / Malaysia **FE1-3** Dual Referencing Simulation Approach on High Speed Interconnects USB3.2 (10Gbps) Li Wern Chew, Paik Wen Ong, Intel Microelectronics (M) / Malaysia **FE1-4** Simultaneous Switching Noise Simulation in VDD-Terminated DDR5 Shinyoung Park[1], Vinod Arjun Huddar[2], [1]Rambus / Korea, [2]Rambus / India
12:50 13:40	**Lunch Time**				
13:40 15:20	**FA2: IMPACT Session** Chairs: J. Mizuno, Waseda University, A. Shigetou, NIMS **FA2-1 <Session Invited>** Emerging Technology for Low Temperature Cu Bond Albert T. Wu, National Central University / Taiwan **FA2-2 <Session Invited>** Simulation Prediction and Experimental Demonstration of Process-Induced Warpage for RDL-First Fan-Out Panel-Level Packaging Chang-Chun Lee, National Tsing Hua University / Taiwan **FA2-3 <Session Invited>** Advanced Materials to Facilitate Hybrid Bonding Technology Alvin Lee, Brewer Science / Taiwan **FA2-4 <Session Invited>** Low Temperature Cu-Cu Hybrid Bonding: The Evolution from 400°C to Near Room Temperature Kuan-Neng Chen, National Yang Ming Chiao Tung University / Taiwan	**FB2: Advanced Packaging 3** Chairs: M. Aoyagi, Kumamoto University, T. Ohba, Tokyo Institute of Technology **FB2-1** Cost and Yield Analysis of Die-to-Wafer Hybrid Bonding Amy Palesko Lujan, SavanSys Solutions / USA **FB2-2** Confined IMCs for low temperature and high throughput D2W bonding Jaber Derakhshandeh, Douglas Charles La Tulipe, Giovanni Capuz, Vladimir Cherman, Carine Gerets, Tom Cochet, Ehsan Shafahian, Inge De Preter, Geraldine Jamieson, Tomas Webers, Eric Beyne, Gerald Beyer, Andy Miller, imec / Belgium **FB2-3** Fundamental Study of IMC Grains at Low Anneal Temperature Carine Gerets, Jaber Derakhshandeh, Ehsan Shafahian, Tom Cochet, Douglas Charles La Tulipe, Gerald Beyer, Andy Miller, Eric Beyne, imec / Belgium **FB2-4** Low Temperature Cu/SiO_2 Hybrid Bonding Fabricated by 2-Step Process Jia-Juen Ong[1], Wei-Lan Chiu[2], Ou-Hsiang Lee[2], Hsiang-Hung Chang[2], Chih Chen[1], [1]National Yang Ming Chiao Tung University, [2] Industrial Technology Research Institute / Taiwan	**FC2: Power Electronics 2** Chairs: M. Inoue, Gunma University, S. Takyu, LINTEC **FC2-1** Design Optimization of Power Module Structure for Inductance Reduction Masaki Akimoto, Makoto Yoshida, Tomoyuki Miyashita, Waseda University / Japan **FC2-2** Design Consideration of 3D Power SoC Using Virtual Prototyping Ayano Furue, Sinei Miyasaka, Yusuke Ogushi, Riki Yamanishi, Satoshi Matsumoto, Kyushu Institute of Technology / Japan **FC2-3** Multi-Objective Design Optimization of Power Module Performances Aiki Nakamura, Makoto Yoshida, Tomoyuki Miyashita, Waseda University / Japan **FC2-4** Estimation of Switching Transients and Power Losses of SiC-based Power MOSFET Inverter Using Electromagnetic-circuit Co-simulation During Six-step Commutation Yan-Cheng Liu[1,2], Hsien-Chie Cheng[1], Hsin-Han Lin[2], Shian-Chiau Chiou[2], Sheng-Tai Wu[2], Tao-Chih Chang[2], [1]Feng Chia University, [2]Industrial Technology Research Institute / Taiwan	**FD2: Solder Materials** Chairs: T. Aoki, IBM Japan, K. Yasuda, Osaka University **FD2-1** Solder/solder Joint for Low Temperature Reflow by Multi Plating Method Yoichi Maruo, Daisuke Hashimoto, Masayuki Kiso, Katsuhisa Tanabe, Yukinori Oda, Shigeo Hashimoto, C. Uyemura / Japan **FD2-2** Comparison of the Mechanical Properties of Conventional Pb-Free Solders and Eutectic Sn-Bi Solder Qichao Hao[1], Xin Fu Tan[1], Stuart D. McDonald[1], Keith Sweatman[1,2], Takatoshi Nishimura[2], Tetsuro Nishimura[2], Kazuhiro Nogita[1], [1]The University of Queensland / Australia, [2]Nihon Superior / Japan **FD2-3** Maximum Fluidity Length of Commercial Solder Alloys and the Effects of Ni and Co in Sn-0.7wt%Cu Solder Alloys Kazuhiro Nogita[1], Jonathan Read[1], Stuart D. McDonald[1], Dong Xu[1], Tetsuro Nishimura[2], [1]The University of Queensland / Australia, [2]Nihon Superior / Japan **FD2-4** Investigation of the Effects of Surface Finish and Reflow Conditions on the Microstructure and Mechanical Properties of Sn-Based Solders Flora Somidin[1, 2], Tetsuya Akaiwa[3], Stuart D. McDonald[2], Tetsuro Nishimura[3], Xiaozhou Ye[2], Anthony Smith[2], Jiye Zhou[2], Kazuhiro Nogita[2], [1]The University of Queensland / Australia, [2]Universiti Malaysia Perlis / Malaysia, [3]Nihon Superior / Japan	**FE2: Design, Modeling, and Reliability 2** Chairs: H. Nishikawa, Osaka University, H. Sakamoto, Huawei Technologies Japan **FE2-1** Evaluation on Process-induced Warpage of Novel Fan-Out Wafer Level Packaging Using TSV Interposer-First Technology C. F. Yu, Y. W. Huang, T. Y. Ouyang, S. F. Cheng, C. C. Hsiao, Industrial Technology Research Institute / Taiwan **FE2-2** Warpage and Stress Simulation Analysis of Substrate on Substrate Antenna in Package (AiP) for 5G CPE Application Ken Zhang, Vito Lin, David Lai, Yu-Po Wang, Siliconware Precision Industries / Taiwan **FE2-3** 3D X-Ray Microscope Applied on Fine-Line Inspection of Fan-Out Packages Cheng-Hsin Liu, Yu-Jen Chang, Yu-Hsiang Hsiao, Yi-Sheng Lin, Advanced Semiconductor Engineering / Taiwan **FE2-4** The Shift-Left Die Strength Analysis Method for Memory Die Products Vance Liu[1], Yi-Chen Wang[1], Cyane Tsai[1], Jeremy Chen[1], Chong Leong Gan[1], Raj Bansal[2], Hem Takiar[2], [1]Micron Technology / Taiwan, [2]Micron Technology / USA
15:20 15:40	**Break**				
15:40 17:20	**FA3: Advanced Package Trend & Material** Chairs: T. Nonaka, Huawei Technologies Japan, Y. Sato, AGC **FA3-1 <Session Invited>** New Developments in High Performance Packaging Jan Vardaman, TechSearch International / USA **FA3-2** Advanced Low Dk and High-Density Photo-Imageable Dielectrics for RDL Interposer Tetsuya Nemoto, Junichi Ooto, Hirokazu Ito, Koichi Hasegawa, JSR / Japan **FA3-3 <Session Invited>** Key Performance of Negative-Tone Photosensitive Insulating Material for Advanced package Shunsuke Kitajima, Kenta Yamazaki, FUJI FILM / Japan **FA3-4 <Session Invited>** Development of Photoresist & Temporary Adhesive for Fan-out Packaging Koki Tamura, TOKYO OHKA KOGYO / Japan	**FB3: Advanced Packaging 4** Chairs: T. Aoki, IBM Japan, F. Inoue, Yokohama National University **FB3-1** Manufacture of High-Strength Differential Pressure Sensor Using SiCer Technology C. Kleinholz[1], A. Cyriax[2], M. Hintz[2], J. Muller[1], T. Ortlepp[2], [1]Technische Universitat Ilmenau, [2]CiS Forschungsinstitut fur Mikrosensorik / Germany **FB3-2** LTCC Patch Antenna Array for 5G Mobile Applications Featuring Embedded Air Cavities A. Schulz, K. Blau, J. Muller, Technische Universitat Ilmenau / Germany **FB3-3** Impact of Backside Defects on Device Characteristics of Ultra-Thin DRAMs with 3-5 μm Si Wafers for Bumpless Build Cube (BBCube) Application Z. Chen[1,2], N. Araki[1,3], Y. Kim[1,2], T. Fukuda[1], K. Sakui[1], T. Nakamura[1], T. Kobayashi[4], T. Obara[4], T. Ohba[1], [1]Tokyo Institute of Technology, [2]DISCO, [3]DAICEL, [4]Micron Memory Japan / Japan **FB3-4** Research on Polynomial Regression Machine Learning Model with K-Means Algorithm for Predicting Advanced Packaging Reliability H. H. Liao, K. N. Chiang, National Tsing Hua University / Taiwan	**FC3: Optelectronics** Chairs: T. Ishigure, Keio University, Y. Morikawa, ULVAC **FC3-1 <Session Invited>** 90°-Bent Graded-Index Core Polymer Waveguide for High-Bandwidth-Density VCSEL-Based Optical Engine Naohiro Kohmu[1,2], Maho Ishii[2], Ryosuke Hatai[2], Takaaki Ishigure[2], [1]Hitachi, [2]Keio University / Japan **FC3-2** FPGA-driven High Density Photonic Reservoir Computing Hidetoshi Numata[1], Jean Benoit Heroux[2], Toshiyuki Yamane[1], Daiju Nakano[1], [1]IBM Research / Japan, [2]IBM Systems / Canada **FC3-3 <Session Invited>** Hollow-Core Fiber Connector Ryo Nagase[1], Hideki Kamitsuna[2], Toshiki Maejima[1], Ryuta Matsuda[1], [1]Chiba Institute of Technology, [2]YOKOWO / Japan	**FD3: Nano-fibers** Chairs: A. Shigetou, NIMS, K. Yasuda, Osaka University **FD3-1** The Effect of Humidity on the Morphological Evolution of β-Chitin Prepared by Electrospinning C. Y. Tsai, C. L. Chung, I-SHOU University / Taiwan **FD3-2** Effect of Wetting Agent on Morphology of Cellulose Nano-Fiber Composited Nickel Electroless Plating Film M. Iioka, W. Kawanabe, I. Shohji, T. Kobayashi, Gunma University / Japan **FD3-3** Preparation of Ti/Si-Ti Base Nanofibers by Electrospinning and Heat Treatment Y. M. Lin, Y. C. Chao, C. L. Chung, I-Shou University / Taiwan **FD3-4** The Influence of Lithium Source and Excess Lithium Addition on the Morphology of Electrospun Li_2SrSiO_4: Eu^{2+} Luminescent Fibers Wei-Hao Chen, Cho-Liang Chung, Jyung-Dong Lin, Ching-Yun Shih, I-Shou University / Taiwan	**FE3: Design, Modeling, and Reliability 3** Chairs: M. Fujino, AIST, H. Sakamoto, Huawei Technologies Japan **FE3-1** Electromigration Comparison Study of Sn, Ag, and Cu Stripes Fabricated by Electron-Beam Physical Vapor Deposition Zhi Jin, Fupeng Huo, Xunda Liu, Hiroshi Nishikawa, Osaka University / Japan **FE3-2** The Blech Effect Revisited – an in-situ Study Shih-kang Lin, Yu-chen Liu, Kuan-hsueh Lin, National Cheng Kung University / Taiwan **FE3-3** Thermomechanical Analysis on Stress Mitigation of FCPBGA with Low Melting Temperature Solder and Low Elastic Modulus Cu Pillar Takashi Hisada, Sayuri Kohara, Chinami Marushima, Toyohiro Aoki, IBM Research / Japan