Advance Program

ICEP 2014

International Conference on Electronics Packaging

April 23-25, 2014

Toyama International Convention Center
Toyama, Japan

Sponsored by JIEP, IEEE CPMT Society Japan Chapter and iMAPS

We welcome you to the International Conference on Electronics Packaging (ICEP) 2014, the largest and premier international conference on electronics packaging in Japan, to be held from April 23rd to 25th at the Toyama International Conference Center in Toyama, Japan.

The papers in the ICEP2014 conference cover a wide range of the "JISSO" technologies. Major topics are Advanced Packaging, Substrate and Interposer, 2.5D and 3DIC Packaging, Design/Modeling/Reliability, Thermal Management, Materials and Processes, Printed Electronics, N-MEMS, Optoelectronics, Power Devices, Automotive Technology, and Medical Device. The technical program will include five keynote lectures. More than 160 papers regarding JISSO technologies will be presented by promising researchers from more than 10 countries.

We, the organization committee, are confident that the conference will provide excellent opportunities for participants to obtain practical information of technologies and to develop global network.

Toyama Prefecture is blessed with a beautiful natural environment. Toyama has beautiful mountains and a bay. Toyama bay produce delicious seafood. You can enjoy not only the conference but also many kinds of foods. In addition to the conference, we prepare a wonderful sightseeing as an excursion event. You can enjoy the big snow wall in Tateyama Kurobe Alpine Route. People in Toyama are also preparing to welcome all participants with hospitality.

I would like to express my special thanks to all the ICEP2014 Organizing Committee members for their enthusiastic work and collaboration, to The Japan Institute of Electrics Packaging (JIEP) staff members for their continuous supports, and to many international friends for making this conference successful. I sincerely hope you will have fruitful discussion, and wish you all a pleasant and enjoyable stay in Toyama. We are looking forward to seeing you at the conference.

Masaru Ishizuka
General Chairperson of ICEP2014 Committee

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The Japan Institute of Electronics Packaging (JIEP)
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Contact:
Secretariat of ICEP 2014
JIEP (The Japan Institute of Electronics Packaging),
3-12-2 Nishiogi-kita, Suginami-ku Tokyo 167-0042, Japan
http://www.jiep.or.jp/icep/

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■Keynote Lectures

Implementation of High-Volume Genomic Analyses by Microfluidics/Microchip Technologies: Towards Integrative Medical Sciences for Preventive Medicine

Osamu Ohara
Deputy Director
Kazusa DNA Research Institute;
Group Director
Laboratory for Integrative Genomics
RIKEN Center for Integrative Medical Sciences

More than ten years have already passed since the human genome sequence first became publicly available. After taking this monumental step in the history of humankind, DNA sequencing technologies have kept advancing without decreasing its pace; it is now expected to make it possible to analyze the genetic information consisting of 1 terabases (corresponding to 300 x human genome) in a week in the very near future. In this regard, it should be emphasized that such ultra-high throughputs of DNA sequencing technologies could not be realized without integration of microfluidics/microchip technologies. In other words, the high-volume genomic analyses solely depend on massively parallel micro-reactions in an ultra-low volume. As well demonstrated by this fact, the microfluidics/microchip technologies have considerably increased their significance and are currently indispensable in the field of medical sciences as well as general biology. In my personal perspectives, the microfluidics/microchip technologies would be absolutely invaluable to genomic analyses toward preventive medicine based on personal genomic information. However, because there still remain many missing tools toward this end, closer and tighter collaboration among multidisciplinary researchers are strongly required to address the remaining problems. In particular, I would put special emphasis on single-cell analysis because it is one of the hottest technology fields in medical sciences.

In this lecture, I would like to offer some future perspectives toward preventive medicine on the basis of my 20-year experiences in genomics, starting from the history of biophysics, molecular biology, and genomics.

■Biography

1977-1983 M.S. in 1979 and Ph.D. in 1983, Department of Biophysics, Faculty of Science, Kyoto University
1986-1988 Post-doctoral fellow with Prof. Walter Gilbert at Harvard University (The Biological Laboratories)
1992-1994 Group leader in Shionogi Research Laboratories, Shionogi & Co., Ltd.
1994-1999 Head of Laboratory of DNA Technology at Kazusa DNA Research Institute. Organized the Kazusa Human cDNA (KIAA) Project.
1999- Department Head of Human Genome Research in Kazusa DNA Research Institute.
2001- Group director of Laboratory for Immunogenomics, Research Center for Allergy and Immunology, RIKEN Yokohama Institute
2009- Deputy Director of Kazusa DNA Research Institute
2013- Group Director of Laboratory for Integrative Genomics, RIKEN Center for Integrative Medical Sciences (IMS-RCAI) Currently serving as a Visiting Professor at Chiba University, Tokyo University of Science and Yokohama City University.

Gen-3 Embedded Cooling: Completing the Inward Migration of Thermal Packaging

Avram Bar-Cohen
DARPA-MTO

The increased 2D and 3D integration density of electronic components and subsystems has exacerbated the thermal management challenges facing electronic system developers. The sequential conductive and interfacial thermal resistances, associated with the prevailing use of attached microcoolers has resulted in only limited improvements in the overall junction-to-ambient thermal resistance of high-performance electronic systems during the past decade. These limitations of Commercial Off-The-Shelf (COTS) thermal packaging are leading to a growing number of products that fail to realize the inherent capability of their continuously improving materials and architecture and thermal management hardware today accounts for a large fraction of the volume, weight, and cost of electronic systems.

To overcome these limitations and remove a significant barrier to continued Moore's Law progression in electronic components and systems, it is essential to implement aggressive thermal management techniques that directly cool the heat generation sites in the chip, substrate, and/or package. The development and implementation of such "Gen-3" embedded thermal management technology, combining intrachip microfluidics with high conductivity thermal interconnects, promises to enable compact microsystems with unprecedented performance. This Keynote lecture will address the motivation, opportunities, current state-of-the-art, and research challenges associated with this embedded cooling thermal management paradigm.

■Biography

Dr. Avram Bar-Cohen is an internationally recognized leader in the development and application of thermal science and engineering to microelectronic and optoelectronic systems. In his role at the Defense Advanced Projects Agency (DARPA) and through his professional service in IEEE and ASME, he has helped to define and guide the field of thermal packaging and facilitated the emergence of high reliability consumer electronics, computing platforms, and microwave communication and radar systems. He is an Honorary member of ASME, and Fellow of IEEE, as well as Distinguished University Professor in the Department of Mechanical Engineering at the University of Maryland. From 2001 to 2010 he served as the Chair of Mechanical Engineering at Maryland and is currently on leave to DARPA. Bar-Cohen was the founding chair of the IEEE Intersociety Conference on Thermal Management in Electronic Equipment (ITHERM) in 1988 and was recognized with the IEEE CPMT Society's Outstanding Sustained Technical Contributions Award (2002), the ASME/IEEE ITHERM Achievement Award (1998) and the THERMI Award from the IEEE/Semi-Therm Conference (1997).

Bar-Cohen has co-authored *Dielectric Liquid Cooling of Immersed Components* (WSPC, 2012), *Design and Analysis of Heat Sinks* (Wiley, 1995), and *Thermal Analysis and Control of Electronic Equipment* (McGraw-Hill, 1983). He has co-edited 16 books in this field and is the Editor-in-Chief of the *Encyclopedia of Thermal Packaging* (WSPC, 2012). He has authored/co-authored some 400 journal papers, refereed proceedings papers, and chapters in books; has delivered 65 keynote, plenary and invited lectures at major technical conferences and institutions, and he holds 8 US and 3 Japanese patents. He has advised to completion 65 PhD and master's students at the University of Maryland, the University of Minnesota and the Ben Gurion University (Beer Sheva, Israel).

April 23

	Room A (Main Hall)	Room B (201)	Room C (202)	Room D (203)	Room E (204)
13:00 13:25	**Opening Ceremony (Room A)**				
13:25 14:25	**Keynote (Room A)** Development of Autonomous Driving Technologies and its Future Ryota Shirato, Nissan Motor Company				
14:25 14:35	**Break**				
14:35 15:35	**Keynote (Room A)** Hybrid Memory Cube: The New Standard for Memory Performance Scott Graham, Micron Technology, Inc.				
15:35 16:35	**Keynote (Room A)** Introducing the Latest 3D Printing Technology and Applications Nave Rachman, Stratasys Asia Pacific & Japan				
16:35 16:45	**Break**				
16:45 18:00	**WA1: Automotive** **WA1-1** Direct Impingement Cooling of LED by Piezo Fan -LED Cooling by Piezo Fan- Randeep Singh, Ahmad Jalilvand, Kazuhiko Goto, Yuji Saito, Masataka Mochizuki, Koichi Mashiko, Fujikura / Japan **WA1-2** Molding Technology for Highly Integrated Transmission Control Unit Tetsuto Yamagishi, Takumi Nomura, Kengo Oka, Kazuya Hirasawa, DENSO / Japan **WA1-3** Lead-free Solders for Solar and Electric Vehicles -Reflections on the World Solar Challenge 2013 in "Arrow1"- Kazuhiro Nogita[1,2], James Kennedy[2,3], Cameron Tuesley[2], Takatoshi Nishimura[4], [1]The University of Queensland, [2]Tritium Pty, [3]TeamArrow Solar Car Team, [4]Nihon Superior / Australia	**WB1: Materials and Processes-1** **WB1-1** Effect of Surface Damage on Strength of Silicon Wafer for Solar Cells Daisuke Echizenya[1,2], Katsuhiko Sasaki[2], [1]Mitsubishi Electric, [2]Hokkaido University / Japan **WB1-2** Application of Pin-on-Elastic-Foundation Test to Evaluating Silicon Die Strength during Pick-and-Place Process Ming-Yi Tsai[1], P. S. Huang[1], Jackson Chen[2], [1]Chang Gung University, [2]ASE Group / Taiwan **WB1-3** High Productivity Sputtering System for Seed Layer of Printed Circuit Board Tetsushi Fujinaga, ULVAC / Japan	**WC1: Advanced Packaging-1** **WC1-1** Newly Developed Ultra Thin Fan-Out Wafer Level Package for PoP Usage Haruo Shimamoto[2], Kyoko Soga[1], Katsuya Takemura[1], Hideyoshi Yanagisawa[1], Satoshi Asai[1], Kazunori Kondo[1], Michihiro Sugo[1], Hideto Kato[1], Yoshio Matsuda[2], [1]Shin-Etsu Chemical, [2]Wave Technology / Japan **WC1-2** Wafer Level Package by using Post Dicing Process Noriyuki Fujimori, Takatoshi Igarashi, Takahiro Shimohata, Takuro Suyama, Kazuhiro Yoshida, Yusuke Nakagawa, Tsutomu Nakamura, Olympus / Japan **WC1-3** Process Integration for Backside Illuminated Image Sensor Stacked with Analog-to-Digital Conversion Chip H. H. Chang, C. H. Chien, Y. C. Lee, S. M. Lee, J. C. Wang, Y. W. Huang, C. J. Zhan, Z. C. Hsiao, C. H. Lin, T. S. Chen, C. T. Ko, W. C. Lo, M. J. Kao, Industrial Technology Research Institute / Taiwan	**WD1: Substrates and Interposers** **WD1-1** Ultrathin 4-layer Flexible Printed Circuits (FPC) Fabricated by Molecular Bonding Technology Fong-Ru Lin[1], Daigo Suzuki[1], Akihiko Happoya[1], Manabu Miyawaki[2], Kouichi Kamiyama[2], Syuukichi Takii[2], Takahiro Kudo[3], Kunio Mori[3], [1]Toshiba, [2]Meiko Electronics, [3]Sulfur Chemical Institute / Japan **WD1-2** Advanced Vertical Interconnect Tech with HDI and Conductive Paste Tsuyoshi Tsunoda, Dai Nippon Printing / Japan **WD1-3** Electrical Assessment of Chip to Chip Connection for Ultra High Density Organic Interposer Keishi Okamoto, Hiroyuki Mori, Yasumitsu Orii, IBM Research -Tokyo / Japan	**WE1: Thermal Management-1** **WE1-1** The Effect of Thermal Conductivity of Board on Optimal Laser Condition to Melt the Solder in Laser Soldering Dai Imai, Risako Kibushi, Tomoyuki Hatakeyama, Shinji Nakagawa, Toyama Prefectural University / Japan **WE1-2** Basic Study on Flow and Heat Transfer Performance of Pulsating Air Flow for Application to Electronics Cooling Mutsuki Kichima, Takashi Fukue, Koichi Hirose, Iwate University / Japan **WE1-3** Evaluation of Cooling Performance of a Piezoelectric Micro Blower in Narrow Flow Passage Takashi Fukue[1], Yoshiki Matsuura[1], Koichi Hirose[1], Hirotoshi Terao[2], [1]Iwate University, [2]ALPS Electronic / Japan

	Room A (Main Hall)	Room B (201)	Room C (202)	Room D (203)	Room E (204)
9:00 10:40	**TA1: 3DIC Packaging-1** **TA1-1** A New Temporary Bonding Technology with Spin-on Glass and Hydrogenated Amorphous Si for 3D LSIs Hideto Hashiguchi, Takafumi Fukushima, Kino Hisashi, Kang-Wook Lee, Tetsu Tanaka, Mitsumasa Koyanagi, Tohoku University / Japan **TA1-2** Effects of Ar Plasma and Ar Fast Atom Bombardment (FAB) Treatments on Cu/Polymer Hybrid Surface for Wafer Bonding Ran He, Tadatomo Suga, The University of Tokyo / Japan **TA1-3** Process Integration of 3D Stacking for Backside Illuminated Image Sensor Zhi-Cheng Hsiao, Cheng-Ta Ko, Hsiang-Hung Chang, Huan-Chun Fu, Chao-Kai Hsu, Shu-Man Li, Wen-Li Tsai, Wen-Wei Shen, Jen-Chun Wang, Yu-Min Lin, Wei-Chung Lo, Industrial Technology Research Institute / Taiwan **TA1-4** Novel 3-Dimensional Package Structure with Micro-Pins and Electronic Components Nau Negishi, Mikio Nakamura, Takanori Sekido, Olympus / Japan	**TB1: Materials and Processes-2** **TB1-1** Flip Chip Assembly with Wafer Level NCF Yuta Kobayashi, Toshihisa Nonaka, Toray Industries / Japan **TB1-2** Novel Low Temperature Curable Photo-Sensitive Insulator Tomohiko Sakurai, Hikaru Mizuno, Kenji Okamoto, Katsumi Inomata, JSR / Japan **TB1-3** Development of Fine Pitch Negative Tone Resist for Electro-Plating Hisanori Akimaru, Hidefumi Ishikawa, Hirokazu Sakakibara, Shingo Naruse, Kenji Okamoto, Katsumi Inomata, JSR / Japan **TB1-4** A Novel Study of Mold Compound Effect Towards Board-Level Solder Joint Reliability & Process Integration for Power Leadless Package Hui Teng Wang, Wei Hing Tan, Choke Fei Cheong, INFINEON TECHNOLOGY (M) / Malaysia	**TC1: iNEMI Session** **TC1-1 <Session Invited>** Develop Environmentally Sustainable Electronics Bill Bader, Haley Fu, International Electronics Manufacturing Initiative / USA **TC1-2** iNEMI Packaging Technology Roadmap Highlights Masahiro Tsuriya, Chuck Richardson, Bill Bader, International Electronics Manufacturing Initiative / USA **TC1-3** High-voltage DC–DC Power Module Development Bill Bader[1], Randhir Malik[2], David Mohr[2], Mark Schaffer[1], Haley Fu[1], [1]International Electronics Manufacturing Initiative, [2]International Business Machines, [3]Hewlett-Packard / USA **TC1-4** Creep Corrosion Test in Flowers of Sulfur Chamber Haley Fu[1], Prabjit Singh[2], Jing Zhang[2], [1]International Electronics Manufacturing Initiatives, [2]IBM / USA	**TD1: Printed Electronics-1** **TD1-1 <Session Invited> (50min.)** Imperceptible Organic Electronic Systems for Bio-Medical Applications Tsuyoshi Sekitani, The University of Tokyo / Japan **TD1-2 <Session Invited>** Automated Manufacturing Line of All-Printed TFT Array Flexible Film Shinichi Nishi, Toshihide Kamata, Japan Advanced Printed Electronics Technology Research Association / Japan **TD1-3 <Session Invited>** Nanosilver Ink Sintarable at Low Temperature Toshitsugu Terakawa, Hiroyoshi Koduma, Yuki Iguchi, Kazuki Okamoto, Daicel / Japan	**TE1: Power Devices** **TE1-1** Thermoelectric Energy Harvesting Characteristics of Thin Film Devices Processed with Flip Chip Bonding Process Kwang-Jae Shin, Jae-Hwan Kim, Jung-Yeol Choi, Tae Sung Oh, Hongik University / Korea **TE1-2** Risk of PV Fire Caused by Solder Bond Failure -Ag Dissolution into Solder in the Interconnection between Ag Electrode and Cu Ribbon- Uichi Itoh[1], Manabu Yoshida[1], Hideo Tokuhisa[1], Isao Sumita[2], [1]AIST, [2]Sumita / Japan **TE1-3** Comparative Analysis of the Process Window of Aluminum and Copper Wire Bonding for Power Electronics Applications Christopher Kaestle, Joerg Franke, Friedrich-Alexander-University of Erlangen-Nuremberg / Germany **TE1-4** Direct Bonding of SiC by the Surface Activated Bonding Tadatomo Suga[1], Fenwen Mu[1], Masahisa Fujino[1], Yoshikazu Takahashi[2], Haruo Nakazawa[2], Kennichi Iguchi[2], [1]The University of Tokyo, [2]Fuji Electric / Japan
10:40 10:50	**Break**				
10:50 11:50	**Keynote (Room A)** Implementation of High-Volume Genomic Analyses by Microfluidics/Microchip Technologies: Towards Integrative Medical Sciences for Preventive Medicine Osamu Ohara, Kazusa DNA Research Institute; RIKEN Center for Integrative Medical Sciences				
11:50 12:50	**Lunch**				
12:50 14:30	**TA2: Taiwan Session** **TA2-1 <Session Invited>** Advanced 3D Technology Update in Taiwan Shen-Li Fu, I-Shou University / Taiwan **TA2-2 <Session Invited> (Tentative)** Heterogeous 3D Systems Integration CP Hung, ASE / Taiwan **TA2-3** Electromigration and Thermomigration of Pb-free Microbumps in Three-dimensional Integrated Circuits Packaging Fan-Yi Ouyang, Wei-Cheng Jhu, Hao Hsu, National Tsing Hua University / Taiwan **TA2-4** Characteristics of 600 V / 450 A IGBT Power Module Assembled by Ag Sintering Technology Jing-Yao Chang, Su-Yu Fun, Fang-Jun Leu, Kuo-Shu Kao, Tao-Chih Chang, Industrial Technology Research Institute / Taiwan	**TB2: Materials and Processes-3** **TB2-1** Tin Pest in Lead-Free Solders? -Fundamental Studies on the Effect of Impurities on Phase Transformation Kinetics- Guang Zeng[1], Stuart McDonald[1], Keith Sweatman[2], Kazuhiro Nogita[1], [1]The University of Queensland / Australia, [2]Nihon Superior / Japan **TB2-2** Phase Transformations of Alloyed and Core-Shell Metallic Nanoparticles for Interconnect Applications Jenn-Ming Song, National Chung Hsing University / Taiwan **TB2-3** Effect of Isothermal Aging on the Growth Behavior of Cu/Al Intermetallic Compounds Omid Mokhtari[1], Min-Su Kim[1], Hiroshi Nishikawa[1], Fumiyoshi Kawashiro[2], Satoshi Itou[2], Takehiko Maeda[2], Tetsuya Hirose[2], Takaki Eto[2], [1]Osaka University, [2]Renesas Electronics / Japan **TB2-4** Effect of Nickel addition on Intermetallic Compound Properties of Sn-Ag-Cu Solder Alloy Siti Rabiatull Aisha Idris, Zetty Akhtar Abd Malek, Hardinnawirda Kahar, University Malaysia Pahang / Malaysia	**TC2: Advanced Packaging-2** **TC2-1** Processing and Characterization of Circuit Metallization on a Stretchable Polymer Substrate for Stretchable Electronic Packaging Dae-Woong Park, Jung-Yeol Choi, Woo-Joon Kim, Tae Sung Oh, Hongik University / Korea **TC2-2** Flip Chip Process on a Stretchable Polymer Substrate for Stretchable Electronic Packaging Woo-Joon Kim, Jung-Yeol Choi, Dae-Woong Park, Dong-Hyun Park, Tae Sung Oh, Hongik University / Korea **TC2-3** Room Temperature Bonding Method for Polymer Films by Surface Activated Bonding Method Using Al Intermediate Layer Takashi Matsumae, Masahisa Fujino, Tadatomo Suga, The University of Tokyo / Japan **TC2-4** Cutting Thin Glass by a Fiber Picosecond IR Laser Hsiang-Chen Hsu[1], Pei-Chieh Chin[1], Shih-Jeh Wu[1], Winphyr Lin[2], [1]I-Shou University, [2]ENR Tech. / Taiwan	**TD2: Printed Electronics-2** **TD2-1 <Session Invited>** Ambient Conductive Metal Nanoink Masayuki Kanehara, Okayama University/ Colloidal Ink / Japan **TD2-2 <session Invited>** Fine Electrode Pattern Formation by Screen-Offset Printing Technique Ken-ichi Nomura[1], Hirobumi Ushijima[1], Kazuro Nagase[2], Hiroaki Ikedo[2], Ryosuke Mitsui[3], Seiya Takahashi[3], Shin-ichiro Nakajima[3], Shiro Iwata[4], [1]National Institute of Advanced Industrial Science and Technology, [2]Mino Group, [3]Japan Aviation Electronics Industry, [4]Shimane Institute for Industrial Technology / Japan **TD2-3 <Session Invited>** Reverse Offset Printing and Special Inks for Printed TFTs Masayoshi Koutake, Yoshinori Katayama, DIC / Japan **TD2-4 <Session Invited>** Low Temperature Photonic Sintering of Conductive Inks Saad Ahmed, Xenon / USA	**TE2: Medical Devices** **TE2-1** Effects of Ar Fast Atom Beam and Ar Plasma Irradiations on the Biocompatibility of Polymeric Materials Mari Nakamoto, Masahisa Fujino, Tadatomo Suga, The University of Tokyo / Japan **TE2-2** Human Body Communication in Vehicle -Transmission Characteristics between Forearm and Steering Wheel- Fukuro Koshiji[1], Takashi Matsumoto[1], Kohji Koshiji[2], [1]Kokushikan University, [2]Tokyo University of Science / Japan **TE2-3 <Session Invited>** Microsystems for Minimally Invasive Medicine and Healthcare Yoichi Haga, Tohoku University / Japan **TE2-4 <Session Invited>** CMOS Image Sensor Technologies for Biomedical Applications Jun Ohta, Nara Institute of Science and Technology / Japan
14:30 15:00	**Poster Session / Break**				
15:00 16:40	**TA3: Korea Session** **TA3-1** Manufacture of Copper Substarte for LED Package and its Characteristics Byung-Wook Ahn, Don-Hyun Choi, Seung-Boo Jung, Sungkyunkwan University / Korea **TA3-2** Optimization of Levelers Concentration to Minimize the Contamination in Copper Via Filling Ja-Kyung Koo[1], Tai Hong Yim[2], Jae-Ho Lee[1], [1]Hongik University, [2]KITECH / Korea **TA3-3** Properties of Polymer Solar Cells with Au Nanoparticle Doped Hole Transport Layer Byung Min Park, Gi Ppeum Kim, Seung Ho Kim, Ho Jung Chang, Dankook University / Korea **TA3-4** Measurement and Comparison with Simulation for the Warpage Characteristics of Package-on-Packages Processed with Thin Dies and Thin Substrates Dong-Hyun Park[1], Dong-Myung Jung[1], Jung-Yeol Choi[1], L. Fabiano[2], C. Moraes[2], E. Rhod[2], W. Hasenkamp[2], Tae Sung Oh[1], [1]Hongik University / Brazil, [2]Unisinos University / Korea	**TB3: Materials and Processes-4** **TB3-1** New Interconnection Alloy Metal for High Bonding Strength -Nano Composite Particles Synthesized by Nanomized Method- Uichi Itoh[2], Shigenobu Sekine[1], [1]Napra, [2]AIST / Japan **TB3-2** Anand Constitutive Model and Fracture Behavior of Novel Lead-Free Solder Sn-Zn-Bi-In-P Jianchun Liu, Hongjiao Yu, Zhenghong Wang, Gong Zhang, Jusheng Ma, Tsinghua University / China **TB3-3** Effect of Gold and Copper on Microstructural Evolution and Mechanical Durability of SAC305 Solder Joints Abhijit Dasgupta, Subhasis Mukherjee, University of Maryland / USA **TB3-4** Multilayered Sn/Ag_3Sn Electroplating on Cu Alloys for High Reliable Electronic/Electric Materials Song-Zhu S. Kure-Chu, Tohru Ogasawara, Hitoshi Yashiro, Rongbin Ye, Takuya Hosokai, Michimasa Uchidate, Eiichi Suzuki, Tomoyuki Naito, Iwate University / Japan	**TC3: Advanced Packaging-3** **TC3-1** A 1020 lead 240 micron pitch 14 x 14mm PoP package and manufacturing infrastructure Richard D. Crisp, Wael Zohni, Rey Co, Ellis Chau, Cisek Rizza, Invensas / USA **TC3-2** Reliability Characterization of 2.5D Multi-Chip Module Under Drop Impact Hsien-Chie Cheng[1], Tzu-Hsuan Cheng[2], Wen-Hwa Chen[2], Tao-Chih Chang[3], Hsin-Yi Huang[3], [1]Feng Chia University, [2]National Tsing Hua University, [3]Industrial Technology Research Institute / Taiwan **TC3-3** A Frequency Enhanced Single Package Multi-Die Memory System Using An In-Package Flyby Configuration Zhuowen Sun, Kevin Chen, Richard Crisp, Invensas / USA **TC3-4** A Microfluidic Interposer Based on Three Dimensional Molded Substrate Technology Thomas Leneke, Soeren Hirsch, Bertram Schmidt, Otto-von-Guericke-University / Germany	**TD3: Printed Electronics** **TD3-1 <Session Invited>** Ag Nanowire Film Produced by Photonic Curing Hideki Ohata, Showa Denko / Japan **TD3-2 <Session Invited>** Study on an Interconnect Technology toward Flexible Printed Electronics Ryosuke Mitsui[1], Seiya Takahashi[1], Shin-ichiro Nakajima[1], Ken-ichi Nomura[2], Hirobumi Ushijima[2], [1]Japan Aviation Electronics Industry, [2]National Institute of Advanced Industrial Science and Technology / Japan **TD3-3 <Session Invited>** Printed E-textiles as Human-machine Interface for Biological Signal Monitoring Masahiro Inoue[1], Yasunori Tada[1], Yosuke Itabashi[1], Kakeru Kaga[1], Tomohiro Tokumaru[2], [1]Gunma University, [2]Biosginal / Japan **TD3-4** The Overview of Electrical Conductivity and Frequency Transmission of ICA(Isotoropic Conductive Adhesive) Paste Shigeru Kohinata[1], Akari Terao[1], Yosihiko Shiraki[1], Masahiro Inoue[2], Keisuke Uenishi[1], [1]Osaka University, [2]Gunma University / Japan	**TE3: N-MEMS-1** **TE3-1** Plastic Molded Package Technology for MEMS Sensor Atsushi Oouchi, STMicroelectronics / Japan **TE3-2** Miniaturized Polarization Sensors Integrated with Wire-Grid Polarizers So Ikeda[1], Eiji Higurashi[1], Tadatomo Suga[1], Toshiaki Oguchi[2], [1]University of Tokyo, [2]NSK / Japan **TE3-3** Room-Temperature Bonding Using Au Compliant Rim with Ultrasonic Assist and its Application to Hermetic Sealing Ryo Takigawa, Keiichiro Iwanabe, Takanori Shuto, Takayuki Takao, Tanemasa Asano, Kyushu University / Japam **TE3-4** Room Temperature Wafer Scale Bonding of Electroplated Au Patterns Processed by Surface Planarization Yuichi Kurashima, Atsuhiko Maeda, Hideki Takagi, Institute of Advanced Industrial Science and Technology / Japan
16:40 16:50	**Break**				
16:50 18:30	**TA4: 3DIC Packaging-2** **TA4-1** Thermal Stresses around Void in Through Silicon Via in 3D SiP Takahiro Kinoshita[1], Tomoya Sugiura[1], Takashi Kawakami[1], Keiji Matsumoto[2], Sayuri Kohara[2], Yasumitsu Orii[2], [1]Toyama Prefectural University, [2]IBM Japan / Japan **TA4-2** Thermal Stresses of TSV and Si Chip in 3D SiP under Device Operation and Reflow Process Tomoya Sugiura[1], Takahiro Kinoshita[1], Takashi Kawakami[1], Keiji Matsumoto[2], Sayuri Kohara[2], Yasumitsu Orii[2], [1]Toyama Prefectural University, [2]IBM Japan / Japan **TA4-3** Virtical and Horizontal Location Design of Program Voltage Generator for 3D-Integrated ReRAM/NAND Flash Hybrid SSD Tomoya Ishii, Koh Johguchi, Ken Takeuchi, Chuo University / Japan **TA4-4** Accurate Resistance Measuring Method for High Density Post-Bond TSVs in 3D-SIC with Electrical Probes Shuichi Kameyama[1], Masayuki Baba[1], Yoshinobu Higami[2], Hiroshi Takahashi[2], [1]Fujitsu, [2]Ehime University / Japan	**TB4: Materials and Processes-5** **TB4-1** Dielectric and Reliability Test on Modified BT/ER Embedded Capacitor Materials Shuhui Yu, Maobai Lai, Rong Sun, Suibin Luo, Xiaoliang Zeng, Chinese Academy of Sciences / China **TB4-2** Effect of Chemical Factors on Evolution of Electrical Conductivity during Curing In Ag-Loaded Conductive Adhesives Composed of an Epoxy-Based Binder -A New Knowledge on Electrical Conductivity of Electrically Conductive Adhesives- Yoshiaki Sakaniwa, Yasunori Tada, Masahiro Inoue, Gunma University / Japan **TB4-3** Ultrasonic Bonding Method for Thin Film Capacitor Module Atsunori Hattori, Hirotaka Hatano, Hirotaka Ogawa, NODA SCREEN / Japan	**TC4: DMR-Electrical-1** **TC4-1** A Built-in Supply Current Test Circuit for Pin Opens in Assembled PCBs Shoichi Umezu, Masaki Hashizume, Hiroyuki Yotsuyanagi, The University of Tokushima / Japan **TC4-2** Pin Open Detection of BGA IC by Supply Current Testing Akira Ono[1], Hiroyuki Yotsuyanagi[2], Masaki Hashizume[2], [1]Kagawa National College of Technology, [2]Tokushima University / Japan **TC4-3** Electrical Test Method of Open Defects at Data Bus in 3D SRAM IC Yudai Shiraishi[1], Masaki Hashizume[1], Hiroyuki Yotsuyanagi[2], Tetsuo Tada[2], Shyue-Kung Lu[3], [1]The University of Tokushima, [2]Tokushima Bunri University / Japan, [3]National Taiwan University of Science and Technology / Taiwan **TC4-4** Method for Back-Annotating Per-Transistor Power Values onto 3DIC Layouts to Enable Detailed Thermal Analysis Samson Melamed[1], Fumito Imura[1], Masahiro Aoyagi[1], Hiroshi Nakagawa[1], Katsuya Kikuchi[1], Michiya Hagimoto[2], Yukoh Matsumoto[2], [1]National Institute of AIST, [2]TOPS Systems / Japan	**TD4: Printed Electronics-4** **TD4-1** Inkjet Printed Wireless Biosensors on Stretchable Substrate Hannu Sillanpaa, Toni Liimatta, Eerik Halonen, Matti Mantysalo, Tampere University of Technology / Finland **TD4-2** Multilayer Ceramic Coil for Wireless Power Transfer System by Photo Resist Film Process Minami Takato, Tatsuya Nishi, Masato Kaneko, Junichi Tanida, Syogo Tada, Ken Saito, Fumio Uchikoba, Nihon University / Japan	**TE4: N-MEMS-2** **TE4-1** Electromagnetic Induction Type Generator Combined with MEMS Air Turbine and Multilayer Ceramic Magnetic Circuit Hiroki Endo, Masato Kaneko, Tatsuya Nishi, Yuji Yokozeki, Kazuki Hoshi, Naohiro Hoshida, Kento Hosoya, Ryo Saito, Minami Takato, Ken Saito, Fumio Uchikoba, Nihon University / Japan **TE4-2** Impact-Type MEMS Microrobot Controlled by Bare Chip IC of Hardware Neuron Kazuaki Maezumi, Minami Takato, Hiroki Obara, Yuka Naito, Yohei Asano, Kei Iwata, Masaki Tatani, Yuki Okane, Yuki Isihara, Tomohiro Hidaka, Hirozumi Oku, Shinpei Yamasaki, Ken Saito, Fumio Uchikoba, Nihon University / Japan **TE4-3** A Bio-Inspired Cylindrical Tactile Sensor for Multi-Direction Pressure Detection Nurul Adni Ahmad Ridzuan, Norihisa Miki, Keio University / Japan **TE4-4** Characterization of Tactile Display of Stiffness Distribution Using Magneto-rheological Fluid Hiroki Ishizuka[1], Nicolo Lorenzoni[2], Norihisa Miki[1], [1]Keio University / Japan, [2]Politecnico di Milano / Italy

*DMR: Design, Modeling and Reliability

	Room A (Main Hall)	Room B (201)	Room C (202)	Room D (203)	Room E (204)
9:00 10:40	**FA1: Thermal Management-2** **FA1-1 <Session Invited>** Thermal Management of Dense Electronic Packaging by Heat Pipe and Piezo Fan Based Cooling Solutions Randeep Singh, Yuji Saito, Masataka Mochizuki, Fujikura / Japan **FA1-2** Cooling Technology of On-Vehicle Inverters with Functional Porous Foam Layer Kazuhisa Yuki, Koichi Suzuki, Tomohiro Hara, Tokyo University of Science-Yamaguchi / Japan **FA1-3** Integrated Vapor Chamber Heat Spreader for High Power Processors Thanh-Long Phan, Yuji Saito, Masataka Mochizuki, Fujikura / Japan **FA1-4** Effect of Thermal Properties of Interposer Material on Thermal Performance of 2.5D Package Takashi Hisada, Yasuharu Yamada, IBM Japan / Japan	**FB1: DMR-Electrical-2** **FB1-1** Locally Shielded Differential-Paired Lines with Bend Discontinuities for SI and EMI Performances Yoshiki Kayano[1], Masashi Ohkoshi[1], Takuya Watabe[1], Hiroshi Inoue[2], [1]Akita University, [2]The Open University of Japan / Japan **FB1-2** Enhanced Passive Equalizer Using the Open Stub Compensation Technique Sheng-Hua Huang[1], Chih-Wen Kuo[1], Chen-Chao Wang[2], Toshihide Kitazawa[3], [1]National Sun Yat-Sen University, [2]Advanced Semiconductor Engineering / Taiwan, [3]Ritsumeikan University / Japan **FB1-3** Electrical Characteristics on a Build-up Substrate Using New Via Structures Tomoyuki Akahoshi[1], Daisuke Mizutani[1], Motoaki Tani[1], Kenichirou Abe[2], Syunji Baba[3], Masateru Koide[3], [1]Fujitsu Laboratories, [2]Fujitsu Interconnect Technologies, [3]Fujitsu Advanced Technologies / Japan **FB1-4** A Multiband Antenna with Fan-Shaped Monopole and Folded Element of 800 MHz, 2.0 GHz and UWB for 4G Smartphones Yusuke Akiyama[1], Fukuro Koshiji[1], Kohji Koshiji[2], [1]Kokushikan University, [2]Tokyo University of Science / Japan	**FC1: Advanced Packaging-4** **FC1-1** Characterization of Micro Bump Formed by IMS Technology Toyohiro Aoki, Kazushige Toriyama, Hiroyuki Mori, Yasumitsu Orii, IBM Japan / Japan **FC1-2** Packaging of High-temperature Planar Power Modules Interconnected by Low-temperature Sintering of Nanosilver Paste Guo-Quan Lu[1,2], David W. Berry[1], Yunhui Mei[2], Shufang Luo[3], Khai D. Ngo[1], [1]Virginia Tech / USA, [2]Tianjin University / China, [3]NBE Technologies / USA **FC1-3** High-Speed Gold Laser-Plating on Nickel-Plated Copper Leadframe toward Flip-Chip Packaging Takahisa Sagawa[1], Mamoru Mita[2], Kazuhiko Yamasaki[1], Katsuhiro Maekawa[1], [1]Ibaraki University, [2]M & M laboratory / Japan **FC1-4** Package on Package DDR Power Integrity Design Heng Chuan Shu, Li Chuang Quek, Intel Microelectronics (M) / Malaysia	**FD1: Interconnection-1** **FD1-1** Fine-Pitch Solder Joining for High Density Interconnection Kuniaki Sueoka, Sayuri Kohara, Akihiro Horibe, Fumiaki Yamada, Hiroyuki Mori, Yasumitu Orii, ASET / Japan **FD1-2** Fine-Pitch Hybrid Bonding with Cu/Sn Microbumps and Adhesive for High Density 3D Integration Masaki Ohyama[1], Jun Mizuno[1], Shuichi Shoji[1], Masatsugu Nimura[1], Toshihisa Nonaka[2], Yoichi Shinba[2], Akitsu Shigetou[3], [1]Waseda University, [2]Toray Industries, [3]National Institute for Materials Science / Japan **FD1-3** The Fine Pitch Cu-pillar Bump Interconnect Technology Utilizing NCP Resin, Achieving the High Quality and Reliability Yoshikazu Shimote, Renesas Electronics / Japan **FD1-4** Effects of Bump Height and UBM Structure on The Reliability Performance of 40 μm-Pitch Solder Micro Bump Interconnection Chau-Jie Zhan[1], Yu-Wei Huang[1], Chih Chen[2], [1]Industrial Technology Research Institute, [2]National Chiao Tung University / Taiwan	**FE1: Optoelectronics-1** **FE1-1** Flip Chip LED Packaging Study & Technology Trend Tetsuya Onishi, Grand Joint Technology / Hong Kong **FE1-2** LED Wafer Level Packaging with Moldless Stacked Lens Shi-Wei Ricky Lee, Rong Zhang, Jeffery Lo, HKUST / Hong Kong **FE1-3** Dispensed Dome Lens Validation Through Optical Simulations for High Illuminance UV LED Module Liao Cheng-Chun, Lin Hao-Xiang, Chang Chien Chien-Lin, Chang Chung-Min, Hsu Chih-Peng, Advanced Optoelectronic Technology / Taiwan **FE1-4** Effect of Die-attach Material on Thermal Performance of Chip-on-Board Packaging of 10W High Power LED Arrays Xin Li, Tianjin University / China
10:40 10:50	**Break**				
10:50 11:50	**Keynote (Room A)** Gen-3 Embedded Cooling: Completing the Inward Migration of Thermal Packaging Avram Bar-Cohen, DARPA-MTO				
11:50 12:50	**Lunch**				
12:50 14:55	**FA2: More-than-Moore 2.0 - Is 2D really saturating? Will 3D really be coming?-** **FA2-1<Session Invited> (50min.)** TBD Hitoshi Wakabayashi, Tokyo Institute of Technology / Japan **FA2-2** TBD **FA2-3** TBD **FA2-4** A Novel 3D IC Assembly Process for Ultra-Thin Chip Stacking Yu-Min Lin, Chau-Jie Zhan, Zhi-Cheng Hsiao, Tao-Chih Chang, Cheng-Ta Ko, Industrial Technology Research Institute / Taiwan **FA2-5** Cu-Cu Wafer Bonding: An Enabling Technology for Three-Dimensional Integration Masaya Kawano[4], Bernhard Rebhan[1], Sajjad Tollabimazraehno[2], Viorel Dragoi[1], [1]EV Group, [2]Johannes Kepler University, [3]Christian Doppler Laboratory for Microscopic and Spectroscopic Material Characterization / Aurtria, [4]EV Group Japan /Japan **FA2-6** High-performance Coolong System with Multi-channel Electro-osmotic Flow Pumps for High-power 3D-ICs Hiroshi Kudo[1], Y Oguri[2], A. Tsukune[3], Y. S. Kim[3], H. Kitada[3], K. Fjimoto[1], I. Kinefuchi[2], Y. Matsumoto[2], T. Ohba[3], [1]Dai Nippon Printing, [2]University of Tokyo, [3]Tokyo Institute of Technology / Japan **Panel Discussion (Tentative)** The panel will discuss new collaboration opportunities across the supply chain that may overcome possible economic constraints on the pace of device scaling. This session will break for 30min. so that participants may join the Poster Session.	**FB2: DMR-Mechanical** **FB2-1** Investigation of Solder Creep Behavior on Wafer Level CSP Under Thermal Cycling Loading Kai-Chiang Wu, Kuo-Ning Chiang, National Tsing Hua University / Taiwan **FB2-2** Solder Crack Simulation using SPH Particle Method with Sub-modeling Technique Chihiro Uchibori[1], Seiki Sakuyma[1], Yuzuru Sakai[2], Thyon Su-I[2], Takayuki Watanabe[2], Nobuki Yamagata[3], [1]Fujitsu Laboratories, [2]Yokohama National University, [3]ACT / Japan **FB2-3** Stress Variation Analysis during Curing Process of Epoxy Underfill Hiroshi Yamaguchi, Toshiaki Enomoto, Toshiyuki Sato, Namics / Japan **FB2-4** Reliability Improvements in Electronic Systems by Combining Condition Monitoring Approaches Kathleen Jerchel[1], Michael Krueger[2], Andreas Middendorf[2], Nils F. Nissen[1], Klaus-Dieter Lang[2], [1]Fraunhofer IZM Berlin, [2]Technische Universität Berlin / Germany **FB2-5** Fatigue Strength of Through Hole in Printed Circuit Board Shogo Iwade[1], Takahiro Kinoshita[1], Takashi Kawakami[1], Hideki Mizushina[2], Hiroshi Iinaga[2], [1]Toyama Prefectural University, [2]Oki Printed Circuits / Japan	**FC2: Thermal Management-3** **FC2-1** Development of 1kW DMFC System with Waste Heat Recovery for Improving Energy Efficiency Yuki Morimatsu, Zhen Guo, Masakazu Ohashi, Fujikura / Japan **FC2-2** Calculation of Temperature Distribution of Power Si MOSFET with Electro-Thermal Analysis (The Effect of Boundary Condition) Risako Kibushi, Tomoyuki Hatakeyama, Shinji Nakagawa, Masaru Ishizuka, Toyama Prefectural University / Japan **FC2-3** Molecular Modeling Approach to Screen Novel Thermal Management Materials Chatterjee Abhijit, Accelrys / Japan **FC2-4** Thermal Management for Embedded Device Package Yukari Imaizumi, Toru Suda, Shigenori Sawachi, Akio Katsumata, Yoichi Hiruta, J-Devices / Japan **FC2-5** Thermal Modeling of Electronic Components for Thermal Simulation of Electronic Equipment Katsuhiro Koizumi[1], Tomoyuki Hatakeyama[2], Masaru Ishizuka[2], [1]Cosel, [2]Toyama Prefectual University / Japan	**FD2: Interconnection-2** **FD2-1** Nanoscale Bondability between Cu-Al Intermetallic Compound for Cu Wirebonding Hsiang-CHen Hsu, Jih-Hsin Chien, Jian-Siang Huang, Li-Ming Chu, Shen-Li Fu, I-Shou University / Taiwan **FD2-2** Effect of Pd Thickness on Bonding Reliability in Copper Coating Pd Wire Jun Cao[1], JunLing Fan[2], ZhiQiang Liu[1], YueMin Zhang[1], [1]HeNan Ploytechnic Universtiy, [2]Jiaozuo University / China **FD2-3** Reliability Evaluation of Bonding between Cu Wire and Al Pad Yuji Ishida, Nobuhiko Ota, Shinji Yamashita, Yaskawa Electric / Japan **FD2-4** The Growth of Ag_3Sn Intermetallic Compound under a Temperature Gradient YuPing Su, National Tsing Hua University / Taiwan **FD2-5** Phase Evolution and Nanomechanical Properties of Intermetallic Compounds in Solid-Liquid Interdiffusion Bonding Jenn-Ming Song, Wei-Chih Lu, National Chung Hsing University / Taiwan	**FE2: Optoelectronics-2** **FE2-1** High-ON/OFF-Contrast 10-Gb/s Silicon Mach-Zehnder Modulator in High-Speed Low-Loss Package Hiroki Ishihara[1], Kenji Oda[1], Ori Teijiro[1], Goi Kazuhiro[1], Ogawa Kensuke[1], Taung-Yang Liow[2], Xiaoguang Tu[2], Guo-Qiang Lo[2], Dim-Lee Kwong[2], [1]Fujikura / Japan, [2]A*STAR / Singapore **FE2-2** Multi-channel and High-density Hybrid Integrated Light Source by Thermal Management to Low Power Consumption for Ultra-high Bandwidth Optical Interconnection Takanori Shimizu[1,2], Makoto Okano[1,3], Hiroyuki Takahashi[1,2], Nobuaki Hatori[1,2], Masashige Ishizaka[1,2], Tsuyoshi Yamamoto[1,2], Masahiko Mori[1,3], Tsuyoshi Horikawa[1,3], Takahiro Urino[1,2], Takahiro Nakamura[1,2], Yasuhiko Arakawa[1,4], [1]Institute for Photonics-Electronics Convergence System Technology, [2]Photonics Electronics Technology Research Association, [3]National Institute of Advanced Industrial Science and Technology, [4]The University of Tokyo / Japan **FE2-3** High Density Wirings of Polymer Optical Waveguides Fabricated Using a Micro Dispenser Daisuke Suganuma, Takaaki Ishigure, Keio University / Japan **FE2-4** Optimal Cavity Length in Cavity-Resonator-Integrated Guided-Mode Resonance Filter Junichi Inoue[1], Tomohiro Kondo[1], Kenji Kintaka[2], Kenzo Nishio[1], Yasuhiro Awatsuji[1], Shogo Ura[1], [1]Kyoto Institute of Technology, [2]National Institute of Advanced Industrial Science and Technology / Japan **FE2-5** A Varifocal Lens Using an Electrooptic $KTa_{1-x}Nb_xO_3$ Crystal with a Microsecond Order Response Time Tadayuki Imai, Jun Miyazu, Souhan Kawamura, Takahiro Inagaki, Junya Kobayashi, Nippon Telegraph and Telephone / Japan
14:55 15:25		**Poster Session / Break**			
15:25 17:30		**FB3: Materials and Processes-6** **FB3-1** Effect of Joining Condition on the Joint Strength of Ag Nanoporous Bonding Min-Su Kim, Hiroshi Nishikawa, Osaka University / Japan **FB3-2** Development of Low-Temperature Sintered Nano-Silver Pastes Using MO Technology and Resin Reinforcing Technology Noritsuka Mizumura, Koji Sasaki, Namics / Japan **FB3-3** A Diffusion-Viscoelastic Analysis and Experimental Verification of Defect Formation in Sintered Silver Bond-line Guo-Quan Lu, Kewei Xiao, Khai D.T. Ngo, Virginia Tech / USA **FB3-4** Measurements of Electrical Resistance and Temperature Distribution During Current Assisted Sintering of Nanosilver Die-Attach Material Yunhui Mei[1], Guo-Quan Lu[2], Wan Li[1], Xin Li[1], [1]Tianjin University / China, [2]Virginia Tech / USA **FB3-5** Challenges of Super High Thermal Performance Adhesive in Power Device Application Wei Hing Tan, Hui Teng Wang, Samsun Paing, Infineon Technologies (Malaysia) / Malaysia	**FC3: Thermal Management-4** **FC3-1** One-Dimensional Thermal Network Expression of Tablet Device with Slate Style Chassis Koji Nishi[1], Tomoyuki Hatakeyama[2], Shinji Nakagawa[2], Masaru Ishizuka[2], [1]AMD Japan, [2]Toyama Prefectural University / Japan **FC3-2** Simulation Based Method to Eliminate the Effect of Electrical Transients from Thermal Transient Measurements Zoltan Sarkany, Andras Vass-Varnai, Attila Szel, Marta Rencz, Mentor Graphics / Hungary **FC3-3** Thermal Transient Test based Thermal Structure Function Analysis of IGBT Package. Yafei Luo[1], Yasushi Kajita[2], Tomoyuki Hatakeyama[3], Shinji Nakagawa[3], Masaru Ishizuka[3], [1]Mentor Graphics, [2]Nagoya Municipal Industrial Research Institute, [3]Toyama Prefectural University / Japan	**FD3: Interconnection-3** **FD3-1** Formic Acid Treatment with Pt Catalyst for Cu Direct Bonding at Low Temperature Tadatomo Suga, Masakate Akaike, Naoya Matsuoka, The University of Tokyo / Japan **FD3-2** Plasma Assisted Bonding of Bulk Copper and Silver Substrates Masahisa Fujino, Kentaro Abe, Tadatomo Suga, The University of Tokyo / Japan **FD3-3** Room-Temperature Direct Bonding of Graphene Films by Means of Vacuum Ultraviolet (VUV) / Vapor-Assisted Method Mano Ajayan[1], Jun Mizuno[1], Shuichi Shoji[1], Akitsu Shigetou[2], [1]Waseda University., [2]National Institute for Materials Science / Japan **FD3-4** Evaluation of Ultrasonic Vibration Energy for Copper-to-Copper Bonding by Flip-Chip Bonding Technology Arai Yoshiyuki[1], Miyamoto Yoshinori[2], Nimura Masatsugu[2], Tomokage Hajime[3], [1]Toray Engineering, Fukuoka University, [2]Toray Engineering, [3]Fukuoka University / Japan	**FE3: Optoelectronics-3** **FE3-1** Nanomaterials for Silicon Nanophotonic Packaging Yoichi Taira, Hidetoshi Numata, Kuniaki Sueoka, IBM Research - Tokyo / Japan **FE3-2** Organic-Inorganic Hybrid Material for Optical Interconnects and Application to Optical Coupling Method Hideyuki Nawata, Nissan Chemical Industries / Japan **FE3-3** Bond Properties of Silane Modified Optical Adhesives for Silicon Photonics Seiko Mitachi[1], Alisa Hagiwara[1], Morio Murata[1], Yuichi Kageyama[2], Kazushi Kimura[2], [1]Tokyo University of Technology, [2]The Yokohama Rubber / Japan **FE3-4** Low-Temperature GaAs/SiC Wafer Bonding with Au Thin Film for High-Power Semiconductor Lasers Ken Okumura[1], Eiji Higurashi[1], Tadatomo Suga[1], Kei Hagiwara[2], [1]The University of Tokyo, [2]NHK Science and Technology Research Laboratories / Japan **FE3-5** Room Temperature Wafer Direct Bonding Using Fast Atom Beam for Low Interfacial Damage Genki Kono, Masahisa Fujino, Daiji Yamashita, Kentaroh Watanabe, Masakazu Sugiyama, Yoshiaki Nakano, Tadatomo Suga, The University of Tokyo / Japan

*DMR: Design, Modeling and Reliability

* The content of the program may be subject to change without any prior notice.
Please check the ICEP web site for an updated version.

■Keynote Lectures

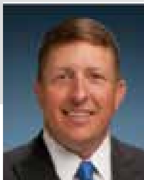
Development of Autonomous Driving Technologies and its Future

Ryota Shirato
Manager, Mobility Services Laboratory,
Nissan Research Center
Nissan Motor Company

The momentum of autonomous vehicle development has been rising globally. Under such circumstance, Nissan exhibited autonomous vehicle technologies in several events, such as "Nissan 360" in California, USA in August 2013, “CEATEC” Combined Exhibition of Advanced Technologies in Makuhari, Japan in October 2013 and so on. Nissan also announced that the company will be ready with multiple, commercially-viable Autonomous Drive vehicles by 2020. The company's engineers have been carrying out intensive research on the technology for years, alongside teams from the world's top universities. In this speech, some of those autonomous technologies will be introduced and the future perspective will be surveyed.

■Biography

Ryota Shirato was born in Saitama, Japan in 1966. He received BS and MS degree from Tokyo Institute of Technology in 1990, 1992 respectively. He joined Nissan Motor Company in 1992 and has been engaged in the fields of image processing, vehicle dynamics, electric propulsion and system architecture design for the research of active safety, vehicle stability control and autonomous driving.



Hybrid Memory Cube: The New Standard for Memory Performance

Scott Graham
General Manager,
Hybrid Memory Cube Technology
Micron Technology, Inc.

The challenge of constrained memory bandwidth, a key problem for applications in both high performance computing and networking, is driving dramatic change throughout the memory landscape. Micron Technology is addressing this challenge with its Hybrid Memory Cube (HMC), which is currently sampling a 2GB device. HMC represents an entirely new category of high performance memory, delivering unprecedented system performance and bandwidth at a fraction of the total cost of ownership of equivalent DRAM solutions. Industry engagement and adoption for HMC has been overwhelmingly positive. Top industry innovators are leading the HMC Consortium which includes over 120 adopters to date. According to research analysts at Yole Développement, TSV-enabled devices such as HMC will account for nearly $40B by 2017 - 10% of the global chip market.

Mr. Graham's presentation will show how Micron is leading the development of 3D TSV devices through HMC and derivative technologies. Additional information on HMC's functionality, benefits, and future applications as well as tools and ecosystem development will also be covered.

■Biography

Scott Graham is the General Manager of Hybrid Memory Cube technology at Micron Technology. Mr. Graham joined Micron in 1994 as an applications engineer in the personal computing division. He has held various managerial positions within Micron and has spent the last 11 years in Micron's memory products division, working on technical marketing for DRAM and NAND memory products. In recent years, Mr. Graham has represented Micron in various organizations responsible for setting industry standards, holding numerous vice-chair, chair, and board-level positions.

Mr. Graham holds a Bachelor of Science in Electronic Engineering Technology from DeVry University and a micro-MBA certification from Boise State University.

Introducing the Latest 3D Printing Technology and Applications

Nave Rachman
Pre-Sale & Application Manager
Stratasys Asia Pacific & Japan

Stratasys Ltd. is the corporate entity formed in 2012 by the merger of 3D printing companies Stratasys Inc. and Objet Ltd., based in Minneapolis, Minn. and Rehovot, Israel. Stratasys manufactures 3D printers and materials for prototyping and production. The company's patented FDM® and PolyJet® processes produce prototypes and manufactured goods directly from 3D CAD files or other 3D content. Systems include affordable desktop 3D printers for idea development, a range of systems for prototyping, and large production systems for direct digital manufacturing. Since June 2012, the company's range of over 130 3D printing materials is the widest in the industry and includes more than 120 proprietary inkjet-based photopolymer materials and 10 proprietary FDM-based thermoplastic materials. Nave will introduce Stratasys leading 3D printing technology, and also key benefits which the technology will bring to the customers through various application case studies.

■Biography

Nave Rachman has been serving as Stratasys AP LTD. Pre-Sale & Application Manager since November 2013.

In Intel Corporation, Nave worked between 2010 and 2013 as a supervisor and project-leader in the System and Security Control Center. Nave has lived 1.5 years in the United Kingdom and Ireland as a Regional Sales-Manager in the cosmetics industry.

Nave has acquired a Bachelor’s degree in Asian Studies from the University of Haifa, Israel. In his studies he learned the history and cultures of Japan, China, Korea and India, and learned Chinese, Japanese and Hindi. He has spent a few months in India and China for studying, and now resides in Hong Kong.

In the Israeli Military, Nave served as a commander, and acquired rich technological knowledge and experience.

Nave has a good background of working with high technology and with a variety of international customers.

■Poster Session

Poster sessions will be held from 14:30-15:00 on April 24 and from 14:55-15:25 on April 25

No.	Title / Authors
P01	Analysis of Temperature Distribution in Stacked IC with a Thermal Simulation and a Specially Designed Test Structure Keita Yamada[1], Toshihiro Matsuda[1], Hideyuki Iwata[1], Tomoyuki Hatakeyama[1], Masaru Ishizuka[1], Takashi Ohzone[2], [1]Toyama Prefectural University, [2]Dawn Enterprise / Japan
P02	Efficient Delay-matching Bus Routing by using Multi-layers Yang Tian, Ran Zhang, Takahiro Watanabe, Waseda University / Japan
P03	Proposal of the Application of the Delamination Test to Semiconductor Package Design Ryuichi Kusama[1], Qiang Yu[2], Kyohei Yamashita[2], Tomohiko Takeda[2], [1]DENSO, [2]Yokohama National University / Japan
P04	Behavior Analysis Method for Product Design Support -A Study on Modeling of Behavior and Functions- Eiji Morinaga, Hidefumi Wakamatsu, Eiji Arai, Hijiri Abiru, Osaka University / Japan
P05	Clarification of Transmission Mechanism in Human Body Communication between Head-Mounted Wearable Devices Dairoku Muramatsu, Yoshiaki Yokoyama, Ken Sasaki, The University of Tokyo / Japan
P06	Input Impedance Characteristics of Horse-shoe Shaped Electrodes in Dry/Wet Skin Conditions for Human Body Communication Takaaki Fujisawa[1], Fukuro Koshiji[1], Kohji Koshiji[2], [1]Kokushikan University, [2]Tokyo University of Science / Japan
P07	Electromagnetic field analysis of Human Body Communication between Wearable and Stationary Devices including the Earth Ground Misaki Kurosu[1], Fukuro Koshiji[1], Kohji Koshiji[2], [1]Kokushikan University, [2]Tokyo University of Science / Japan
P08	Comparison of Body Area Transmission Characteristics Using Right-Handed and Left-Handed Coils as a Wearable Antenna Nanako Yuyama[1], Fukuro Koshiji[1], Kohji Koshiji[2], [1]Kokushikan University, [2]Tokyo University of Science / Japan
P09	Hemocompatibility of DLC Coating for Blood Analysis Devices Keisuke Shiba[1], Yasuharu Ohgoe, Kenji Hirakuri, Jun Mizuno, Shuichi Shoji, Kazuhide Ozeki, Keisuke Sato, Hukata Naoki, Ali Alanazi, [1]Tokyo Denki University, [2]Waseda University, [3]Ibaraki University, [4]International Center of Materials Nanoarchitectonics (MANA), [5]King Saud University / Japan
P10	Effect of Filler Morphology on Fatigue Properties of Stretchable Wires Printed with Ag Pastes. Yosuke Itabashi, Yasunori Tada, Masahiro Inoue, Gunma University / Japan
P11	Flexible and Capacitive Tactile Sensor Sheet Masanori Mizushima[1], Shigeo Takagi[1], Hiromichi Itano[1], Tsutomu Obata[2], Takashi Kasahara[3], Shuich Shoji[3], Jun Mizuno[3], [1]Oga, [2]Toyama Industrial Technology Center, [3]Waseda University / Japan
P12	Leadfree Solder Joint Non- uniformity Study on SMT Anocha Sriyarunya, Jiraporn Tondtan, SPANSION(THAILAND) / Thailand
P13	Impact Properties of Sn-3Ag-0.5Cu Solder Ball Joint with Epoxy-Based Flux Akiyoshi Ishiyama[1], Ikuo Shohji[1], Tatsuya Ganbe[2], Hirohiko Watanabe[2], [1]Gunma University, [2]Fuji Electric / Japan
P14	Influence of Intermetallic Compounds on Tensile Strength of Lead-Free Solder Masaya Iwasaki, Masashi Kurose, Akira Yamauchi, Gunma National College of Technology / Japan
P15	Increasing Bonding Strength of Chips and Substrates Assembly by Argon Plasma Cheng-Li Chuang[1], Jong-Ning Aoh[2], Bo-Zhi Yang[2], [1]Chung Shan Medical University, [2]National Chung Cheng University / Taiwan
P16	Effect of Coupling Agent on Adhesion of Underfill Materials on Copper Hironao Mitsugi, Ikuo Shohji, Shinji Koyama, Shinya Kitagoh, Gunma University / Japan
P17	Effect of Fiber Direction and Temperature on Mechanical Properties of Short Fiber-Reinforced PPS Ryogo Takahashi[1], Ikuo Shohji[1], Yuki Seki[2], Satoshi Maruyama[2], [1]Gunma University, [2]Yamada Manufacturing / Japan
P18	Preparation of Aligned Conjugated Polymer Fibers By Electrospinning Hsiao-Chung Chu, Cho-Liang Chung, Yu-Hsuan Lin, Sheng-Li Fu, I-Shou University / Taiwan
P19	Morphology And Applications of TiO2 Electrospun Nanofiber Wei Chen, Cho-Liang Chung, Chih-Hao Hsu, Sheng-Li Fu, I-Shou University / Taiwan
P20	The Study of Optical Variation for Dispensing Lens Type LED Package Chien-Lin Chang Chien, Yu-Wei Tsai, Ya-Ting Wu, How-Wen Chen, Zheng-Hua Yang, Chung-Min Chang, Chih-Peng Hsu, Advanced Optoelectronic Technology / Taiwan
P21	Thermal Effect on the Radiation Flux of UV COB LED Package Yu-Wei Tsai, Chien Lin Chang Chien, Cheng Chun Liao, Chung-Min Chang, Chih-Peng Hsu, Fuh-Shyang Juang, Advanced Optoelectronic Technology / Taiwan
P22	Robust Lensed Fibers Having High Focusing Effects in Resin Bond Kazuo Shiraishi[1], Masaru Horiuchi[1], Hidehiko Yoda[1], Chen S. Tsai[2], [1]Utsunomiya University, [2]University of California, Irvine / Japan
P23	A Spot-Size Converter with Vertical Down Taper for the Coupling Between Single-Mode Fiber and Silicon-Wire Waveguide Kazuo Shiraishi[1], Ryutaro Takasaki[1], Hidehiko Yoda[1], Hideya Oshikiri[1], Chen S. Tsai[2], [1]Utsunomiya University, [2]University of California, Irvine / Japan
P24	A Novel S-Bridged Power Plane with Ultra Wideband Suppression of Ground Bounce Noise Using Open Stub on High Speed Circuit Meng-Huan Lu[1], Chen-Chao Wang[2], Chih-Wen Kuo[1], Toshihide Kitazawa[3], [1]National Sun Yat-Sen University,, [2]Advanced Semiconductor Engineering Inc, Kaohsiung., Taiwan, [3]Ritsumeikan University, Japan / Taiwan
P25	Study on Bent Type of UWB Antenna Built in Electronic Equipment Housing Daisuke Momose, Takahiko Yamamoto, Kouji Koshiji, Tokyo University of Science / Japan
P26	A Flexible Broadband Antenna with Fan-Shaped and Trapezoidal Elements Formed on Printed Circuit Board for Ultra-Wideband Radio Kazuya Hiraguri[1], Fukuro Koshiji[1], Kohji Koshiji[2], [1]Kokushikan University, [2]Tokyo University of Science / Japan
P27	Comparison of Wireless Power Transmission Characteristics Using Circular-Coil Array and Elliptical Coil as a Transmission Coil Kohei Horigome[1], Fukuro Koshiji[1], Kohji Koshiji[2], [1]Kokushikan University, [2]Tokyo University of Science / Japan

■Registration

The online registration system on the ICEP web site (http://www.jiep.or.jp/icep/) will be available through March 31.
Please come to the on-site registration desk after April 1.

Registration Fees

Category	Fee	On site	Includes
Member of JIEP / IEEE / IMAPS (Including Company Member of JIEP)	¥40,000	[¥48,000]	Including Proceedings and Reception
Member of Partner Organization	¥40,000	[¥48,000]	Including Proceedings and Reception
Non-Member	¥50,000	[¥58,000]	Including Proceedings and Reception
Student	¥7,000	[¥8,000]	Including Proceedings
Speaker	¥40,000		Including Proceedings and Reception
Student speaker	¥7,000		Including Proceedings
Welcome Reception Only	¥10,000		[ ] On site

REMINDER: ICEP2014 is scheduled on the week between the Easter weekend and Japan's spring holiday week called the Golden Week. It is strongly advised that participants reserve their flights and accommodation as early as possible.

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