2012 14th International Conference on Electronic Materials and Packaging

(EMAP 2012)

Lantau Island, Hong Kong
13-16 December 2012

IEEE Catalog Number: CFP12506-PRT
ISBN: 978-1-4673-4945-1

Session I-a Materials & Processing (1)

P060*
Recent Advances in Anisotropic Conductive Adhesives (ACAs) Technology: Materials and Processing """3
Kyung W. Paik
Korea Advanced Institute of Science and Technology, KOREA

P034+
Potential-assisted Assembly of Thiol-based Materials for Reliable Copper-Epoxy Interface '"6
Stephen C.T. KWOK, Matthew M.F. YUEN
Department of Mechanical Engineering, The Hong Kong University of Science and Technology, HONG KONG

P043+
Preparation of MWCNT-Ni0.5Zn0.5Fe2O4-Epoxy Composites with both Dielectric and Ferromagnetic Properties '";
Qi Zheng,[1,2] Pengli Zhu,[1] Rong Sun,[1*] , Ching-Ping Wong[3]*
[1] Shenzhen Institutes of Advanced Technology, Chinese Academy of Science, CHINA
[2] Shenzhen University, CHINA
[3] Department of Electronics Engineering, The Chinese University of Hong Kong, HONG KONG

P046
Joint Properties of Micro Sn-58Bi Solder Bumps on Flexible Substrate '"35
Min-Su Kim[1, 2], Yong-Ho Ko[2, 3], Sehoon Yoo[2], Chang-Woo Lee[2]
[1] Dept. of Electronic Packaging Engineering, University of Science & Technology, KOREA
[2] Micro-Joining Center, Korea Institute of Industrial Technology, KOREA
[3] Dept. of Mechanical Engineering, KAIST, KOREA

P030*
Controlling Fusion Zone Shape and Peak Temperature Produced by Laser or Electron Beam'""39
P. S. Wei
Department of Mechanical and Electro-Mechanical Engineering National Sun Yat-Sen University, TAIWAN

P100
Improvement of Pick & Place Yield in Carrier Tape Packaging System through Materials Selection and Cavity Structure Optimization'""42
Chenxiao Qiao[1], Yuning Shi[3], Nelson G. Vicera[3], Matthew Poon[3], Weiqiang Li[1], Haibin Chen[1, 2,] Jingshen Wu[1,2]
[1] Department of Mechanical Engineering, The Hong Kong University of Science and Technology, HONG KONG
[2] Center of Engineering Materials and Reliability, HKUST Fok Ying Tung Graduate School, The Hong Kong University of Science and Technology, HONG KONG
[3] NXP Semiconductors Hong Kong Ltd, Kowloon, Hong Kong

P101+
Effects of Moisture Absorption and Temperature on the Adhesion Strength between Die Attach Film (DAF) and Silicon Die'"""46
Chunhua Guan[1], Martin Li[2], Kewei Chen[2], Haibin Chen[1, 3], Jingshen Wu[1, 3]
[1] Center of Engineering Materials and Reliability, Fok Ying Tung Graduate School, Hong Kong University of Science and Technology, HONG KONG
[2] NXP Semiconductors Hong Kong Ltd, HONG KONG
[3] Department of Mechanical Engineering, Hong Kong University of Science and Technology, HONG KONG

P020
Photo-mask Cleaning issues at Photolithography of Bumping Process(For Packaging) '"P 1C
Ted Miyagawa
Technovision Inc., Kawajima-machi Saitama, JAPAN

P075
Electrochemical deposition of Galfenol '"4:
Robert W. Kay[1], Jack Ng[2], Marc P. Y. Desmulliez[2], Chris Popov[2], Paul Record[2]
[1]Additive Manufacturing Research Group (AMRG), Loughborough University, UK
[2]MicroSystems Engineering Centre (MiSEC), Heriot-Watt University, UK

Session I-b Design & Applications

P072* Thin Packages Enabling Thin Mobile Products '"54
William T. Chen, Andy Tseng, Bernd K. Appelt
ASE Group, Sunnyvale, USA

P038* Air Gap Design of Current Sensor Based on Closed Loop Hall Effect '"59
Fu'an Li[1,2], Xingguo Cheng[2,3] , Sheng Liu[2,3], Xiaobing Luo[1,2]
[1] School of Energy and Power Engineering, Huazhong University of Science and Technology, CHINA
[2] Wuhan National Lab for Optoelectronics, Huazhong University of Science and Technology, CHINA
[3] Institute of Microsystems, State Key Laboratory for Digital Manufacturing Equipment & Technology, School of Mechanical Science and Engineering, Huazhong University of Sci & Tech, CHINA

P121 Generation of Arbitrary Vector Beams with a Spatial Light Modulator 64
Mengnan Zhao, Xiangsheng Xie
State Key Laboratory of Optoelectric Material and Technology, Sun Yat-Sen University, CHINA

P078 Optical Module for Healthcare Electronics'""67
Lydia Leung, Sunny Chu, Luis Ng, Raymond To, Enboa Wu
Material and Packaging Technologies Group, Hong Kong Applied Science and Technology Research Institute Co. Ltd (ASTRI), HONG KONG

P120* Laminates for MEMS and BioMEMS "6:
Mark Bachman, G.-P. Li
Department of Electrical Engineering and Computer Science, University of California, Irvine, USA

P107* Opportunities on Prolong Battery Stand-by Time '""""75
Tam Yee Kam Daphne[1], Chen Haibin[2], Wu JingShen[2]
[1] NXP Semiconductors, HONG KONG
[2] The University of Hong Kong Science and Technology, HONG KONG

P041 Inductive Link Design with Optimal Transfer Efficiency and a High CMRR '"""7:
Yi-Chieh Lin, Tzyy-Sheng Horng, Lih-Tyng Hwang
Department of Electrical Engineering, National Sun Yat-Sen University, TAIWAN

16:40-17:00
P003[+] In-line Monitoring of the Change of Residual Stress in Nano-Scale Transistors during Their Thin-Film Processing and Packaging '"""84
Hironori Tago[1], Ken Suzuki[2], Hideo Miura[2]
[1]Dept. of Nanomechanics, Graduate School of Engineering, Tohoku University, Sendai, Japan
Fracture and Reliability Research Institute, Graduate School of Engineering, Tohoku University, Sendai, Japan 6-6-11-716, Aoba, Aramaki, Aoba-ku, Sendai, Japan

P056 Development of thermal fatigue sensor for electrical and electronic equipment 89
Yuya MINAKATA[1], Qiuang YU[1], Kanji Takagi[2]
[1]Yokohama National University, Yokohama, JAPAN
[2]OMRON Automotive Electronics Co, Ltd., JAPAN

Session I-c TSV

P103*
Supply Chains for 3D IC Integration Manufacturing '"94
John H. Lau
Electronics & Optoelectronics Research Laboratory, Industrial Technology Research Institute (ITRI), TAIWAN

P036+
Warpage, Stresses and KOZ of 3D TSV DRAM Package During Manufacturing Processes'"9;
P. S. Huang1, M. Y. Tsai[1], C. Y. Huang[1], P. C. Lin[2], Lawrence Huang[2], Michael Chang[2], Steven Shih[2], J.P. Lin[2]
[1]Department of Mechanical Engineering, Chang Gung University, TAIWAN
[2]Technology Development Div, Nanya Technology Co., TAIWAN

P076
A 3D Integration Testing Vehicle with TSV Interconnects'""": 6
Tiwei Wei[1], Qian Wang[1], Ziyu Liu[1], Yinan Li[3], Dejun Wang[3], Tao Wang[1], Jian Cai[1,2]
[1]Institute of Microelectronics, Tsinghua University, CHINA
[2]Tsinghua National Laboratory for Information Science and Technology, CHINA
[3]Faculty of Electronic information and Electrical Engineering, Dalian University of Technology, CHINA

P106
Through Silicon Via (TSV) Redundancy – A High Reliability, Networking Product Perspective '"": ;
Poh Choon Chew, Li Li, Jie Xue, William Eklow
Cisco Systems, Inc

P013+
Evaluation of the Crystallographic Quality of Electroplated Copper Thin-Film '"; 6
Interconnections Embedded in TSV Structures
Ryosuke Furuya[1], Ken Suzuki[2], and Hideo Miura[2]
[1]Dept. of Nanomechanics, Graduate School of Eng., Tohoku University, JAPAN
[2]Fracture and Reliability Research Institute, Graduate School of Eng., Tohoku University, JAPAN

P032+
Silicon Substrate with TSV for Light Emitting Diode Packaging '"322
Zhicheng Lv[1,2,4], Xiaogang Liu[2,3], Liang Yang[2,3], Jiaojiao Yuan[2,3], Xuefang Wang[2,3], Sheng Liu[2,3]
[1]School of Optoelectronic Science and Engineering, Huazhong University of Science and Technology, CHINA
[2]MOEMS Division, Wuhan National Lab for Optoelectronics, Huazhong University of Science & Technology, CHINA
[3]Institute of Microsystems, State Key Lab of Digital Manufacturing Equipment & Technology, School of Mechanical Science and Engineering, Huazhong University of Science & Technology, CHINA
[4]Huazhong University of Science and Technology, F101 Wuhan National Lab for Optoelectronics, CHINA

P001
Assembly Analysis of Cu/Ni/SnAg Microbump for Stacking Thin Chips in a Fine Pitch Package Using a Wafer-level Underfill '"326
Chang-Chun Lee[1], Tsung-Fu Yang[2], Kuo-Shu Kao[3], Ren-Chin Cheng[3], Chau-Jie Zhan[3]
[1]Research and Development Center for Microsystem Reliability Department of Mechanical Engineering, Chung Yuan Christian University, TAIWAN
[2]Electronics division, Business Group III, Topco Scientific Co., LTD.
[3]Assembly and Reliability Technology Department, Industrial Technology Research Institute.

P008
Current Stressing Effects on Interfacial Reaction Characteristics of Fine-Pitch Microbump '"333
Jong-Myeong Park, Jong-Jin Park, Sung-Hyuk Kim, Young-Bae Park
School of Materials Science and Engineering, Andong National University, KOREA

P059
Employment of a bi-layer of Ni(P)/Cu as diffusion barrier for the 3D integration bonding '"P 1C
Byunghoon Lee and Hoo-jeong Lee
School of Advanced Materials Science and Engineering, Sungkyunkwan University, Suwon, South Korea

Session I-d Solders

P077* High-Speed, Low-Power Device Trend and Low-k Layer Delamination '"336
Hirofumi Nakajima
Renesas Electronics Corporation, Japan

P063 Microstructural Analysis of Lead-free Solder Joint under Thermo-mechanical Loading '"33:
Kuo-Kang Hung, Mei-Ling Wu
Department of Mechanical & Electro-Mechanical Engineering National Sun Yat-Sen University, TAIWAN

P016 Effect of additive elements on tensile, creep and low cycle fatigue strength for SnBi solders '"344
Sho NAKANO, Masao SAKANE, Hiroaki HOKAZONO, Mitsuo YAMASHITA
Department of Science and Engineering Ritsumeikan University, JAPAN

P080 The Effect of Gold Concentration through a Single Dynamic Wave Soldering Process with respect to PCB Assembly '"349
F. Che Ani[1], A. Jalar[1], M.S. Abdul Aziz[2], M.Z. Abdullah[2], P. Rethinasamy[3],
[1]Institute of Microengineering and Nanoelectronics, Universiti Kebangsaan Malaysia, MALAYSIA.
[2]School of Mechanical Engineering, Universiti Sains Malaysia, MALAYSIA.
[3]Celestica (M) Sdn. Bhd., Industrial Tech. Kulim, Kedah, MALAYSIA.

P095* The Interfacial Interaction of Ti/Ni/Ag/Au Multilayer under Thermal Cycling Test '"358
Fu-Jung Yeh, Tsung-Chieh Chiu, Kwang-Lung Lin
Department of Materials Science and Engineering, National Cheng Kung University, TAIWAN

P092 The Evolution of IMCs' Morphologies and Types in SAC and SAC+ Solder Bumps during Thermal Shock Process '"363
Ying Zhong[1], Chun Qing Wang[1], J.F.J.M. Caers[2], Xiujuan Zhao[2]
[1]State Key Laboratory of Advanced Welding and Joining, Harbin Institute of Technology, CHINA
[2]Philips Research, Eindhoven, NETHERLANDS

P113+ Assembly and Testing of Thermal Test Chip on Silicon Interposer with Through Silicon Via '"367
Ziyu Liu[1], Jian Cai[1, 2], Qian Wang[1], Xi He[1], Shuidi Wang[1]
[1]Institute of Microelectronics, Tsinghua University, CHINA
[2]Tsinghua National Laboratory for Information Science and Technology, CHINA

P114+ Localized Heating and Bond Formation at Solder/Cu Interface Induced by Ultrasonic Friction '"372
Zhuolin Li[1], Mingyu Li[1], Jongmyung Kim[2], Hongbae Kim[2]
[1]Shenzhen Graduate School, Harbin Institute of Technology, CHINA
[2]Jeonnam Provincial College, SOUTH KOREA

P108 Tin Whisker Mitigation: from Single Layer to Multilayer '"P 1C
Ting Liu[1], Dongyan Ding[1], Yu Hu[2], Yihua Gong[2]
[1]Shanghai Jiao Tong University, CHINA
[2]Corporate Technology, Siemens Ltd., CHINA

Session II-a Materials & Processing (2)

P104* Parametric Modeling Study of Basic Electrodeposition in Microvias '"376
Nadezhda Strusevich, Mayur Patel, Christopher Bailey
University of Greenwich, UK

P002+ Effect of the Lattice Mismatch between Copper Thin-film Interconnection Base Material on the Crystallinity of the Interconnection'""37; "
Chuanhong Fan[1], Osamu Asai[1], Ken Suzuki[2], Hideo Miura[2]
[1]Dept. of Nanomechanics, Graduate School of Eng., Tohoku University, JAPAN
[2]Fracture and Reliability Research Institute, Graduate School of Eng., Tohoku University,

JAPAN

A Facile Fabrication method of Silver Lines on PET with Good Adhesion at Room Temperature'""386
P112+ Yunxia Jin, Dunying Deng, Yuanrong Cheng, Fei Xiao
Fudan University, CHINA

Dependence of packing fraction and surface area of the particles in the composites made by the combination of aluminum oxide and nitride for improving the thermal conductivity '"38:
P015 *Seran Choi, Yuseon Heo, Myeongjin Kim, Yongseon Hwang, Jooheon Kim*
Chung-Ang University, KOREA

Carbon Nanotubes Based Composites with High Dielectric Constant and Low Loss '"393
P049+ *Imtiaz Madni [1], Shuhui Yu[1], Rong Sun[1],*
Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, CHINA

Effects of Surface Treatments on the Performance of High Thermal Conductive Die Attach Adhesives (DAAs) '"399
P091* *Chenmin LIU, Dong Lu, Xianxin LANG, Ashley Choi, Peter WM Lee*
Nano and Advanced Materials Institute
The Hong Kong University of Science and Technology, Hong Kong, CHINA

Micro-Texture and Physical Properties of the Cold-sprayed Copper Deposit '"3: 4
P027+ *Yusuke Watanabe, Yuji Ichikawa, Isamu Nonaka, and Hideo Miura*
Tohoku University, JAPAN

Molding Void Issue and Solution of a Package-in-Package'""3: 8
P089 *Yu Chen[1], Jian Cai[1], Mian Huang[2], Guanqiang Song[3], Jing Jiang[3], Lin Tan[1], Qian Wang[1]*
[1]Tsinghua University, CHINA
[2]Institute of Microelectronics of the Chinese Academy of Sciences, CHINA
[3]Shennan Circuit Co., Ltd., CHINA

Volume Effect on Interfacial Microstructure and Mechanical Properties of Ni(UBM)/Sn3.0Ag0.5Cu/Ni(UBM) Joints'"3; 3
P058 *Jing-Bo Zeng, Guang-Sui Xu, Min-Bo Zhou, Xin-Ping Zhang*
South China University of Technology, CHINA

Session II-b Reliability (1)

Hygrothermal Analysis for the Electrochemical Migration Failure in Multi-Chip Packages during a Highly Accelerated Stress Test'"""3; 8
P007* *Jongguk Choe[1], Jae-Won Jang[1], Nam-Seog Kim[2], Soon-Bok Lee[1]*
[1]Department of Mechanical Engineering, Korea Advanced Institute of Science and Technology , Republic of Korea
[2]SK Hynix Inc. Icheon, Gyeonggido, Republic of Korea

Research on Temperature Gradient Effect to Solder Joint Reliability '""422
P071 Zheming Zhang[1,2], Jingshen Wu[1,2]
[1]The Hong Kong University of Science and Technology, Hong Kong, CHINA
[2]Fok Ying Tung Graduate School, The Hong Kong University of Science and Technology, CHINA

Reliability Simulation and Structural Optimization for Mechanical Loading '"""429
P102 *Jia-Shen Lan, Mei-Ling Wu*
National Sun Yat-Sen University, TAIWAN

Impact from IMC Thickness on the Reliability of Wire Bonding '""433
P115+ *J. Xiao, J. Huang, J. Liao, Y. Lin*

University of Electronic Science and Technology of China, CHINA

P018+
Effects of Molding Compounds on Warpage and Damage of PBGA after Post Mold Cure '"'438
Tatiana M. Lam , Sung Yi
Mechanical and Material Engineering Department, Portland State University, Portland, USA

P026*
Feasibility of PBGA Packaging for High Random Vibration Applications '"'446
Yeong K. Kim[1], Do Soon Hwang[2] , Jae Hyuk Lim[2]
[1]Korea Aerospace University Dukyang Gu, Goyang Si, Kyun-gi Do, 412-791, South Korea
[2]Korea Aerospace Research Institute, Daejun, 305-806, South Korea

P019+
Effects of Microstructure on Thermal Fatigue Life Prediction of Solder Joints '"'449
Hiue Tran[1], Yin Fun Chua[1], Sung Yi[1], Phil Geng[2]
[1]Portland State University, USA
[2]Intel Corporation, USA

P031
Development of Innovative Cold Pin Pull Test Method for Solder Pad Crater Evaluation '""'457
Qiming Zhang, Chaoran Yang, Mian Tao, Fubin Song, S. W. Ricky Lee,
Hong Kong University of Science & Technology, Hong Kong

P061
Ultrasonic Inspection of Package Internal Defects Considering Multiple Interface Effects '""'45;
Minshu Zhang[1], C. C. Jeffery. Lo[2] , Shi-Wei Ricky Lee[2]
[1]Xiamen University of Technology, CHINA
[2] Hong Kong University of Science and Technology,Hong Kong, CHINA

Session II-c LED & Power Electronics (1)

Chair: MY Tsai, Chang Gung; Co-chair: Lilin Liu, SYSU

P037*
The Role of Thermal Properties of PCB Substrates in Heat Dissipation of LED Back Light Bars '""'466
C. Y. Tang[1], J. J. Huang[1], Y. L. Peng1, M. Y. Tsai[1], and Peter Liang[2]
[1]Chang Gung University, TAIWAN
[2]Nanya Plastics Co.,TAIWAN

P109*
Color Consistence Improvement in LED packages '""'472
Cell K.Y. Wong[1], Stanley Y.Y. Leung[1], Lin Niu [1], Gongqi Fan[1], Xiang Zhou[1], Cadmus C.A. Yuan[2], Guoqi Zhang[2], Yanglin Li[4], Menglong Tu[4] , Shaofang Wang[4]
[1]State Key Laboratory of Solid State Lighting (Changzhou Base), CHINA
[2]State Key Laboratory of Solid State Lighting, Haidian, CHINA
[3]DIMES, Delft University of Technology, the Netherlands
[4]Ledman Optoelectronic Co. Ltd, CHINA

P039
A method for geometry control of phosphor layer in high-power white LEDs by package structure '""'477
Huai Zheng, Xing Fu, Bulong Wu, Sheng Liu, and Xiaobing Luo
Huazhong University of Science and Technology, CHINA

P068
LED Wafer Level Packaging with a Remote Phosphor Cap '""'482
Huihua Liu, Rong Zhang, Jeffery C. C. Lo, S. W. Ricky Lee
Hong Kong University of Science and Technology, Hong Kong

P025
A Thermal Performance Assessment of Panel Type Packaging (PTP) Technology for High Efficiency LED'""'487
Yen-Fu Su[1], Yu-Hsiang Yang[1], Wen-Kun Yang[2], Kuo-Ning Chiang[1,3]
[1]National Tsing Hua University, Hsinchu, TAIWAN
[2]King Dragon International Inc., British Virgin Islands

[3]National Center for High-Performance Computing

P064* High Bright White LED Packaging Systems Using Unique Vacuum Printing Technology (VPES) '"492
Atsushi Okuno, Yoshiteru Miyawaki, Dongxu Wang, Osamu Tanaka
SANYU REC CO.,LTD,JAPAN

P093* The Investigation of LED's Reliability Through Highly Accelerated Stress Testing Methods '"496
Lilin Liu, Jianfu Yang, Gang Wang
Sun Yat-Sen University,, CHINA

P099 Convenient fabrication of Composites with Aqueous Synthesized Quantum Dots for LED Encapsulation '"499
Lei Zhang, Haibin Chen, Jingshen Wu
Center for Engineering Materials and Reliability , Fok Ying Tung Graduate School, The Hong Kong University of Science and Technology

P105+ White LED devices with nearly uniform space-color distribution through nanoparticle usage '"4: 4
Mingyang Wu, Lilin Liu, Gang Wang
Sun Yat-Sen University,CHINA

Session II-d Nano & Emerging Technologies (1)

P051 Transparent Functionalized Zinc Oxide/Epoxy Nanocomposite with High Thermal Performance for High-Power Light-Emitting Diodes '"4: 8
Min Zhang, Kai Zhang, Xinfeng Zhang, Chen Yang, Matthew Ming-Fai Yuen
The Hong Kong University of Science and Technology, Hong Kong, CHINA

P033+ Hard Mold UV Nanoimprint Lithography Process '"4; 4
Yinsheng ZHONG, Matthew. M. F. YUEN
The Hong Kong University of Science and Technology, Hong Kong, CHINA

P048+ Different morphologies of Nano-ZnO affection on properties of transparent epoxy resin encapsulants'"4; 9
Chongnan Peng[1,2], Guoping Zhang[1], Rong Sun[1], Ricky Lee[3]*
[1]Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences. CHINA
[2]Shenzhen University, CHINA
[3]The Hong Kong University of Science and Technology, Hong Kong, CHINA

P050 Carbon Nanotubes Based Composites with High Dielectric Constant and Low Loss '"523
Imtiaz Madni1, Shuhui Yu, Rong Sun
Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, CHINA

P054 Preparation And Performance Research On The $Si_3N_4@SiO_2$/PI Nanocomposite '"529
Jing Qin[1,2], Guoping Zhang[1], Rong Sun[1] , Chingping Wong [1,3]
[1]Shenzhen Institutes of Advanced Technology Chinese Academy of Science, CHINA
[2]Shenzhen University, CHINA.
[3]Chinese University of Hong Kong, CHINA

P009 Development of Highly Conductive Inks for Smart Textiles '"533
Masahiro Inoue[1], Yasunori Tada[1], Hiroaki Muta[2], Yamato Hayashi[3], Tomohiro Tokumaru[4]
[1]Gunma University, JAPAN
[2]Osaka University, JAPAN
[3]Tohoku University, JAPAN
[4]Bio Signal Co., Ltd. JAPAN

P065 An Investigation on Secondary EFO Copper Wire – from a Nanoscale Perspective View'"537
Hsiang-Chen Hsu, Jih-Hsin Chien, Chen-Yi Wang, Cheng-Che Liu, Shen-Li Fu, Miin Shyan

Bair
I-Shou University, TAIWAN

P062 Wet-chemical Synthesis of the Size-controlled BaTiO3 Nanoparticles for Embedded Capacitors 543
Enhe Zhang[1,2,] Suibin Luo[1], Wenhu Yang[1], Shuhui Yu[1], Rong Sun[1], Yubao Zhao[2]
[1]Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, CHINA
[2]University of South China, CHINA

P022+ Mechanical fastening to enable room temperature packaging for LOCs based on biocompatible hydrogel thin film 547
Weiwei Zhao[1], Changqing Liu[1], Cristina Lenardi[2], Tommaso Santaniello[1,2], Fengshun Wu[3]
[1]Loughborough University, Loughborough, UK
[2]University of Milan, Milan, ITALY
[3]Huazhong University of Science and Technology

Session III-a Interconnect & Bonding

P090* Process Considerations of TC-NCP Fine-pitch Copper Pillar FC Bonding 552
Y.M. Cheung, Ka San Lam, Giuseppe Y. Mak, Dewen Tian, Ming Li
ASM Technology Hong Kong, Hong Kong, China

P110 Low-Temperature Bonding Method Based On Metallic Microcone Array For Interconnection Application 559
Qin Lu, Zhuo Chen, Liming Gao, Ming Li*
State Key Laboratory of Metal Matrix Composites, Key Laboratory for Thin Film and Microfabrication Technology of the Ministry of Education, School of Material Science and Engineering, Shanghai Jiao Tong University, China

P006 Low Temperature Bonding of Piezoelectric Single Crystal Materials for Miniaturized High Resolution Ultrasound Transducers 563
Jack Hoy-Gig Ng[1], Robert T. Ssekitoleko[2], Hoang-Vu Nguyen[3], Knut E. Aasmundtveit[3], Christine E. M. Démoré[4], Sandy Cochran[4] and Marc P.Y. Desmulliez[1]
[1]MIcroSystems Engineering Centre (MISEC), Institute of Sensors, Signals and Systems (ISSS), Heriot-Watt University, Scotland, UK
[2]Department of Bioengineering, University of Strathclyde, Glasgow, Scotland, UK
[3]Department of Micro and Nano Systems Technology (IMST), Vestfold University College, Norway
[4]Institute for Medical Science and Technology (IMSaT), University of Dundee, Scotland, UK

P028+ An Atomistic Scale Study on Solidification in Ultrafine Interconnects 567
Zhiyong Wu[1], Zhiheng Huang[1], Paul Conway[2], and Qingfeng Zeng[3]
[1]School of Physics and Engineering, Sun Yat-sen University, China
[2]Wolfson School of Mechanical and Manufacturing Engineering, Loughborough University, U.K.
[3]School of Materials Science and Engineering, Northwestern Polytechnical University, China

P017+ Development of low temperature Chip-on-Flex (COF) bonding process of 100℃ 574
Sun-Chul Kim and Young-Ho Kim
Division of Materials Science & Engineering, Hanyang University, Korea

P085 Development and Qualification of Copper Wire Bond Process for Automotive Applications 577
Pey Fang Hiew, Yin Kheng Au, Poh Leng Eu
Freescale Semiconductor (M) Sdn. Bhd., Malaysia

P086 Importance of Cu/Al Intermetallic Coverage in Copper Wire Bonding with Sensitive Pad Structure 582
Tracy Jia Lin Yap, Yin Kheng Au, Poh Leng Eu

Freescale Semiconductor, (M) Sdn. Bhd., Malaysia

P088 Systematic Pd Cu Wire Bond Recipe Development Flow for Successful Qualification Result '"587
Law Lai Cheng, Wong Boh Kid, Hiew Pey Fang, Eu Poh Leng
Freescale Semiconductor, (M) Sdn. Bhd., Malaysia

Session III-b Reliability (2)

P057* Solder Volume Effects on Fatigue Life of BGA Structure Cu/Sn-3.0Ag-0.5Cu/Cu Interconnects '"58;
Hong-Bo QIN[1], Xun-Ping LI[1,2], Xin-Ping ZHANG[1]
[1]Smart Materials and Electronic Packaging (SMEP), School of Materials Science and Engineering, South China University of Technology, Guangzhou, China
[2]Science and Technology on Reliability Physics and Application of Electronic Component Laboratory, the 5th Electronics Research Institute of Ministry of Information Industry, Guangzhou, China

P045 Effect of interfacial reaction layer on the brittle fracture of the SAC305 solder joint on ENIG and ENEPIG surface finish'""598
Sang-Hyun Kwon[1], Kang-Dong Kim[2], Deok-Gon Han, Tae-Hyun Sung, Chang-Woo Lee[1], and Sehoon Yoo[1]
[1]Korea Institute of Industrial Technology, KOREA
[2]Samsung Electro-Mechanics Co., LTD, KOREA

P055 Packaging of Microelectronics for Thermo-Mechanical Environments '"59;
Ming-Han Wang, Mei-Ling Wu
Department of Mechanical Engineering, National Sun Yat-Sen University, Kaohsiung, Taiwan

P012+ Improvement of the Reliability of Thin-Film Interconnections Based on the Control of the Crystallinity of the Thin Films '"5: 5
Osamu Asai, Naokazu Murata, Ken Suzuki, and Hideo Miura
Tohoku University, Sendai, JAPAN

P035* Reliability evaluation of a new 3D SIC package by FEM and thermal-strain measurement with digital image correlation using SEM '""P IC
Toru Ikeda[1], Masatoshi Oka[2], and Noriyuki Miyazaki[2], Hiroyuki Tanaka[3], Takuya Hatao[4]
[1]Kagoshima University, Kagoshima, Japan
[2]Kyoto University, Kyoto, Japan
[3]Sumibe Research Co., Ltd., Utsunomiya, Japan
[4]Sumitomo Bakelite Co., Ltd., Utsunomiya, Japan

P094* Investigation of Rework for Straddle Mount Connectors '"5: :
Jeffery Li[1], Fubin Song[1], Khoo KoK Wei[1], James Huang[1], Alex Chen[2], PK Pu[3], Sven Peng[3]
[1]Celestica, Song Shan Lake, China,
[2]Celestica, Toronto, Canada.
[3]IBM Corporation, ShenZhen, China

P029+ Effects of Microstructure on Vacancy and Stress Distributions in Micro Joints under Current Stressing '"5; 5
Hua Xiong[1], Zhiheng Huang[1], Paul Conway[2], Qingfeng Zeng[3]
[1]School of Physics and Engineering, Sun Yat-sen University, 135 West Xingang Road, Guangzhou, China
[2]Wolfson School of Mechanical and Manufacturing Engineering, Loughborough University, U.K.
[3]School of Materials Science and Engineering, Northwestern Polytechnical University, China

P023+
Fatigue Life and Reliability Prediction of Electronic Packages under Thermal Cycling Conditions through FEM Analysis and Acceleration Models'"623
Xuhua Huang, Wen-Fang Wu and Po-Lun Chou
National Taiwan University, TAIWAN

Session III-c LED & Power Electronics (2)

P084*
LED Device & SSL packaging trends study by x-ray analysis'""P 1C
T. Onishi
Grand Joint Technology Ltd.

P096
Thermal performance and placement design of LED array package on PCB '"629
K.C. Yung, H.M. Liem, H.S. Choy
Department of Industrial and Systems Engineering, the Hong Kong Polytechnic University, Hong Kong

P097+
Anomaly Detection for Chromaticity shift of High Power White LED with Mahalanobis Distance Approach '"634
Jiajie Fan[1], Kam-Chuen Yung[1], Michael Pecht[2]
[1]PCB Technology Center, Department of Industrial and Systems Engineering, The Hong Kong Polytechnic University, Hong Kong
[2]Center for Advanced Life Cycle Engineering, University of Maryland, USA

P044
Study on Thermal Design due to Downsizing of Power Module Using Coupled Electrical-Thermal-Mechanical Analysis'""639
Yasutaka YAMADA, Qiang YU, Tomohiro TAKAHASHI Yusuke TAKAGI
Yokohama National University, Japan

P053
A Study on Evaluation Method of New Packaging Structure for High-Temperature Power Device'"646
Akihiro HIGUCHI, Qiang YU, Toshikazu OSHIDARI, Mingliang CUI
Yokohama National University, Japan

16:00-16:20
P081
Novel Substrate Technology for IPM (Intelligent Power Module) Applications: Structural, Thermal and Electrical Characteristics'"652
Kwang-Soo Kim[1], Young-Ki Lee[1], Young-Hoon Kwak[1], Ji Hyun Park[1], Job Ha[1], Ga-Young Shin[2], Bum-Seok Suh[1]
[1]Samsung Electro-Mechanics Co., LTD., Suwon, Korea
[2]Department of Chemistry, Hanyang University, Seoul, Korea

P119
IGBT Power Module Packaging for EV Applications '""655
Chun-Kai, Liu, Yu-Lin Chao, June-Chien Chang, Wei Li, Chih-Ming Tzeng, Rong-Chang Fang, Kuo-Shu Kao, Tao-Chih Chang, Chang-Sheng Chen, Wei-Chung Lo
Electronics and Opto-Electronics Laboratories/Industrial Technology Research Institute, Taiwan

P082
Packaging of SiC-SBD for High Temperature Operation '"659
Zarel Valdez-Nava[1,2], Masahiro Kozako[3], Sorin Dinculescu[1,2], Ichiro Omura[3], Masayuki Hikita[3], Thierry Lebey[1,2]
[1]Université de Toulouse, France.
[2]CNRS, France.
[3]Kyushu Institute of Technology, Japan

P118
Dual-phase solid-liquid interdiffusion bonding, a solution for the die attachment of WBG power module assembly'""663
Tao-Chih Chang, Jing-Yao Chang, Tung-Han Chuang
Industrial Technology Research Institute, Taiwan

Session III-d Nano & Emerging Technologies (2)

P070*
Multiscale Modeling of Thermomechanical Behavior of Lead-Free Solders and Solder/Cu Interfaces '"P 1C
Feng Gao , Jianmin Qu
Department of Civil and Environmental Engineering Department of Mechanical Engineering Northwestern University Evanston, USA

P004
Highly Sensitive Strain Sensor Using Carbon Nanotube '"668
Hiroshi Kawakami[1], Ken Suzuki[2], Hideo Miura[2]
[1]Dept. of Nanomechanics, Graduate School of Eng., Tohoku University, Japan
[2]Fracture and Reliability Research Institute, Graduate School of Eng., Tohoku University, Japan

P014+
Highly Transparent Conducting Graphene Films Produced by Langmuir Blodgett Assembly as Flexible Electrodes '"673
Xiuyi Lin, Jingjing Jia, Nariman Yousefi, Xi Shen, Jang-Kyo Kim
Department of Mechanical Engineering, The Hong Kong University of Science and Technology, Hong Kong

P066+
Fabrication of One-dimensional CuO Nanocrystals via Pulsed Wire Explosion: Structural, Optical and Electronic Characterizations'""678
Shutesh Krishnan, A.S.M.A Haseeb, Mohd. Rafie
Department of Mechanical Engineering University of Malaya,, Malaysia

P116+
Pressureless low temperature sintering of Ag nanoparticles for interconnects'"682
Shuai Wang[1], Hongjun Ji[1], Mingyu Li[1], Jongmyung Kim[2], Hongbae Kim[2]
[1]Shenzhen Graduate School, Harbin Institute of Technology, China.
[2]Jeonnam Provincial College, South Korea

P111
Preparation of Copper Nanoparticles with Low Sintering Temperature '"686
Dunying Deng, Yunxia Jin, Yuanrong Chen, Tianke Qi, Fei Xiao
Fudan University, CHINA

P083
RFID device packaging trends study by tear down '"P 1C
T. Onishi
Grand Joint Technology Ltd.

P117
An Assessment Method for Cu Wire Bond-pads '"P 1C
Dewen Tian, Janardhanan Pillai Madhukumar, Ming Li
ASM Pacific Technology, Hong Kong, China

P087
Effect of Chemical Etching Solution on Cu/Al IMC Result'"""68:
Wong Boh Kid, Eu Poh Leng, Yow Kai Yun
Freescale Semiconductor, (M) Sdn. Bhd., Malaysia