

Technical Programme

Wednesday 3rd September 2008

Plenary

Keynote: SiP and WLP-CSP trends: state-of-the art and future trends

Coffee Break

Session We-A-1 Poster Session : Optoelectronics, Assembly of Alternative Energy Sources and Emerging Technologies

Novel Optical Transmitter and Receiver for Parallel Optical Interconnects on PCB-Level

Krzysztof Niewegłowski, Klaus-Jürgen Wolter, Electronics Packaging Laboratory, Technische Universität Dresden

Investigation on OLED Encapsulation Characteristics with Adhesive

Zhang Yan¹, Andreasson Måns², Liu Johan², Andersson Thorvald², ¹Shanghai University, ²Chalmers University of Technology

Photolithographically Manufactured Acrylate Multimode Optical Waveguide Misalignment Design Rules

David R. Selviah¹, Kai Wang¹, Ioannis Papakonstantinou¹, Hadi Baghsiahi¹, Guoyu Yu¹, Wai-Yin Michael Yau², ¹University College London, ²Agilent

Development of a low cost Gigabit Ethernet Optical Media Converter Module avoiding fiber optic connectors

Giovanni Delrosso, Luca Maggi, Pirelli Labs

Flexible Integration of Alternative Energy Sources for Autonomous Sensing

Alex Weddell, Nick Harris, Neil White, University of Southampton

Fabrication of gold nanorod absorption layers for infrared sensors

Marco Schossig¹, Gerald Gerlach¹, Mathias Lakatos², Wolfgang Pompe², ¹Solid-State Electronics Lab, ²Institute for Materials Science

Overview of Carbon NanoTube for Electronic Interconnect

Xia Zhang¹, Teng Wang², Joham Liu¹, ¹Chalmers University and Technology & Shanghai University, ²Chalmers University and Technology

Electromagnetic and Circuital Modeling of Carbon Nanotube Interconnects

Antonio MAFFUCCI¹, Giovanni MIANO², Fabio VILLONE¹, ¹DAEIMI, Università di Cassino, Cassino (FR), Italy, ²DIEL, Università di Napoli "Federico II", Napoli, Italy

Evaluation of Printing Parameters and Substrate Treatment Over the Quality of Printed Silver Traces

Renato Bonadiman, Marco Marques, Germano Freitas, Tommi Reinikainen, Nokia Technology Institute

Numerical Processing of Stereo Optical Images for Autonomous Navigation

Hapenciuc Iaroslav-Andrei, Svasta Paul Mugur, CETTI

Session We-A-2 Advanced Packaging : Advanced Packaging I

TSV process using bottom-up Cu electro-plating and it's reliability test

Hsiang-Hung Chang, Chia-Wen Chiang, Zhi-Cheng Hsiao, Chao-Kai Hsu, Ying-Ching Shih, ITRI

Collective flip chip hybridization of tantalum absorbers on a silicon thermistors array for X-ray imaging devices

Adrien GASSE¹, Patrick AGNESE¹, Abdelkader ALIANE¹, Fabrice DE MORO¹, Claude PIGOT², Jean Luc SAUVAGEOT², Virgine SZEFLINSKI², ¹CEA-LETI-Minatec, ²CEA/DSM/DAPNIA

Fabrication Process for Novel High Speed Coaxial to Coplanar Off-chip Interconnect

Christopher McIntosh, Brock LaMeres, Montana State University

A Multilayer Process For The Connection Of Fine-Pitch-Device On Molded Interconnect Devices (Mids)

Soeren Hirsch, Thomas Leneke, University of Magdeburg

Session We-A-3 New Materials and Processes : Bonding, Plating and Fabrication 2

Laser based hermetic joining with glass frit intermediate layer

Qiang Wu¹, Norbert Lorenz¹, Kevin Cannon², Changhai Wang¹, A.J. Moore¹, D.P. Hand¹, ¹Heriot Watt University, ²GE aviation system Ltd.

Growth Mechanism of Single Crystal Copper Column by Electrodeposition

Jun Liu, Changqing Liu, Paul Conway, Loughborough University

Sonochemistry – A sound approach to surface modification.

Andrew Cobley, Timothy Mason, The Sonochemistry Centre at Coventry University

UV Direct-Writing of Metals on Polyimide Substrates

Jack Hoyd-Gigg Ng, Kevin A. Prior, Duncan P. Hand, Marc P. Y. Desmulliez, Heriot-Watt University, UK

Session We-A-4 Modelling, Simulation and Design : Simulation and DFR 4

High Frequency Characterization and Modeling of Inkjet Printed Coplanar Strips on Flexible Substrate

Botao Shao, Li-Rong Zheng, The Royal Institute of Technology

Reliability evaluation and structure optimization of a Wafer Level Chip Scale Packaging (WLCSP)

Shan Gao, Jupyter Hong, Jinsu Kim, Jingu Kim, Seogmoon Choi, Sung Yi, Samsung Electro-Mechanics

FEA Modeling and DOE Analysis for Design Optimization of 3D-WLP

Ming-Che Hsieh, Wei Lee, Industrial Technology Research Institute

Chip-package interactions: Combined effects of some package parameters on Copper/Low-k Interconnect Delaminations

Vincent Fiori, STMicroelectronics

Session We-A-5 Manufacturing and Test Technology : Manufacturing I

Flip Chip Interconnects Qualified for Advanced Low-k Chips with SnCu Bumps by alloying Cu/Sn plated stack

Hirokazu Ezawa¹, Masayuki Uchida², Masayuki Miura¹, Takashi Togasaki², Tsunetoshi Iijima¹, Tatsuo Migita¹, Tadashi Iijima¹, Kazuhito Higuchi², Toshiba Corporation Semiconductor Company / Process & Manufacturing Engineering Center, ²Toshiba Corporation / Corporate Manufacturing Engineering Center

Advanced Bumping Process to Enable High Density Electronics Interconnection

Yingtao Tian¹, Jens Kaufman², Changqing Liu¹, David Hutt¹, Bob Stevens³, Marc P.Y. Desmulliez², Wolfson School of Mechanical and Manufacturing Engineering, Loughborough University, UK, ²MicroSystems Engineering Centre (MISEC), Heriot-Watt University, Edinburgh, UK, ³Central Microstructure Facility, Rutherford Appleton Laboratory, UK

Electronics Production and Process Controlling

Jiri Tupa, University of West Bohemia in Pilsen

3D-Mintegration: The design and Manufacture of 3D miniaturised products

Marc Desmulliez¹, David Topham², Heriot-Watt university, ²Arts & Science

Session We-A-6 Reliability and Technology of Micro and Nano Systems : Solder Joint Reliability

Thermal Cycling Fatigue Analysis of Copper Pillar-to-Solder Joint Reliability

John H. L. PANG¹, Stephen C. K. WONG², S. K. NEO¹, Kok Ee TAN¹

¹Nanyang Technological University, ²Singapore Institute of Manufacturing Technology

Effects of Composition and Volume on the Microstructure of SnAgCu Solder Balls

Maik Mueller, Steffen Wiese, Klaus-Juergen Wolter, TU Dresden / IAVT

Fracture Mechanics Analysis of Cracks in Solder Joint Intermetallic Compounds

M. O. Alam¹, H. Lu¹, C. Bailey¹, Y. C. Chan², University of Greenwich, ²City University of Hong Kong

Fatigue Damage Prediction During Thermo-mechanical Cycling for Lead-free Solders

Christopher Hunt, Milos Dusek, NPL

Special Session We-A-7 System Prognostics & Health Management

- "Embedded Prognostics and Health Monitoring Systems", Dr. Bruno Foucher, EADS.
- "Integrated Vehicle Health Management in the Auto Industry", Steven Holland, General Motors.
- "Aerospace and Electronic Systems Prognostic Health Management", Dr. John Vian, Boeing.
- "Detecting Anomalies in Field Returned Laptops using Mahalanobis Distance", Prof Michael Pecht, CALCE, University of Maryland.

Lunch Break

Session We-P-8 Poster Session : Advanced Packaging, Electronics System-Integration for Healthcare, Power Electronics

Fine pitch Cu wire bond process for integrated circuit devices for high volume production

Sebastian Schindler, Klaus-Jürgen Wolter, TU Dresden, Electronics Packaging Laboratory

Advance in the Assembling and Packaging of Supercapacitor Modules for Higher Performance

Vasile Obreja, National Research and Development Institute for Microtechnology (IMT Bucuresti), Bucharest, Romania

New Developments for highest integration density in Polymer Thick-film Technology

Marco Luniak, Klaus-Jürgen Wolter, TU Dresden / IAVT

Stacking of Ultra-thin film packages

Ying-Ching Shih¹, Jing-Yao Chang¹, Cheng-Ta Ko¹, Dionysios Manassis², Andreas Ostmann², ¹ITRI, ²IZM

Evolution of VLSIs Materials and Packaging Technology Correlated with Progress of Thin Films Deposition and Outlets Bonding Methods

Victor Emelyanov, Corporation "Integral"

Microsystems technology for the separation of fetal cells from maternal blood

Deirdre M. Kavanagh, Marc P.Y. Desmulliez, Resham Dhariwal, David Flynn, Farid Amalou, Brian G Moffat, Heriot Watt University

A New Technology Of Communication With People

Vlad Cehan, Dana-Anca Cehan, Radu-Gabriel Bozomitu, "Gh. Asachi" Technical University of Iasi

Computer Modelling Analysis of the Globtop's Effects on Aluminium Wirebond Reliability

Hua Lu¹, Wei-Sun Loh², Chris Bailey², C. Mark Johnson³, ¹Univ of Greenwich, ²Univ of Sheffield, ³Univ of Nottingham

Modelling, Simulation And Experimental Results Of A Switching Power Supply With DC-DC Converter

Florescu Adriana, Vasile Alexandru, Radoi Constantin, Stanciu Dumitru, Politehnica University of Bucharest

A frequency-response-based characterisation methodology for piezoelectric transformers

Edward Horsley, Martin Foster, David Stone, The University of Sheffield

Session We-P-9 Optoelectronics : Devices and Products

Optical Encoder Readhead Chip

John Carr¹, Marc Desmulliez², Nick Weston¹, David McKendrick¹, Graeme Cunningham¹, Wyn Meredith³, Andy McKee³, Conrad Langton³. ¹Renishaw, ²Heriot-Watt University, ³CST Global

Integration of Laser-support Fiber Adjustment in Opto-electronic Modules

Johan van Zantvoort, Simon Plukker, Erwin Dekkers, Djan Khoe, Ton Koonen, Huug de Waardt, Eindhoven University of Technology

Improved infrared temperature sensing system for mobile devices

Kimmo Keränen¹, Jukka-Tapani Mäkinen¹, Pentti Korhonen¹, Veli Heikkinen¹, Jakke Mäkelä². ¹VTT, ²Nokia

Illumination of LCOS microdisplays using planar lightguides

Tapani Levola, Pekka Äyräs, Nokia

Session We-P-10 New Materials and Processes : Advancements in adhesives, encapsulants, underfills, solder alloys (1)

High-Frequency Vibration Tests of Sn-Pb and Lead-Free Solder Joints

Davide Di Maio, Chris Hunt, NPL

Electrical Property of Conductive Adhesives Using Silver Coated Copper Filler

Hiroshi Nishikawa¹, Saya Mikami², Nobuto Terada³, Koichi Miyake⁴, Akira Aoki⁵, Tadashi Takemoto¹. ¹JWRI, Osaka Univeristy, ²Osaka University, ³Harima Chemicals, Inc., ⁴Mitsui Mining & Smelting Co., Ltd., ⁵Hikoshima Smelting Co., Ltd.

Viscoelastic properties of solder pastes and isotropic conductive adhesives used for flip-chip assembly

Rajkumar Durairaj, Universiti Tunku Abdul Rahman (UTAR)

Correlation between Intermetallic Compound Formation and Brittle Fracture for Different Solder Composition on Surface Finish

Liang-Yi Hung, Chiang Cheng Chang, C.S. Hsiao, Chein Wei Li, Yu Po Wang, Siliconware Precision Industries Co., Ltd

Session We-P-11 Modelling, Simulation and Design : Simulation and Characterisation (1)

Evaluation of Stress-induced Effect on Electronic Characteristics of nMOSFETs using Mechanical Stress

Simulation and Drift-Diffusion Device Simulation

Masaaki Koganemaru¹, Toru Ikeda², Masateru Komori², Noriyuki Miyazaki², Hajime Tomokage³. ¹Fukuoka Industrial Technology Center, ²Kyoto University, ³Fukuoka University

Strain Rate Effects on Mechanical Properties for SnAgCu and SnAgCu-X Solder Joint

John H. L. PANG, Nanyang Technologiccal University

Matrix rheology effect on the stability of thermally conductive adhesives properties - numerical approach

Tomasz Falat, Jan Felba, Artur Wymyslowski, Wroclaw University of Technology

Modeling Reactive Wetting with a Diffuse Interface Approach

D. Wheeler, J. A. Warren, W. J. Boettinger, NIST

Session We-P-12 Manufacturing and Test Technology : Manufacturing (2)

Rigid-flexible Interconnection Realized by Laser Soldering through Polyimide

Bálint Balogh, Zsolt Illyefalvi-Vitez, Zsolt Baranyay, Department of Electronics Technology, BME

Innovative Optical and Electronic Interconnect Printed Circuit Board Manufacturing Research

David R. Selviah¹, Andy C. Walker², David A. Hutt³, Dave Milward⁴, Kai Wang¹, Ioannis Papakonstantinou¹, Hadi Baghsiahi¹, Aongus McCarthy², Himanshu Suyal². ¹University College London, ²Heriot Watt University, ³Loughborough University, ⁴Xyratex Technology Ltd.

Thick Film Modules assembled to flexible printed Circuits

Markus Detert¹, Lars Rebenklau², Klaus-Jürgen Wolter². ¹Centre of Microtechnical Manufacturing, ²Electronics Packaging Lab

Life-time Test of Laser Soldered Joints on Flexible Boards

Zsolt Illyefalvi-Vitez¹, Bálint Balogh¹, Zsolt Baranyay¹, Réka Bátorfi¹, Graham Farmer². ¹BME-ETT, ²GTS Flexible Materials Ltd

Session We-P-13 Reliability and Technology of Micro and Nano Systems : Interconnects and Packaging

Microstructural evolution by electromigration in line-type Cu/SnBi/Cu solder joint

XIN GU, Y. C. CHAN, Department of Electronic Engineering, City University of Hong Kong

Effect of Thermal Aging on Interfacial Behaviour of Copper Ball Bonds

Hui Xu, Changqing Liu, Vadim Silberschmidt, Loughborough University

Structure Property Correlation of cross-linked epoxy resins under the influence of moisture & temperature; comparison of Diffusion coefficient with MD-simulations

Emmanouella Dermizaki¹, Bernhard Wunderle¹, Bauer Jörg¹, Walter Hans², Michel Bernd¹, ¹Fraunhofer Institute-IZM, ²AMIC

Reliability of Isotropic Conductive Adhesives (ICAs) Contact Resistance with Immersion Silver Printed-Circuit Board (PWB)

Jeahuck Lee, James E. Morris, Portland State University

Session We-P-14 Emerging Technologies : Applications to Soldering

Room Temperature Sintering Mechanism of Ag Nanoparticle Paste

Suganuma Katsuaki, Daisuke Wakuda, Chang-Jae Kim, Keun-Soo Kim, Osaka University

Synthesis and characterization of nano-sized Sn-Cu-Co lead-free solder particles using a chemical reduction method

Cristina Andersson, Masahiro Inoue, Johan Liu, Chalmers University of Technology

NanoFlux - Doping of solder pastes

Patrick Zerrer¹, Andreas Fix¹, Matthias Hutter², Uwe Pape², ¹Robert Bosch GmbH, ²IZM Fraunhofer

Nanoparticle synthesis and formation of composite solder for harsh environments

Andrew Cobley, Timothy Mason, Coventry University

Coffee Break

Session We-P-15 Poster Session : Modelling, Simulation and Design

A simulation model for supporting the low volume manufacture of complex, high value-added electronics manufacturing

Lina A. M. Huertas Quintero, Andrew A. West, Diana M. Segura Velandia, Paul P. Conway, Anthony Wilson, Radmehr P. Monfared, Loughborough University

Investigating the kinematical behaviour of Chip Components during Reflow Soldering

Krammer Olivér, Radvánszki Zoltán, Illyefalvi-Vitéz Zsolt, BME - Electronics Technology Department

Application Of A Method For Characterization Of Thermo Mechanical Stress Caused By Packaging Processes

Soeren Hirsch, Soeren Majcherek, University of Magdeburg

Uncertainty Analysis to Minimise Risk in Designing Micro-Electronics based Manufacturing Processes

Ying Kit Tang¹, Stoyan Stoyanov¹, Chris. Bailey¹, Y. C. Chan², ¹University of Greenwich, ²The City University of Hong Kong

Vibration analyses of the die bonder process using laser interferometry and FE techniques

Jian Gao, Robert Kelly, Xin Chen, School of Electromechanical Engineering, Guangdong University of Technology

Integrating Design, Manufacture and Test using Capability Measures

James Gilbert, University of Hull

Controlling Stochastic Resonance In An Electronic Circuit With Lévy Perturbations

Romeo NEGREA, Horia CARSTEA, Paul CONTANTINESCU, Daniela SAMOILA-MIHET, Politehnica University of Timisoara

Session We-P-16 Optoelectronics : Interconnects

Bended Interconnection using Graded Index Optical Waveguide for High Speed Optical Communication

Kiyokazu Yasuda, Kunio Ota, Kozo Fujimoto, Osaka University

The Effect of Surface Modification on Adhesion of Polymer Waveguide Deposits on Flexible Substrate

Tze Yang Hin, Changqing Liu, Paul P. Conway, Loughborough University

Direct Laser-Writing of Polymer Structures for Optical Interconnects on Backplane Printed Circuit Boards

Andy Walker, Himanshu Suyal, Aongus McCarthy, Heriot-Watt University

Session We-P-17 New Materials and Processes : Advancements in adhesives, encapsulants, underfills, solder alloys (2)

An electro-magnetic actuator for printing solder

Oliver S. Kessling, Franz Irlinger, Tim C. Lueth, TU Muenchen, Department for Microtechnology and Medical Device Technology

Development of Gap Spacer in LCD for Ink Jet Printing

Naoki Maruyama, Hitachi Chemical Co.,Ltd.

PZT thick films for pressure sensors: Characterisation of materials and devices

Darko Belavic¹, Marko Hrovat², Marina Santo Zarnik¹, Janez Holc², Jena Cilensek², Mitja Jerlah¹, Srecko Macek², Hana Ursic², Marija

Kosec², ¹HIPOT-RR c/o Jozef Stefan Institute, ²Jozef Stefan Institute

Session We-P-18 Modelling, Simulation and Design : Simulation and Characterisation (2)

Mechanical characterisation of thin metal layers by modelling of the nanoindentation experiment

Olaf Wittler¹, Raúl Mrožko², Eberhard Kaulfersch¹, Bernhard Wunderle¹, Bernd Michel¹: ¹Fraunhofer IZM, Micro Materials Center Berlin and Chemnitz, Germany, ²AMIC GmbH, Berlin, Germany

Effektive Thermal Modelling Evaluation and Non-Destructive Tests for Thermal Via-Structures in Organic Multi Layer PCBs

Ralph Schacht¹, Daniel May², Mohamad Abo Ras³, Bernhard Wunderle³, Bernd Michel³, Herbert Reichl⁴: ¹University of Applied Sciences Lausitz, ²AMIC GmbH, ³Fraunhofer IZM, ⁴Technical University Berlin

Modelling of Polymer Cored BGA Interconnects

David Whalley, Helge Kristiansen, Zhiliang Zhang: ¹Loughborough University, ²Conpart AS, ³Norwegian University of Science and Technology

Session We-P-19 Manufacturing and Test Technology : Quality Assurance (I)

Encapsulation of Systems in Package - Process Characterization and Optimization

Thomas Schreier-Alt, Fraunhofer IZM, Micro Mechatronic Systems, Oberpfaffenhofen-Weßling, Germany

Crystal Defect Analysis of Laser Drilled Through Silicon Vias by Synchrotron X-ray Topography

Rene Landgraf¹, Ralf Rieske², Andreas N. Danilewsky³, Klaus-Jürgen Wolter²: ¹Institute of Semiconductor and Microsystems Technology, Technische Universität Dresden, Germany, ²Electronics Packaging Laboratory, Technische Universität Dresden, Germany, ³Crystallographic Institute, Albert-Ludwigs-Universität, Freiburg, Germany

Nano Evaluation of Electronic Packaging

Martin Oppermann¹, Klaus-Juergen Wolter¹, Henning Heuer², Norbert Meyendorf²: ¹Dresden University of Technology, IAVT, ²Fraunhofer IZFP-D

Session We-P-20 Reliability and Technology for Micro and Nano Systems : Methodology

Condition Indicators for Reliability Monitoring of Microsystems

Tilman Eckert¹, Karl-Friedrich Becker², Tanja Braun², Olaf Bochow-Ness², Andreas Middendorf¹, Kornelius Tetzner¹, Herbert Reichl¹: ¹Technische Universität Berlin, ²Fraunhofer IZM

Application of Lock-In-Thermography for 3D defect localisation in complex devices

Christian Schmidt, Frank Altmann, Christian Große, Fraunhofer Institute for Mechanics of Materials

Ultrasonic Flaw Detection using Sparse Representation for Failure Analysis of Next Generation

Microelectronic Packages

Zhang Guangming¹, Harvey David M¹, Braden Derek R²: ¹Liverpool John Moores University, ²Delphi Electronics & Safety

Session We-P-21 Emerging Technologies : Nanotechnologies

Electronic transport across single metallic nanowires

Alexander Haußmann, Lukas M. Eng, Institute of Applied Photophysics, Dresden University of Technology

Carbon Nanotube (CNT) filled adhesives for microelectronic packaging

Martin Wirts-Rütters¹, Matthias Heimann², Jana Kolbe¹, K.J. Wolter²: ¹IFAM Fraunhofer, Bremen, ²IAVT, Dresden

Electrofunctional Polymer Nanocomposites

Constantina Lekakou, Guillaume Rebord, Noparat Hansrisuk, Beatrice Lindsay, Graham Reed, John F. Watts, University of Surrey

**Plenary: European Global Business Council
(Organised by IMAPS-Europe)**

Grand Conference Dinner in Great Painted Hall