

2016 Pan Pacific Microelectronics Symposium (Pan Pacific 2016)

**Big Island, Hawaii, USA
25-28 January 2016**



**IEEE Catalog Number: CFP16B91-POD
ISBN: 978-1-5090-1206-0**

**Copyright © 2016, Surface Mount Technology Association (SMTA)
All Rights Reserved**

******This publication is a representation of what appears in the IEEE
Digital Libraries. Some format issues inherent in the e-media version may
also appear in this print version.***

IEEE Catalog Number:	CFP16B91-POD
ISBN (Print-On-Demand):	978-1-5090-1206-0
ISBN (Online):	978-0-9888873-9-8

Additional Copies of This Publication Are Available From:

Curran Associates, Inc
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: (845) 758-0400
Fax: (845) 758-2633
E-mail: curran@proceedings.com
Web: www.proceedings.com

CURRAN ASSOCIATES INC.
proceedings
.com

TABLE OF CONTENTS

3D-PRINTING AND ELECTRONIC PACKAGING	1
<i>C. Bailey ; S. Stoyanov ; T. Tilford ; G. Tourloukis</i>	
DIGITAL HEALTH: HYPE TO REALITY	8
<i>M. K. Hudes</i>	
APPLICATION OF NANOSTRUCTURING, NANOMATERIALS AND MICRO-NANO- INTEGRATION FOR IMPROVED COMPONENTS AND SYSTEM'S PERFORMANCE	13
<i>J. Muller ; T. Hannappel ; M. Hoffmann ; H. O. Jacobs ; Y. Lei ; I. W. Rangelow ; P. Schaaf</i>	
NEW ERA IN AUTOMOTIVE ELECTRONICS, A CO-DEVELOPMENT BY GEORGIA TECH AND ITS AUTOMOTIVE PARTNERS	23
<i>R. Tummala ; K. J. Wolter ; V. Sundaram ; V. Smet ; P. M. Raj</i>	
MULTIPURPOSE LEAD-FREE RELIABILITY PREDICTION MODEL	27
<i>O. Salmela ; J. Putaala ; O. Nousiainen ; A. Uusimaki ; J. Sarkka ; M. Tammenmaa</i>	
INTERPRETING ACCELERATED TEST RESULTS FOR LEAD FREE SOLDER JOINTS	34
<i>P. Borgesen ; S. Hamasha ; L. Wentlent ; D. Watson ; C. Greene</i>	
EFFECT OF BATH CONTAMINATION ON ELECTROPLATED SOLDER BUMPS	43
<i>S. Lee ; M. Bernt ; P. Lianto</i>	
A NOVEL PIEZOELECTRIC PRINthead FOR HIGH MELTING POINT LIQUID METALS	53
<i>D. Rumschoettel ; F. Kunzel ; F. Irlinger ; T. C. Lueth</i>	
ROADMAPPING THE ELECTRONICS MANUFACTURING SUPPLY CHAIN TAKES A "VILLAGE"	61
<i>B. Bader ; C. Richardson ; P. Gargini</i>	
CRITICAL SUCCESS FACTORS FOR ELECTRONIC MANUFACTURING SERVICES	75
<i>E. Kobeda ; P. Isaacs ; L. Pymeto</i>	
HIGH-DENSITY ASSEMBLY AND ROOT CAUSE ANALYSES	86
<i>J. Sjoberg ; C. Nash ; D. Shiroli ; W. Qu</i>	
IMPROVING DESIGN PERFORMANCE WITH SYSTEM-LEVEL CO-DESIGN AND MULTI- PHYSICS ANALYSIS: THERMAL AND STRESS-AWARE DESIGN FOR THREE DIMENSIONAL STACKED IC PACKAGE	92
<i>K. Hasegawa ; K. Koga ; H. Mandavia</i>	
RECENT ADVANCES IN X-RAY TECHNOLOGY	99
<i>R. Vaga ; K. Bryant</i>	
X-RAY INSPECTION STUDY WITH PCB CAVITY PRESS-FIT CONNECTORS	109
<i>G. Xu ; E. Khor ; L. Su ; W. Liu ; Z. J. Feng ; D. Geiger ; L. L. Ngor ; W. Yun ; C. H. Hwa ; S. ZiYang</i>	
HIGH-DENSITY PACKAGING TECHNOLOGY SOLUTION FOR SMART ICT	113
<i>K. Suu</i>	
X-RAY INSPECTION METHODS FOR CONTROLLING PCBA POTTING PROCESS - 2DX AND PARTIAL ANGLE COMPUTER TOMOGRAPHY	119
<i>A. Liu ; C. Zou ; T. Lin ; J. Li ; C. K. Tan ; Z. J. Feng ; D. Geiger ; S. Liu ; J. P. Wen ; J. Xiao ; L. Liu ; E. Krastev</i>	
EFFECTS OF MOLDING COMPOUND PROPERTIES ON ACOUSTIC EVALUATION OF ENCAPSULATED MICROELECTRONIC DEVICES	124
<i>J. E. Semmens</i>	
CORROSION STUDY ON BGA ASSEMBLIES	130
<i>A. Guedon-Gracia ; H. Fremont ; J. Y. Deletage ; K. Weide-Zaage</i>	
THE RETURN OF THE RED RETARDANT	137
<i>D. Brown</i>	
WHAT MAKES NO-CLEAN FLUX RESIDUE BENIGN?	142
<i>P. Isaacs ; T. Munson</i>	
NEW TECHNOLOGY, SMALL FOOTPRINT (9' X 4'), VERTICAL CIRCUIT WASHING SYSTEM FOR PCBAS (< 3" X 3")	149
<i>P. Fritsche</i>	
ELECTRONIC ASSEMBLY WARRANTIES CHALLENGE THE INDUSTRY TO IMPROVE RISK MITIGATION TEST METHODS	156
<i>M. McMeen ; J. Tynes ; M. Bixenman ; D. Lober</i>	
PART, MATERIAL, AND PROCESS REQUIREMENTS IMPACT ON RELIABILITY	169
<i>C. Cooper</i>	

COMPREHENSIVE CORRELATION OF INLINE INSPECTION DATA FOR THE EVALUATION OF DEFECTS IN HETEROGENEOUS ELECTRONIC ASSEMBLIES	176
<i>S. Harter ; T. Klinger ; J. Franke ; D. Beer</i>	
CHARACTERIZING MATERIALS AT THE COMPONENT INTERFACE CAN IMPROVE RELIABILITY	182
<i>M. Bixenman ; D. Lober ; M. McMeen ; J. Tynes</i>	
NEAR-FIELD SCAN TOOLS FOR EMBEDDED ELECTRONIC ANALYSIS	190
<i>T. Dubois ; G. Duchamp ; J. Weckbrodt ; S. Azzopardi</i>	
CONFORMAL COATING CHALLENGES: DETECTION, REWORK AND FAILURE ANALYSIS	199
<i>P. Dobriyal ; S. Ramalingam ; S. L. Lim ; A. Kurella</i>	
ALCU-METAL HEATER FOR INTERCONNECT MONITORING TEST STRUCTURES	205
<i>V. Hein ; M. Erstling</i>	
COSIVU - COMPACT, SMART AND RELIABLE DRIVE UNIT FOR FULLY ELECTRIC VEHICLES	210
<i>D. R. Andersson ; K. Brinkfeldt ; S. Nord ; J. Ottosson ; G. Lampic ; G. Gotovac ; O. Zschieschang ; H. Baumgartel ; M. Brusius ; E. Kaulfersch ; F. Hilpert ; A. Otto ; S. Frankeser</i>	
EMBEDDED CAMERA MODULE FOR AUTOMOTIVE CAMERA SYSTEM	220
<i>H. Kim ; J. Lee ; S. m. Hwang ; S. Cha</i>	
DIRECTLY ATTACHED AIRBAG SENSOR PACKAGING FOR AUTOMOBILES	227
<i>Y. K. Kim ; H. Kang ; J. K. Kim</i>	
OPTIMISING THERMO MECHANICAL BEHAVIOUR OF POWER ELECTRONIC MODULE STRUCTURES	230
<i>P. Rajaguru ; C. Bailey ; H. Lu</i>	
MODE SIZE CONVERTER DESIGNS FOR FABRICATION OF ULTRA-LOW LOSS OPTICAL INTERCONNECTS	237
<i>T. Bowen ; J. Lee ; T. Ling ; J. Sun ; H. Zhang</i>	
FINE-PITCH CHIP-ON-FLEX PACKAGING OF OPTOELECTRONIC DEVICES USING LOW TEMPERATURE OPTODIC BONDING	241
<i>Y. Wang ; M. Gauch ; D. Ristau ; L. Overmeyer</i>	
AN EFFICIENT MICRO CONTROL UNIT VLSI DESIGN FOR WEARABLE ELECTRONICS AND SENSOR NETWORKS	250
<i>M. C. Tuan ; S. L. Chen ; T. L. Lin ; H. Y. Lee</i>	
PIEZOELECTRIC MATERIALS FOR HIGH PERFORMANCE ENERGY HARVESTING DEVICES	257
<i>Y. K. Jin ; S. Sarker ; K. S. Lee ; H. W. Seo ; D. M. Kim</i>	
FORMATION OF METAL INTERCONNECTS AND THEIR RESISTANCE-CHANGE BEHAVIOR DURING TENSILE STRETCHING FOR STRETCHABLE PACKAGING APPLICATIONS	261
<i>D. Park ; D. U. Park ; K. S. Han ; S. J. Shin ; H. A. Oh ; T. S. Oh ; J. Y. Choi ; S. K. Hynix</i>	
FLEXIBILITY OF ANISOTROPIC CONDUCTIVE FILMS (ACFS) BONDED CIF(CHIP IN FLEX) PACKAGE FOR WEARABLE ELECTRONICS APPLICATIONS	267
<i>K. W. Paik ; J. H. Kim ; Y. R. Kim</i>	
A DESIGN FOR HIGHLY ROBUST ALCU-W-PLUG-METALLIZATION STACK	271
<i>V. Hein ; M. Ackermann ; M. Erstling ; J. Liew ; K. Weide-Zaage</i>	
PROGRESS AND APPLICATION OF THROUGH GLASS VIA (TGV) TECHNOLOGY	277
<i>A. B. Shorey ; R. Lu</i>	
SIGNAL AND POWER INTEGRITY DESIGN OF 2.5D HBM (HIGH BANDWIDTH MEMORY MODULE) ON SI INTERPOSER	283
<i>K. Cho ; H. Lee ; J. Kim</i>	
GLASS INTERPOSERS WITH METALIZED THROUGH VIA	288
<i>S. Kuramochi ; S. Koiwa ; H. Nagano ; J. Iida ; M. Akazawa ; H. Mawatari ; K. Suzuki ; Y. Fukuoka</i>	
ADVANCED INTERCONNECT TECHNOLOGIES IN THE ERA OF COGNITIVE COMPUTING	297
<i>Y. Orii ; A. Horibe ; K. Matsumoto ; T. Aoki ; K. Sueoka ; S. Kohara ; K. Okamoto ; S. Yamamichi ; K. Hosokawa ; H. Mori</i>	
DEVELOPMENT STATUS OF PHOTORESIST AS MASK MATERIAL FOR INJECTION MOLDED SOLDER (IMS) TECHNIQUE	303
<i>K. Hasegawa ; J. Mukawa ; S. Takahashi ; C. Kobata ; K. Ohkita ; S. Kusumoto ; T. Aoki ; E. Nakamura ; T. Hisada ; H. Mori ; Y. Orii</i>	
HYBRID BONDING TECHNOLOGY WITH CU-CU/ADHESIVES FOR HIGH DENSITY 2.5D/3D INTEGRATION	309
<i>T. Sakai ; N. Imaizumi ; S. Sakuyama</i>	

NANO ANCHORING COPPER FOIL FOR NEXT GENERATION PRINTED WIRING BOARDS	315
<i>O. Suzuki ; A. Yoshi ; H. Tsubura ; M. Sato ; N. Obata ; Y. Kokaji</i>	
JOINING OF PURE COPPER USING CU NANOPARTICLES DERIVED FROM CUO PASTE	321
<i>T. Fujimoto ; T. Ogura ; T. Sano ; A. Hirose</i>	
MAKING THE CONNECTIONS IN ELECTRONIC CIRCUITRY-THE CONTINUING EVOLUTION OF JOINING TECHNOLOGIES	327
<i>T. Nishimura</i>	
GRAPHENE NANORIBBONS FOR NEXT-GENERATION ELECTRONICS.....	335
<i>A. Rae ; P. Clayson ; J. Clayson</i>	
LOW-TEMPERATURE AND LOW-PRESSURE DIRECT COPPER-TO-COPPER BONDING BY HIGHLY (111)-ORIENTED NANOTWINNED CU	340
<i>C. Chen ; C. M. Liu ; H. w. Lin ; Y. S. Huang ; Y. C. Chu ; D. R. Lyu ; K. N. Chen ; K. N. Tu</i>	
DEVELOPMENT OF TOOLS AND TECHNIQUES FOR MECHANICAL PROPERTY TESTING AND ANALYSIS OF EXPERIMENTAL NANO SOLDER.....	345
<i>S. Shina ; P. E. A. Appiah ; C. Johnson ; A. Rugg ; M. Sanderson ; O. Serebour</i>	
Author Index	