

## Advance Program and Registration

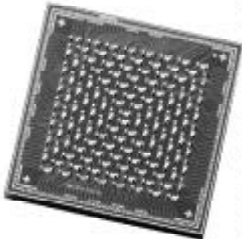
IMAPS Topical Workshop and Exhibition on

# FLIP CHIP TECHNOLOGY

June 21 - 24, 2004

Austin Marriott at the Capitol  
Austin, Texas

in conjunction with the Global Business Council Meeting - June 21, 2004  
visit [www.imaps.org/gbc](http://www.imaps.org/gbc) for details or see page 3 & 4 for program and registration.



Courtesy ST Assembly Test Services Inc.

### General Chair:

**Theodore Tessier**

ST Assembly Test Services Inc.  
Phone: 480-222-1735  
tessiert@statsus.com

### Technical Co-Chairs:

**Jon G. Aday**

Amkor Technology Inc.  
Phone: 480-821-5000, ext. 5082  
jaday@amkor.com

**Michael Todd**

Henkel Loctite Electronic Materials  
Phone: 626-968-6511  
michael.todd@loctite.com

### GBC Steering Committee

#### Chairman:

Mike O'Neill  
Heraeus CMD  
moneill@4cmd.com

### Sponsored by:



International Microelectronics And  
Packaging Society (IMAPS)

*"Everything in electronics between the  
chip and the system"*

### PROFESSIONAL DEVELOPMENT COURSE - (1/2 DAY)

MONDAY, JUNE 21 1 PM - 5 PM

FLIP CHIP PACKAGING COURSE - FLIP CHIP ASSEMBLY

INSTRUCTOR: R. WAYNE JOHNSON, AUBURN UNIVERSITY

### NETWORKING RECEPTION

MONDAY, JUNE 21 6:30 PM

**Sponsored by the Global Business Council (GBC)**

### EXHIBITION HOURS

TUESDAY, JUNE 22\* 10 NOON - 8 PM

\*REFRESHMENT BREAKS AND LUNCH IN THE EXHIBITS HALL

### WELCOME RECEPTION IN THE EXHIBIT HALL

TUESDAY, JUNE 22 6 PM - 8 PM

### TECHNICAL PROGRAM

JUNE 22 - 24, 2004

#### SESSION 1: FLIP CHIP CHARACTERIZATION AND MODELING

Chairs: P. Ho, University of Texas - Austin; P. Elenius, E&G Technology Partners, LLC

#### SESSION 2: ADVANCES IN BUMPING PROCESS TECHNOLOGIES

Chairs: H. Fuerhaupter, Atotech USA; K. O'Donnell, NEXX Systems Inc.

#### SESSION 3: POSTER - INFRASTRUCTURE FOR FLIP CHIP DEPLOYMENT

Chair: R. Wayne Johnson, Auburn University

#### SESSION 4: FLIP CHIP ASSEMBLY

Chairs: D. K. Numakura, DKN Research; T. G. Tessier, ST Assembly Test Services Inc.

#### SESSION 5: UNDERFILL RELATED DEVELOPMENTS

Chairs: M. Todd, Henkel Loctite Electronic Materials; D. Peard, National Starch & Semiconductor

#### SESSION 6: FLIP CHIP TEST AND RELIABILITY

Chairs: G. Rinne, Unitive Electronics; D. E. Hodges Poppo, Motorola

#### SESSION 7: PB-FREE AND LOW K FLIP CHIP CHALLENGES

Chairs: J. Aday, Amkor Technology, Inc.; A. Strandjord, IC Interconnect

**Early Bird Registration and Hotel Deadline: May 14, 2004.**

# Message from the General Chair:

The International Microelectronics And Packaging Society (IMAPS) is holding its annual Technology Workshop on Flip Chip Technology from June 21<sup>st</sup> to 24<sup>th</sup>, 2004, at the Marriott Hotel in Austin, Texas. This workshop is a continuation of the annual Flip Chip Workshop held for the past several years. This meeting showcases the latest in flip chip technology development. This year, the IMAPS Global Business Council will also hold a Global Flip Chip Business Overview which will be held concurrently with Flip Chip 2004. This will provide attendees with a rare opportunity to be updated on both the technological and business sides of flip chip packaging.

The technical program will focus on recent advancements in flip chip technology and flip chip deployment across the industry. As in previous years, we will hold a focused exhibition for suppliers who support Wafer Bumping and Flip Chip Technology needs. A highly informative and interactive poster session entitled: "Infrastructure for Flip Chip Deployment" has been added to the program for this year and will be held during the usual attendee reception to stimulate participant interaction and information exchange.

Though this Topical Workshop has always had a strong reputation for drawing internationally recognized authorities from industry and academia both as presenters and participants, I am particularly pleased with the breadth of global participation that will occur this year. Clearly, flip chip development is alive and well. If you are active or interested in Flip Chip related technologies, this is a meeting you cannot afford to miss!

Theodore Tessier, ST Assembly Test Services, Inc.

## **Flip Chip Tabletop Exhibition**

*"An opportunity to talk to industry leaders"*

### **Exhibit Hours**

Tuesday - June 22                      10 am - 8 pm

*Lunch, Refreshment Breaks and Reception will be held in the Exhibit Hall.*

### **Tabletop Registration Fees**

IMAPS Corporate Member              Pre 5/14 - \$450              After 5/14 - \$550

Non-Corporate Member                  Pre 5/14 - \$550              After 5/14 - \$650

*Included with your registration: one six ft. draped table, two chairs, carpeting, one Technical Presentation CD-ROM, final list of attendees, exhibit hall admission for two booth personnel*

Only tabletop exhibits will be accepted. Free standing exhibits will not be allowed at this event.

**For more information visit [www.imaps.org/flipchip](http://www.imaps.org/flipchip) or contact IMAPS at 202-548-4001**

### ***NEW Feature Available for Exhibitors***

IMAPS will provide all exhibitors an opportunity to provide up to six (6) pages of company products, services and contact information to be included on the post-event Procee CD-ROM. These CD-ROMs are provided to all technical conference attendees and are for sale through IMAPS to all industry professionals.

This new and unique feature will promote the Exhibitor's products and abilities much longer than just the Conference. There is a charge of \$50 for this optional feature. This equates to 6 pages of advertising for just \$50.

These submissions must be no more than six (6) pages long and must be sent, electronically, in Word or PDF format, to [bschieman@imaps.org](mailto:bschieman@imaps.org) no later than June 11, 2004.

# Global Business Council (GBC) Program\*

Monday June 21, 2004

8:00 AM Continental Breakfast

8:30 AM **Opening Remarks**  
Michael O'Neill, Chairman, GBC  
Steering Committee  
Ted Tessier, Chairman, Flip Chip  
Topical Workshop & Exhibition

**Session 1 Flip Chip Market Overview**  
Session Chair: Adam Singer,  
*Cookson Electronics*

8:45 AM **Semiconductor Market:  
Mid-Year Forecast**  
IC Insights

9:45 AM **Flip Chip End User Market**  
*TBD*

10:45 AM Break

11:00AM **Global Flip Chip Business  
Overview**  
Jan Vardaman, *TechSearch  
International*

12:00 NOON LUNCH

**Session 2: Alliances and Acquisitions**  
Session Chair: Mike Kunselman,  
*Dow-Corning*

1:30 PM: **Case Study 1: Buyout and Start-  
up of Flip Chip International**  
Bob Forcier,  
*Flip Chip International*

2:30 PM **Case Study of Two Acquisitions/  
Alliances: Kyocera / IBM\_Yasu,  
Japan) and ASE Compeq**  
*BPA*

3:30 PM Break

**Session 3 Infrastructure**

Session Chair: Jan Vardaman,  
*TechSearch International*

3:45 PM **APiA – Advanced Packaging  
& Interconnect Alliance**  
Ellery Buchannon, *Ultratech, Inc.*

4:45 PM **SECAP – Semiconductor  
Equipment Consortium for  
Advanced Packaging**  
Michael Toepper, *Fraunhofer IZM*

5:45 PM **\*Panel Discussion**

6:30 PM **\*Networking Reception**

7:30 PM **Closing Remarks, Adjourn**

**\*Free to registered Flip Chip ATW  
participants**

\*Program subject to change

About Austin, Texas

**"Live Music Capital of the World"**

It's more than just a slogan. Music is a driver of the "creative economy" that translates into millions of dollars annually for Austin. Austin City government recognizes that music is one of the things that makes Austin special, and has several programs to help musicians and promote their music. Austin has more music per capita than such music hotbeds as Nashville, Memphis, Los Angeles, Las Vegas or New York City.

Not only is Austin the Capital of Texas, but it is also home to the University of Texas and the new "Story of Texas" Museum and two IMAX theaters.

Wonderful restaurants and shops, abound in and around the city and it is just a short drive to the beautiful lakes that make this part of the state known as "lake country."

The beautiful Austin Marriott at the Capitol is just what it says -- a "stone's throw" from the Capitol building and near to everything that makes Austin a delightful city to visit and enjoy.

GBC Registration on Page 4

**Global Business Council Summer 2004 Meeting Registration**  
**On-line registration - [www.imaps.org/gbc](http://www.imaps.org/gbc)**

**Meeting Fees\***

	On/Before 5/21	After 5/21
<input type="checkbox"/> IMAPS Corporate Member	\$450	\$500
<input type="checkbox"/> Non-Corporate member*	\$1,050	\$1,100

**\*\$50 discount to full registrants of Flip Chip Workshop.**

\*Nonmember attendees are granted a one year IMAPS Corporate membership at no extra charge.

Meeting attendees will be mailed a CD ROM of the meeting presentations.

**Additional Purchases**

<input type="checkbox"/> CD of Presentations (Members)	\$100
<input type="checkbox"/> CD of Presentations (Non-members)	\$160
<input type="checkbox"/> Shipping in the US	\$7
<input type="checkbox"/> Shipping Overseas	\$25

**Payment**

Registration Fee \$ \_\_\_\_\_

Additional Purchases \$ \_\_\_\_\_

Total Payment Due \$ \_\_\_\_\_

Enclosed is my check in the amount of \$ \_\_\_\_\_

Credit Card:

AMEX  VISA  MasterCard  Discover  Diners

Card # \_\_\_\_\_ Exp. \_\_\_\_\_

Authorized Signature: \_\_\_\_\_

**Tell us about yourself:**

Dr.  Mr.  Ms. IMAPS ID# \_\_\_\_\_

First Name \_\_\_\_\_

Last Name \_\_\_\_\_

Company/Organization \_\_\_\_\_

Job Position \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_

Zip/Postal Code \_\_\_\_\_ Country \_\_\_\_\_

Phone \_\_\_\_\_ Fax \_\_\_\_\_

E-mail \_\_\_\_\_

**Housing (Hotel Cut-off is May 21, 2004)**

Housing Accommodations **must** be made directly to:

Austin Marriott at the Capitol

701 East 11th Street

Austin, Texas 78701

P: 512-478-1111

**Single/Double - \$159**

**Please reference IMAPS when making reservation.**

Mail this form with payment to: International Microelectronics And Packaging Society (IMAPS), 611 2nd Street, NE, Washington, DC 20002-4909 U.S.A. For credit card transactions, register on-line at [www.imaps.org/3d](http://www.imaps.org/3d); or register by phone with your credit card by calling 202-548-4001; Fax this form to 202-548-6115. Additional Information? E-mail: [IMAPS@imaps.org](mailto:IMAPS@imaps.org), or visit our web site: <http://www.imaps.org>. Cancellations will be refunded (less a \$50 processing fee) only if written notice is postmarked on or before **May 21, 2004**. No refunds will be issued after that date.

# Professional Development Course - Monday, June 21

## FLIP CHIP ASSEMBLY (1/2 Day)

1 pm - 5 pm

Instructor: R. WAYNE JOHNSON, AUBURN UNIVERSITY

### DESCRIPTION:

Flip chip use is growing in both flip chip-in-package and flip chip-on-laminate applications. This course will provide insight into the design and assembly of electronics using flip chip devices. The practical issues of implementing flip chip technology from wafer bumping to reliability characterization are covered. This course will begin with an examination of bumping options and corresponding design rules. Redistribution will also be discussed. Substrate requirements for flip chip will then be presented including a discussion of high density interconnect options and substrate design. Assembly of flip chip devices adds materials and processes to the standard SMT assembly process and the integration of these into the SMT process flow is examined. Materials and processes to be discussed include lead free alloys, fluxes, underfills (capillary flow, fluxing no-flow, and wafer applied), substrate dehydration, flux and underfill application, underfill curing, inspection, and underfill characterization techniques. The presentation will conclude with a discussion of flip chip assembly reliability testing, test vehicle design and failure analysis.

### LECTURE SYLLABUS:

1. Introduction to Flip Chip
2. Flip Chip Bumping
3. Substrates and Substrate Design
4. Assembly
  - a. Flux Application
  - b. Placement
  - c. Reflow
5. Underfill
  - a. Capillary
  - b. Fluxing
    - i. Placement Optimization
  - c. Wafer Applied
  - d. Transfer Molded
6. Reliability and Failure Analysis

### WHO SHOULD ATTEND?

This Workshop is intended for those individuals soon to be responsible for implementing flip chip assembly, suppliers of materials and equipment for flip chip assembly and others interested in flip chip implementation.

### THE INSTRUCTOR:

Dr. Wayne Johnson is a Professor of Electrical Engineering at Auburn University and Director of the Laboratory for Electronics Assembly and Packaging (LEAP). At Auburn, he has established teaching and research laboratories for advanced packaging and electronics assembly. Research efforts are focused on materials, processing, and reliability for advanced SMT, wire bond and flip chip assembly. He has published and presented numerous papers at workshops and conferences and in technical journals on flip chip assembly. He received the 1997 Auburn Alumni Engineering Council Senior Faculty Research Award for his work in electronics packaging and assembly.

Dr. Johnson is currently the Technical Vice President of the International Microelectronics and Packaging Society. He was the 1991 President of the International Society for Hybrid Microelectronics (ISHM). He received the 1993 John A. Wagon, Jr. Technical Achievement Award from ISHM, was named a Fellow of the Society in 1994 and received the Daniel C. Hughes Memorial Award in 1997. He is also a member SMTA and IPC and a Fellow of IEEE

Dr. Johnson received the B.E. and M.Sc. degrees in 1979 and 1982 from Vanderbilt University, Nashville, TN, and the Ph.D. degree in 1987 from Auburn University, Auburn, AL, all in electrical engineering. He has worked in the microelectronics industry for DuPont, Eaton, and AmpereX.

Technical Workshop Registration	Technical Workshop Presentations
Your registration fee includes Breakfast, Luncheons, Refreshment Breaks, Welcome Reception and an Abstract Book. A CD of the Workshop Presentations will be sent to each attendee after the event.	If you are unable to attend the Workshop and would like a CD of the Presentations, you may purchase a copy by using the registration form. Your copy will be mailed to you after the event.
Professional Development Course offered for additional fee.	The cost is \$100 for members; \$175 for nonmembers*, plus shipping and handling. Reserve your CD on-line at <a href="http://www.imaps.org/flipchip">www.imaps.org/flipchip</a> or call 202-548-4001.
	*includes 1 year IMAPS membership at no charge

**Tuesday, June 22**

Registration Open: 7 am – 8 pm

Breakfast: 7 am – 8 am

Exhibit Open: 10 am – 8 pm

Welcome Reception in the Exhibit Hall: 6 pm - 8 pm

**SESSION 1: FLIP CHIP CHARACTERIZATION AND MODELING**

**8 am - Noon**

Chairs: P. Ho, University of Texas - Austin; P. Elenius, E&G Technology Partners, LLC

**SUBSTRATE ELECTRICAL DESIGN FOR 40x40MM FLIP CHIP BGA WITH 125Gb/s AGGREGATE SIGNALING BANDWIDTH**

Alfredo Moncayo, Infineon Technologies North America

**VERIFICATION OF SUBMODELING TECHNIQUE IN THERMOMECHANICAL RELIABILITY ASSESSMENT OF FLIP-CHIP BGA**

Yi-Shao Lai, Tong Hong Wang, Advanced Semiconductor Engineering, Inc.

**SHORT TIME THERMAL MECHANICAL SHOCK WAVE PROPAGATION IN FLIP CHIP CONFIGURATION**

Mahavir Nagaraj, C. Steve Suh, Texas A&M University

**TRANSIENT DEFORMATION AND FRACTURING OF SOLDER BUMPS SUBJECTED TO IMPACT LOADS**

Chang-Lin Yeh, Yi-Shao Lai, Jung-Shian Yang, Advanced Semiconductor Engineering, Inc.

Break: 10 am – 10:30 am

**INVESTIGATION ON EFFECTIVE ELASTIC MODULI OF UNDERFILL MATERIALS**

Zhongmin Xiao, Soh-Har Leong, Nanyang Technological University

**THERMAL INTERFACE MATERIAL (TIM) DESIGN GUIDANCE FOR FLIP CHIP BGA PACKAGE THERMAL PERFORMANCE**

T. D. Yuan, Hsin-Yu Pan, Yuan Li, Taiwan Semiconductor Manufacturing Company, Ltd.

**RELIABILITY STUDY FOR CU/BLACK DIAMOND STRUCTURES IN FLIP-CHIP PACKAGING**

Guotao Wang, Paul S. Ho, The University of Texas at Austin; Steven Groothuis, Micron Technology Texas LLC

Lunch: Noon – 1 pm

**SESSION 2: ADVANCES IN BUMPING PROCESS TECHNOLOGIES**

**1 pm - 5 pm**

Chairs: H. Fuerhaupter, Atotech USA; K. O'Donnell, NEXX Systems Inc.

**C4 SOLDER BUMP UBM RELIABILITY AND OUTLOOK**

Jianxing Li, Mahalingam Sankararaman, Raymond Carey, Avi Fuerst, William Johannes, Intel Corporation

**CHARACTERIZATION OF REACTION RATES AND INTERMETALLIC PHASE FORMATION FOR Ni AND NiV UBM LAYERS WITH EUTECTIC SnPb AND LEAD-FREE SnAg SOLDERS**

Kathy O'Donnell, NEXX Systems Inc.; D. Gupta, APSTL; P. Silberud, Semitool; C. Lopper, M. Topper, Fraunhofer (IZM)

**ENHANCED WLP RELIABILITY USING POSITIVE PHOTSENSITIVE POLYBENZOXAZOLES AS INTERLAYER DIELECTRICS**

Ken Imamura, Takashi Hirano, Shusaku Okamoto, Sumitomo Bakelite Co., Ltd.

Break: 2:30 – 3 pm

**MODULATING CHARACTERISTICS OF BUMPING PASTES WITH ANALYSIS OF EFFECTS**

Bryce Watson, Kester

**HIGH SPEED THROUGH-MASK COPPER ELECTRODEPOSITION FOR BUMPING PROCESS**

Zhenqiu Liu, Bill (Qunwei) Wu, Arthur Keigler, John Harrell, NEXX Systems

**LOW COST WAFER BUMPING FOR POWER ELECTRONICS DEVICE INTERCONNECTION**

Thorsten Teutsch, T. Oppert, E. Zakel, PacTech USA - Packaging Technologies, Inc.; Mervi Paulasto-Kröckel, Motorola GmbH

**EVALUATION OF LCHR: A LOW COST PLATED COLUMN BUMP TECHNOLOGY FOR SUB 100 UM AND WLP APPLICATIONS**

D. Gupta, F. Kalle, M. Fria, APSTL

**SESSION 3: POSTER - INFRASTRUCTURE FOR FLIP CHIP DEPLOYMENT**

**6 pm - 8 pm**

Chair: R. Wayne Johnson, Auburn University

**COST-EFFECTIVE FLIP CHIP PACKAGING FOR MID-RANGE APPLICATIONS**

Theodore G. Tessier, Jamin Ling, Roger Emigh, Sheila Alvarez, IK Shim, ST Assembly Test Services Inc.

**FLIP CHIP PROCESSES ENABLED THROUGH PANASONIC EQUIPMENT INNOVATION**

Thomas M. Garvin, Ryota Furukawa, Panasonic Factory Automation

**A NOVEL NO FLUX WAFER LEVEL SOLDER REFLOW**

Jian Zhang, C. Lee, SEMIgear, Inc.

**PECULIARITIES OF MEASURING THE ALPHA PARTICLE ACTIVITY OF FLAT SAMPLES OF METALS, ALLOYS AND POWDERS USING GAS FLOW PROPORTIONAL COUNTERS**

Yuri Borisovich Tolstukhin, Sergei Mikhajlovich Zakharjash, Irini Vitaljevna Fedotova, Pure Technologies, LLC

**ADVANCED WAFER-LEVEL CLEANING FOR ADVANCED WLP AND FLIP CHIP**

Diane Scheele, Donn Detzler, Dynaloy, Inc.; Thomas Goodman, Peter Elenius, E&G Technology Partners, LLC

**FULL-WAVE SOLVER OF MULTI-VIA SCATTERING AND MICROSTRIP LINE COUPLING IN PCBs**

Xiaoxiong Gu, Leung Tsang, Houfei Chen, Chung-chi Huang, Qin Li, Chong-jin Ong, Kim Lun Lai, Chien-Min Lin, University of Washington

**A NEW, THICK, HIGH ASPECT RATIO PLATING RESIST FOR BUMPS**

Donald W. Johnson, William D. Weber, Harris Miller, Pamela J. Waterson, Satoshi Mori, Nao Honda, MicroChem Corp.

**RELIABILITY IMPACT OF SUBSTRATE AND BUMP SELECTION FOR A FC BGA PACKAGE**

Diane E. Hodges Poppo, Thomas H. Koschmieder, Andrew J. Mawer, Motorola

**ASSEMBLY PROCESS AND PACKAGE DESIGN FOR HIGH PERFORMANCE FLIP CHIP APPLICATIONS**

Jon G. Aday, Danny T. Brady, Amkor Technology Inc.

**PATTERNABLE SILICONES FOR NEXT GENERATION PACKAGING RELIABILITY REQUIREMENTS**

Michael E. Kunselman, Dow Corning Corp.

**Wednesday, June 23**

Registration Open: 7 am – 6 pm

**SESSION 4: FLIP CHIP ASSEMBLY**

**8 am - Noon**

Chairs: D. K. Numakura, DKN Research; T. G. Tessier, ST Assembly Test Services Inc.

**A NOVEL METHOD OF IMAGE SENSOR PACKAGE USING FLEX-ON-GLASS SUBSTRATE**

Teck Tiong Tan, Jeff H. Burns, Arun Chaudhuri, Binghua Pan, Chih Kai Nah, Kiat Choon Teo, John Troxell, David Ihms, William Bauson, Stephen Fox, Timothy Garner, Delphi Electronics & Safety

**ULTRASONIC FLIPCHIP: THE GREEN, LOW COST ALTERNATIVE**

Roberto Gilardoni, Hesse & Knipps GmbH

**JET DISPENSING OF FLUXES FOR FLIP CHIP ATTACHMENT AND MEASUREMENT METHODS FOR ENSURING CONSISTENT FLUX COATING**

Steven J. Adamson, Asymtek; Steve Heveron-Smith, Lumetrics Inc.

**FLIP-CHIP BONDING FOR FLEXIBLE CIRCUIT DEVICE WITH BIOMEDICAL APPLICATION**

Daniel N. Pascual, SUSS MicroTec; Steve Callender, Duke University

Break: 10 am – 10:30 am

**GOLD TO GOLD INTERCONNECT ULTRASONIC FLIP CHIP BONDING**

Philip Coutts, Tsunishia Nishioka, TDK Corporation of America

**THIN SUBSTRATE FLIP CHIP ASSEMBLY CHALLENGES**

Shichun Qu, Daniel J. Foster, Donald R. Banks, Robin E. Gorrell, 3M

**MICRO BUMP ARRAY CONSTRUCTIONS ON THE ORGANIC SUBSTRATES BY ELECTRICAL FORMING**

Masahiro Mizoguchi, Asahi Denka Kenkyusho, Dominique Numakura, DKN Research

Lunch: Noon – 1 pm

**SESSION 5: UNDERFILL RELATED DEVELOPMENTS**

1 pm - 5 pm

Chairs: M. Todd, Henkel Loctite Electronic Materials; D. Peard, National Starch & Semiconductor

**THERMO-MECHANICAL PROPERTIES AND RELIABILITY PERFORMANCE OF AN UNDERFILL ENCAPSULANT FOR FLIP CHIP ON LAMINATE (FCOL) AND FLIP CHIP IN PACKAGE (FCIP) APPLICATIONS**

Kalyan Ghosh, Mark McCabe, Lord Corporation; Guoyun Tian, Auburn University

**DEVELOPMENT OF CAPILLARY UNDERFILL MATERIALS FOR LEAD-FREE PACKAGES**

Katsushi Yamashita, Masahiro Kitamura, Masahiro Wada, Yushi Sakamoto, Sumitomo Bakelite Co., Ltd.

**EFFECT OF UNDERFILL MATERIALS ON Pb-FREE FLIP CHIP PACKAGE RELIABILITY**

Tie Wang, Jamin Ling, Ming Ying, Ted Tessier, IK Shim, ST Assembly Test Services Ltd.

Break: 2:30 – 3 pm

**DEVELOPMENT OF NOVEL PACKAGING STRUCTURES, ENCAPSULATION PROCESS, MATERIALS AND RELIABILITY FOR MATRIX ARRAY OVER-MOLDED FLIP CHIP CSP**

Kai-Chi Chen, Hsun-Tien Li, Tzong-Ming Lee, Shu-Chen Huang, Taro Fukui, Tomoaki Nemoto, Kenji Kitamura, Takayuki Tsuji, Industrial Technology Research Institute

**EFFECTS OF SUBSTRATE DESIGN ON UNDERFILL VOIDING FOR FLIP CHIP ASSEMBLY USING NO-FLOW UNDERFILLS**

Daniel F. Baldwin, Engent, Inc.; David Milner, Intel Corporation; Chetan Paydenkar, National Semiconductor


**ENHANCING Pb-FREE PACKAGE PERFORMANCE THROUGH FLUX-UNDERFILL SYNERGY**

Fritz Byle, Kester

**DOUBLE BUMP FLIP CHIP**

R. Wayne Johnson, Wei Yan, Auburn University; Russell Stapleton, Melissa Kern, Lord Corporation

Reception: 5 pm – 6 pm

Travel	The Hotel
 <p><b>FLY UNITED AND SAVE \$\$\$</b></p> <p>Take 5% off any United, United Express or Shuttle by United published fares, including First Class, in effect when tickets are purchased, subject to all applicable restrictions, or take 10% off applicable BUA, or like fares, in effect when tickets are purchased 7 days in advance. Reservations and schedule information may be obtained by calling the United Meetings desk at 1-800-521-4041 and referencing Meeting ID #583IW.</p>	<p>AUSTIN MARRIOTT AT THE CAPITOL 701 EAST 11TH STREET AUSTIN, TEXAS 78701</p> <p><b>RESERVATIONS: 512-478-1111 OR 800-228-9290</b> <b>WHEN MAKING RESERVATION, PLEASE REFERENCE IMAPS</b></p> <p>SINGLE/DOUBLE.....\$159</p>

Thursday, June 24

Registration Open: 7 am - 5 pm

**SESSION 6: FLIP CHIP TEST AND RELIABILITY**

8 am - Noon

Chairs: G. Rinne, Unitive Electronics; D. E. Hodges Popp, Motorola

**A KGD ENABLER: FULL WAFER CONTACT TECHNOLOGY**

Tim Pham, Motorola, Inc.

**IMPACT OF TEST ON KGD AND BACK-END ASSEMBLY, RELIABILITY AND PROCESS CONTROL**

Terence Collier, CV Inc.

**DEVELOPMENT OF TEST CHIP FOR ELECTRO-MIGRATION MEASUREMENTS IN FLIP CHIP CONNECTION**

Riet Labie, Tomas Webers, Eric Beyne, IMEC

**STUDY OF ELECTROMIGRATION DAMAGE EVOLUTION IN HIGH LEAD SOLDERS BY WHEATSTONE BRIDGE METHOD**

Min Ding, Guotao Wang, Amit Marathe, Raj Master, Van Pham, Paul S. Ho, University of Texas at Austin

Break: 10 am – 10:30 am

**HIGH CURRENTS IN WL-CSPs: CONTROLLING ELECTROMIGRATION**

Glenn A. Rinne, Unitive Electronics

**RELIABILITY CAPABILITY OF REDUCED BUMP PITCH ON FLIP CHIP CBGA AND PBGA PACKAGES**

Diane E. Hodges Popp, Brett Wilkerson, James Guajardo, Motorola

**STUDIES OF LEAD-FREE FLIP-CHIPS WITH A FOCUS ON ENHANCING THERMAL FATIGUE LIVES AND AN INSIGHT INTO LOW-K DELAMINATION**

Yi-Shao Lai, Yi-Hsien Lin, Chin-Li Kao, Jenq-Dah Wu, Advanced Semiconductor Engineering, Inc.

Lunch: Noon – 1 pm

**SESSION 7: PB-FREE AND LOW K FLIP CHIP CHALLENGES**

1 pm - 5 pm

Chairs: J. Aday, Amkor Technology, Inc.; A. Strandjord, IC Interconnect

**DESIGN GUIDANCE FOR THE MECHANICAL RELIABILITY OF LOW-K FLIP CHIP BGA PACKAGE**

Kuo-Chin Chang, Yuan Li, Vincent Wang, Chung-Yi Lin, Mirng-Ji Lii, Taiwan Semiconductor Manufacturing Company, Ltd.

**SELECTING AN UNDERFILL FOR LEAD FREE/CU-LOW K/FLIP CHIP ORGANIC AND CERAMIC PACKAGING**

Rehan Choudhary, Thomas Lombardi, Frank Pompeo, Michael Gaynes, Eric Duchesne, Marie-Claude Paquet, Valerie Oberson, IBM Microelectronics

**REDUCING STRESS AND IMPROVING RELIABILITY CU - LOW K FLIP-CHIP PACKAGE ASSEMBLIES CONSTRUCTIONS ARE CONSIDERED**

Leo M. Higgins, ASAT Inc.

Break: 2:30 – 3 pm

**COMPARISON STUDY OF PACKAGE IMPACT TO CU/LOW-K PRODUCTS**

Brett Wilkerson, Diane Hodges Popp, Jie-Hua Zhao, Motorola Inc.

**QUALIFICATION OF LEAD FREE FLIP CHIP IN PACKAGE FOR HIGH FREQUENCY APPLICATIONS**

Daniel F. Baldwin, Engent, Inc.; Grant Baynham, Georgia Institute of Technology

**LOW K AND PB-FREE MECHANICAL DURABILITY**

Terence Collier, CV Inc.

**MASS PRODUCTION EXPERIENCE OF LEAD FREE SN-AG ALLOY BUMP BY ELECTROPLATING METHOD**

Masakazu Inagaki, Kouichi Kanai, Casio Micronics Co., Ltd.; Kiyotaka Tsuzi, Ishihara Chemical Co., Ltd.

Concluding Remarks: 5 pm

# REGISTRATION FORM

REGISTER ON-LINE AT [WWW.IMAPS.ORG/FLIPCHIP](http://WWW.IMAPS.ORG/FLIPCHIP)

FLIP CHIP TECHNOLOGY WORKSHOP - JUNE 21 - 24, 2004

Dr.  Mr.  Ms. Member ID# \_\_\_\_\_  
First Name \_\_\_\_\_ M.I. \_\_\_\_\_ Last Name \_\_\_\_\_  
Company/Affiliation \_\_\_\_\_ Job Position \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_ Country \_\_\_\_\_  
Phone \_\_\_\_\_ Fax \_\_\_\_\_ Email \_\_\_\_\_

## REGISTRATION FEES: EARLY REGISTRATION ENDS 5/14/04

### WORKSHOP FEE

(On or before 5/14) (After 5/14)

- |   |       |       |
|---|-------|-------|
| <input type="checkbox"/> Member (IMAPS)           | \$550 | \$650 |
| <input type="checkbox"/> Non-member*              | \$625 | \$725 |
| *Includes one-year individual membership in IMAPS |       |       |
| <input type="checkbox"/> Speaker/Chair            | \$500 | \$600 |
| <input type="checkbox"/> Exhibits Only            | Free  | Free  |

### ADDITIONAL PURCHASES

- |  |       |       |
|--|-------|-------|
| <input type="checkbox"/> Spouse/Guest (meals only)             | \$160 | \$160 |
| <input type="checkbox"/> CD of Presentations (Member Rate)     | \$100 | \$100 |
| <input type="checkbox"/> CD of Presentations (Non-Member Rate) | \$175 | \$175 |
| <input type="checkbox"/> Add to Ship in the US                 | \$7   | \$7   |
| <input type="checkbox"/> Add to Ship Overseas                  | \$25  | \$25  |

### PROFESSIONAL DEVELOPMENT COURSE (1/2 DAY\*)

- |  |       |       |
|--|-------|-------|
| <input type="checkbox"/> Flip Chip Assembly* | \$300 | \$350 |
|--|-------|-------|
- Course will run from 1 pm - 5 pm on Sunday, June 21st!

### TABLETOP EXHIBITS (JUNE 22)

- |   |       |       |
|---|-------|-------|
| <input type="checkbox"/> IMAPS Corporate Member                       | \$450 | \$550 |
| <input type="checkbox"/> Non-IMAPS Corporate Members                  | \$550 | \$650 |
| <input type="checkbox"/> Yes, we will participate in the CD-ROM* \$50 |       |       |

Tabletop registration fee includes, 1-six foot draped table, 2 chairs, carpeting and an Exhibit Hall admission for 2 booth personnel. A CD-ROM and 1 list of attendees will be sent to you after the event. Full Technical Workshop registrations are available at an extra cost, fees are above.

### HOUSING (Hotel Cut-off is May 14, 2004)

Housing Accommodations **must** be made directly to:  
Austin Marriott at the Capitol  
701 East 11<sup>th</sup> Street  
Austin, TX 78701

Reservation: 512-478-1111 or 800-228-9290

When making reservation, please reference IMAPS.

Single/Double \$159

Austin Marriott at the Capitol requires a deposit for the first night's room and tax to hold your room.

## PAYMENT

Workshop Fee: \$ \_\_\_\_\_  
Additional Purchases: \$ \_\_\_\_\_  
Professional Course: \$ \_\_\_\_\_  
Exhibit Space: \$ \_\_\_\_\_  
Total Payment Due: \$ \_\_\_\_\_

- Enclosed is a check payable in US funds to IMAPS  
 Charge my fees to:  
 Visa  MasterCard  Discover  Amex  Diners Club  
Card# \_\_\_\_\_ Exp. \_\_\_\_\_  
Signature \_\_\_\_\_

Card billing address, if different from above: (required)

Wire Transfer information can be found on-line at  
[www.imaps.org/registration/flipchip04.asp](http://www.imaps.org/registration/flipchip04.asp)

Mail this form with payment to: IMAPS \* 611 2nd Street, NE \* Washington, DC 20002-4909. For credit card transactions, register on-line: [www.imaps.org](http://www.imaps.org); or register by phone with your credit card by calling 202-548-4001; Fax: 202-548-6115. Additional information? E-mail: [IMAPS@imaps.org](mailto:IMAPS@imaps.org), or visit our web site: <http://www.imaps.org>. **Cancellations will be refunded (less a \$50 processing fee) only if written notice is postmarked on or before Monday, May 31, 2004. No refunds will be issued after that date.**

IMAPS Registration  
611 2nd Street, NE  
Washington, DC 20002-4909

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