Power Your Business with Matched Materials Solutions

Why Heraeus?
Technological Expertise
Expansive Product Portfolio
Global Presence
Lower Costs
Shorten Development Cycles

Our Solutions
Hybrid Thick Film Pastes
Solder Pastes
Bonding Wires
Adhesives
Roll Clad Strips
Direct Bonded Copper

Heraeus Electronics is your expert for materials and matched materials solutions for electronics packaging. Our innovative product portfolio, application know-how, and our expertise in matching materials strengthens our ability to support our customers.

www.heraeus-electronics.com

Visit us at IMAPS booth #703 for our latest innovations in Matched Materials Solutions.
Table of Contents

49th International Symposium on Microelectronics • October 10-13, 2016

Welcome from the General Chair ................................................................. 3
Welcome from the Technical Chair ............................................................. 5
Symposium Committee ............................................................................ 5
Thank You to Our Sponsors ..................................................................... 7
Professional Development Courses .......................................................... 8-9
IMAPS 2016 Mobile App .......................................................................... 11
Exhibit Floorplan .................................................................................... 12
2016 Exhibitor Directory ........................................................................ 13-37
Program-at-a-Glance .............................................................................. 28-29
Technical Program-at-a-Glance ............................................................... 38
Technical Program .................................................................................. 39-50
Opening Ceremonies ............................................................................... 39
GBC Keynotes ....................................................................................... 43-44
2016 Outreach Events ............................................................................ 52
2016 Student Symposium Programs ....................................................... 53

Professional Development Courses (PDCs):
Monday, October 10 – New 2-hour formats, by theme/track
8:00 AM – 10:00 AM | 10:30 AM – 12:30 PM
1:00 PM – 3:00 PM | 3:30 PM – 5:30 PM

Registration:
Monday, October 10 – 7 AM - 6 PM
Tuesday, October 11 – 7 AM - 5:30 PM
Wednesday, October 12 – 7 AM - 5:30 PM
Thursday, October 13 – 7 AM - 3 PM

Technical Sessions:
Tuesday, October 11 – 2 PM - 5:55 PM
Wednesday, October 12 – 10 AM - 3:55 PM
Thursday, October 13 – 8 AM - 3:25 PM

Exhibition:
Monday, October 10 – SET-UP ONLY: 8 AM-5 PM
Tuesday, October 11 – SET-UP ONLY: 8 AM-10:30 AM – SHOW 11 AM - 5 PM
Wednesday, October 12 – 11 AM - 6:30 PM
Thursday, October 13 – MOVE-OUT ONLY: 8 AM - 2 PM
InFORMS®
High-Reliability Preforms

- IGBT Assembly – DBC to Baseplate
- Low voiding
- Eliminates wirebond trimming

Contact our technical engineers today:
techsupport@indium.com

Learn more:
www.indium.com/informs/IMAPS

See us at Booth 710

From One Engineer To Another®

www.indium.com

©2016 Indium Corporation
Welcome from the General Chair

Greetings IMAPS members and the worldwide microelectronics community!

Welcome to Pasadena! It is a great pleasure to be serving as this year’s General Chair and I am blessed to have an excellent group of committee chairs supporting me. I am excited to share some of the great things that we have planned for the IMAPS 49th Annual International Symposium on Microelectronics.

The IMAPS committees and many dedicated volunteers have been working together over the past six months to prepare for the 2016 Symposium with an emphasis on bringing exciting topics that are relevant within the microelectronics community. This year’s Technical Committee, chaired by Dan Krueger, has prepared technical sessions with topics ranging from high reliability systems to fan-out wafer level and embedded packages. The conference theme for IMAPS 2016 is “Packaging the Connected World.” Building on the successes of the previous symposia, the technical program in 2016 features parallel tracks covering Emerging Applications and the Connected World, 2.5/3D Packaging and Embedded Packaging Technologies, Advanced Packaging and Enabling Technologies, Advanced Materials and Processes, and Modeling, Design, Test and Reliability.

Complementing the technical sessions, we offer 15 Professional Development Courses (PDCs) with a variety of topics to enhance and broaden your technical portfolio. These will be held on Monday, October 10, prior to the kick-off of the technical sessions.

Additional updates for this year include a change in format of the Global Business Forum. This will include a set of keynote presentations on Wednesday morning, which offers a better opportunity for all attendees to attend. The Exhibition returns with more than 130 exhibit booths, and the symposium committee has scheduled more time to engage with exhibitors without conflicting with the technical program.

Beyond the exhibit hall, technical sessions, keynote presentations, and professional development courses, look for other opportunities to get involved at the conference. IMAPS continues to provide a platform for college and university students to showcase their research and win valuable prize money, including travel grants for qualifying students. The IMAPS outreach to local high school students will include a robotics team demonstration from El Modena High School on the exhibit hall floor. Please look for the students and engage them about the opportunities within our community. There are also plenty of occasions to connect with friends, both current and new, throughout the conference over coffee, lunch or at the opening reception. Be sure to download the IMAPS app so you can keep up with all the activities!

We will continue to incorporate your feedback, so please share your comments with any of the leadership before, during and after the conference. I thank you for taking the time to join us this week at IMAPS 2016!

Erica Folk
Northrop Grumman Corporation
General Chair, IMAPS 2016
Welcome from the Technical Chair

I’m looking forward to the best ever International Symposium on Microelectronics with our 49th Annual event this week. Pasadena, California serves as a perfect backdrop for our Symposium this year with innovators in science and engineering at NASA’s Jet Propulsion Laboratory, California Institute of Technology, and many nearby technology companies driving our industry every day.

I’ve been honored to work with a great technical committee, and together we have put together an exceptional technical program following the theme “Packaging the Connected World.” This is an exciting time to be part of the microelectronics, assembly, and packaging supply chain as our world becomes more and more connected and integrated. Connectivity is changing our personal and industrial worlds and that is driving new and changing challenges and opportunities for the IMAPS community.

Our 2016 Symposium builds on the success of last year’s changes with an opening Plenary Session that includes three keynote speakers from TSMC, Flextronics and JPL. We kick off Wednesday morning with a Global Business Council Plenary Session featuring two more keynotes from Amkor and Plexus. The Posters and Pizza session was an overwhelming success at the 2015 Symposium and is being continued this year. Incorporating your feedback, we will have even more opportunities this year to engage in networking and exploring the exhibits while maintaining a high quality technical program with 5 parallel technical tracks. New this year will be a special invited session focusing on disruptive and game-changing technologies of Fan-out Wafer Level Packaging. The 5 technical tracks are:

- Emerging Technology and the Connected World
- 2.5/3D Packaging and Embedded Packaging Technologies
- Advanced Packaging and Enabling Technologies
- Advanced Materials and Processes
- Modeling, Design, Test and Reliability

Thanks to all of you and to the Technical Committee for making the 49th Annual Symposium on Microelectronics the best ever! It’s been an honor and pleasure to work with my team to organize the technical program and I’m excited to participate with all of you this week in Pasadena, California.

Dan Krueger
Honeywell FM&T
Technical Chair, IMAPS 2016

Symposium Committee

General Chair, Erica Folk, Northrop Grumman
Past General Chair (tours & pdcs), Urmi Ray, Qualcomm
Technical Chair, Dan Krueger, Honeywell
Technical Co-Chair, USA, Mary Cristina Ruales Ortega, University of Missouri
Technical Co-Chair, Europe, Andre Rouzaud, CEA LETI
Technical Co-Chair, Asia, Woong-Sun Lee, SK Hynix
Assistant Technical Co-Chair, USA, Samson Shahbazi, Heraeus
Assistant Technical Co-Chair, USA, Aric Shorey, Corning
Assistant Technical Co-Chair, Europe, Gabriel Parès, CEA LETI
Assistant Technical Co-Chair, Europe, Steffen Kroehnert, Nanium
Assistant Technical Co-Chair, Asia, Kwang Sung Choi, Electronics and Telecommunications Research Institute

Assistant Technical Co-Chair, Asia, Seungwook Yoon, STATS ChipPAC
PDC Chair, Tom Green, TJ Green Associates, LLC
GBC Chair, Rich Rice, ASE
GBC Co-Chair, Lee Smith, UTAC Group
GBC Co-Chair, Kazumi Allen, Invensas
Foundation Chair & Golf Chair, Gary Hemphill, Technic, Inc.
Foundation High School Chair, Bill Gaines, Northrop Grumman
Marketing Chair, Iris Labadie, Kyocera America
Marketing Co-Chair, Adrienne Gerard, Finetech USA
ASK US ABOUT:

- DRAM
- 3D-NAND
- Advanced Logic
- MEMS / Sensors
- Compound Semiconductor
- Non-Volatile Memory (NVM)
- Display Materials
- Flexible Display
- Liquid Crystals
- OLED
Thank You to Our Sponsors!

Premier Event Sponsors

Premier Program Sponsor:

Heraeus

Premier Technology Sponsors:

METALOR

Event Sponsors

Dessert “Happy Hour”:

PALOMAR

Posters & Pizza:

NORTHROP GRUMMAN

Keynote Session:

APPLIED MATERIALS

Exhibit Happy Hour Sponsor:

EMD PERFORMANCE MATERIALS

Student Programs Sponsor

Honeywell

Coffee Break Sponsor:

MU

Coffee Break Sponsor:

SHENMAO America Inc.

Golf Hole Sponsors

EMD PERFORMANCE MATERIALS

TECHNIC INC

MicroScreen

Official Media Sponsors

MEMS JOURNAL

3DInCites

THERMAL News

ANTENNA SYSTEMS & TECHNOLOGY

ELECTRONICS PROTECTION

GLOBAL SMT & PACKAGING

Chip Scale Review

MEPTEC

IMAPS 2016 • 49th Annual Symposium on Microelectronics
Professional Development Courses (PDCs)

New Format!

Get off line and learn Face to Face...Sign up for a PDC!

PDCs (Professional Development Course) are a big part of the Annual IMAPS Symposium each year. Why not plan to take a course on Monday before IMAPS 2016 kicks off and take advantage of the rich learning opportunities available at the IMAPS symposium.

This year the Monday courses have been completely redesigned to enhance your experience!

PDCs are all now scheduled for 2-hour lessons. Shorter courses for you to digest great information without being overwhelmed by a 4-8 hour commitments after your travels! The shorter tutorials also allow for you to participate in more topical areas and learn from a variety of instructors! The courses are also now arranged under 4 “TRACK” categories: (A) - Introduction to Microelectronics, Packaging & Test; (B) Reliability; (C) Materials & Processes; and (D) Next Generation Packaging Challenges.

PDCs create a unique environment whereby students can personally interact with the instructors, and with each other in the classroom and over lunch. It’s mentally stimulating and the new found professional connections will prove to be valuable in the long run. Learning on line is fine, but it cannot duplicate hours spent immersed in a specific topic, led by an industry expert in the field and surrounded by like-minded professionals.

This year we’ve put together another impressive assortment course options Our goal is to make the IMAPS PDCs the premier learning experience; so we ask that you take time to fill out the evaluation form that accompanies each course and give us your feedback on this or any other aspects of the PDCs. Read through the course descriptions on line and pick the course that best suits your company and career objectives. Every PDC includes a full set of comprehensive course notes. Class sizes typically range from ten to thirty students and there is always ample time for questions and networking. We hope you will consider joining us in Pasadena for a learning experience like no other.

Education is a lifelong pursuit, don’t miss out on this opportunity!

Tom Green, Tom Terlizzi, and Urmi Ray
IMAPS 2016 PDC Co-Chairs

Monday, October 10, 2016

IMAPS Microelectronics Foundation David C. Virissimo Memorial Golf Classic | 6:45 AM - “Scramble”

Professional Development Courses (PDCs) - 8:00 AM - 5:30 PM

Microelectronics/Packaging Industry Tour - 10:00 AM - 3:00 PM
SUS Photonic Systems Inc. - Corona, CA
The tour will include company introduction, general tour of the facilities including development and prototype tools, lunch and live demos using a projection scanner and excimer laser ablation on production tools. $15 fee - includes lunch and transportation

Please meet at the main entrance of the convention center at 9:45am.

Welcome Reception | 5:30 PM - 7:30 PM | Sheraton Pasadena Justine Ballroom
Welcome Reception Sponsored by:

Heraeus
### Professional Development Courses (PDCs)
**Monday, October 10, 2016**

**NEW PDC FORMAT This Year!**
**Monday, October 10: New 2-hour formats, by theme/track**
**8:00 AM – 10:00 AM | 10:30 AM – 12:30 PM | 1:00 PM – 3:00 PM | 3:30 PM – 5:30 PM**

<table>
<thead>
<tr>
<th>Time</th>
<th>Track A: Intro to Microelectronics, Packaging &amp; Test</th>
<th>Track B: Reliability</th>
<th>Track C: Materials &amp; Processes</th>
<th>Track D: Next Generation Packaging Challenges</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00 AM-10:00 AM</td>
<td>A1: Fundamentals of Microelectronics Packaging - John Pan, Cal Poly State University</td>
<td>B1: Solder Joint Reliability - Jennie Hwang, H-Technologies Group</td>
<td>C1: Polymers in Electronic Packaging - Jeffrey Gotro, InnoCentrix LLC</td>
<td>D1: Emerging Challenges in Semiconductor Packaging - Raja Swaminathan, Intel</td>
</tr>
<tr>
<td>10:00 AM-10:30 AM</td>
<td>Coffee / Networking in Foyer - Open to all PDC participants</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12:30 PM-1:00 PM</td>
<td>Lunch - Open ONLY to PDC participants taking morning AND afternoon courses</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3:00 PM-3:30 PM</td>
<td>Coffee / Networking in Foyer - Open to all PDC participants</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3:30 PM-5:30 PM</td>
<td>A4: Electrical Modeling &amp; Test Strategies for 3D Packages - Bruce Kim, City University of New York</td>
<td>B4: Reliability Testing of Implanted Class III Medical Devices &amp; In Vivo Sensors - Thomas J. Green, T J Green Associates LLC</td>
<td>C4: It is Time for Low Temperature - Low Temperature Solders, New Development, and Their Applications - Ning-Cheng Lee, Indium Corporation</td>
<td>D4: Advances in Fan-Out Wafer Level Packaging (FOWLP) - Beth Keser, Qualcomm</td>
</tr>
<tr>
<td>5:30 PM-7:30 PM</td>
<td>Welcome Reception - Open to all IMAPS 2016 participants</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Cost for Each PDC: $400
Please Visit Booth #423

ADT will also be hosting a Technical Dicing Seminar on Wednesday, October 12, 2016.

This **free** event will be held at the **Sheraton Pasadena** (during the IMAPS Show). Light snacks and beverages will be provided.

---

**When:** October 12, 2016  
1:00 pm – 4:00 pm  
(during IMAPS Show)

**Where:** Sheraton Pasadena  
303 Cordova St.  
Pasadena, California, 91101  
*Magnolia Room*

To reserve your space, please call Sol at **480-234-4356**.  
For more info on Advanced Dicing Technologies (ADT) please visit:  
[www.adt-dicing.com](http://www.adt-dicing.com)

- Tempe, AZ (480-666-9620)  
- Horsham, PA (215-773-9155)
Here’s how to get the app

1. Visit the Apple Store or the Google Play store and search “IMAPS Events” or visit https://imaps.gatherdigital.com for the web-based version.

2. Log in with your registration email and the password imaps2016.

3. Take advantage of all of the attendee and exhibitor features!
Exhibit Floorplan

Exhibition in Exhibit Halls A/B
5N Plus Micro Powders
Booth # 632
4385 Garand St.
Montreal, QC, Canada H4R 2B4
(P) 514-856-0644
(E) sales.micropowders@5nplus.com
(W) www.5nplus.com

5N Plus is a leading producer of specialty metals and compounds for use in advanced electronic, pharmaceutical and industrial applications. We have recently commissioned a modern metal powder production facility in Montreal. This plant is specifically designed to produce powders in the 2 to 25 micron range in order to meet the challenges of the electronics industry as the drive towards miniaturization accelerates. Our flexible process is ideally suited for customized alloy compositions and particle size distributions.

Accu-Tech Laser Processing, Inc.
Booth #608
550 S. Pacific Street, # A-100
San Marcos, CA 92078
(P) (209) 833-1110
(E) runderwood@cctlaser.com
(W) www.accutechlaser.com


AdTech Ceramics
Booth # 713
511 Manufacturers Rd
Chattanooga, TN 37405
(P) 423-755-5400
(E) sales@adtechceramics.com
(W) www.adtechceramics.com

US based manufacturer of high temperature co-fired ceramic electronic packages with over 45 years of experience. We offer a full line of HTCC packages from alumina and aluminum nitride. Fully integrated manufacturing with chemically milled seal rings, leads and step lids. In addition to our standard tungsten based metallization system, we offer a platinum co-fire metallization for high temperature applications. This Pt system has demonstrated excellent performance for thousands of hours at 500 degrees C. Developed for evolving SiC integrated circuits and other devices that require higher temperature packaging. For improved thermal management, common heat sink materials that we braze to our packages include BeO, CuW, CuMo and AISI6. Additionally, our injection molding product line allows for the production of complex ceramic shapes that can be metallized and provided as a brazed assembly. AdTech Ceramics is AS9100C/ISO9001:2008 certified.

Advance Reproductions Corp.
Booth # 202
100 Flagship Drive
North Andover, MA 01845
(P) (978) 685-2911
(E) d.robinson@advancerepro.com
(W) www.advancerepro.com

Advance Reproductions is a leading supplier of high-quality, large-area and optical photomasks and phototools. Advance is an ISO 9001and ITAR registered company. We support manufacturers throughout the world involved in the manufacturing of semiconductor, hybrid, microwave, nanotechnology, medical and electronic packaging devices. Advance Reproductions provides solutions and custom manufacturing services for research and development, custom shaped substrates and engineered tooling.

Advanced Dicing Technologies
Booth # 423
6202 S Maple Ave Suite 120
Tempe, AZ 85283
(P) (480) 666-9620
(E) ADT-USA-Support@adt-co.com
(W) www.adt-co.com

Advanced Dicing Technologies serves the micro electronics market with mechanical dicing equipment, blades, process develop, service and support. We offer single/twin spindle dicing equipment fully automatic or semi automatic configurations supporting 200mm/300mm substrates. ADT has a strength in hard materials processing such as ceramics and glass.

Advanced Substrate Microtechnology Corporation
Booth # 305
7860 Thorne Drive
Greensboro, North Carolina, 27409
(P) 336-285-5955
(E) sales@advancedsubstrate.com
(W) www.advancedsubstrate.com

Advanced Substrate (ASMC) is the leader in producing substrates with complex design requirements. We build substrates on Al2O3, BeO, AlN, Zirconia, Glass, 12” Si wafer and other specialty materials with various types of conductors, insulators and passive components. ASMC works with customers to optimize their design and reduce manufacturing cost. All processes and procedures have been set up to comply with ISO9000 and MIL-PRF-38534. All products are manufactured in class10K equivalent clean room. ASMC provides a 100% turnkey solution from one location in North Carolina. Having in-house capabilities enables ASMC to provide the shortest cycle time for urgent customer orders and new prototype designs. Our customers’ products are serve in various industries: RF, Optical, Telecom, Defense, MEMS and Semiconductor.
Advantech US, Inc.
Booth # 112
160 Industry Drive
RIDC Park West
Pittsburgh, PA 15275
(P) (412) 706-5400
(E) slauer@advantechus.com
(W) www.advantechus.com/

Advantech U.S., Inc. is a Pittsburgh-based company that has developed a game-changing printing technology for manufacturing microelectronic devices. AMAX Evaporation Printing™ is an additive manufacturing technology that performs material deposition through shadow masks (fine metal masks). The core technology platform enables the fabrication of precision patterned thin films and utilizes process management of shadow masks up to 370μm by 470 mm with feature sizes as low as 5μm and high precision alignment registration better than 1μm layer to layer. This process has shown significant application potential for the fabrication of ePaper display backplanes, OLED display front panels, chip packaging, microelectronic devices and circuitry; specifically, high density interposers, fine conductor lines and embedded components such as capacitors, resistors, and transistors. The process is compatible with a number of both rigid and flexible substrates and bulk deposition materials.

AEMtec GmbH
Booth # 311
James-Franck-Str. 10
12489 Berlin, Germany
(P) +49 (30) 6392-7300
(E) info@aemtec.com
(W) www.aemtec.com

High precision and complex assemblies: AEMtec GmbH supports their customers by providing comprehensive development and production services for next level microsystems, optoelectronics and sensor systems. We produce high quality electronic components by using outstanding technological equipment, such as Wafer Back-End Services, Chip on Board and Flip Chip, 3D-Integration and Opto-Packaging. Professional supply chain management allows a reduction in total cost of ownership (TCO). Customers take advantage to get access to a strong European group with its focus markets in electronics, security technologies and turn-key solutions.

AI Technology, Inc.
Booth # 116
70 Washington Road
Princeton Junction, NJ 08550
(P) (609) 799-9388 (124)
(E) mleblon@aitechnology.com

AI Technology, Inc. (AIT) developed flexible epoxies for microelectronic packaging in 1985. Today, AIT’s product line includes patented component, substrate and large die bonding adhesives and underfills, stack-chip packaging with dicing die-attach film (DDAF), flip-chip bonding and underfilling, single and multiple-chip module die bonding (230°C and above), and component and substrate bonding adhesives for military and commercial applications. AIT’s thermal interface materials, including phase-change pads, greases, gels and adhesives, ensure ultimate performance in semiconductors, modules, computers and communication electronics applications.

AIM Solder
Booth # 810
25 Kenney Drive
Cranston, RI 02920
(P) (401) 429-5215
(E) jwinchell@aimsolder.com
(W) www.aimsolder.com

AIM is a leading global manufacturer of solder assembly materials for the semiconductor, electronics and photonics packaging industries. We supply lead-free, indium alloy and AuSn alloy solders in all forms, including PREFORMS, Wire, Paste, Foil, Spheres and custom TIM’s. AIM is ISO 9001:2008 and ISO 14001:2004 certified.

AkroMetrix, LLC
Booth # 312
2700 NE Expressway
Building B, Suite 500
Atlanta, GA 30345
(P) (404) 486-0880 (21)
(E) emoen@akrometrix.com

Akrometrix is a Georgia-based company founded in 1994 to provide services and equipment to measure and resolve thermo-mechanical surface flatness issues in manufacturing and assembly operations, most notably in the production of electronic circuit substrates and components. Its pioneering technology was based on the research of Dr. I. Charles Ume, a professor at the Georgia Institute of Technology (Georgia Tech). Akrometrix licensed and commercialized the application of Dr. Ume’s technology, which today serves as a crucial component in the production, and continued miniaturization, of advanced electronics products. Akrometrix has become the industry leader in real-time metrology emphasizing resolution of thermo-mechanical issues at all levels of electronic materials production, components fabrication and assembly processes.

AMICRA Microtechnologies
Booth # 527
1250 Oakmead Parkway, Suite 210
Sunnyvale/CA/94085 USA
(P) 408 418 4681
(E) sales@amicra.com
(W) http://www.amicra.com

AMICRA Microtechnologies is a worldwide leading supplier of Die Attach Equipment specializing in submicron placement accuracy (± 0.5μm@3σs). Equipment offering supports Die Attach and Flip Chip bonding processes including the following capability: in-situ eutectic bonding, dynamic alignment, heated tool, pulse heating, laser heating, volumetric and jet dispensing, active bond force control, high speed solutions, in-situ UV curing, 550x600mm bonding area, quantitative tilt calibration system, etc. Market focus: Opto, Silicon Photonics, AOC, VCSEL, Laser Diode, WLP 2.5D/3D IC, TSV, TCB, Fan-out/EWLP. Other products include: High Speed Wafer Inking and inspection, Automated LED/LD Test & Sort Systems, Gel Fill Line and Custom Solutions.
ASYS Group Americas Inc.  
Booth # 735  
140 Satellite Blvd. NE  
Suite B1  
Suwanee, GA 30024  
(P) (770) 246-9706  
(E) astrid.wilkens@asys-group.com  
(W) www.asys.de  
The ASYS Group is a global technology company and leading supplier of equipment for the electronic, solar and life science industry.

ATV Technologie GmbH  
Booth # 711  
Johann-Sebastian-Bach-Str. 38  
Vaterstetten, 85591  
Germany  
(P) 49810630500  
(E) sales@atv-tech.de  
Batch type VACUUM REFLOW Soldering OVENS/RTAs: Void free solder joints, IGBT, DBC, CSP, Flip Chip, CPV, MMIC In Line VACUUM REFLOW Soldering OVENS MEMMS cap/Package lid sealing with GETTER activation THERMO COMPRESSION BONDER up to 450°C: Transient Liquid Phase Soldering/Bonding, warped/thinned chip Ag sintering, Cu pillar/micro bump flip chip soldering QUARTZ TUBE Furnaces: LPCVD, CNT/graphene, oxidation, diffusion THERMO COMPRESSION BONDER up to 1100°C: Constrained LTCC sintering, LTCC embossing, glass imprinting/embossing Manual DIAMOND SCRIBERS: to 200 mm IR LPCVD/ALD System, 50°C-1050°C, temperature/pressure alternation BSET EQ GAS PLASMA SYSTEMS: etching/cleaning/ashing/stripping/surface treatment/RI Etching, nondestructive Cu/Al wire functional de-capsulation, functional de-layering, isotropic Polyimide removal, anisotropic Si3N4 removal, functional failure analyze

Axus Technology  
Booth # 606  
7001 W. Erie Street, Suite 1  
Chandler, AZ 85226  
(P) (480) 705-8000  
(E) bvandevender@axustech.com  
Axus Technology delivers end-to-end support, for R&D through volumen production, for CMP and substrate thinning applications. Starting with process design and development in our CMP Foundry, through delivery of production tools and processes; Axus provides industry-leading process and equipment solutions for fabs, 3D integration, and wafer & device packaging users.

Azimuth Electronics, Inc.  
Booth # 610  
2605 So. El Camino Real  
San Clemente, CA 92672 USA  
(P) 949-492-6481  
(E) sales@azimuth-electronics.com  
(W) www.azimuth-electronics.com  
Azimuth Electronics, Inc., a US manufacturer of Test and Burn-In Sockets, has been providing innovative interconnect solutions for over 50 years. Our broad experience allows us to tackle the challenges of a constantly evolving industry. Complete in-house services include design, prototyping, tooling fabrication, and production injection molding.

Bach Resistor Ceramics GmbH  
Booth # 531  
Buchenweg 2  
Seefeld / Germany / 16356  
(P) +4933398696634  
(E) jp@bachrc.de  
(W) www.bachrc.de  
Bach RC manufactures ceramic heating elements of silicon nitride and aluminum nitride with an integrated ceramic heating conductor. Various shapes and sizes of heaters from 3x3mm up to 400mm can be manufactured according to the requirements of the application. With a maximum temperature of 1000°C and surface power of 150W/cm², ceramic heaters outperform conventional metallic heaters in heating speed, temperature uniformity and reliability.

BTU International., Inc.  
Booth # 835  
23 Esquire Road  
N Billerica, MA 01862  
(P) 978-667-4111  
(E) sales@btu.com  
(W) www.btu.com  
BTU International, a wholly-owned subsidiary of Amtech Group (Nasdaq: ASYS), is a global supplier and technology leader of advanced thermal processing equipment and processes to the electronics manufacturing and alternative energy markets. BTU equipment is used in the production of printed circuit board assemblies and semiconductor packaging as well as in the manufacturing of solar cells and nuclear fuel. BTU has operations in North Billerica, Massachusetts, and Shanghai, China, with direct sales and service in the U.S.A., Asia and Europe. Information about BTU International is available at www.btu.com.
Cal Poly Microelectronics Packaging and Printed Electronics
Booth # 431
Dept. of IME, Cal Poly
San Luis Obispo, CA 93407, USA
(P) (805) 756-2540
(E) pan@calpoly.edu
(W) ime.calpoly.edu

The Department of Industrial and Manufacturing Engineering (IME) at Cal Poly has an excellent electronics manufacturing lab including a SMT line, die attachment stations, a wire bonder, and many electronic testing instruments. Cal Poly’s Graphics Communication department is a leader in functional and graphic print education in the US. Printed electronics lab in more than 33,000 square feet of lab space is dedicated to metrology and lab-scale patterning and coating, and screen printing. Cal Poly has an 8-unit flexographic printing line, a 4-unit gravure line, an ATMA screen press, and world-class imaging technology. Focusing on the wearable space, we are working on development of an assembly method for attaching ultra-thin chips onto printed flexible substrates that can provide better performance and comfort for wearable medical/human monitoring systems. By developing assembly technology useful for other applications and growing the expert base, while driving toward a commercially available solution, the project aims to benefit the Flexible Hybrid Electronics (FHE) community overall.

Camtek USA
Booth # 313
48389 Fremont Blvd. Ste. 112
Fremont, CA 94538
(P) (408) 986-9540
(E) dpickett@camtekusa.com

Camtek develops and manufactures state-of-the-art Inspection and Metrology systems for the Semiconductor industry. Camtek’s Eagle line delivers unparalleled Inspection and Metrology solutions supporting the Semiconductor industry from R&D to the high production volume environment, providing combined 2D and 3D capabilities on the same platform. The Eagle is designed to support the increased requirements for inspection and metrology for the market’s most demanding applications, including bumps, surface defects, post dicing, RDL and the emerging advanced packaging segment. Camtek Ltd. provides automated solutions dedicated for enhancing production processes and yield in three industries: Semiconductors, Printed Circuit Board (PCB) and High Density Interconnect Substrates.

Canon USA
Booth # 830
3300 North 1st St.
San Jose, CA 95134, USA
(P) 4084682000
(E) semi-info@cusa.canon.com
(W) usa.canon.com/industrial

Canon USA Industrial Products Division provides advanced water & panel process equipment for applications including semiconductor, Advanced Packaging & display. Canon provides cost-effective water processing solutions including i-line & KrF optical lithography, nanoimprint lithography & Canon Anelva deposition equipment. Canon also has a variety of panel based lithography & deposition solutions that can be extended to a variety of applications. Contact semi-info@cusa.canon.com for more info.

Coining, Inc.
Booth # 624
15 Mercedes Drive
Montvale, NJ 07645 USA
(P) +1 201-791-4020
(E) NJ-MONSalesteam@ametek.com
(W) www.ametek-ecp.com

Coining Inc., a business unit of Ametek Electronic Components and Packaging, manufactures Pb and Pb free solder/braze preforms, micro-stampings, cover assemblies, Au & Al bonding wire and bond pads. The company offers high purity alloys of gold, silver, lead, tin, indium, bismuth, palladium and aluminum. Coining specializes in supplying stamped Copper, Kovar®, Molybdenum and cladded materials. The company also offers flux coating, tape & reel and custom packaging services. Extensive tooling library supports standard & custom designs. Contact: Vincent Boccio, Business Development Mgr., vincent.boccio@ametek.com.

Conductive Containers, Inc.
Booth # 404
4500 Quebec Ave., North
New Hope, MN 55428
(P) (763) 537-2090
(E) zachb@corstat.com

At CCI, we eliminate ESD. Every day we take on ESD problems and wrestle them into submission. From material handling products to shippers and packaging to production process reviews. We know what it takes to eliminate ESD from your manufacturing and handling processes. Our path to leadership in the static safe packaging industry has included the invention of Corstat conductive corrugated materials in 1978 and the design of a broad scope of products using that material. Our roots go back to a passion for creating complete packaging materials for static sensitive products.

Crystal Mark, Inc.
Booth # 230
613 Justin Ave.
Glendale, CA 91201
(P) (800) 659-7926 (224)
(E) sales@crystalmarkinc.com
(W) www.crystalmarkinc.com

Since 1967, Crystal Mark, Inc. has specialized in the field of abrasive blasting technology. As a tool abrasive blasting has many uses in many applications. These include: electronics industry, aerospace, precision machining, medical manufacturing, semiconductor industry, glass engraving and fossil preparation. Micro-abrasive blasting is when a finely graded powder is introduced into a gas stream and delivered to a nozzle. The nozzle increases speed and directs the abrasive with precision.
cyberTECHNOLOGIES USA
Booth # 635
962 Terra Bella Ave.
San Jose, CA 95125
(P) (408) 689-8144
(E) khsrass@cybertechnologiesusa.com
(W) www.cybertechnologies.com
cyberTECHNOLOGIES develops and manufactures high-end 3D surface measurement systems for industrial and scientific applications.

Dewey Tool Company, Inc.
Booth # 525
959 Transport Way
Petaluma, CA 94954
(P) (707) 765-5779
(E) Jpalmer@deweyl.com
DeWeyl provides the finest quality bonding wedges in the world. Located in the Petaluma, CA, DeWeyl’s primary business is manufacturing wire bond wedges and custom high precision tooling for the semiconductor, aerospace and medical industry. DeWeyl produces wedges made from ceramic, titanium and tungsten carbide for small and large round wire and ribbon applications.

DfR Solutions
Booth # 734
9000 Virginia Manor Road, Suite 290
Beltsville, MD 20705
(P) 301-474-0607
(E) sales@dfrsolutions.com
(W) www.dfrsolutions.com
DfR Solutions is the leader in quality and reliability services and software for the electronics industry. We support clients throughout the electronic component and material supply chain. DfR Solutions specializes in knowledge- and science-based solutions to maximize product integrity, saving time, managing resources, and improving customer satisfaction. Sherlock Automated Design Analysis™ software is a Physics of Failure based electronics design reliability analysis tool that streamlines new product development by providing greater insights earlier, eliminating test failures due to design flaws and accelerating product qualification. Sherlock provides reliability predictions and allows design iterations to be completed quickly, resulting in reduced cost, risk and time to market. For more information, visit www.dfrsolutions.com.

DOWA International Corporation
Booth # 111
4320 Stevens Creek Blvd. Suite 125
San Jose, CA 95129, USA
(P) 408-236-7560
(E) asaharaf@dicny.com
DOWA is a Japanese material manufacture of non ferrous metals and largest supplier of Ag powder. In this show, DOWA offers Nano Ag paste for soldering. DOWA’s nano Ag paste has low soldering temperature, high shear strength, and high thermal conductivity.

DuPont
Booth # 733
14 T.W. Alexander Drive
Research Triangle Park, NC 27709
(P) (919) 248-5364
(E) Ronda.i.johnson@dupont.com
(W) www.mcm.dupont.com
DuPont has over 40 years of experience in the development, manufacture, sale, and support of specialized thick film and GreenTape(tm) low temperature co-fired ceramic (LTCC) compositions for a wide variety of printed electronic applications in the photovoltaic, display, automotive, biomedical, industrial, military, and telecommunications markets. We deliver solutions that lower the cost of ownership and improve performance, reliability and functionality. For more information please visit http://mcm.dupont.com.

East China Research Institute of Microelectronics
Booth # 122
19 Hehuan Road
Hefei, 230088
China
(P) +86-551-63667943
(E) sales@ecrim.cn
ECRIM engages in developing, manufacturing and sales of variety of Microelectronic and Package products. ECRIM is known for its technical strength, proven product reliability, innovative solutions, quick response, competitive pricing and overall value. We have seven product lines including LTCC, AIN/HTCC, Thick Film, Thin Film, Metal Hermetic Package and Furnace.

Electronic Production Partners GmbH
Booth # 825
Lochhtamer Schlag 17
Graefelfing, BY 82166
Germany
(P) 49-89-829989-0
(E) hstenger@epp-germany.com
(W) www.epp-germany.com
AOI Systems in 2D/3D, INLINE & OFFLINE, Manual & Automatic, for inspection of Screen printed, sputtered or electroplated circuitry. For inspection of Thick/Thin Films, LTCCs, sensors, Wafers, LED ceramics, Automotive, Military, Medical, Telecom Electronics.
**ESL ElectroScience**  
Booth # 402  
416 E. Church Road  
King of Prussia, PA 19406 USA  
(P) 6102728000  
(E) timko@electroscience.com  
(W) www.electroscience.com

ESL ElectroScience specializes in providing solutions to enable customers to take technologies from concept through high volume production using thick film pastes and ceramic tapes. ESL products can be found in hybrid microcircuits, multilayer microelectronics, transformers, thick film heaters, sensors, and fuel cells. For more information visit us at www.electroscience.com.

**ENZOTECHNOLOGY**  
Booth # 307  
14776 YORBA COURT  
CHINO, CA 91710  
(P) 909-993-5140  
(E) info@enzotechnology.com  
(W) www.enzotech.com

ENZOTECH has been in the thermal industry for over 30 years. We offer both standard and customized heat sink solutions. We are unique because we have a vertical integrated production line. From tool making, material forming, post machining, final finishes are all performed in house to provide one stop shopping. Please stop by and let us know what we can do to help!

**F&K Delvotec**  
Booth # 222  
27182 Burbank  
Foothill Ranch, CA 92610  
(P) 949-595-2200  
(E) dominic.sha@fkdelvotecusa.com  
(W) www.fkdelvotec.com

F&K Delvotec is the world-wide leader in innovative wire bonding technology. Delvotec’s expansive portfolio of products deliver intelligent one-stop shop solutions for any wire bonding application, from lab bond process development to completely automated systems. Over 40 patents in wire bonding technology, and award-winning new products and customer satisfaction, attest to the continuing emphasis on providing innovative solutions that drive the industry forward. Whatever bonding is required, Delvotec delivers smart technology that follows the “staying ahead” philosophy that is the heart of the company. F&K’s corporate office is in Germany, with satellite offices in Singapore and the U.S. For more information, please visit www.fkdelvotec.com.

**Ferro Corporation**  
Booth # 203  
4150 East 56th Street  
(P. O. Box 6550)  
Cleveland, OH 44105  
(P) (216) 750-7426  
(E) enrique.marroquin@ferro.com  
(W) www.ferro.com

Ferro Corporation is a leading global supplier of technology-based performance materials, including glass-based coatings, pigments and colors, electronic materials, and polishing materials. Ferro products are sold into the electronics, building and construction, automotive, appliance, household furnishings, and industrial products markets. Its electronics portfolio includes electronic packaging and electro-ceramic materials, electronic glass materials, and other engineered products used in the manufacture of hybrid circuits, microelectronics, advanced packaging, multilayer chip components, and other electronic devices. Ferro also produces semiconductor wafer polishing materials.

**ESM Performance Materials**  
Booth # 619  
6555 Nancy Ridge Drive, #200  
San Diego, CA 92121  
(P) (858) 883-3473  
(E) james.haley@emdgroup.com  

Performance Materials comprises the entire specialty chemicals business of Merck KGaA, Darmstadt, Germany. The portfolio includes high-tech performance chemicals for applications in fields such as:  
- Displays  
- Integrated Circuits  
- Lighting Applications  
- Solar & Energy  
- Coatings  
- Semiconductor Packaging

Customer sectors in consumer electronics, lighting, printing technology, plastics applications and integrated circuits make use of materials and solutions from EMD Performance Materials. Thanks to comprehensive investments in research & development, we are constantly extending our leading position as an innovator and reliable partner.

Our future growth integrates key materials consisting of high purity chemicals used in wafer fabrication to sustainable materials for advanced back end solutions.

**ENZOTECHNOLOGY**  
Booth # 307  
14776 YORBA COURT  
CHINO, CA 91710  
(P) 909-993-5140  
(E) info@enzotechnology.com  
(W) www.enzotech.com

ENZOTECH has been in the thermal industry for over 30 years. We offer both standard and customized heat sink solutions. We are unique because we have a vertical integrated production line. From tool making, material forming, post machining, final finishes are all performed in house to provide one stop shopping. Please stop by and let us know what we can do to help!

**ESL ElectroScience**  
Booth # 402  
416 E. Church Road  
King of Prussia, PA 19406 USA  
(P) 6102728000  
(E) timko@electroscience.com  
(W) www.electroscience.com

ESL ElectroScience specializes in providing solutions to enable customers to take technologies from concept through high volume production using thick film pastes and ceramic tapes. ESL products can be found in hybrid microcircuits, multilayer microelectronics, transformers, thick film heaters, sensors, and fuel cells. For more information visit us at www.electroscience.com.

**F&K Delvotec**  
Booth # 222  
27182 Burbank  
Foothill Ranch, CA 92610  
(P) 949-595-2200  
(E) dominic.sha@fkdelvotecusa.com  
(W) www.fkdelvotec.com

F&K Delvotec is the world-wide leader in innovative wire bonding technology. Delvotec’s expansive portfolio of products deliver intelligent one-stop shop solutions for any wire bonding application, from lab bond process development to completely automated systems. Over 40 patents in wire bonding technology, and award-winning new products and customer satisfaction, attest to the continuing emphasis on providing innovative solutions that drive the industry forward. Whatever bonding is required, Delvotec delivers smart technology that follows the “staying ahead” philosophy that is the heart of the company. F&K’s corporate office is in Germany, with satellite offices in Singapore and the U.S. For more information, please visit www.fkdelvotec.com.

**Ferro Corporation**  
Booth # 203  
4150 East 56th Street  
(P. O. Box 6550)  
Cleveland, OH 44105  
(P) (216) 750-7426  
(E) enrique.marroquin@ferro.com  
(W) www.ferro.com

Ferro Corporation is a leading global supplier of technology-based performance materials, including glass-based coatings, pigments and colors, electronic materials, and polishing materials. Ferro products are sold into the electronics, building and construction, automotive, appliance, household furnishings, and industrial products markets. Its electronics portfolio includes electronic packaging and electro-ceramic materials, electronic glass materials, and other engineered products used in the manufacture of hybrid circuits, microelectronics, advanced packaging, multilayer chip components, and other electronic devices. Ferro also produces semiconductor wafer polishing materials.
Finetech
Booth # 612
560 E Germann Rd. #103
Gilbert, AZ 85297
(P) 480-893-1630
(E) sales@finetechusa.com
(W) www.finetechusa.com

Finetech is a manufacturer of innovative equipment solutions for advanced packaging and micro assembly. The FINEPLACER die bonders are used for R&D and prototyping (high accuracy, low volume) to fully-automated production environments with high yield. Due to their modular architecture, the manual, semi-automated and full-automatic systems offer maximum process flexibility: thermo-compression, thermosonic, eutectic, epoxy, high force, ACF/Indium bonding. Applications areas include flip chip, opto-e, sensors, Si photonics, MicroLEDs, C2W, Cu pillar, Focal Plane Arrays, Chip-on-Glass, Chip-On-Flex and more. Finetech also provides advanced rework systems for today’s challenging applications. Finetech serves a broad range of industries, such as aerospace, medical technologies, automotive, consumer electronics, semiconductor, opto-electronics, defense, universities and research centers.

GE Inspection Technologies
Booth # 110
50 Industrial Park Road
Lewistown, PA 17044
(P) (650) 454-7366
(E) David.Lehmann@ge.com
(W) https://www.gemeasurement.com/inspection-and-non-destructive-testing

GE Inspection Technologies offer micro- and nanofocus 2D industrial X-ray inspection systems as well as industrial computed tomography (micro CT and nano CT), 3D failure analysis, 3D metrology and inline CT. As center of excellence for computed tomography, microelectronic and materials science applications, phoenix x-ray is part of GE Measurement & Control Solutions.

Geib Refining Corporation
Booth # 504
399 Kilvert St.
Warwick, RI 02886
(P) (800) 228-4653
(E) mike@geibrefining.com

Precious metal reclaim of gold - platinum - palladium - silver - iridium - ruthenium ITAR and EPA compliance means 100% destruction of your intellectual property in a regulated and environmentally responsible manner. We process all types of precious metal scrap including hazardous wastes. We also support thin film technology through shield cleaning to UHV standards. Settlements include bullion, source materials, or check/wire. We have many sound relationships within the IMAPS community and are a major supporter of IMAPS New England. Stop on over and learn why Geib is the most valued precious metals refining source.

GPD Global
Booth # 118
611 Hollingsworth St.
Grand Junction, CO. 81505
(P) 970-245-0408
(E) cvega@gpd-global.com
(W) www.gpd.global.com

GPD Global is a leading manufacturer of fluid dispensing systems and other capital equipment for the semiconductor, telecommunications, automotive, aerospace, consumer electronics, and medical device industries. Our primary product lines are: - Precision Fluid Dispensing Systems - Precision Lead Forming machines for through-hole component preparation - SMT Cover Tape Peel Back Force Tester

Haiku Tech, Inc.
Booth # 210
1669 NW 79 Ave.
Miami, FL 33126
(P) (305) 463-9304
(E) sales@haikutech.com
(W) www.haikutech.com

Customized Technical and equipment solutions for the manufacture of electronic passive components, e.g. LTCC, HTCC, MLCC, etc. Products’ portfolio includes: dielectric powders, binders, tape casters, sheet blankers, mechanical punches, screen printers, stackers, isostatic laminators, green chip (hot knife) dicers, termination equipment, furnaces, optical dilatometers and visual inspection equipment. We also offer ceramic tape development and manufacturing consulting services.

Hary Manufacturing Inc.
Booth # 605
24 Cokesbury Road
Lebanon, NJ 08833
(P) 908-722-7100
(E) sales@hmiprinters.com
(W) www.hmiprinters.com

Hary Manufacturing, Inc. (HMI) is a premier supplier of Precision Screen Printers for the thick-film, hybrid and other precision deposition applications. Complementing products include Infrared conveyor dryers and substrate handling automation for a wide range of applications. HMI offers full spare parts and technical support for AMI Presco printers as well as all HMI equipment. Our consumable product lines provide printing squeegee and lint-free cleaning cloths to satisfy the production needs of our customers. Please visit www.hmiprinters.com for more information.
Heraeus Electronics
Booth # 703
24 Union Hill Rd
Conshohocken, PA 19428
(P) 610-825-6050
(E) electronics.americas@heraeus.com
(W) www.heraeus-electronics.com

Heraeus Electronics is your expert for materials and matched materials solutions for electronics packaging. With our expansive product portfolio consisting of, thick film pastes, solder pastes, adhesives, bonding wire, roll clad strips, and DBC we can shorten development cycles and lower costs for our customers.

Hesse Mechatronics, Inc.
Booth # 523
225 Hammond Ave.
Fremont, CA 94539
(P) (408) 436-9300
(E) jolynn.snell@hesse-mechatronics.us
(W) www.hesse-mechatronics.us

Designs and manufactures thin wire bonders for aluminum and gold, and heavy wire bonders for aluminum, gold and copper, round wire and ribbon, including HCR ™ (High Current Ribbon). Services include wire bonding equipment training, applications support, development and production of prototypes and pre-production manufacturing at four applications and demonstration labs.

Hi-Rel Laboratories
Booth # 306
6116 N Freya
Spokane, WA 99217
(P) 509 325-5800
(E) roger@hrlabs.com
(W) www.hrlabs.com

Hi-Rel Laboratories, Inc. is an independently owned and operated corporation whose main concentration of activity is in the materials evaluation of the micro-electronic oriented phases of commercial, aerospace and defense industries. We specialize in the solution of process, production and application problems requiring knowledge and experience in such diverse fields as microelectronics and materials technology. Using proven analytical techniques such as metallography, light and scanning electron optics coupled with energy dispersive spectroscopy, FTIR and FIB, we are able to isolate and solve your materials related issues. The largest activity in the laboratory is the performance of DPA testing for a wide variety of commercial, civil, and military space programs. Hi-Rel was the first commercial test lab in the U.S. to perform DPA testing in a support role to “in house” OEM Laboratories beginning in 1972. We also have over 40 years of experience in performing root cause failure analysis of electrical and electronic components, from passive components like resistors, inductors and capacitors, to transistors, integrated circuits and hybrids. In response to industry requests, Hi-Rel also offers non-electrical testing upgrade services such as Pt.N.D., Real-time Radiography, Hermeticity testing, and Dot Marking. All operations are carried out in our 100% ESD protected Upgrade services Lab.

HSIO Technologies
Booth # 602
13400 68th Ave N
Suite #110
Maple Grove, MN 55311
(P) (763) 447-6260
(E) randy.knudsen@hsiotech.com
(W) www.hsiotech.com

HSIO Technologies applies advanced design concepts and manufacturing processes to enable interconnect solutions with ever smaller form factors and ever higher performance. The company has developed a patent-pending collection of technologies that eclipse performance and size limitations of traditional methods of electrical interconnect and power management. Combining traditional connector, chip packaging, and printed circuit manufacturing methods with processes used in the production of Photovoltaic, Display, LED, and Printed Electronics devices, the unique set of capabilities provide low cost, yet high performance methods to interconnect and power the components contained in electronic devices.

i3 Electronics
Booth # 522
1093 Clark Street
Endicott, NY 13760
(P) (607) 755-1985
(E) julie.jones@i3electronics.com
(W) www.i3electronics.com

i3 Electronics, Inc., with headquarters in Endicott, NY, is a vertically integrated provider of high performance electronic solutions consisting of: design and fabrication of printed circuit boards & advanced semiconductor packaging; high speed laminate expertise; advanced assembly services; reliability & signal integrity reliability lab services; high speed back plane & press fit assembly; and flex, rigid-flex & 2.5 & 3D die assembly. i3 product lines meet the needs of markets including aerospace & defense, medical, high performance computing, industrial, telecom, semiconductor & test and alternative energy, where highly reliable products built in robust manufacturing operations are critical for success. For more information about i3 and its products, please visit www.i3electronics.com.
IBM Canada Ltd  
Booth # 325  
23 Airport Blvd  
Bromont, Quebec, Canada J2G4N3  
(P) 450-531-2474  
(E) assembly@ca.ibm.com  
(W) www-03.ibm.com/systems/services/packaging/

IBM Bromont is a world leader in semiconductor packaging technology, products and services. Now available to customers worldwide, we invite you to take advantage of our experience, system level mindset, and skilled engineers to execute your most advanced packaging and test solutions. Tap into our deep competencies as the industry continues to shift to custom SoCs and SiPs. IBM is known for its multi-chip packaging and heterogeneous integration. We offer full turnkey solutions from modelling and characterization through Burn-in and test. Our test capability spans digital, analog, mixed signal, RF as well as multi-site programming, test pattern conversion, and load board design. We provide high quality mechanical, thermal and electrical design (including high speed/SERDES, signal integrity and power integrity), ensuring effective execution of new and updated platforms. Services include materials and process characterization, optimized substrate design, and failure analysis while package platforms range from large organic substrates to silicon and glass interposers, and the newest coreless technologies. We invite you to discuss your next generation requirements – our developments in areas such as silicon photonics are unrivaled. IBM will help you deliver differentiated solutions while providing personalized, expert support to meet even the toughest application goals.

Indium Corporation  
Booth # 710  
34 Robinson Road  
Clinton, NY 13323  
(P) (315) 853-4900  
(E) askus@indium.com  
(W) www.indium.com

Indium Corporation is a premier materials manufacturer and supplier to the global electronics, semiconductor, thin-film, thermal management, and solar markets. Products include solders and fluxes; brazes; thermal interface materials; sputtering targets; indium, gallium, germanium, and tin metals and inorganic compounds; and NanoFoil®. Founded in 1934, Indium has global technical support and factories located in China, Malaysia, Singapore, South Korea, the United Kingdom, and the USA. For more information about Indium Corporation, visit www.indium.com. You can also follow our experts, From One Engineer To Another® (#FOETA), at www.facebook.com/indium or@IndiumCorp.

IMRA America  
Booth # 533  
1044 Woodridge Ave  
Ann Arbor, MI 48105  
(E) lasers@imra.com  
(W) www.imra.com

IMRA America, Inc. is dedicated to creative research and innovation leading to the development of essential technologies for industrial use. Our history as the oldest and most experienced femtosecond fiber laser company reflects the successful implementation of breakthrough technologies. IMRA continues to expand its capabilities, from fundamental research to commercial laser products and full-featured laser processing solutions. With strong product development and engineering competencies, IMRA continues to lead the industry with high volume manufacturing capability and rigorous quality control.

Infinite Graphics  
Booth # 113  
4611 East Lake St.  
Minneapolis, MN 55406  
(P) (612) 721-6283 (326)  
(E) smcdonough@igi.com  
(W) www.igi.com

Infinite Graphics is an end-to-end Precision Imaging Engineering Solutions provider. IGI offers a unique set of photolithography services including grayscale, 3D nano-structures and photomask layout software designed to save you time and money. IGI will demo Medium and Large Area Masks and the NanoSculpt 3D Solutions Suite.

Interconnect Systems  
Booth # 503  
741 Flynn Road  
Camarillo, CA 93010  
(P) 805-482-2870  
(E) info@isipkg.com  
(W) www.isipkg.com

Interconnect Systems, Inc. (ISI), specializes in high-density module packaging and advanced system-level interconnect solutions. ISI offers design, qualification, and testing, coupled with fully integrated in-house manufacturing. Capabilities include: high-density PCB design, fine pitch SMT, flip chip, wire bond assembly, IC packaging, custom molding, over molding, and automated optical inspection. www.isipkg.com
Invenios
Booth # 633
320 North Nopal
Santa Barbara, CA 93103
(E) ellenk@invenios.com
(W) www.invenios.com

Invenios designs, develops, and manufactures microfluidics, MEMS, and 3D microstructures. Invenios engineers exclusive processes and custom production equipment that is required to manufacture this range of products. Invenios has a fully capable microfluidics/MEMS foundry that offers high performance, cost effective solutions for both established and emerging companies. Unlike traditional microsystems foundries, Invenios delivers a complete production cycle, which includes design review, process development, manufacturing, and testing within an ISO 9001 environment to support a broad range of micron and sub-micron level products.

Kulicke & Soffa Industries, Inc.
Booth # 626
1821 E. Dyer Road #200
Santa Ana, CA 92705
(P) (949) 660-0440
(E) msim@kns.com
(W) www.kns.com

Kulicke & Soffa (NASDAQ: KLIC) is a global leader in the design and manufacture of semiconductor, LED and electronic assembly equipment. K&S has expanded its product offerings in advanced packaging through the acquisition of Assembleon, which diversifies K&S’ participation in the automotive and industrial markets via advanced SMT. K&S solutions include ball bonding, wedge bonding, wafer level bonding, thermo-compression bonding, flip chip, FOWLP, WLP, SIP, PoP and Embedded Die. Combined with its expertise in process technology, K&S is well positioned to help customers meet the challenges of assembling the next-generation semiconductor, LED devices and high quality printed circuit board assembly.

Kyocera International, Inc.
Booth # 422
8611 Balboa Avenue
San Diego, CA 92123
(P) (858) 614-2592
(E) iris.labadie@kyocera.com
(W) americas.kyocera.com/kai-semiparts/

Kyocera America, Inc. (KAI) offers an extensive array of semiconductor packages and high frequency complex modules including mmW, RF, T/R modules, BGAs, SiPs, and High Power GaN packages in a variety of ceramic and organic material sets. KAI has state-of-the-art electrical design, modeling / simulation capability in-house to maximize package and circuit performance in your application. Our Assembly Technology Division accepts prototype to volume production orders for flip chip, wirebond, wafer dicing / bumping, vacuum soldering, test and burn-in.

LINTEC OF AMERICA
Booth # 308
15930 S. 48TH STREET, SUITE 110
PHOENIX, AZ 85048
(P) 480-966-0784
(E) INFO2@LINTEC-USA.COM
(W) WWW.LINTEC-USA.COM

LINTEC’s semiconductor manufacturing related products, Adwill, includes a wide array of lines consisting of high-function adhesive tapes and equipment:
- Non UV and UV dicing tape, wafer mounting systems, and UV systems
- Non UV and UV Backgrounding tape, lamination, and detaping systems
- 2 in 1 Dicing Die Attach Film
- Backside Coating tape and laminating equipment

LINTEC is relied on by the largest semiconductor manufacturers, and has received multiple supplier awards, for innovations which has moved semiconductor manufacturing forward. LINTEC is there to provide 30+ years of expertise to answer your dicing, grinding, and packaging tape related process questions.

Materion
Booth # 207
2978 Main Street
Buffalo, New York 14214
(P) +1 800.327.1355
(E) advancedmaterials@materion.com
(W) www.materion.com/advancedmaterials

Materion Advanced Materials Group is an industry leader in providing durable and best-cost solutions for ceramic packages and hermetic cover/lids for the microelectronics industry. We offer a comprehensive portfolio of packaging materials in precious or non-precious material and can customize innovative electronic package materials to satisfy your unique needs. Our high-reliability packaging also supports most configurations, applications and volume requirements. Because of our industry expertise, extensive global manufacturing capabilities and R&D proficiency, we are able to meet customers’ packaging requirements today and partner with them to meet future challenges.
Metalar Technologies USA
Booth # 813
255 John L. Dietsch Blvd.
North Attleboro
(P) 508-699-8000
(E) gary.nicholls@metalar.com
(W) www.metalar.com

Powders and Flakes
We supply a comprehensive range of leading edge materials to meet the demanding requirements of the automotive, electrical, renewable energy (photovoltaics), and electrochemical or mechanical means. Based on our proprietary technology we produce: Customized flakes for electrically and thermally conductive die attach and adhesives for microelectronic applications. Silver powders and flakes for ceramic interconnect, low temperature co-fired ceramic (LTCC) fabrication and passive component termination. Specially silver powders and flakes for polymer thick film (PTF), membrane touch switches (MTS), RFID antennas and printed electronic (PE) applications. Engineered silver powders and flakes for the rapidly growing photovoltaics/solar cell market place. Silver powders for sprayable inks, formable gaskets and other shielding materials. A variety of materials via joint development programmes for custom applications, including, but not limited to, emerging display requirements.

Plating
We are a leading supplier of precious metal plating products and processes, both electrolytic and electroless, developed over many years to meet the demands of a diverse set of activities in the electronics, semiconductor and decorative industries. Our processes are designed for use with high speed, reel-to-reel, barrel, rack, vibratory and semiconductor metallization equipment. Simply stated, Metalar products work — they are tried and tested. Our Advanced Coatings Division concentrates its expertise on a comprehensive plating process range which includes precious metal solutions and ancillary products.

Micro Systems Technologies, Inc.
Booth # 123
1839 S. Alma School Road, Suite 270
Mesa, AZ 85210-3024 / USA
(P) +1 (480) 775 6878
(E) sales.msti@mst.com
(W) www.mst.com

The Micro Systems Technologies group comprises four technology companies providing innovative products and services for high-reliability/high-performance industries, like medical technology, aerospace & defense, telecommunication and various industrial segments. The offering includes HDI/microvia PCBs, LCP substrates, ceramic substrates, electronic module design and manufacturing, advanced assembly and semiconductor packaging technologies, as well as batteries for active implants.

MicroScreen, LLC
Booth # 603
1106 S. High Street
South Bend, IN 46601
(P) (574) 232-4358
(E) info@microscreenllc.com
(W) microscreenllc.com

MicroScreen LLC manufactures thick film screens and large format/solar screens in a wide variety of mesh and frame sizes, with highly controlled coating machines for uniform emulsion. MicroScreen also offers laser cut and electroformed stencils for solder paste deposition. All stencils are 100% inspected using ScanCheck AOI. Options include Nano Coating, PhD and Tension materials, MicroWeld step stencils, and Wizard frame and Space Saver frame systems. MicroScreen is ITAR Registered.

Micross Components
Booth # 103
7725 N. Orange Blossom Trail
Orlando, FL 32810 USA
(P) 1.855.4COMPONENTS
(E) sales@micross.com
(W) www.micross.com

Micross Components offers a comprehensive array of hi-rel electronic solutions for defense, space, medical, industrial and other demanding industries. As a one solution provider, we manufacture and distribute a wide range of products, including integrated circuit and discrete bare die and wafers; passive components, standard and custom packaged devices; and an extensive list of services spanning component modification, assembly, electrical and environmental test capabilities. With over 35 years’ experience and a quality system certified to applicable aerospace, military, and industrial standards, Micross possesses the design, manufacturing, test and logistics expertise needed to support an application throughout the entire program life cycle. And today, Micross continues to attract a growing roster of Blue Chip companies and leading semiconductor manufacturers who now rely on us as their single-source supplier of high-reliability electronic solutions. For more information or to request a quote, visit www.micross.com or email sales@micross.com

Mini-Systems, Inc.
Booth # 507
20 David Rd.
PO. Box 69
N. Attleboro, MA 02761-0069
(P) (508) 695-0203
(E) ctourgee@mini-systemsinc.com
(W) www.mini-systemsinc.com

For over 44 years, MSI has been supplying superb quality and on-time deliveries. Absolute tolerances starting at 0.005% and TCR’s at 2ppm/C. Case sizes start at 0101. Standard deliveries under 2 weeks. MSI is ISO 9001 certified and is on the QPL for MIL-PRF-55342 and MIL_PRF-32159.
MiQro Innovation Collaborative Center – C2MI
Booth # 433
45 Boul. de l’Aéroport
Bromont, QC
Canada
(P) (438) 496-0548
(E) dominic.gariepy@c2mi.ca
(W) www.c2mi.ca/en

C2MI promotes strong links between the academic and industrial sectors, two spheres that interact and collaborate for the advancement and development of next-generation prototypes. The C2MI is an international beacon in advanced packaging and microsystems. As a Centre of Excellence, its goal is to allow its members to foster the growth of the microelectronics industry through the accelerated commercialization of market-driven prototypes.

Mitsubishi Materials U.S.A. Corporation
Booth # 832
1314B North Plum Grove Road
Schaumburg, IL 60173
(P) 847-252-6364
(E) ElectronicMaterials@mmus.com
(W) http://www mmc.co.jp/adv/ele/en/index.html

Mitsubishi Materials Corporation has been manufacturing ultra low alpha lead free chemistry and solder paste as a leading global company. Sn-Ag plating process and solder paste with finer particles for fine pitch assembly are two of our many successful works. In addition, we are providing various advanced products such as Cu plating chemical for Cu pillar application with a high plating rate, Au-Sn alloy solder paste for LED head lamp and power devises so on, sol-gel solution to form ferroelectric tin films for semiconductors and MEMS.

Mitsui Mining & Smelting Co., Ltd.
Booth # 204
1-11-1 Osaki
Shinagawa, Tokyo 141-8584, Japan
(P) -4095
(E) y. lazaki@mitsui-kinzoku.co.jp
(W) https://www.mitsui-kinzoku.co.jp/en/

Mitsui Mining & Smelting Co., Ltd. (Mitsui Kinzoku) supplies nonferrous metal intermediates that play key role in high-tech industries. Since its establishment in 1950, the Company has also been known as a leading supplier of such nonferrous metals as zinc and copper and one of the world’s largest producers of zinc. The Company has technological expertise in the production of electronics-related materials, which are presently indispensable for information-related and telecommunications device. The company maintains its technological leadership through aggressive R&D accompanied with its “material intelligence” obtained through its extensive background in smelting and refining operations in the nonferrous metals field. In addition, the Company is known as producer of highly evaluated automotive door-related parts and components. Superior quality is the hallmark of Mitsui Kinzoku products and services. A team of more than 10,000 talented employees strives to ensure this quality and, in doing so, has maintained the integrity of the Mitsui Kinzoku name and its long-standing reputation for innovation.

MRSI Systems
Booth # 709
101 Billerica Ave, Bldg #3
North Billerica, MA 01862
(P) 978-667-9449
(E) sales@mrsisystems.com
(W) www.mrsisystems.com

MRSI Systems is a leading manufacturer of fully automated, ultra-precision die bondering and epoxy dispensing systems. We enable customers to optimize the performance of their process including yield, throughput and uptime by building systems that use our unique expertise. In summary this includes, our proprietary software, proven hardware, deep process knowledge, state-of-the-art manufacturing and a world-class customer service team. MRSI’s systems are built on common platforms that can be configured to meet specific customer requirements. These platforms are designed to be scalable from prototype to volume manufacturing. Since 1984, we have been recognized as the standard of the industry, delivering our solutions to leading optoelectronic and microelectronic customers worldwide.

NAMICS Corporation
Booth # 623
2055 Gateway Place, Suite 480
San Jose, CA 95110
(P) 408-516-4611
(E) info@namics-usa.com
(W) www.namics-usa.com

NAMICS CORPORATION is a leading source for underfills, encapsulants, adhesives, and insulating and conductive materials used by producers of semiconductor devices, passive components and solar cells. Headquartered in Niigata, Japan with subsidiaries in the USA, Europe, Singapore, Korea, Taiwan, and China, NAMICS serves its worldwide customers with enabling products for leading edge applications.

Neu Dynamics Corp
Booth # 302
110 Steamwhistle Dr e
Ivyland, PA 18974 USA
(P) 215-355-2460
(E) sales@neudynamics.com
(W) www.neudynamics.com

Neu Dynamics Corp is an ISO 9001:2008 certified Tool, Mold and Die manufacturer specializing in tooling and equipment used in building Semiconductors, Electronics components and a wide variety of the devices used in automotive, telecommunications, solar and medical applications. We further offer small to medium volume contract molding services for microelectronic packages such as BGA, QFN, MLP optical components etc. We also have capability to provide insert molding services for items such as connectors. Our Sister company, NDC International offers a complete line of specialized assembly equipment built for today’s high-tech semiconductor assembly processes.
NETZSCH Instruments N.A. LLC  
Booth # 808  
129 Middlesex Turnpike  
Burlington, MA 01803  
(P) 781-272-5353  
(E) bob.fidler@netzsch.com  
(W) www.netzsch.com

Thermal analysis & thermal properties measurement instruments plus contract testing services; Thermal diffusivity & thermal conductivity of electronic packaging materials according to ASTM E1461 by the Laser Flash Method, DSC, TGA, STA (true DSC-TGA), Dynamic Mechanical Analysis DMA, thermal expansion by TMA and Dilatometry, specific heat capacity by DSC, DEA - dielectric analysis for thermoset cure monitoring, and more.

NorCom Systems, Inc.  
Booth # 323  
1055 West Germantown Pike  
Norristown / PA / 19403  
(P) 610-592-0167  
(E) sales@norcomsystemsinc.com  
(W) www.norcomsystemsinc.com

NorCom Systems, Inc. manufactures the NorCom 2020 series Optical Leak Test System, which provides automated in-line, full matrix leak testing of hermetically sealed microelectronic, optoelectronic and wafer level devices. The 2020 eliminates the need for helium mass spectroscopy and gross leak bubble testing by utilizing a patented laser interferometer to simultaneously measure gross and fine leaks in hermetic devices. The system provides quantitative leak test results in the industry standard of cc-atm/second helium and is MIL STD compliant and CE marked. The NorCom 2020 is ideal for optoelectronic, semiconductor, MEMS, and PC board mounted devices for military, aerospace and telecommunication applications.
nScrypt, Inc.
Booth # 630
12151 Research Pkwy, #150
Orlando, FL 32826
(P) (407) 275-4720
(E) cnb@sciperio.com
(W) www.nscrypt.com

nScrypt sells 3D printing and micro-dispensing platforms with 3 to 6 axis of motion. nScrypt’s SmartPump™ technology dispenses a wide range of materials to include epoxies, solders, conductive polymers and pastes. The fine line ability to reach 50 microns and less in line widths and dots of 75 microns and less enables many next generation packaging applications. They also excel at printed conformal antennas.

NTK Technologies
Booth # 611
3979 Freedom Circle Drive, Suite 320
Santa Clara/CA/95054
(P) 4085625124
(E) mstoops@ntktech.com
(W) http://www.ntktech.com

NTK Technologies is a leader in IC Ceramic Packaging. With global service centers, NTK offers a wide range of packaging materials and package design services for Medical, Automotive, SIP/MCM, MEMS, Opto, RF, CMOS Image Sensors, Hi-Rel, Satellite, FCBGA, FCCSP FPGA, CPU and MPU applications. Monolithic package designs for Medical and Mobile applications. Optimum package designs for 10G, 40G, and 100/400G. Large and small scale Ceramic STFs are manufactured for high-speed/high density probe cards for semiconductor wafer test. Large and small scale ceramic substrates can be configured with narrow pitches and a wide range of pin count capabilities. NTK supports fast paced product cycle times with our advanced design and production flows featuring high precision processes for fast turn-around with the highest quality.

PA&E
Booth # 505
434 Olds Station Rd.
Wenatchee, WA 98802
(P) (855) 285-5200
(E) sales@pacaero.com
(W) www.pacaero.com

PA&E specializes in the custom design and manufacture of hermetic connectors and electronic packaging. Our technology is proven in the harshest environments – from deep beneath the earth’s surface to deep space and even within the human body. We work directly with engineers to custom design and manufacture electronic packaging and connector products that meet the exacting standards for the reliability satellite, missile, fighter aircraft, undersea and other mission-critical systems require. PA&E utilizes unique materials in its manufacturing processes and offers a range of production capabilities – machining, plating, vacuum brazing, laser welding, and more – all at a single location. This integrated manufacturing approach can reduce complexity and risk on your next project. We have a talented staff of application engineers, with deep experience in developing and manufacturing custom hermetic solutions, who are ready to assist you with your next project. Let us know how we can help.

Noritake Co., Inc.
Booth # 304
2635 Clearbrook Drive
Arlington Heights, IL 60005
(P) (847) 439-9020
(E) kawabata.cer@noritake.com
(W) www.noritake.co.jp/eng/products/ceramic/index.html

Over 100 years of experience, lessons learned, and no-how. “Noritake” is the leading industrial ceramics and materials company in all of Asia and other points locally. This allows “Noritake” and its partners to share in development and innovation. New innovations include, any kinds of ceramics materials based PCB for Pressure sensors, LED and Power Electronics.

Northrop Grumman Mission Systems
Booth # 722
7323 Aviation Blvd
Baltimore, MD
(P) (410) 765-4608
(E) michael.taddeo@ngc.com
(W) www.ngc.com

Northrop Grumman is a leading global security company providing innovative systems, products and solutions in unmanned systems, cyber, C4ISR, and logistics and modernization to government and commercial customers worldwide. Please visit www.northropgruman.com for more information.

Nordson DAGE
Booth # 205
2747 Loker Avenue West
Carlsbad, CA 92010, USA
(P) 760.930.3307
(E) sales@nordsondage.com
(W) www.nordsondage.com

Nordson DAGE and Nordson YESTECH are part of the Advanced Technology - Electronics Systems Group of the Nordson Corporation (NASDAQ: NDSN) and manufacture and support a complete range of Industry leading Test and Inspection equipment for the Printed Circuit Board Assembly and Semiconductor industries. Offering an award winning portfolio of AOI, Bond Test, Materials Test and X-ray Inspection systems, the excellence of their engineered products is at the core of their success. The Nordson DAGE 4000 Optima is optimized for fast, accurate and reliable bond testing in the volume manufacturing environment. The combination of patented technology and superior ergonomics with intelligent and intuitive software makes the 4000 Optima the number one production bond tester; providing repeatable and reproducible results with typical test times of less than 2 seconds per bond for wire pull and ball shear. Nordson DAGE’s thorough understanding of bond testing in the volume manufacturing environment underpins the no-compromise development of industry-unique multi-function cartridges (MFC’s). The uniquely designed MFC’s expand the versatility of manual testing on the industry-unique multi-function cartridges (MFC’s). The uniquely designed MFC’s expand the versatility of manual testing on the environment.

nScrypt's SmartPump™ technology dispenses a wide range of materials to include epoxies, solders, conductive polymers and pastes. The fine line ability to reach 50 microns and less in line widths and dots of 75 microns and less enables many next generation packaging applications. They also excel at printed conformal antennas.

NTK Technologies
Booth # 611
3979 Freedom Circle Drive, Suite 320
Santa Clara/CA/95054
(P) 4085625124
(E) mstoops@ntktech.com
(W) http://www.ntktech.com

NTK Technologies is a leader in IC Ceramic Packaging. With global service centers, NTK offers a wide range of packaging materials and package design services for Medical, Automotive, SIP/MCM, MEMS, Opto, RF, CMOS Image Sensors, Hi-Rel, Satellite, FCBGA, FCCSP FPGA, CPU and MPU applications. Monolithic package designs for Medical and Mobile applications. Optimum package designs for 10G, 40G, and 100/400G. Large and small scale Ceramic STFs are manufactured for high-speed/high density probe cards for semiconductor wafer test. Large and small scale ceramic substrates can be configured with narrow pitches and a wide range of pin count capabilities. NTK supports fast paced product cycle times with our advanced design and production flows featuring high precision processes for fast turn-around with the highest quality.

PA&E
Booth # 505
434 Olds Station Rd.
Wenatchee, WA 98802
(P) (855) 285-5200
(E) sales@pacaero.com
(W) www.pacaero.com

PA&E specializes in the custom design and manufacture of hermetic connectors and electronic packaging. Our technology is proven in the harshest environments – from deep beneath the earth’s surface to deep space and even within the human body. We work directly with engineers to custom design and manufacture electronic packaging and connector products that meet the exacting standards for the reliability satellite, missile, fighter aircraft, undersea and other mission-critical systems require. PA&E utilizes unique materials in its manufacturing processes and offers a range of production capabilities – machining, plating, vacuum brazing, laser welding, and more – all at a single location. This integrated manufacturing approach can reduce complexity and risk on your next project. We have a talented staff of application engineers, with deep experience in developing and manufacturing custom hermetic solutions, who are ready to assist you with your next project. Let us know how we can help.

Noritake Co., Inc.
Booth # 304
2635 Clearbrook Drive
Arlington Heights, IL 60005
(P) (847) 439-9020
(E) kawabata.cer@noritake.com
(W) www.noritake.co.jp/eng/products/ceramic/index.html

Over 100 years of experience, lessons learned, and no-how. “Noritake” is the leading industrial ceramics and materials company in all of Asia and other points locally. This allows “Noritake” and its partners to share in development and innovation. New innovations include, any kinds of ceramics materials based PCB for Pressure sensors, LED and Power Electronics.

Northrop Grumman Mission Systems
Booth # 722
7323 Aviation Blvd
Baltimore, MD
(P) (410) 765-4608
(E) michael.taddeo@ngc.com
(W) www.ngc.com

Northrop Grumman is a leading global security company providing innovative systems, products and solutions in unmanned systems, cyber, C4ISR, and logistics and modernization to government and commercial customers worldwide. Please visit www.northropgruman.com for more information.
PanTech USA  
Booth # 634  
328 Martin Ave  
Santa Clara, CA 95050  
(P) 408 588 1925  
(E) info.usa@pactech.com  
(W) www.pactech.com

PacTech Packaging Technologies GmbH, (group member of NAGASE & CO., Ltd.) is headquartered in Nauen, Germany, with wholly-owned subsidiaries: PacTech USA - Packaging Technologies Inc. in Silicon Valley, USA, and PacTech ASIA Sdn. Bhd. in Penang, Malaysia. PacTech is comprised of two unique advanced packaging units: 1- EQUIPMENT MANUFACTURING: PacLine 300 A50: Automatic ENIG & ENEPIG plating tools. SB²-Jet: Laser solder jetting equipment. Ultra-SB²: Wafer-level solder ball transfer systems. LAPLACE: Laser-assisted flip-chip bonder. 2- SUBCONTRACT SERVICES: Flip Chip ad Wafer Level Package Bumping Services including ENIG or ENEPIG for UBM (solder bumping) or OPM (wirebond). Other services include: AOI, X-Ray, Repassivation, RDL, Wafer Thinning, Backmetal, Laser Marking, Dicing and Tape & Reel.

Palomar Technologies, Inc.  
Booth # 702  
2728 Loker Avenue West  
Carlsbad, CA 92010  
(P) 760-931-3600  
(E) kfinney@bonders.com  
(W) www.palomartechnologies.com

Palomar Technologies, a former subsidiary of Hughes Aircraft, is the global leader of automated high-accuracy, large work area die attach and ball and wedge wire bonding equipment and precision contract assembly services. Customers utilize the products, services and solutions from Palomar Technologies to meet their needs for optoelectronic packaging, complex hybrid assembly and micron-level component attachment. For more information, visit www.palomartechnologies.com.

Panasonic Factory Solutions Company of America  
Booth # 213  
1701 Olf Rd, Suite 3-1200  
Rolling Meadows, IL 60008  
(P) (847) 637-9689  
(E) tae.yi@us.panasonic.com  
(W) www.panasonicifa.com

Panasonic Factory Solutions Company of America (PFSA) develops and supports innovative manufacturing processes around the core of circuit manufacturing technologies and computer-integrated manufacturing software—thereby, contributing to the growth and prosperity of our customers’ businesses regardless of their mix or volume.

Perfection Products, Inc.  
Booth # 812  
1320 Indianapolis Avenue  
Lebanon, IN 46052  
(P) 765-482-7786  
(E) sales@perfection-products.com  
(W) www.perfection-products.com

Perfection Products manufactures Process Magazines and Carriers. Such products are Film Frames, Grip Rings, Magazines for Frames and Rings. Lead Frame Magazines, Process Boats (formed & flat style) & Magazines, Antistatic Shippers for Frames and Rings. Also, available are the 12.0” (300 mm) Wafer Frames and Magazines. Perfection – Accept Nothing Less

PINK GmbH Thermosysteme  
Booth # 412  
Am Kessler 6  
Wertheim, 97877  
Germany  
(E) aweil@cwitechsales.com  
(W) www.pink.de/en

PINK GmbH Thermosysteme is located in Wertheim/Main and produces at the site in Bestenheid systems for vacuum-supported soldering, low-pressure plasma systems, sintering systems as well as systems for drying and processing technology. PINK is a worldwide supplier for innovative and reliable customized systems and delivers products to well-known technology companies of e.g. automotive industry and their suppliers, semiconductor industry, electronics industry as well as chemical and pharmaceutical industry.

Plasma-Therm, LLC  
Booth # 512  
10050 16th St. North  
10050 16th St. North  
(P) 727-577-4999  
(E) information@plasmatherm.com  
(W) www.plasmatherm.com

Plasma-Therm® is a leading provider of advanced plasma processing equipment. Plasma-Therm systems perform critical process steps in the fabrication of integrated circuits, micro-mechanical devices, solar power cells, lighting, and components of products from computers and home electronics to military systems and satellites. Specifically, Plasma-Therm systems employ innovative technology to etch and deposit thin films. The company’s Mask Etcher® series for photomask production has exceeded technology roadmap milestones for more than 15 years. Plasma-Therm’s Singulator® systems bring the precision and speed of plasma dicing to chip-packaging applications. Manufacturers, academic and governmental institutions depend on Plasma-Therm equipment, designed with “lab-to-fab” flexibility to meet the requirements of both R&D and volume production. Plasma-Therm’s products have been adopted globally and have earned their reputation for value, reliability, and world-class support. Plasma-Therm’s status as a preferred supplier of plasma process equipment has been recognized with VLSIresearch Customer Satisfaction awards for 17 consecutive years, including “RANKED 1st” awards from 2012 to 2016.
## Schedule At-a-Glance

### Monday, October 10

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:00am-12:00pm</td>
<td>David C. Virissimo Golf Tournament Supporting the Microelectronics Foundation</td>
<td>Brookside Golf Club</td>
</tr>
<tr>
<td>8:00am-5:00pm</td>
<td>Professional Development Courses</td>
<td>Ballroom A, Ballroom B, Ballroom C, Ballroom F</td>
</tr>
<tr>
<td></td>
<td>Track A Courses</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Track B Courses</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Track C Courses</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Track D Courses</td>
<td></td>
</tr>
<tr>
<td>10:00am-3:00pm</td>
<td>Microelectronics Industry Tour of SUSS Photonic Systems</td>
<td>Corona, CA</td>
</tr>
<tr>
<td></td>
<td>Departs from main entrance of convention center.</td>
<td></td>
</tr>
<tr>
<td>5:30pm-7:30pm</td>
<td>Welcome Reception</td>
<td>Sponsored by Heraeus</td>
</tr>
</tbody>
</table>

### Tuesday, October 11

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00am-8:45am</td>
<td>Welcome, Business Session, and Awards Ceremony</td>
<td>Ballroom DE</td>
</tr>
<tr>
<td>8:45am-11:30am</td>
<td>Keynote Addresses</td>
<td>Sponsored by Applied Materials</td>
</tr>
<tr>
<td></td>
<td>“Simpler is Better” - New Trends and Challenges for Advanced Packaging</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Douglas Yu, TSMC</td>
<td></td>
</tr>
<tr>
<td>9:30am-10:00am</td>
<td>Coffee Break</td>
<td>Sponsored by FujiFilm Dimatix</td>
</tr>
<tr>
<td></td>
<td>Keynote Addresses Continued</td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>Enabling Product Innovation Through Microelectronics Packaging</em></td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>Mark Brillhart, Flextronics</em></td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>Lift up! to IC Packaging: Trends and Assembly Reliability</em></td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>Dr. Reza Ghaffarian, NASA/JPL</em></td>
<td></td>
</tr>
<tr>
<td>11:00am-5:00pm</td>
<td>Exhibit Hall Open</td>
<td></td>
</tr>
<tr>
<td>11:45am-2:00PM</td>
<td>Lunch</td>
<td>Sponsored by EMD Performance Materials</td>
</tr>
<tr>
<td>2:00pm-5:55pm</td>
<td>Technical Presentations in Session</td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>Emerging Applications &amp; The Connected World</em></td>
<td>Ballroom A</td>
</tr>
<tr>
<td></td>
<td><em>2.5/3D Packaging &amp; Embedded Packaging Technologies</em></td>
<td>Ballroom B</td>
</tr>
<tr>
<td></td>
<td><em>Advanced Packaging &amp; Enabling Technologies</em></td>
<td>Ballroom C</td>
</tr>
<tr>
<td></td>
<td><em>Advanced Materials &amp; Processes</em></td>
<td>Ballroom F</td>
</tr>
<tr>
<td></td>
<td><em>Modeling, Design, Test &amp; Reliability</em></td>
<td>Ballroom G</td>
</tr>
<tr>
<td>3:30pm-4:30pm</td>
<td>Dessert Happy Hour</td>
<td>Sponsored by Palomar</td>
</tr>
<tr>
<td>6:00pm-7:00pm</td>
<td>Student Interactive Roundtable and Hiring Panel</td>
<td>Sponsored by Honeywell</td>
</tr>
</tbody>
</table>
## Schedule At-a-Glance

### Wednesday, October 12

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:15am-9:45am</td>
<td>Global Business Council Keynote Address</td>
<td>Sponsored by Applied Materials</td>
</tr>
<tr>
<td></td>
<td><em>Creating Semiconductor Value through Advanced Packaging Technology</em></td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>Ron Huemoeller, Amkor</em></td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>Strategy and Ecosystem for Microelectronics Assembly in the US</em></td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>Jon Greenwood, Plexus</em></td>
<td></td>
</tr>
<tr>
<td>9:45am-10:00am</td>
<td>Coffee Break</td>
<td>Sponsored by MRSI</td>
</tr>
<tr>
<td>10:00am-3:55pm</td>
<td>Technical Presentations in Session</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Emerging Applications &amp; The Connected World</strong></td>
<td>Ballroom A</td>
</tr>
<tr>
<td></td>
<td><strong>2.5/3D Packaging &amp; Embedded Packaging Technologies</strong></td>
<td>Ballroom B</td>
</tr>
<tr>
<td></td>
<td><strong>Advanced Packaging &amp; Enabling Technologies</strong></td>
<td>Ballroom C</td>
</tr>
<tr>
<td></td>
<td><strong>Advanced Materials &amp; Processes</strong></td>
<td>Ballroom F</td>
</tr>
<tr>
<td></td>
<td><strong>Modeling, Design, Test &amp; Reliability</strong></td>
<td>Ballroom G</td>
</tr>
<tr>
<td>11:00am-6:00pm</td>
<td>Exhibit Hall Open</td>
<td></td>
</tr>
<tr>
<td>11:00am-1:00pm</td>
<td>High School Student-Exhibitor Interchange</td>
<td>Sponsored by Honeywell</td>
</tr>
<tr>
<td></td>
<td><em>Clockwork Oranges Robotics Demo, El Modena High School</em></td>
<td></td>
</tr>
<tr>
<td>12:00pm-1:30pm</td>
<td>Lunch</td>
<td>Sponsored by EMD Performance Materials</td>
</tr>
<tr>
<td>4:00pm-6:00pm</td>
<td>Happy Hour</td>
<td>Sponsored by Heraeus</td>
</tr>
<tr>
<td>6:15pm-7:30pm</td>
<td>Celebrating Women Reception Open to all.</td>
<td>Bodega Wine Bar</td>
</tr>
<tr>
<td></td>
<td></td>
<td>300 E. Paseo Blvd.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pasadena, CA</td>
</tr>
</tbody>
</table>

### Thursday, October 13

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00am-3:55pm</td>
<td>Technical Presentations in Session</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Emerging Applications &amp; The Connected World</strong></td>
<td>Ballroom A</td>
</tr>
<tr>
<td></td>
<td><strong>2.5/3D Packaging &amp; Embedded Packaging Technologies</strong></td>
<td>Ballroom B</td>
</tr>
<tr>
<td></td>
<td><strong>Advanced Packaging &amp; Enabling Technologies</strong></td>
<td>Ballroom C</td>
</tr>
<tr>
<td></td>
<td><strong>Advanced Materials &amp; Processes</strong></td>
<td>Ballroom F</td>
</tr>
<tr>
<td></td>
<td><strong>Modeling, Design, Test &amp; Reliability</strong></td>
<td>Ballroom G</td>
</tr>
<tr>
<td>11:30am-1pm</td>
<td>Posters and Pizza Session</td>
<td>Sponsored by Northrop Grumman</td>
</tr>
<tr>
<td>3:45pm-5:00pm</td>
<td>Chapter leadership meeting</td>
<td>Conference 211</td>
</tr>
</tbody>
</table>
Quik-Pak, a division of Promex Industries  
Booth # 622  
10987 Via Frontera  
San Diego, CA 92127  
(P) (858) 521-3607  
(E) casey@icproto.com  
(W) www.icproto.com

Quik-Pak, a division of Promex Industries, provides IC packaging, assembly, and wafer preparation services in its ISO 9001:2008 registered facility in San Diego, California. Quik-Pak manufactures overmolded and pre-molded open cavity QFN packages that provide a fast, inexpensive solution for prototype to full production needs. Same-day assembly services are provided to shorten time to market. In addition to wire bond assembly for MW/RF applications, the company assembles flip chips, BGAs, sensors, MEMS, and chip-on-board and chip-on-finger assemblies.

Reldan Metals Co. Div Abington Reldan Metals, LLC  
Booth # 114  
550 Old Bordentown Road  
Fairless Hills, PA 19030  
(P) 732-238-8550  
(E) sales@armetals.com  
(W) www.armetals.com

Reldan Metals Co. Div. of Abington Reldan Metals, LLC refinery has been operating and handling precious metal scrap for over 35 years. Our goal is to maximize the value of your precious metal scrap. The company’s State of the Art, LEED certified facility is ISO 14001:2004 certified, OHSAS 18001:2007, e-Steward 2.0:2013, R2:2013 certified, GreenCircle certified, CHWMEG reviewed and ITAR registered. LEED certification sets forth strict standards for energy-efficient and environmentally responsible workplaces. Abington Reldan Metals reflects its commitment to environmental sustainability at every step of the refining process. Our expertise, knowledge and skills help us serve many customers in an ever changing industry as well as providing the highest level of service for your precious metal recovery program.

Riv Inc. — Precision Printing Screens  
Booth # 502  
31 Railroad Ave.  
Merrimack, NH 03054-4121  
(P) (603) 424-0510  
(E) tania@rivinc.com

Since 1986 Riv Inc. has been a leading manufacturer of high quality printing screens. We cater to: Thick Film Hybrid Electronics, Flex Circuitry, Membrane Switches, RFID Antennas, Solar Cell Manufacturing and other Emerging Industries. We use only the finest mesh and emulsions available in our industry. This gives us the advantage of manufacturing the finest screen possible for your screen printing needs and lets us help you Print With Quality.

Royce Instruments  
Booth # 403  
831 Latour Court, Suite C  
Napa, CA 94558 USA  
(P) 707-255-9078  
(E) sales@royceinstruments.com  
(W) http://www.royceinstruments.com/

Royce Instruments invites you to visit booth 403 to demo its new automated die sorter, the AP+. With over 30 years in the electronic component processing and packaging industry, Royce and parent company V-TEK each bring a wealth of experience to the design table. The result is the AP+, a flexible solution that merges Royce’s capability of processing highly sensitive die with V-TEK’s most advanced taping technology. The highly customizable AP+ offers a variety of automated input and output options while maintaining fast change-over between processes. Die input is from wafer or tray using an input map. Output options are the same (wafer pack, Gel-Pak, JEDEC tray, etc.) with the addition of a new tape and reel system. The AP+ taper features an adjustable width track with heat and pressure seal options. Die Sort Manager Software provides input to output traceability at the die level. AP+ options include non-surface die pick-up and 180 degree die flip. With its multi-project wafer mapping capability and quick-change fixtures and tooling, the AP+ is ideal for supporting medium volume, high mix environments. The AP+ joins the current Royce 600 Series Bond Test Instruments and Semi-Automatic DE35-ST die sorter in carrying on Royce’s tradition of excellence in machine precision and performance.

Rudolph Technologies, Inc.  
Booth # 631  
16 Jonspin Road  
Wilmington/MA/01887  
(P) 978-253-6200  
(E) info@rudolphtech.com  
(W) www.rudolphtech.com

Rudolph Technologies, Inc. is a leader in the design, development, manufacture and support of defect inspection, lithography, process control metrology, and process control software used by semiconductor and advanced packaging device manufacturers worldwide. Rudolph delivers comprehensive solutions throughout the lab with its families of proprietary products that provide critical yield-enhancing information, enabling microelectronic device manufacturers to drive down costs and time to market of their devices. Headquartered in Wilmington, Massachusetts, Rudolph supports its customers with a worldwide sales and service organization.

Sales & Service, Inc.  
Booth # 330  
4883 E. La Palma Ave. #505  
Anaheim, CA 92807  
(P) (714) 696-5332  
(E) madison@salesandserviceinc.com  
(W) www.salesandserviceinc.com

Manufacturer’s Rep and Distributor
Sustainable Solutions for a Digital Age

As a precious metals refiner that has exceeded regulatory requirements we can help you get the most value from your precious metal scrap. Working with us allows you to integrate sustainability into your business which generates value for you, your customers, the environment and the communities where we all live and work.


REFINING FOR TOMORROW®

Call us today for more Information
1-800-764-9222

On the web
www.armetals.com

E-mail:
sales@armetals.com

Learn how we can help. Visit Booth #114.
Samtec, Inc.
Booth # 509
520 Park East Blvd.
New Albany, IN 47150
(P) 812-944-6733
(E) ty.atkins@samtec.com
(W) www.samtec.com

Samtec is the worldwide service leader for electronic interconnect systems. Samtec focuses on leading edge high speed products and services, including IC packaging and optics. Key capabilities include microelectronics, IC Packaging, Glass Core Technology, and system design. Samtec provides full turnkey solutions for your entire signal path from IC, through the package, and through substrates, connectors and cables. Samtec can help you design, model, layout and assemble your IC package with highest level of Signal Integrity.

SCREEN Finetech Solutions Co., Ltd. / SCREEN Semiconductor Solutions Co., Ltd.
Booth # 131
Tenjinkita-machi 1-1, Teranouchi-agaru 4-chrome
Horikawa-dori
Kyoto, Kaniygo-ku
Japan
(P) 810754172565
(E) y.takaya@screen.co.jp
(W) www.screen.co.jp

SCREEN Finetech Solutions Co., Ltd. provides wide range of equipment and services for the manufacturing of flat panel displays (FPDs) used in such digital devices as LCD TVs and smartphones.

SCREEN Semiconductor Solutions Co., Ltd. Believes in supporting our Customers’ Business Through Innovation that Starts from the Customer’s Point of View. On a base of our core technologies in etching and photolithography that we have cultivated over the years, SCREEN entered into the semiconductor production equipment market in the 1970s. With our cleaning equipment business, we have built a steadfast share in the increasingly important cleaning process. In order to even further strengthen our business, we have added lithography equipment – represented by the SOKUDO DUO coater/developer that is equipped with various defect control functions based on fundamental but novel, industry-first, concepts — millisecond annealers that are indispensable in processing advanced devices, as well as nano-level laser annealers and other units to our product lineup. Moreover, we are advancing our “Frontier Project” towards the new market of 200 mm and smaller wafers, we are comprehensively developing applications for our existing technology, including that of image processing, and we are furthering our aggressive development of both products and technology.

SemiDice, Inc.
Booth # 510
10961 Bloomfield Street
Los Alamitos, CA 90720
(P) 562-594-4631
(E) ssmith@semidice.com
(W) www.semidice.com

Wafer and Bare Die Products. SemiDice is the preferred global wafer and bare die component supplier to the microelectronic industry. The only wafer processor with a High Reliability Division dedicated to providing bare die for military, aerospace, medical and industrial applications. Extensive die inventory of both active and passive devices.

Sentec E&E Co., Ltd.
Booth # 821
No. 32 Gong 5Rd., Lungtan
Taoyuan 32559 Taiwan
(P) 886-975-582-588
(E) sentecjason@gmail.com
(W) www.sentecee.com.tw

Sentec is a TS16949 and National Awards certified with headquarters in Taiwan and it is a solid middle scaled enterprise with more than 1,000 employees worldwide. Technologies are co-developing together with Panasonic Ceramic Devices Group since early 1990’s.

- Non-Shrinkage LTCC
- Direct Plating Copper (DPC)
- Ni/Pd/Au Plating
- Au/Sn Metallization
- Module Packaging Prototyping

Quality volume production record for tier 1 automotive, medical and industrial sectors. With multiple manufacturing locations in Taiwan, India, China and Vietnam.

Shinko Electric America
Booth # 310
1280 E. Arques Ave
Sunnyvale, CA 94085
(P) (407) 595-4776
(E) michael.hudgens@shinko.com
(W) www.shinko.com

Shinko Electric Industries CO., LTD. is a leading manufacturer of products used in the assembly of IC’s such as; Organic Substrates, Etched and Stamped Leadframes, TO Packages and Integrated Heatspreaders. Shinko manufactures a full line of Organic Substrate structures including coreless options offering enhanced electrical performance and package size reduction. Shinko can also provide subcontract assembly services with an emphasis on packaging solutions such as POP, SIP and Camera Modules utilizing our advanced package assembly technologies, including our molded core embedded package, MCoP™. Shinko is located in Nagano, Japan and provides the ultimate in service and solutions for our customers with Sales and Engineering support worldwide. For more about Shinko please visit our website at www.shinko.com.
Sikama International, Inc.
Booth # 604
118 E. Gutierrez Street
Santa Barbara CA 93101 USA
(P) 805-962-1000
(E) sales@sikama.com
(W) www.sikama.com
Sikama International designs, develops, manufactures, and markets solder reflow & curing ovens, wafer flux coaters and wafer washing machines. Our ovens feature a patented conduction plus convection heating technology. The precise temperature set-points are a perfect match for all applications where temperature control is critical. Our unique features are efficient use of power and gas, fast thru-put, small footprint, and consistent repeatable profiles for high volume production or R&D.

Small Scale Systems Integration & Packaging (S³IP) Center, Binghamton University
Booth # 530
Binghamton University
85 Murray Hill Rd.
Vestal, NY 13850
(P) (607) 777-5314
(E) khrwynak@binghamton.edu
(W) www.binghamton.edu/s3ip
The New York State Center of Excellence in Small Scale Systems Integration and Packaging (S3IP) performs high-impact basic and applied research to support the technical translation of economically significant innovations such as electronics systems integration, flexible electronics, thin film solar power, energy management for electronic systems, new materials and sensors, and modeling, analysis and characterization, to national industry sectors. S3IP, a leading academic-industry-government partnership, is a critical participant in advancing these technologies and in training, with industrial partners, the essential educated work force. S3IP brings together an interdisciplinary, inter-institutional team of scientists, engineers and technologists, along with unparalleled infrastructure to achieve the following goals:
Develop novel research outcomes in emerging, people-friendly electronics;
Ensure economic development by providing a platform to assist with creation of new emerging technology companies;
Enhance US science and engineering education at all levels.

SMART Microsystems
Booth # 209
141 Innovation Drive
Elyria, OH 44035
(P) 440-366-4203
(E) matt@smartmicrosystems.com
(W) www.smartmicrosystems.com
SMART Microsystems creates turn-key solutions for microelectronic package assembly challenges to move your MEMS sensor technology from development to production. With an engineering team experienced in manufacturing and state-of-the-art facilities, SMART Microsystems accelerates the transition of your new MEMS sensor product to the market.

SOMACIS
Booth # 731
3500 Danielson Street
Poway, 92064 CA, USA
(P) 858-513-2200
(E) info@somacis.com
(W) www.somacis.com
For more than forty years, SOMACIS has been a dynamic company producing high-tech PCBs and delivering innovative solutions. SOMACIS, headquartered in Italy, is one of the leading PCB manufacturers, with more than 800 employees and production plants in Italy (SOMACIS SpA), USA (SOMACIS Inc.) and China (DSG PCB Co., Ltd.). SOMACIS is a worldwide partner supplying HDI, rigid, rigid-flex and flex PCBs for time critical and mass production requirements.

Sonoscan, Inc.
Booth # 413
2149 E. Pratt Blvd.
Elk Grove Village, IL 60007
(P) 847-437-6400
(E) info@sonoscan.com
(W) www.sonoscan.com
Founded in 1973 and headquartered in Chicago, IL, Sonoscan®, Inc. is a worldwide leader and innovator in Acoustic Micro Imaging (AMI) technology. Sonoscan manufactures and markets acoustic microscope instruments and accessories to nondestructively inspect and analyze products. Our C-SAM® scanning acoustic microscope provides unmatched accuracy and robustness setting the standard in AMI for the inspection of products for hidden internal defects such as poor bonding, delaminations between layers, cracks and voids. In addition, Sonoscan offers analytical services through regional testing laboratories in Asia, Europe and the U.S. and educational workshops for beginners to advanced on AMI technology.

SST
Booth # 702
9801 Everest St.
Downey, CA 90242
(P) 562-803-3361
(E) sales@sstinternational.com
(W) www.sstinternational.com
SST Vacuum Reflow Systems makes, designs, and markets vacuum/pressure furnaces that create voidfree/fluxfree joints for high reliability microelectronic packages. We consult with customers to devise and deliver materials recommendations and comprehensive packaging solutions. Using our specialized semiconductor graphite tooling design and fabrication capabilities, we ensure systems deliver immediate results, high production yields, and fast return on investment. In the industry since 1978, all our design, fabricating and manufacture is performed in the USA.
**Stellar Industries Corp.**  
**Booth # 724**  
50 Howe Avenue  
Millbury, MA 01527  
(P) 508-865-1668  
(E) JASON@stellarind.com  
(W) www.stellarind.com

Stellar’s custom products include precision lapped and polished electronic grade ceramics composed of Alumina, Beryllium Oxide, Aluminum Nitride, and other specialty dielectrics. Stellar also provides custom/design specific metallization services on these ceramics using a variety of thick film, thin film, refractory, plated, and Direct Bond Copper technologies. Stellar is ITAR Registered and AS9100 Certified. We’ve been in business for over 30 years and our vertically integrated facility provides both the agility and flexibility to help bring your ideas to market. We’ll work with you from initial consultation and design phases though prototype and full production manufacturing. We have the capacity, the equipment, the team, and the experience to support your requirements now and in the future.

**TAIYO INK MFG. CO., LTD**  
**Booth # 625**  
2675 Antler Drive  
Carson City, NV 89701  
(P) 408-821-2705  
(E) dano@taiyo-america.com  
(W) www.taiyo-hd.co.jp/en/

TAIYO INK MFG. CO., LTD has more than 90% market share of solder resist products on IC-Packaging industry. Recently, TAIYO INK MFG. CO., LTD introduced two important products to the market. The first product, AZ1, provides very robust TST crack resistance with higher Tg best for large body FCBGA and automotive BGA products. The other new product, SR3, offers very low CTE (15-20ppm) with high modulus (>10GPa) ideally for coreless/thin core applications. Also, based on our expertise in photo-imageable dielectric technology, we started to offer a photo-imageable dielectric dry film material as a build-up material for BGA substrates or interposers, or as an insulation material for embedded applications. Furthermore, this material can replace PI/PBO for WLP / PLP products with greater advantage. For more details, please visit our booth 625. We will meet you there to answer all of your questions including those about our material for your applications.

**Tanaka Precious Metals**  
**Booth # 303**  
235 Vineyard Court Suite 150  
Morgan Hill, California 95037  
(P) 408-779-0461  
(E) tki-usa@ml.tanaka.co.jp  
(W) http://pro.tanaka.co.jp/en

TANAKA is a Japanese custom manufacturer of precious metals materials, founded in 1885. TANAKA has been providing precious metal products to various field including automotive and semiconductor industries. TANAKA developed and specializes in Semiconductor package interconnect technology, physics of sputtering technology and precious metal film formation methods. An example of products dominating global markets today; Bonding wires, Precious metal clad materials, Cadmium-Free silver oxide contact materials and Fuel cell catalysts. TANAKA is ISO/IEC 17025 certified for the analytical techniques of Platinum, Gold, Silver and Palladium, and ISO9001 certified for quality management system. TANAKA has been offering reliable quality products with high purity precious metals. Sales support is available in the U.S.

**TechSearch International, Inc.**  
**Booth # 730**  
4801 Spicewood Springs Road, Suite 150  
Austin, TX 78759  
(P) (512) 372-8887  
(E) becky@techsearchinc.com  
(W) www.techsearchinc.com

TechSearch International, Inc. has a 28-year history of market and technology trend analysis focused on semiconductor packaging, materials, and assembly. Research topics include WLP, Flip Chip, CSPs including stacked die, BGAs, 3D ICs with TSVs, 2.5D interposers, and System-in-Package (SIP), embedded components, and panel-based processing. In conjunction with SavanSys Solutions, wire bond, flip chip, WLP and 3D IC cost models are offered. TechSearch International professionals have an extensive network of more than 16,000 contacts in North America, Asia, and Europe and travel extensively, visiting major electronics manufacturing operations and research facilities worldwide.
Teikoku Taping System Inc.
Booth #125
5090 North 40th Street
Suite 140
Phoenix, AZ 85018
(P) (480) 794-1926
(E) joe.umpleby@teikoku-taping.com
(W) www.teikoku-taping.com

For more than 25-years Teikoku Taping System has been an innovative leading custom equipment supplier for the backend semiconductor industry.

Teikoku’s backend semiconductor products include Wafer Mounting Systems, UV Irradiation Systems, Tape Removal Systems, Backgrind Tape Laminators, and Dry Film Resist Laminators. TTS will continue to revolutionize the semiconductor industry and exceed industry expectations with new and innovative equipment designs.

Teledyne Advanced Electronic Solutions
Booth #803
1425 Higgins Road
Lewisburg, TN 37091
(P) 931-359-4531
(E) microelectronics@teledyne.com
(W) www.teledyneaes.com

Teledyne Advanced Electronic Solutions provides innovative technologies and successful program solutions to the aerospace, defense, space and high-tech industries. With an established pedigree of over 50 years, we leverage our experience and broad spectrum of capabilities to provide our customers with a new level of full service design, manufacturing and test solutions. Our world class manufacturing facilities, along with our experienced team of technical experts will assure your program will be successfully finished on time and on budget.

Teledyne Advanced Electronic Solutions is:
• Teledyne Electronics Manufacturing Services
• Teledyne Microelectronics

From circuit card assemblies to complex microelectronics, to box level assemblies, we are uniquely positioned to help you and your most complex and challenging manufacturing needs:
• Complex circuit card, module, box level assembly and test
• Creative microelectronics package

We offer the most advanced technologies, with a one stop shop backed by unparalleled service and support.

Teledyne Microwave Solutions
Booth #803
1274 Terra Bella Avenue
Mountain View, CA 94043
(P) 650.691.9800
(E) microwave@teledyne.com
(W) www.teledynemicrowave.com

For over three decades, Teledyne Microwave Solutions has built a strong heritage delivering advanced value added services to the military, space and industry sectors of aerospace. With test capabilities up to 40 GHz, TMS offers chip and wire assembly of products ranging from single die through complex hybrids which can then be submitted to a combination of customer-specified RF and DC testing and environmental screening. TMS offers a complete portfolio of screening/testing services for device sorting, labeling, lead forming and tinning, and tape-and-reel packaging, as well as LAT services on packaged devices or bare-die, including diodes, transistors, and MMICs.

Torrey Hills Technologies, LLC
Booth #231
6370 Lusk Blvd., Suite F-111
San Diego, CA 92121
(P) (858) 558-6666
(E) kkuang@torreyhillstech.com
(W) www.torreyhillstech.com

Torrey Hills Technologies, LLC is a leader in developing and delivering high-quality yet extremely affordable materials, fabricated parts, and equipment for multiple industries. The company’s core business includes refractory metal heat sinks (CuW, CuMo, CMC, CPC); fabricated microelectronics packaging components; molybdenum, tungsten and their alloy materials; belt furnace equipment for electronics and solar cell industry; mixing equipment like three roll mills and planetary ball mills.

TPT Wire Bonder
Booth #406
704 Ginesi Drive
Suite 11A
Morganville, NJ 07751
(P) (732) 536-3964
(E) TPTWirebonder@cwitechsales.com

TPT Wire Bonder’s are used in many leading Universities, Institutes, Aerospace & Medical Device companies and Semiconductor Laboratories around the world. Relying on over 25 years of wire bonding knowhow, TPT designs and manufactures a complete range of manual and semi-automatic wire bonder machines. These all digital Bench Top systems use one bond head for bonding in Ball/Wedge or Wedge/Wedge bonding modes. With only a tool change, TPT’s HB05/HB10/HB16 models are all capable of Ball/Bump, Wedge, and Ribbon bonding for Fine Wire applications and TPT’s HB30 model is for Heavy Wire Wedge bonding applications. Ideal for start-ups, R&D Laboratories, pilot and small scale production lines.
Tresky Corporation  
**Booth # 408**  
704 Ginesi Drive, # 11 – A  
Morganville, NJ 07751  
(P) (732) 536-8600  
(E) sales@tresky.com  
(W) www.tresky.com

For more than 30 years, Tresky has been providing pick & place and die bonding solutions. It’s flagship FC3 platform can deliver alignment accuracy of 0.5um, forces up to 50kg, and run applications such as eutectic die attach, flip chip, thermosonic, epoxy die attach with bondline thickness, 2.5/3D, and many more. The T-6000L (8um @ 3s) and T-8000 (5um @ 3s) are full-automated platforms targeted at R&D, low and medium volume production capable of running the same applications.

U.S. Tech  
**Booth # 105**  
10 Gay Street  
Phoenixville, PA 19460  
(P) 610-783-6100  
(E) mail@us-tech.com  
(W) www.us-tech.com

U.S. Tech, an international hi-tech electronics publication, reaches over 300,000 engineers, buyers, product specifiers & manufacturing & corporate managers each month on the web, in print & digital formats. The newspaper focuses on new innovations in components, distribution & PCB design, manufacturing, assembly & test, as well as the business, supply chain, and regulatory issues facing the electronics manufacturing and distribution sector.

Unisem  
**Booth # 425**  
2241 Calle de Luna  
Santa Clara, CA 95054  
(P) 408-734-3222  
(E) info@unisemgroup.com  
(W) www.unisemgroup.com

Unisem is a global provider of semiconductor assembly and test services for many of the world’s most successful electronics companies. Unisem offers an integrated suite of packaging and test services such as wafer bumping, wafer probing, wafer grinding, a wide range of leadframe and substrate IC packaging, wafer level CSP and RF; analog, digital and mixed-signal test services. Our turnkey services include design, assembly, test, fail analysis, and electrical and thermal characterization. With approximately 7,000 employees worldwide, Unisem has factory locations in Ipoh, Malaysia; Chengdu, People’s Republic of China and Batam, Indonesia. The company is headquartered in Kuala Lumpur, Malaysia.

UNITY  
**Booth # 211**  
611 Rue Aristide Berges  
2a De Pre Millet  
Montbonnot, 38330 Saint Martin  
France  
(P) +33 4 66 620555  
(E) s.perrier@fogale.com  
(W) unity-sc.com

A new era in process control! Unity delivers visionary technologies that foster progress for people. We are recognized as a key player in inspection and metrology combining advanced technologies to enable higher yields and faster time to market. Based on strong multidisciplinary technologies, we provide standard and customized solutions adapted to specific industrial needs and constraints.

Utz Technologies, Inc.  
**Booth # 805**  
Lisa Guid  
11 drawbridge road  
Westford, MA 01886  
(P) (978) 805-5001  
(E) lisa@utz.com  
(W) www.utz.com

UTZ is premier manufacture of Thick Film Screens (PE) and Solder Paste Stencils (SMT). Established in 1968 UTZ has the most diverse manufacturing capabilities inside the US, which leads to more comprehensive solutions to printing problems and allow’s UTZ to utilize multiple manufacturing avenues to insure our customers get the best technology for their application. UTZ’s focus is to solve the challenges and drawbacks in the industry and to bring solutions and new products to the industry.

West Bond, Inc.  
**Booth # 513**  
1551 South Harris Ct.  
Anaheim, CA 92806  
(P) (714) 978-1551  
(E) sales@westbond.com  
(W) www.westbond.com

XYZTEC
Booth # 410
36 Balch Ave
Groveland, MA 01834
(P) 978-880-2598
(E) tom.haley@xyztec.com
(W) www.xyztec.com
If you are looking for a bond tester that offers the latest technology advancements, clever innovations and the utmost flexibility, XYZTEC is your solution. Technology—fiducial pattern recognition, automation, high sample rate 24 bit ADC and high speed (50mm/sec) axes speed, Innovation—Rotating Measurement Unit (RMU) that holds up to 6 sensors that are software selectable. Change from test to test in seconds. No more cartridges and their inherent wear issues! Flexibility—Support for 25+ test types, 12” fully automated wafer test system, up to 500Kg shear capability and the most advanced software available.

YINCAE Advanced Materials, LLC.
Booth # 309
19 Walker Way
Albany, NY 12205
(P) 5184522880
(E) info@yincae.com
(W) www.yincae.com
Founded & headquartered in Albany, New York, YINCAE Advanced Materials is a leading manufacturer and supplier of high-performance coatings, adhesives and electronic materials used in electronic & optoelectronic devices. YINCAE products provide new technologies to support manufacturing processes from wafer level, to package level, to board level and final devices while facilitating smarter and faster production and supporting green initiatives. Products:
- Solder Joint Encapsulants
- Underfill Materials
- Die Attach Adhesives
- Conformal Coatings
- TIM
- Optical Adhesive
- Board Level Assembly
- Anti-Warpage Materials
- Nanofilm

Yole Developpement
Booth # 426
75 cours Emile Zola
Villeurbanne, 69006
France
(P) 33-472-83-01-80
(E) veyrier@yole.fr
Founded in 1998, Yole Développement has grown to become a group of companies providing marketing, technology and strategy consulting, media and corporate finance services. With a strong focus on emerging applications using silicon and/or micro manufacturing, the Yole Développement group has expanded to include more than 50 collaborators worldwide covering MEMS, Compound Semiconductors, LED, Image Sensors, Optoelectronics, Microfluidics & Medical, Photovoltaics, Advanced Packaging, Manufacturing, Nanomaterials and Power Electronics. The group supports industrial companies, investors and R&D organizations worldwide to help them understand markets and follow technology trends to develop their business. CONTACTS - Consulting & Financial Services: Jean-Christophe Eloy(eloy@yole.fr) - Reports business: David Jourdan(jourdan@yole.fr) - Press relations: Sandrine Leroy(leroy@yole.fr)

YXLON Feinfocus
Booth # 212
5675 Hudson Industrial Parkway
Hudson, OH 44236
(P) (234) 284-7859
(E) randy.floyd@yxlon.com
(W) www.yxlon.com
YXLON is a leading supplier of industrial X-Ray inspection and CT solutions for the non-destructive testing of materials and electronics. The YXLON product portfolio includes the Y.Cheetah and Y.Cougar which offer effortless high-quality X-Ray imaging for a wide range of continuous inspection tasks. The Y.Cheetah and Y.Cougar combine proprietary FeinFocus technology with advanced high-speed flat panel detector technology. Within seconds, the systems adapt between inspection tasks-failure analysis, research and development, process control and product testing including QuickScan mode.

Zeta Instruments, Inc.
Booth # 411
2528 Qume Drive Suite 12
San Jose, CA 95131
(P) 408-573-7285
(E) marketing@zeta-inst.com
(W) www.zeta-inst.com
Zeta Instruments designs and manufactures Multi-Mode non-contact optical profilers and defect inspection systems for multiple high-technology industries, including: advanced semiconductor packaging, high-brightness LEDs, advanced glass manufacturing, solar, microfluidics and data storage. Zeta Instruments has installed more than 250 systems in 23 different countries. The rapid adoption of Zeta’s products is a testament to the company’s differentiated technology, with 10 issued patents and 13 additional patents in process. Our growth has been driven by rapid technology progress combined with strong focus on customer requirements. Its locations include headquarters in San Jose, CA, a regional office in Shanghai, China, and sales and service representatives worldwide.
# Technical Program At-a-Glance

## Tuesday, October 11, 2016

**2:00 PM—5:55 PM**

### EMERGING APPLICATIONS & THE CONNECTED WORLD
- **Ballroom A**
  - Session TP1: Innovative Substrates
    - Chairs: Doug Shelton, Canon USA; Benson Chan, Binghamton University

### 2.5/3D PACKAGING & EMBEDDED PACKAGING TECHNOLOGIES
- **Ballroom B**
  - Session TP2: 3D Integration Materials and Processes
    - Chairs: Mark Gerber, ASE US; Doug Link, Starkey Hearing Technologies

### ADVANCED PACKAGING & ENABLING TECHNOLOGIES
- **Ballroom C**
  - Session TP3: INVITED SESSION: Chip Package Interactions in Fanout Wafer Level and Embedded Packages
    - Chairs: Rajiv Roy, Rudolph Technologies; Tengfei Jiang, University of Central Florida

### ADVANCED MATERIALS & PROCESSES
- **Ballroom F**
  - Session TP4: Materials Solutions for Different Applications
    - Chairs: Samson Shahbazi, Heraeus; Chris Kapusta, GE Global Research Center

### MODELING, DESIGN, TEST & RELIABILITY
- **Ballroom G**
  - Session TP5: Advanced Solder Joint Reliability
    - Chairs: Tom Green, T&J Green Associates

## Wednesday, October 12, 2016

### WA1: Medical Applications
- **Ballroom DE**
  - Chair: Susan Bagen, Micro Systems Technologies, Inc.; Tim LeClair, Cerapax

### WA2: 3D Technologies and Applications
- **Ballroom DE**
  - Chair: Jim Will, Honeywell FM&T; Anne Zeng, Northrop Grumman

### WA3: Fanout Wafer Level Packaging I
- **Ballroom DE**
  - Chair: Rajiv Roy, Rudolph Technologies; Tengfei Jiang, University of Central Florida

### WA4: SMT
- **Ballroom DE**
  - Chair: Aicha Elshabini, University of Alaska Anchorage; Frank Eberle, Northrop Grumman

### WA5: Advanced Wire Bonding Technology for Reliability
- **Ballroom DE**
  - Chair: Matt Apanius, SMART Microsystems; Randy Hamm, Honeywell FM&T

## Thursday, October 13, 2016

### THA1: Power Devices
- **Ballroom DE**
  - Chair: Doug Hopkins, North Carolina State University; Kyo-oh Lee, Intel Corp.

### THA2: Embedded Packages
- **Ballroom DE**
  - Chair: Chief Pelesko, Savanys; Zhenzhen Shen, Beker Hughes

### THA3: Wire Bonding
- **Ballroom DE**
  - Chair: Dan Evans, Palomar Technologies; Martin Schneider-Ramelow, Fraunhofer IZM

### THA4: Semiconductor Processes & Thermal Management
- **Ballroom DE**
  - Chair: Kevin Mercurio, Northrop Grumman; John Mazurowski, Penn State Electro-Optics Center

### THA5: Design of QFN and WL-CSP for Reliability
- **Ballroom DE**
  - Chair: Tim Jensen, Indium Corp.; Vicentiu Grosu, Teledyne

### Posters & Pizzas - 11:30 AM - 1:00 PM

## Keynotes

### Tuesday, October 11, 2016

- **8:45 AM - 9:30 AM**: Keynote 1 - Ballroom DE
  - “Simpler is Better” - New Trend and Challenges for Advanced Packaging

- **10:00 AM - 10:45 AM**: Keynote 2 - Ballroom DE
  - Enabling Product Innovation Through Microelectronics Packaging

- **10:45 AM - 11:30 AM**: Keynote 3 - Ballroom DE
  - Lift up! to IC Packaging: Trends and Assembly Reliability

### Wednesday, October 12, 2016

- **8:15 AM - 9:00 AM**: GBC Keynote 1 - Ballroom DE
  - Creating Semiconductor Value through Advanced Packaging Technology

- **9:00 AM - 9:45 AM**: GBC Keynote 2 - Ballroom DE
  - Strategy and Ecosystem for Microelectronics Assembly in the United States
Technical Program

Tuesday, October 11, 2016

7:00 AM – 5:30 PM: Registration Open
11:00 AM – 5:00 PM: Exhibit Hall Open

IMAPS 2016 Opening Ceremonies & Plenary Session:

8:00 AM – 8:15 AM: Welcome to IMAPS 2016 - Ballroom DE
Erica Folk, General Chair, Northrop Grumman Corporation

8:15 AM – 8:45 AM: Annual Business Meeting & Awards Ceremony - Ballroom DE
IMAPS President

Keynote Introductions - Erica Folk, General Chair & Dan Krueger, Technical Chair
Keynote Sessions sponsored by: Applied Materials

8:45 AM - 9:30 AM: Keynote 1 - Ballroom DE
Doug Yu, TSMC

“Simpler is Better” - New Trend and Challenges for Advanced Packaging
Heterogeneous system integration plays important role in providing better system solution for semiconductor industry. Various structures and associated integration flows have been proposed that impact on system performance, power, profile and manufacturing cost. Simpler structure with simpler integration flow can enable shorter integration flow with shorter cycle-time and more competitive cost. Furthermore, it can also realize system with higher performance, lower power consumption and lower profile. Simpler supply chain and simpler design flow and design support provide further benefits to the industry. This presentation will illustrate those points with real examples.

Douglas Yu is a senior director in charge of TSMC Advanced Package R&D. His team has developed and delivered CoWoSTM and InFO, industry first Si interposer technology, and first high-density 3D-FOWLP, respectively. He was previously responsible for the development industry’s first Cu/Low-K on-chip interconnect from TSMC 0.13mm technology. Doug received Ph.D. degree on Materials Science and Engineering from Georgia Institute of Technology. He holds 600 issued US patents and publishes more than 100 papers. Doug is an IEEE Fellow.

9:30 AM - 10:00 AM: Coffee Break in Foyer
Coffee Break sponsored by: Fujifilm Dimatix

10:00 AM - 10:45 AM: Keynote 2 - Ballroom DE
Mark Brillhart, Flextronics
Chief Technology Officer, CEC

Enabling Product Innovation Through Microelectronics Packaging
Mark Brillhart is Chief Technology Officer and a Senior Vice President of the Flex Communications Infrastructure Computing Enterprise (CEC) business group. His team focuses on leading the technical initiatives across networking, telco and compute segments. He has over twenty years’ experience in the technology sector. Mr. Brillhart is accomplished in establishing and driving partner-integrated end-to-end supply chains. He has a deep background in quality (component, factory and product), component and assembly technology, as well as broad experience in the test of network products.

Previously, as Vice President Manufacturing Operations, Quality and Manufacturing Engineering with Juniper Networks, Mr. Brillhart led a global team responsible for all aspects of contract manufacturing including original design manufacturing, product quality, NPI test engineering and manufacturing engineering. He attended the University of Illinois, studied Civil Engineering and obtained a Masters in Civil Engineering. In addition, he holds a Master Degree in Polymers from the Massachusetts Institute of Technology.
Tuesday, October 11, 2016...continued

10:45 AM - 11:30 AM: Keynote 3 - Ballroom DE
Reza Ghaffarian, Jet Propulsion Laboratory, California Institute of Technology

Lift up! to IC Packaging: Trends and Assembly Reliability

For five decades, the semiconductor industry has distinguished itself from other industries by continuously reducing IC sizes while exponentially increasing functionality (Moore’s Law) that enabled IC shrinkage and lower cost. The problem now is that IC shrinkage hit a brick wall, in response, a new paradigm shift is emerged—packaging technologies. Industries now focusing on shrinking the IC packaging through stacking and system integration. This talk presents electronics packaging miniaturization trends from ball grid arrays to wafer level and stack technologies with emphasis on system to package qualification and reliability testing methodologies and results.

Dr. Reza Ghaffarian has more than 35 years of industrial and academic experience. For the last 22 years at NASA/JPL, he led R&D activities on reliability and quality assurance in advanced electronics packaging/assembly and has been a subject matter expert (SME) resource for most JPL projects including Mars Curiosity Rover. He has received many awards including the NASA Exception Service Medal for outstanding leadership and industrial partnership. He has authored more than 150 technical papers, 11 book chapters, two guidelines, and co-edited a CSP book. He serves as technical Advisor/Committee to IPC, Microelectronics Journal, SMTA, IMAPS and IEEE IEMT/CPMT. He received his Ph.D. in 1982 from University of California at Los Angeles (UCLA).

11:30 AM - 11:45 AM - Ballroom DE
Introduction and What’s Ahead with the Technical Program
Dan Krueger, Technical Chair, Honeywell FM&T

11:45 AM - 2 PM: Lunch & Networking in Exhibit Hall
Lunch sponsored by: EMD Performance Materials

![MRSI Systems Ad](image-url)
<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>2:00 PM - 2:25 PM</td>
<td>The Die Embedded and RDL Structure on the High Density Substrate (iTHOP®) for Mobile Application</td>
<td>Ballroom A</td>
</tr>
<tr>
<td></td>
<td>Chairs: Doug Shelton, Canon USA; Benson Chan, Binghamton University</td>
<td></td>
</tr>
<tr>
<td>2:30 PM - 2:55 PM</td>
<td>Co-Design and Demonstration of Fully Integrated Optical Transceiver Package Featuring Optical, Electrical, and Thermal Interconnects in Glass Substrate</td>
<td>Ballroom B</td>
</tr>
<tr>
<td></td>
<td>Chairs: Doug Shelton, Canon USA; Benson Chan, Binghamton University</td>
<td></td>
</tr>
<tr>
<td>3:00 PM - 3:25 PM</td>
<td>Glass 3D Solenoid Inductors IPD Substrate Manufacturing Assembly and Characterization</td>
<td>Ballroom C</td>
</tr>
<tr>
<td></td>
<td>Chairs: Doug Shelton, Canon USA; Benson Chan, Binghamton University</td>
<td></td>
</tr>
<tr>
<td>3:30 PM - 4:30 PM</td>
<td>Dessert “Happy Hour” in the Exhibit Hall sponsored by: Palomar Technologies</td>
<td>Ballroom D/F/G/H</td>
</tr>
<tr>
<td>4:30 PM - 4:55 PM</td>
<td>Hybrid Fabrication of Flexible Muntions Circuitry Integrating Printed Electronics and COTS Components</td>
<td>Ballroom D/F/G/H</td>
</tr>
<tr>
<td></td>
<td>Chairs: Doug Shelton, Canon USA; Benson Chan, Binghamton University</td>
<td></td>
</tr>
<tr>
<td>Time</td>
<td>Session</td>
<td>Location</td>
</tr>
<tr>
<td>------------</td>
<td>---------------------------------------------</td>
<td>------------------</td>
</tr>
<tr>
<td>5:00 PM</td>
<td>Silicon based Cell Sorting Device: Fabrication, Characterization and Applications</td>
<td>Ballroom A</td>
</tr>
<tr>
<td></td>
<td>Addressing Flux Drip Challenges for 3D Integrated Large Die, Ultra-fine Pitch Interconnects</td>
<td>Ballroom B</td>
</tr>
<tr>
<td></td>
<td>Experimental Study on 28nm Chip/Package Interactions in eWLB (Embedded Wafer Level BGA) Fan-Out Wafer Level Packages</td>
<td>Ballroom C</td>
</tr>
<tr>
<td></td>
<td>Electrodeposited Copper-graphite Composites for Low-CTE Integrated Thermal Structures</td>
<td>Ballroom F</td>
</tr>
<tr>
<td></td>
<td>Design of BGA Assemblies with Enhanced Thermal Cycle Capability Using Solder Coated Polymer Balls</td>
<td>Ballroom G</td>
</tr>
<tr>
<td>5:30 PM</td>
<td>Embedded RDL formation in Non Photo Polymer using Excimer Laser Ablation</td>
<td>Ballroom A</td>
</tr>
<tr>
<td></td>
<td>Ultra Thin, Low ESL and High Frequency Performance of High Density Silicon Capacitors</td>
<td>Ballroom B</td>
</tr>
<tr>
<td></td>
<td>Electrodeposited Copper-graphite Composites for Low-CTE Integrated Thermal Structures</td>
<td>Ballroom F</td>
</tr>
<tr>
<td></td>
<td>Design of BGA Assemblies with Enhanced Thermal Cycle Capability Using Solder Coated Polymer Balls</td>
<td>Ballroom G</td>
</tr>
<tr>
<td>5:30 PM</td>
<td>How Mitigation Techniques Affect Reliability Results for BGAs</td>
<td>Ballroom A</td>
</tr>
<tr>
<td>5:30 PM</td>
<td>How Mitigation Techniques Affect Reliability Results for BGAs</td>
<td>Ballroom A</td>
</tr>
<tr>
<td>5:30 PM</td>
<td>Addressing Flux Drip Challenges for 3D Integrated Large Die, Ultra-fine Pitch Interconnects</td>
<td>Ballroom B</td>
</tr>
<tr>
<td>5:30 PM</td>
<td>Experimental Study on 28nm Chip/Package Interactions in eWLB (Embedded Wafer Level BGA) Fan-Out Wafer Level Packages</td>
<td>Ballroom C</td>
</tr>
<tr>
<td>5:30 PM</td>
<td>Electrodeposited Copper-graphite Composites for Low-CTE Integrated Thermal Structures</td>
<td>Ballroom F</td>
</tr>
<tr>
<td>5:30 PM</td>
<td>Design of BGA Assemblies with Enhanced Thermal Cycle Capability Using Solder Coated Polymer Balls</td>
<td>Ballroom G</td>
</tr>
<tr>
<td>5:30 PM</td>
<td>Embedded RDL formation in Non Photo Polymer using Excimer Laser Ablation</td>
<td>Ballroom A</td>
</tr>
<tr>
<td>5:30 PM</td>
<td>Ultra Thin, Low ESL and High Frequency Performance of High Density Silicon Capacitors</td>
<td>Ballroom B</td>
</tr>
<tr>
<td>5:30 PM</td>
<td>Electrodeposited Copper-graphite Composites for Low-CTE Integrated Thermal Structures</td>
<td>Ballroom F</td>
</tr>
<tr>
<td>5:30 PM</td>
<td>Design of BGA Assemblies with Enhanced Thermal Cycle Capability Using Solder Coated Polymer Balls</td>
<td>Ballroom G</td>
</tr>
<tr>
<td>5:30 PM</td>
<td>How Mitigation Techniques Affect Reliability Results for BGAs</td>
<td>Ballroom A</td>
</tr>
<tr>
<td>5:30 PM</td>
<td>How Mitigation Techniques Affect Reliability Results for BGAs</td>
<td>Ballroom A</td>
</tr>
<tr>
<td>5:30 PM</td>
<td>Addressing Flux Drip Challenges for 3D Integrated Large Die, Ultra-fine Pitch Interconnects</td>
<td>Ballroom B</td>
</tr>
<tr>
<td>5:30 PM</td>
<td>Experimental Study on 28nm Chip/Package Interactions in eWLB (Embedded Wafer Level BGA) Fan-Out Wafer Level Packages</td>
<td>Ballroom C</td>
</tr>
<tr>
<td>5:30 PM</td>
<td>Electrodeposited Copper-graphite Composites for Low-CTE Integrated Thermal Structures</td>
<td>Ballroom F</td>
</tr>
<tr>
<td>5:30 PM</td>
<td>Design of BGA Assemblies with Enhanced Thermal Cycle Capability Using Solder Coated Polymer Balls</td>
<td>Ballroom G</td>
</tr>
</tbody>
</table>
Wednesday, October 12, 2016

8:00 AM - 8:15 AM: Welcome, About the Global Business Council, & Keynote Introductions (Plenary Session) - Ballroom DE

Rich Rice, GBC Chair, ASE US

Keynote Sessions sponsored by: Applied Materials

8:15 AM - 9:00 AM: GBC Keynote 1 - Ballroom DE

Ron Huemoeller, Amkor Technology Inc.
Corporate Vice President, WWRD and Technology Strategy

Creating Semiconductor Value through Advanced Packaging Technology

Over the past few years, there has been a significant shift from PCs and notebooks to smartphones and tablets as drivers of advanced packaging innovation. In fact, the overall packaging industry is doing quite well today as a result, with solid growth expected to create a market value in excess of $30B USD by 2020. This is largely due to the technology innovation in the semiconductor industry continuing to march forward at an incredible pace, with silicon advancements in new node technologies continuing on one end of the spectrum and innovative packaging solutions coming forward on the other in a complementary fashion. The pace of innovation has quickened as has the investments required to bring such technologies to production. At the packaging level, the investments required to support the advancements in silicon miniaturization and heterogeneous integration have now reached well beyond $500M USD per year. Why has the investment to support technology innovation in the packaging community grown so much? One needs to look no further than the complexity of the most advanced package technologies being used today and coming into production over the next year.

Advanced packaging technologies have increased in complexity over the years, transitioning from single to multi-die packaging, enabled by 3-dimensional integration, system-in-package (SiP), wafer-level packaging (WLP), 2.5D/3D technologies and creative approached to embedding die. These new innovative packaging technologies enable more functionality and offer higher levels of integration within the same package footprint, or even more so, in an intensely reduced footprint. In an industry segment that has grown accustomed to a multitude of package options, technology consolidation seems evident, producing “The Big Five” advanced packaging platforms. These include low-cost flip chip, wafer-level chip-scale package (WLCSP), microelectromechanical systems (MEMS), laminate-based advanced system-in-package (SiP) and wafer-based advanced SiP designs.

This presentation will address ‘The Big Five’ packaging platforms and how they are adding value to the Semiconductor Industry.

Ron Huemoeller is Corporate Vice President, Worldwide R&D, at Amkor Technology. Ron joined Amkor in 1995 and has since served in multiple senior to executive level roles. Currently, Ron is responsible for global R&D and technology strategy. Prior to joining Amkor, Ron was Director of Engineering at Cray Computer Corp. in Colorado Springs for 5 years, leading the facilitation, startup and development of state of the art motherboards for the world’s fastest supercomputer. Ron has authored numerous technical publications, co-authored a chapter in the Handbook of 3D Stacking (McGraw Hill) and has been granted more than 100 U.S. patents. Ron holds a B.S. in Chemistry from Augsburg College with highest honors, a MBA in Business Management from Arizona State University and a Masters in Technology Management from the University of Phoenix.
9:00 AM - 9:45 AM: GBC Keynote 2 - Ballroom DE
Jon Greenwood, Plexus

Strategy and Ecosystem for Microelectronics Assembly in the United States
In the 1980’s the US based electronics manufacturing and ecosystem witnessed a significant shift from manual operations to automated assembly to enable high volume, lower cost products. The maturation of surface mount technology and the introduction of organic semiconductor packaging were key drivers and enablers during this era. The 1990’s brought about the shift from the OEM microelectronics innovation & assembly ecosystem to the outsourced model as OEM’s tried to stay ahead of the cost reduction curve during this dotcom era. The end result was a short lived US based model for outsourced volume microelectronics assembly that crashed with many of the other startups in the early 2000’s. The severity of the downturn not only affected the volume assembly service model but, more importantly the innovation and development opportunities for microelectronics as well. With the recent renewed emphasis on innovation, security, reshoring and manufacturing job creation the opportunity to create a new model for microelectronics assembly in the US has successfully emerged.

Jonathon Greenwood is currently the General Manager of the Plexus Boise, ID campus which specializes in high complexity manufacturing solutions in support of their customers. Previously he has held strategic leadership positions at GLOBALFOUNDRIES, Micron Technology, Amkor Technology and Motorola with a focus on global technology strategy, business development, operational excellence and organizational transformation. He holds a B.S. in Chemical Engineering from the University of Florida and has authored numerous patents and papers in the field of advanced semiconductor packaging including high performance flip chip, 2.5D & 3D packaging, MEMS, SIP, optoelectronics and other related technologies.

9:45 AM - 10:00 AM: Coffee Break in Foyer
Coffee Break sponsored by: MRSI
<table>
<thead>
<tr>
<th>Time</th>
<th>Room</th>
<th>Session</th>
</tr>
</thead>
<tbody>
<tr>
<td>10:00 AM - 11:25 AM</td>
<td>WA1: Medical Applications</td>
<td>Chairs: Susan Bagen, Micro Systems Technologies, Inc.; Tim LeClaire, Cerapax</td>
</tr>
<tr>
<td>10:30 AM - 10:55 AM</td>
<td>WA2: 3D Technologies and Applications</td>
<td>Chairs: Jim Will, Honeywell F&amp;M&amp;T, Anne Zeng, Northrop Grumman</td>
</tr>
<tr>
<td>11:00 AM - 11:25 AM</td>
<td>WA3: Fanout Wafer Level Packaging I</td>
<td>Chairs: Steffen Kroehnert, Nanium; Habib Hichri, SUSS Microtec</td>
</tr>
<tr>
<td>10:00 AM - 11:55 AM</td>
<td>WA4: SMT</td>
<td>Chairs: Aicha Eshabini, University of Alaska Anchorage; Frank Eberle, Northrop Grumman</td>
</tr>
<tr>
<td>10:30 AM - 10:55 AM</td>
<td>WA5: Advanced Wire Bonding Technology for Reliability</td>
<td>Chairs: Matt Apanius, SMART Microsystems; Randy Hamm, Honeywell F&amp;M&amp;T</td>
</tr>
<tr>
<td>11:00 AM - 11:25 AM</td>
<td>WA7: Correlation of Through-silicon Via (TSV) Dimension Scaling to TSV Stress and Reliability for 3D Interconnects</td>
<td>Chairs: Jim Will, Honeywell F&amp;M&amp;T, Anne Zeng, Northrop Grumman</td>
</tr>
<tr>
<td>11:30 AM - 11:55 AM</td>
<td>WA8: Process Development and Material Characterization of Cu-Cu thermo-Compression Bonding (TCB) for High-ductility Electrical Interconnects</td>
<td>Chairs: Matt Apanius, SMART Microsystems; Randy Hamm, Honeywell F&amp;M&amp;T</td>
</tr>
<tr>
<td>12:00 PM - 1:30 PM: Networking &amp; Lunch in Exhibit Hall (EXHIBITS OPEN: 11am-6pm)</td>
<td>Ballroom A</td>
<td></td>
</tr>
</tbody>
</table>
### Wednesday, October 12, 2016

<table>
<thead>
<tr>
<th>1:30 PM - 1:55 PM</th>
<th>Technology</th>
<th>WP1: Increasing the Reliability of 3D Printing a Wi-Fi Sensor Device</th>
<th>3:30 PM - 3:55 PM</th>
<th>Technology</th>
<th>WP3: Fanout Wafer Level Packaging II</th>
</tr>
</thead>
<tbody>
<tr>
<td>WP2: Challenges in Fine Feature Solder Paste Printing for SIP Application</td>
<td>3D SIP Assembly and Reliability for Glass Substrate with Through Vias</td>
<td>Ultra-High Density System-in-Package (SIP) for The Lowest Size Weight and Power (SWAP)</td>
<td>WP4: Polymers, Underfill, Encapsulants, and Adhesives</td>
<td>WP5: Characterization and Modeling for Reliability</td>
<td></td>
</tr>
<tr>
<td>WP3: Fabrication of Silicon Substrates</td>
<td>New Laser-Based FOWLP Processes for High I/O Applications with Ultra-Fine Line Routing and Sub 4 Um Vias</td>
<td>Pre-applied Inter Chip Fill Material for 3D Chip Stack Integration - How to Improve Bonding Quality and Reliability</td>
<td>Electrical Characterization of Low-Profile Copper Foil for Reduced Surface Roughness Loss</td>
<td>3D TSV-based Inductor Design for Secure Internet of Things</td>
<td></td>
</tr>
<tr>
<td>WP5: Investigation of Defects in Thin Silicon Oxynitride Film by Cu Electroplating for Organic Device Encapsulation</td>
<td>Glass Based Inductors, Capacitors and System-In-Package for RF Applications</td>
<td>Assembly Equipment Requirements for Next Generations Advanced Packaging</td>
<td>High Viscosity Paste Dosing for Microelectronic Applications</td>
<td>Aicha Elshabini, University of Alaska Anchorage (Fred Barlow, University of Alaska Anchorage; Pin Jen Wang, Sharmin Islam, University of Idaho)</td>
<td></td>
</tr>
</tbody>
</table>
| WP6: Increasing the Reliability of 3D Printing a Wi-Fi Sensor Device | WP2: Addressing Next Generation Packaging and IoT with Glass Solutions | Small Volume Dicing and High Density Wafer Stacking | WP7: Effect of Vapor-Deposited Parylene Coating on Reliability of Sintered Silver Joints for Extreme Temperature Applications | 4:00 PM - 6:00 PM: HAPPY HOUR in the Exhibit Hall sponsored by: Heraeus

**EMERGING APPLICATIONS & THE CONNECTED WORLD**

Ballroom A

**2.5/3D PACKAGING & EMBEDDED Packaging Technologies**

Ballroom B

**ADVANCED PACKAGING & ENABLING TECHNOLOGIES**

Ballroom C

**ADVANCED MATERIALS & PROCESSES**

Ballroom F

**MODELING, DESIGN, TEST & RELIABILITY**

Ballroom G
### Thursday, October 13, 2016

#### 8:00 AM - 8:25 AM

- **THA1:** Power Devices  
  Chairs: Doug Hopkins, North Carolina State University; Kyu-oh Lee, Intel Corp.  
  The Reliability of Ag Wedge Bonding with Various Bonding Pads for Power Devices  
  Xing Wei, Waseda University (Zhou Yu, Ge Yan, Tomonori Iizuka, Kohei Tatsumi)

- **THA2:** Embedded Packages  
  Chairs: Chet Palesko, Savansys; Zhenzhen Shen, Baker Hughes  
  Higher Efficiency Power Module Integrated Solution by Chip Embedding  
  Kay Essig, ASE Group (CT Chiu, Jarris Kuo, Phidia Chen, Jean-Marc Yannou)

- **THA3:** Wire Bonding  
  Chairs: Dan Evans, Palomar Technologies; Martin Schneider-Ramelow, Fraunhofer IZM  
  A Deeper Understanding on the Motion Behaviors of Wire during Ultrasonic Wedge-Wedge Bonding Process  
  Yangyang Long, Leibniz University Hannover (Folke Dencker, Marc Wurz, Jens Twiefel, Armin Feldhoff)

- **THA4:** Semiconductor Processes & Thermal Management  
  Chairs: Kevin Mercurio, Northrop Grumman; John Mazurowski, Penn State Electro-Optics Center  
  High Selective Wet Silicon Etch Chemistry and Process for Advanced Semiconductor Packaging  
  Yongqiang Lu, SACHEM Inc (Sian Collins, Laura Mauer, John Taddei, John Clark)

- **THA5:** Design of QFN and WL-CSP for Reliability  
  Chairs: Tim Jensen, Indium Corp.; Vicentiu Grosu, Teledyne  
  Behaviors of QFN Packages on a Substrate Strip  
  Eric Guyang, StatsChip PAC (Billy Ann, Song Guan Chow, Anhovuex Dexter, SeonMo Gu, YongHyuk Jeong, JaeMyong Kim)

#### 9:00 AM - 9:25 AM

- **THA6:** Thermal and Electrical Characterizations of Ultra-Thin Flexible 3YSZ Ceramic for Electronic Packaging Applications  
  Xin Zhao, North Carolina State University (K. Jagannadham, Wittichai Reanithippayasakul, Michael. Lanagan, Douglas Hopkins)

- **THA7:** Novel Mold-free Fan-out (MFO) Wafer Level Package using Silicon Wafer  
  Vivek Sridharan, Maxim Integrated (Amid Kolkar, Khanh Tran, Anu Srivastava, Viren Khandekar, Ricky Agrawal)

- **THA8:** Design and Process Considerations in Transitioning From Aluminum Wire to Aluminum Ribbon  
  Charles Italiano, Coining Inc. (Y. Mindin, M. Oud)

- **THA9:** In-situ Measuring Module for Transfer Molding Process Monitoring  
  Ruben Kalhe, Technical University Berlin (Tanja Braun, Jörg Bauer, Karl-F. Becker, Martin Schneider-Ramelow, Klaus-Dieter Lang)

#### 9:25 AM - 10:00 AM: Break in the Foyer
<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
</tr>
</thead>
<tbody>
<tr>
<td>10:00 AM</td>
<td><strong>EMERGING APPLICATIONS &amp; THE CONNECTED WORLD</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Ballroom A</strong></td>
</tr>
<tr>
<td></td>
<td><strong>2.5/3D PACKAGING &amp; EMBEDDED PACKAGING TECHNOLOGIES</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Ballroom B</strong></td>
</tr>
<tr>
<td></td>
<td><strong>ADVANCED PACKAGING &amp; ENABLING TECHNOLOGIES</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Ballroom C</strong></td>
</tr>
<tr>
<td></td>
<td><strong>ADVANCED MATERIALS &amp; PROCESSES</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Ballroom F</strong></td>
</tr>
<tr>
<td></td>
<td><strong>MODELING, DESIGN, TEST &amp; RELIABILITY</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Ballroom G</strong></td>
</tr>
<tr>
<td>10:00 AM</td>
<td>Power Device Packaging</td>
</tr>
<tr>
<td></td>
<td>Targeting High Temperature Operation with Maximum Tcase = 250°C</td>
</tr>
<tr>
<td></td>
<td>Shijo Nagao, Osaka University</td>
</tr>
<tr>
<td></td>
<td>(Zhang Hao, Takuo Sugio, Satoshi Ogawa, Tenuhisa Fujibayashi, Katsuaki Saganuma)</td>
</tr>
<tr>
<td></td>
<td>Isothermal DSC Study of the Curing Kinetics of an Epoxy/silica Composite for Microelectronics</td>
</tr>
<tr>
<td></td>
<td>Lerys Granado, Atotech Deutschland GmbH (Stefan Kempa, Stefanie Wiese, Laurence Gregoriades, Frank Brueining, Eric Anglaret, Nicole Frety)</td>
</tr>
<tr>
<td>10:30 AM</td>
<td>Consumable and Process Improvement for Large Copper Wire Bonding</td>
</tr>
<tr>
<td></td>
<td>Tao Xu, Kulicke &amp; Soffa Industries, Inc.</td>
</tr>
<tr>
<td>10:45 AM</td>
<td>Improvement of Coherency of the Panel Level Package by Integrated Dry Process</td>
</tr>
<tr>
<td></td>
<td>Shinichi Endo, Ushio Inc.</td>
</tr>
<tr>
<td></td>
<td>(Tomoyuki Habu, Akira Aiba, Hiroko Suzuki, Noritaka Takezoe, Hiroki Horibe, Kazuki Arikawa, Masaki Miura, Hajime Kikuii, Shintaro Yabu)</td>
</tr>
<tr>
<td>11:00 AM</td>
<td>Underfill Selection for Improved Board Level Thermal Cycle</td>
</tr>
<tr>
<td></td>
<td>Reliability of WL-CSPs</td>
</tr>
<tr>
<td></td>
<td>Tara Assi, NXP Semiconductors</td>
</tr>
<tr>
<td></td>
<td>(Nishant Lakhera, Andrew Mawer, Mike Fuller, Jim Howell)</td>
</tr>
<tr>
<td>10:45 AM</td>
<td>Ultrasonic Bonding on Unstable Pin</td>
</tr>
<tr>
<td></td>
<td>Henri Seppaenen, Kulicke and Sofa (Jason Fu)</td>
</tr>
<tr>
<td></td>
<td>Wedge Bonding Wire and Ribbon to Support RF and Optoelectronic Packaging</td>
</tr>
<tr>
<td></td>
<td>Daniel Evans, Palomar Technologies (Wenjuan Qi, Kevin Bauder)</td>
</tr>
<tr>
<td>11:00 AM</td>
<td>Performance Evaluation of Gold (Au) Wire and Ribbon Interconnects in High Frequency Circuits</td>
</tr>
<tr>
<td></td>
<td>Cenk Alatan, ASELSAN A.S (Tayan Eker)</td>
</tr>
<tr>
<td>11:15 AM</td>
<td>Joint Healing Thermal Interface Material</td>
</tr>
<tr>
<td></td>
<td>Jingting Yang, Laird (Jason Strader, Sean Ozolek, Eugene Pruss, Laird, Phillip Fosnol, Jesse Galloway, Amkor)</td>
</tr>
<tr>
<td>11:45 AM</td>
<td>Impact of Cleaning Technologies on Lead Frame Packages: The Difference in Wire Bond Yields</td>
</tr>
<tr>
<td></td>
<td>Ravi Parthasarathy, ZESTRON Americas (Larry Park, Umut Tosun, GT Yeah)</td>
</tr>
<tr>
<td>12:15 PM</td>
<td>Advances in Wire Bonding Technology for Overhang Applications</td>
</tr>
<tr>
<td></td>
<td>Aashish Shah, Kulicke &amp; Soffa Industries Inc (Nestor Mendoza, Rob Ellenberg, Gary Schulze, Ivy Qin, Bob Chylak)</td>
</tr>
<tr>
<td>12:30 PM</td>
<td>Metallic TIM Testing and Selection for IC, Power, and RF Semiconductors</td>
</tr>
<tr>
<td></td>
<td>David Saums, DS&amp;A LLC (Tim Jensen, Indium Corporation)</td>
</tr>
<tr>
<td>12:45 PM</td>
<td>Understanding Whisker Growth: Effect of Substrate and Underlayer</td>
</tr>
<tr>
<td></td>
<td>Piyush Jagtap, Indian Institute of Science, Bangalore (Praveen Kumar)</td>
</tr>
</tbody>
</table>
Thursday, October 13, 2016

11:30 AM – 1:00 PM: Posters & Pizza in the Foyer

Interactive Poster Session in the Foyer starting at 11:30 AM
Chairs: Erica Folk, Northrop Grumman Corporation; Dan Krueger, Honeywell FM&T

Posters & Pizza Sponsored by:

Feasibility Studies on Selective Laser Melting of Copper Powders for the Development of High-temperature Circuit Carriers
Aarief Syed-Khaja, Friedrich-Alexander-University Erlangen-Nuremberg, Institute FAPS (Christopher Kaestle, Joerg Franke)

Optimization of Processing Condition for Isotropic Conductive Paste using Cu and Solder Powder
Yong-Sung EOM, Electronics and Telecommunications Research Institute (Ji-Hye SON, Hyun-Cheol BAE, Kwang-Seong Choi, Jin-Ho LEE)

SigNature DNA Program and Product Updates Across a Broad Range of Industries
Janice Meraglia, Applied DNA Sciences (Bob MacDowell)

Development and Challenges of Warpage for Fan-Out Wafer-Level Package Technology
Mu-Hsuan Chan, Siliconware Precision Industries Co., Ltd. (Yu-Po Wang, Ivan Chang, James Chiang, George Pan, Nicholas Kao, David Wang)

Paying by the Micron - ED-XRF Analysis of Consumer Products
Brian Goolsby, Hitachi High-Technologies America, Inc.

NSOP Reduction for QFN RF-IC Packages
Mumtaz Bora, Peregrine Semiconductor

Introduction to a New Silicone Adhesive Designed for Wearables Technologies
Michelle Poliske, NuSil (Javier Fregoso, Robert Krizan)

High Speed Fluorescent Inspection of Non-visible Defects
Gurvinder Singh, Rudolph Technologies (Chet Suresh, John Thornell, Woo Young Han)

Direct Write Lithography Approach for Panel Level Package
Hiroshi Matsui, SCREEN Semiconductor Solutions

The Impact of Stencil Printing Upon Assembly & Reliability of 0.3mm Pitch CSP Components
Mark Whitmore, ASM Assembly Systems (Jeff Schake)

Isothermal DSC Study of the Curing Kinetics of an Epoxy/silica Composite for Microelectronics
Lerys Granado, Atotech Deutschland GmbH (Stefan Kempa, Stefanie Wiese, Laurence Gregoriades, Frank Brunening, Eric Anglaret, Nicole Fréty)

Washable Coatings for Packaging Applications
John Moore, Daetec LLC (Alex Brewer)

Role of Crystallographic Texture and Local Stress Field on Whisker Growth from Electrodeposited Sn
Piyush Jagtap, Indian Institute of Science, Bangalore (Praveen Kumar)

TBD - new material for lenses used in optical interconnects
Gabrie Hoogland, SABIC

TBD - Smartflux dipping paste and Welco powder
LiSan Chan, Heraeus Singapore
<table>
<thead>
<tr>
<th>Time</th>
<th>Session Name</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:30 PM - 1:55 PM</td>
<td>THP1: MEMS Sensors</td>
<td>Chairs: Andre Rouzaud, CEA-Létt; Gabriel Pares, CEA-Létt</td>
</tr>
<tr>
<td>2:00 PM - 2:25 PM</td>
<td>THP2: LTCC and Ceramic Technologies</td>
<td>Chairs: Thomas Bartnitzek, Micro Hybrid; Howard Imhof, Silicon Valley Materials Technology Corp</td>
</tr>
<tr>
<td>2:30 PM - 3:25 PM</td>
<td>THP2: Package on Package, BGA, Flip Chip</td>
<td>Chairs: Bill Marsh, Northrop Grumman; Bob Chylak, Kulicke &amp; Sofla</td>
</tr>
<tr>
<td>3:00 PM - 3:25 PM</td>
<td>THP4: Reliability and Soldering Application</td>
<td>Chairs: Maria Durham, Indium Corp.; Seungwook Yoon, STATS ChipPAC, Ltd.</td>
</tr>
<tr>
<td>1:30 PM - 1:55 PM</td>
<td>Alternative Metallurgies for MEMS Lid Seal</td>
<td>Catherine Shearer, Ormet Circuits, Inc EMD Performance Materials</td>
</tr>
<tr>
<td>1:30 PM - 1:55 PM</td>
<td>Novel Core-Shell Conductive Materials for LTCC Metallizations</td>
<td>Richard Stephenson, Silicon Valley Materials Technology Corp (Kyle Bandaccari, Howard Imhof)</td>
</tr>
<tr>
<td>2:00 PM - 2:25 PM</td>
<td>Challenges in Assembly Implementation of Ultra-thin Profile Flipchip Package-on-Pack</td>
<td>Abu Eghan, Open Silicon</td>
</tr>
<tr>
<td>2:00 PM - 2:25 PM</td>
<td>Achieving Low Voiding with Lead Free Solder Paste for Power Devices</td>
<td>Pierino Zappella, SST International (Saeed Sedehi, Robert Hixon, Adrienne Williams)</td>
</tr>
<tr>
<td>1:30 PM - 1:55 PM</td>
<td>A Comparison of Immersion Gold and Tin Surface Finishes on Sensing Electrodes for PCB Environmental Saltwater Concentration Sensors</td>
<td>Robert Dean, Auburn University (Frank Werner)</td>
</tr>
<tr>
<td>1:30 PM - 1:55 PM</td>
<td>Evaluation of a Lead-Free Ultra Low Fire Ceramic (ULTCC) Tape Designed for Lamination on Aluminum Substrates and a Compatible Co-Fireable Silver</td>
<td>Steven Grabey, Heraeus Electronics (Samson Shahbazi, Ryan Persons)</td>
</tr>
<tr>
<td>1:30 PM - 1:55 PM</td>
<td>Enabling Low Warpage on Low-Profile BVA™ Package On Package (PoP)</td>
<td>Akash Agrawal, Inversas Corporation (Ashok Prabhu, Min Tao, Wael Zohn)</td>
</tr>
<tr>
<td>1:30 PM - 1:55 PM</td>
<td>Transient Liquid Phase Sintering Materials (TLPS) vs. Conventional Solders for High Temperature MLCC Interconnects</td>
<td>John McConnell, KEMET Corporation (J. Bultitude, L. Jones, J. Qazi)</td>
</tr>
<tr>
<td>1:30 PM - 1:55 PM</td>
<td>Advantages and Limitations of Ceramic Packaging Technologies in Harsh Applications</td>
<td>Thomas Bartnitzek, Micro Hybrid Electronic GmbH (Torsten Thelenmann, Stefan Apel, Karl-Heinz Suphan)</td>
</tr>
<tr>
<td>1:30 PM - 1:55 PM</td>
<td>Novel Glass Substrates for Minimizing Thermal Stress Development during Electronic Device Packaging Process</td>
<td>Shuhui Nourma, Asahi Glass Co., Ltd. (Shigeki Sawamura, Yu Hanawa, Yusuke Sakai, Kuzatuka Hayashi)</td>
</tr>
<tr>
<td>1:30 PM - 1:55 PM</td>
<td>Voiding Control at Preform Soldering</td>
<td>Ning-Cheng Lee, Indium Corporation (Anab Dasgupta, Elaina Zito)</td>
</tr>
<tr>
<td>1:30 PM - 1:55 PM</td>
<td>Effects of X-ray Exposure on NOR and NAND Flash Memory Devices During High-resolution 2D and 3D X-ray Inspection</td>
<td>Anju Sharma, Binghamton University (Preeth Sivakumar, Andrew Feigel, In-Tae Bae, Steve Cain, Larry Lehman, Joseph Gogor, James Cash, Joseph Kolly)</td>
</tr>
<tr>
<td>1:30 PM - 1:55 PM</td>
<td>An Integrated Sensor for Detecting Moisture Ingress in Printed Circuit Board Assemblies</td>
<td>Robert Dean, Auburn University (Nathan Loden, Curtis Hartley, Jeffery Craven)</td>
</tr>
<tr>
<td>1:30 PM - 1:55 PM</td>
<td>New Ferrimagnetic Garnets for LTCC-Technology Circulators</td>
<td>Lila Qassym, Thales Research and Technology (Gérard Cibien, Richard Lebourgeois, Gérard Cibien, Gérard Cibien, Gérard Cibien)</td>
</tr>
<tr>
<td>1:30 PM - 1:55 PM</td>
<td>Study of Void Formation Mechanism in Electroplated SnAg Solder Bump</td>
<td>Koji Tatsumi, Mitsubishi Materials Corporation (Akio Sakai, Syunsuke Kawai, Takuma Katase, Takashi Miyazawa, Masayuki Ishikawa)</td>
</tr>
<tr>
<td>1:30 PM - 1:55 PM</td>
<td>iNEMI Connector Reliability Test Recommendations Project Report</td>
<td>Vincent Pasucci, TE Connectivity</td>
</tr>
<tr>
<td>1:30 PM - 1:55 PM</td>
<td>The True Cost of Hermeticity in Microelectronic Packaging</td>
<td>Timothy Dittman, Northrop Grumman Mission Systems (Alex Bailey, Steve Smalley)</td>
</tr>
<tr>
<td>1:30 PM - 1:55 PM</td>
<td>The Impact of Stencil Printing Upon Assembly &amp; Reliability of 0.3mm Pitch CSP Components</td>
<td>Mark Whitmore, ASM Assembly Systems (Jeff Schake)</td>
</tr>
</tbody>
</table>
The Largest MEMS Publication in the World

- Founded in 2003
- 34,800+ subscribers
- Comprehensive MEMS news coverage
- 7-14 MEMS and microsystems stories every week
- MEMS webinars, whitepapers and presentations
- Interviews with MEMS industry leaders
- Latest MEMS patents and patent applications

MEMS Journal, Inc.
2000 Town Center, Suite 1900, Southfield, Michigan 48075
Phone: 734.277.3599 / Fax: 734.239.7409
http://www.memsjournal.com
http://www.memsjournal.com/subscribe.htm

For marketing and consulting services, please contact Dr. Mike Plevis at mike@memsjournal.com
For editorial inquiries, please contact John Williamson at editor@memsjournal.com
2016 Outreach Events

Celebrating Women Meet-Up

Wednesday, October 12th • 6:15 pm – 7:30 pm • Bodega Wine Bar • 300 E Colorado Blvd.

All conference attendees are welcome! Join us to celebrate women in the field of microelectronics and packaging and an opportunity to network. Wear your conference badge to enjoy drinks on IMAPS!

Please bring your ideas for next year’s program surrounding career growth, diversity and/or other topics important to you as a member of IMAPS.

Walking Directions (approx. 4 minutes): From the main entrance of the Pasadena Convention Center, cross Green Street at Garfield Avenue and continue onto Garfield for about .1 miles. Enter the Paseo Colorado Shopping Center main entrance on your left. Bodega Wine Bar is located on the 2nd level across from El Cholo.

Suffering from any of these Solder Paste Problems?

- Voids  • Head-on-Pillow  • Slumping
- Non Wetting Open  • Short Stencil Life

Eliminating These Problems Starts with Higher Quality Flux and Extremely Pure Powder, Resulting in Solder Joints of Ultimate Quality.

- At SHENMAO, we make our own powder.
- We ONLY use virgin powder.

That’s why 11 of the 12 largest EMS companies in the world use our solder paste!

SHENMAO America Inc.

Over 43 years of experience that you can count on.

www.shenmao.com  |  408.943.1755

Our Solder Paste is blended in the USA
Student Industry Roundtable and Hiring Panel

Tuesday, October 11th • 6pm – 7pm • Pasadena Convention Center • Conference Room 214

Join IMAPS industry professionals and hiring managers in a networking forum to learn more about life after graduation. Industry professionals will interact with graduate and undergraduate students in an informal roundtable discussion, followed by a Q&A with a panel of hiring managers. Topics will include:

- What employers are looking for in new hires out of school
- What a great resume looks like (bring yours!)
- How to navigate the hiring process
- What to expect in the first six-twelve months of your first job
- Plus more!

Students are encouraged to submit questions and topics for the roundtable and the panel to Shelby Moirano, Membership Administrator, at smoirano@imaps.org.

Student-Exhibitor Interchange with El Modena High School Robotics

Wednesday, October 12 • 11am-1pm • Exhibit Hall
LEADING GLOBAL SUPPLIER OF PRECIOUS METAL TECHNOLOGY

EXCELLENCE IN PRECIOUS METALS

A symbol of credibility and reliability

- International Swiss-based group with subsidiaries in 17 countries
- Over 150 years experience in precious metals
- Product stability, the guarantee of customer reliability
- High-quality precious metals for high-tech products
- Technical service and on-site support throughout the world
- Certified quality to highest international standards

Metalor offers a global service from sales to recycling

Advanced Coatings
Leading edge solutions in plating, powders, flakes, chemicals and compounds

Refining
Evaluation and refining, ingots and bars

Electrotechnics
Silver and pseudo-alloy electrical contacts

Technology Products
Innovative products from research to large scale production

Metalor Technologies USA Corporation
52 Gardiner Street, USA, Attleboro, MA 02703
Tel. +1 508 226 6470, Fax +1 508 695 4180
www.metalor.com, advanced_coatings.usa@metalor.com

METALOR®