

ADVANCE PROGRAM AND REGISTRATION ON-LINE: WWW.IMAPS.ORG/THERMAL

IMAPS Advanced Technology Workshop
and Tabletop Exhibition on
Thermal Management

The Cabaña Hotel & Resort (A Crowne Plaza Resort)
Palo Alto, California - USA
OCTOBER 13 - 16, 2008

General Chair:

David Saums, DS&A LLC
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Technical Program Chair:

Vadim Gektin, Sun Microsystems, Inc.
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Program Committee:

David Copeland, Sun Microsystems, Inc.
Vadim Gektin, Sun Microsystems, Inc.
William Maltz, Electronic Cooling Solutions
George A. Meyer IV, Celsia Technologies
John Peeples, The Citadel
Dave Saums, DS&A LLC
Jun Shen, Redback Networks, Inc. (An Ericsson Company)
Guy R. Wagner, Storage Genetics, Inc.



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International Microelectronics And Packaging Society (IMAPS)
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Hotel Cut-off: September 15, 2008
Early Registration Discount Ends: October 3, 2008

Monday, October 13

Registration: 5:00 pm - 6:30 pm

Opening Reception: 5:30 pm - 6:30 pm

Tuesday, October 14

Registration: 7:30 am - 8:00 pm

Continental Breakfast: 7:30 am - 8:30 am

Opening Remarks: 8:30 am - 8:40 am

Exhibit Opens: Noon - 5:00 pm

SESSION 1: MARKET DRIVERS

Chair: Dave Saums, DS&A LLC
8:40 am - 12:00 pm

Mobile PCI Express Graphics Module (MXM) 3.0 specification: Thermo-Mechanical Interchangeability
Joe Walters, Mohammed Tantoush, nVidia

Data Center Cooling: Comparison of Thermal Resistance and Pump Power for Circulating Air, Water, and Freon (Phase Change) Coolants
Ronald C. Crane, Clustered Systems Co.

Thermal Management in the Renewable Energy Market
Kevin Closson, Nerac

Break: 10:10 am - 10:30 am

An Overview of the Water Cooling System for the IBM Power 575 Supercomputer
Michael J. Ellsworth, Jr., International Business Machines Corporation

Preliminary Specification for a Closed Loop Liquid Cooling System Product Reliability Test Plan
Margaret B. Stern, David Copeland, Marlin Vogel, John Dunn, Don Kearns, Steve Lindquist, Sun Microsystems

Thermoelectric Power Harvesting from Small Engines
John Langley, Bor Yann Liaw, Ambient Micro; William Maltz, Electronic Cooling Solutions, Inc.; Guy Wagner, Storage Genetics, Inc.

Lunch: 12:00 pm - 1:30 pm

SESSION 2: THERMAL INTERFACE MATERIALS

Chair: Guy Wagner, Storage Genetics, Inc.
1:30 pm - 5:00 pm

Thermal Interface Material Market Outlook
Melanie Wuthenow, Prismark

Thermally Conductive Adhesives for Electronics Applications
John Timmerman, The Bergquist Company

Application and Performance Characteristics of Soft Metal Thermal Interface Materials for IGBT Applications
Dave Saums, DS&A LLC; Bob Jarrett, Jordan Ross, Indium Corporation; Alan Fairbairn, Indium Corporation UK; Wolfgang Bloching, GPS Technologies GmbH

Break: 3:00 pm - 3:30 pm

Equipment and Methodology for Consistent High Quality Stencil Printing of Phase Change Thermal Interface Material
Andrew D. Delano, Richard Xu, Honeywell

Stress Minimization during Deflection of Thermally Conductive Gap Pads
Karen Bruzda, Laird Technologies

Materials and Substrates for LED Thermal Management
Justin Kolbe, Sanjay Misra, The Bergquist Company

Dinner: 5:00 pm - 6:30 pm

SESSION 3: EQUIPMENT AND TEST

Chair: Jun Shen, Redback Networks, Inc.
(An Ericsson Company)
6:30 pm - 8:00 pm

Thermal Test Chip - Definition, Design and Applications
Bernie Siegal, Thermal Engineering Associates, Inc.

Thermo-Mechanical Design Challenges in Validation Platforms
Rahima K. Mohammed, Ashok Kabadi, Intel Corporation

Thermal Management System with Passive Cooling Modules
Michael Spokoiny, Vladimir Zrodnikov, Xinliang Qiu, James M. Kerner, United States Technology Consortium

→ Student Competition Winners Funding

provided by



Wednesday, October 15

Registration: 7:30 am - 8:00 pm

Continental Breakfast: 7:30 am - 8:30 am

Exhibit Opens: 10:00 am - 3:00 pm

SESSION 4: THERMAL ANALYSIS I

Chair: David Copeland, Sun Microsystems, Inc.
8:30 am - 12:00 pm

Thermal Interface Materials Characterization and Development by Computer Modeling and in Package Testing

David A. Zoba, LORD Corporation

Thermal Characterization of a Half mPCI Express Card and Associated Devices

Raj Bahadur, Carlton Hanna, Upendra Sheth, Intel Corporation

Why Mathematical Modeling is a Necessity to Manage the Cooling/Energy Efficiency in Today's Mission Critical Facilities

Sherman Ikemoto, Akhil Docca, Future Facilities Inc.

Break: 10:00 am - 10:30 am

→ Transient Multiscale Thermal Modeling of Electronic Enclosures

Qihong Nie, Yogendra Joshi, Georgia Institute of Technology

→ Experimental and Numerical Study of Thermal Interface Material Performance

Parisa Pour Shahid Saeed Abadi, Chuangang Lin, D.D.L. Chung, University at Buffalo, State University of New York

Enabling Dynamic Voltage & Frequency Scaling in Next-Generation Microprocessors: Thermal & Reliability Considerations

Sai Ankireddi, David Copeland, Sun Microsystems Inc.

Lunch: 12:00 pm - 1:30 pm

SESSION 5: THERMAL ANALYSIS II

Chair: George A. Meyer IV, Celsia Technologies
1:30 pm - 5:00 pm

→ Development of Boundary Condition Independent Reduced Order Models using POD

Arun P. Raghupathy, Attila Aranyosi, William Maltz, Electronic Cooling Solutions Inc.; Karman Ghia, Urmila Ghia, University of Cincinnati

Solving Transient Non-Linear Heat Transfer Problems using a Spreadsheet

Guy R. Wagner, Storage Genetics, Inc.

Unraveling the Mystery of Equivalent Thermal Conductivities for Heat Pipe and Vapor Chambers

George A. Meyer IV, Sobo Sun, Celsia Technologies

Break: 3:00 pm - 3:30 pm

→ Heat Sink Effect of a Gold Wire Bond Next to Hot Spots on a Microchip

Michael McCracken, Michael Mayer, John Persic, University of Waterloo - Microjoining Laboratory

→ Bias-Dependent MOS Transistors Thermal Resistance and Non-uniform Self-Heating Temperature

Xi Wang, James Christofferson, Ali Shakouri, University of California Santa Cruz

Competitive Advantage through Strategic System Thermal Design

Denise Pliskin, Speck Design

Dinner: 5:00 pm - 6:30 pm

SESSION 6: SYSTEM COOLING

Chair: William Maltz, Electronic Cooling Solutions
6:30 pm - 8:00 pm

Sub-Ambient Cooling System Overview

Gerald Wyatt, Dick Weber, Raytheon

→ Chimney Effect on Natural Convection Cooling of Electronic Components

Bjorn Vermeersch, G. De Mey, M. Wojcik, J. Pilarski, M. Lasota, J. Banaszczyk, A. Napieralski, M. De Paepe, University of Ghent

Advances in Telecommunications Thermal Management Solutions

Rick Schmidt, Dantherm Air Handling, Inc.

A SPECIAL THANK YOU

TO ALL THE MEMBERS OF THE PROGRAM COMMITTEE,
THE CHAIRS, SPEAKERS AND STUDENT COMPETITION
PROVIDERS.

YOUR PARTICIPATION IS GREATLY APPRECIATED!

Hotel Cut-off: September 15, 2008

IMAPS cannot guarantee room availability or pricing after the September 15th deadline. Register by phone (+1-800-593-5477) or On-line at www.cppaloalto.crownplaza.com, use group code IMA.

Early Registration Discount Ends October 3, 2008

Chairs and Speakers are required to register at the reduced rate on or before October 3rd. Go to www.imaps.org/thermal.

Thursday, October 16

Registration: 7:30 am - 4:50 pm

Continental Breakfast: 7:30 am - 8:30 am

SESSION 7: HIGH CONDUCTIVITY MATERIALS

Chair: Dave Saums, DS&A LLC

8:30 am - 12:00 pm

Natural Graphite Reinforced Al and Cu Alloys with Thermal Conductivity 2 x Cu and Thermal Expansion Matched to Advanced Semiconductors

James A. Cornie, Rob Hay, Steve Cornie, Shiyu Zhang, Metal Matrix Composite, LLC and WmK LLC

The Use of Diamond Composite Baseplates for Thermal Management of Power Electronic Modules

Svetlana Levchuk, G. Mitic, M. Poehl, Siemens AG

High Performance Pyrolytic Graphite Heat Spreaders – Near Isotropic Structures with Metallization

Richard J. Lemak, R. J. Moskaitis, MINTEQ International, Inc.; D. Pickrell, D. Kupp, A. M. Yocum, Omega Piezo Technologies, Inc.

Break: 10:00 am - 10:30 am

Diamond Materials for Thermal Applications

Thomas Obeloer, David Rowcliffe, Harris International

Thermal Reliability of Advanced Metal Diamond Composites

Ravi Bollina, Janet Linke, Tobias Mrotzek, Sven Knippscheer, Plansee SE

Advances in Material Design and Processing for Thermal Management Solutions

Birol Sonuparlak, Rogers Corporation

Lunch: 12:00 pm - 1:30 pm

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

"Return Service Requested"

SESSION 8: LIQUID COOLING

Chair: John Peeples, The Citadel

1:30 pm - 4:50 pm

Vaporizable Dielectric Fluid Cooling for IGBT and Power Semiconductor Applications

Dave Saums, DS&A LLC; David Levett, Infineon Technologies; Jeremy Howes, Parker Hannifin; Joe Marsala, Thermal Form & Function Inc.

Automatic Purging of Non-Condensable Gases from 2-Phase Immersion Cooling Systems

Phillip E. Tuma, 3M Company

Immersion Cooling of Power Electronics in Segregated Hydrofluoroether Liquids

Cindy Barnes, Phillip E. Tuma, 3M Company

Break: 3:00 pm - 3:20 pm

→ Flow Study in Magnetic Micro-Channel Heat Pipe

B. J. Wang, C. R. Chen, J. R. Tsai, W. F. Lee, C. H. Chen, C. Y. Chen, NSPO/NYUST/NKIT/NCTU

Passive Phase Change Tower Heat Sink & Pumped Coolant Technologies for Next Generation CPU Module Thermal Designs

Marlin Vogel, David Copeland, Andrew Masto, Joe Marsala, Matt Connors, Brad Whitney, Sukhvinder Kang, Sun Microsystems, Inc.

→ Model for Energy Transport in Nanofluids

Vijaya Kumar Kollipar, Emmanuel C. Nsofor, Southern Illinois University

Closing Remarks: 4:50 pm

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Tabletop Exhibition on Thermal Management
October 13-16, 2008; Palo Alto, California - USA**

Program & Registration On-line:

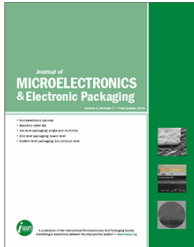
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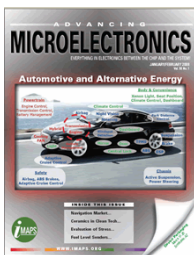


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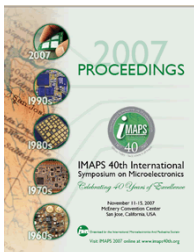


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REGISTRATION FORM

REGISTER ON-LINE AT WWW.IMAPS.ORG/THERMAL

IMAPS THERMAL MANAGEMENT ATW: OCTOBER 13 - 16, 2008

Dr. Mr. Ms.

Member ID# _____

First Name _____ M.I. _____ Last Name _____

Company/Affiliation _____ Job Position _____

Address _____

City _____ State _____ Zip _____ Country _____

Phone _____ Fax _____ Email _____

REGISTRATION FEES: ADVANCE REGISTRATION ENDS 10/3/08

THERMAL WORKSHOP FEES

(On or before 10/3) (After 10/3)

- | | | |
|--|-------|-------|
| <input type="checkbox"/> Member (IMAPS) | \$650 | \$750 |
| <input type="checkbox"/> Non-member* | \$750 | \$850 |
| <input type="checkbox"/> Speaker* <input type="checkbox"/> Chair* <input type="checkbox"/> Chapter Officers* | \$350 | \$450 |
| <input type="checkbox"/> Student | \$200 | \$300 |
| <input type="checkbox"/> Exhibits Only (meals not included) | \$25 | \$25 |

*Includes one-year IMAPS individual membership or membership renewal at no additional charge. Does not apply to corporate or affiliate memberships.

Workshop Fee includes an Abstract Book, all meals listed and a CD of Presentations. CD will be mailed 15 business days after the event.

ADDITIONAL PURCHASES

- | | | |
|--|-------|-------|
| <input type="checkbox"/> CD of Presentations (Member Rate) | \$200 | \$200 |
| <input type="checkbox"/> CD of Presentations (Non-Member Rate) | \$300 | \$300 |
| <input type="checkbox"/> Add to Ship in the US | \$7 | \$7 |
| <input type="checkbox"/> Add to Ship Overseas | \$25 | \$25 |

HOW DID YOU HEAR ABOUT THIS EVENT?

- | | | |
|---|--|---------------------------------|
| <input type="checkbox"/> Direct Mail | <input type="checkbox"/> Website | <input type="checkbox"/> E-Mail |
| <input type="checkbox"/> Advancing Microelectronics | <input type="checkbox"/> Colleague | |
| <input type="checkbox"/> IMAPS Weekly E-mail Bulletin | <input type="checkbox"/> Personal Phone Call | |
| <input type="checkbox"/> Industry/Trade Magazine | <input type="checkbox"/> Other _____ | |

HOUSING (Hotel Cut-off is September 15, 2008)

Housing Accommodations must be made directly to:

The Cabaña Hotel & Resort (A Crowne Plaza Resort)

4290 El Camino Real

Palo Alto, CA 94306

P: +1-800-593-5447

Please reference **IMAPS** when making reservations by phone.

On-line reservations: www.cppaloalto.crowneplaza.com, use group code IMA.

Room Rate: \$190/night (Single/Double)

IMAPS cannot guarantee room availability or pricing after the September 15th deadline.

The Cabaña Hotel & Resort requires a deposit for the first night's room and tax to hold your room. Cancellations accepted without penalty up to 72 hours in advance. After 72 hours, guest will be billed one night's room & tax.

PAYMENT

THERMAL08PROG

Thermal Workshop Fee: \$ _____

Additional Purchases: \$ _____

Total Payment Due: \$ _____

Enclosed is a check payable in US funds to IMAPS

Charge my fees to:

Visa MasterCard Discover Amex Diners Club

Card# _____ Exp. _____

Signature _____

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

Email address required to receive confirmation of registration.

Wire Transfers: IMAPS Headquarters will accommodate requests for payment to IMAPS by wire transfer. The party requesting to pay by wire transfer will be charged an additional fee of \$25 (U.S.) regardless of the amount of the transfer. Contact IMAPS HQ at 202-548-4001 for more information.

Mail this form with payment to: IMAPS * 611 2nd Street, NE * Washington, DC 20002-4909. For credit card transactions, register on-line: www.imaps.org; or register by phone with your credit card by calling 202-548-4001; Fax: 202-548-6115. Additional information? E-mail: IMAPS@imaps.org, or visit our web site: <http://www.imaps.org>. Cancellations will be refunded (less a \$50 processing fee) only if written notice is postmarked on or before **Friday, October 3, 2008**. No refunds will be issued after that date.