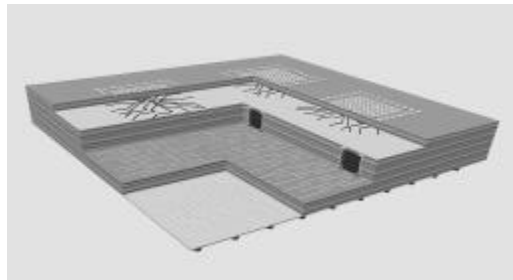


# IMAPS/ACerS 1<sup>st</sup> International Conference and Exhibition on Ceramic Interconnect and Ceramic Microsystems Technologies (CICMT)

co-located with the 107<sup>th</sup> Annual Meeting of The American Ceramic Society  
[www.ceramics.org/meetings/am2005](http://www.ceramics.org/meetings/am2005)

BALTIMORE MARRIOTT WATERFRONT HOTEL  
BALTIMORE, MARYLAND  
APRIL 10 - 13, 2005



## CICMT SESSION OUTLINE

**Session MP1: Materials Solution for Microsystems**  
Chair: Heiko Thust, Technical University of Ilmenau

**Session MP2: Cofiring**  
Chairs: Fred Barlow, University of Arkansas; Martin Oppermann, EADS Deutschland GmbH

**Session MP3: Microsystem Materials & Integration**  
Chair: Bob Freer, University of Manchester/UMIST

**Session MP4: Dimensional Control in LTCC Systems**  
Chairs: Adam Schubring, Visteon Corp.; Walter Rothlingshofer, Robert Bosch GmbH

**Session TA1: Ceramic Microsystems and Applications I**  
Chair: Leszek Golonka, Wroclaw University of Technology

**Session TA2: Processing Integrated Passives in LTCC**  
Chair: Raghu Settaluri, Oregon State University

**Session TA3: Ceramic Microsystems and Applications II**  
Chair: Amy Moll, Boise State University

**Session TA4: Materials Integration in LTCC**  
Chair: Larry Zawicki, Honeywell Federal Manufacturing and Technologies, LLC

**Session WA1: Design and Fabrication of Ceramic Microsystems and Devices**  
Chair: Torsten Rabe, Federal Institute for Materials Research and Testing

**Session WA2: Design, Simulation and Modeling**  
Chair: Daniel Amey, DuPont Microcircuit Materials

**Session WA3: Ceramic Microsystems and Devices**  
Chair: Klaus-Dieter Lang, Fraunhofer IZM

**Session WA4: Characterizing Materials Integration Effects**  
Chair: Daniel Krueger, Honeywell FM&T

**Session WP1: Ceramics: The Microsystem Device Enabler**  
Chair: Paul Clem, Sandia National Laboratories

**Session WP2: Ink Jet Printing Technology**  
Chairs: Veena Tikare & Tom Swiler, Sandia National Laboratories

**Session WP3: Microsystem Materials and Fabrication**  
Chair: Dean Anderson, TRS Ceramics, Inc. & The Pennsylvania State University

### GENERAL CO-CHAIRS:

**Samuel J. Horowitz, DuPont**  
[Samuel.j.horowitz@usa.dupont.com](mailto:Samuel.j.horowitz@usa.dupont.com)

**David Wilcox, Consultant**  
[DLwilcox1@cox.net](mailto:DLwilcox1@cox.net)

### TECHNICAL PROGRAM CO-CHAIRS:

**Kevin G. Ewsuk, Sandia National Laboratories**  
[kgewsuk@sandia.gov](mailto:kgewsuk@sandia.gov)

**Michael Ehlert, Barry Industries Inc.**  
[mikeehlert@cox.net](mailto:mikeehlert@cox.net)

### CO-SPONSORED BY:

INTERNATIONAL MICROELECTRONICS AND  
PACKAGING SOCIETY (IMAPS)  
Everything in electronics between the chip  
and the system!

&

THE AMERICAN CERAMIC SOCIETY (ACerS)



**Early Registration and Hotel Deadline: March 15, 2005**

# essage from the General Co-Chairs

Under the joint sponsorship of the International Microelectronics And Packaging Society (IMAPS) and The American Ceramic Society (ACerS), the scope of the very successful Ceramic Interconnect Conference has expanded. The renamed International Conference on Ceramic Interconnect and Ceramic Microsystems Technologies (CICMT) combines the complementary interests, strengths, and leadership of the constituencies of both IMAPS and ACerS to focus on and accelerate advances in both ceramic interconnect and ceramic microsystems. We believe this conference will be THE premier global forum on ceramic interconnect and ceramic microsystems, two of the fastest growing areas of ceramic technology.

We thank our 21-member international advisory board (see [www.cicmt.org](http://www.cicmt.org)), Technical Co-Chairs, Kevin Ewsuk (Sandia National Laboratories) and Mike Ehlert (Barry Industries, Inc.), session organizers/leaders, and the IMAPS and ACerS staff for their support and leadership in putting this program together.

The participation of speakers from 13 different countries in Europe, Asia, and the Americas reflects the international scope of this three-day conference. Six invited keynote speakers will provide comprehensive overviews of current and future directions in key areas, including: ceramic microsystems, ceramic interconnect, materials and processing, automotive applications, and design and integration. Additionally, 57 contributed papers in 15 different sessions will address the latest advances in ceramic interconnect and ceramic microsystems.

As an added bonus, Mike O'Neill (Heraeus, Inc.) and Mike Lanagan (The Pennsylvania State University) have organized a special session entitled "Business of Emerging Microsystems" that will feature the perspectives of government, industry, and national laboratory speakers. Following this, David Wilcox will lead a panel discussion on opportunities and needs to accelerate the ceramic microsystems thrust. The special business session and panel discussion will address the infrastructure being developed to support the vital emerging ceramic microsystems market.

Finally, to provide an opportunity for those involved in development and manufacturing to meet suppliers who support the industry, space has been set aside for tabletop exhibits. To facilitate networking, these exhibits will be located in the same room used for the breaks and meals. To reserve space, visit [www.cicmt.org](http://www.cicmt.org) or contact Ann Bell ([abell@imaps.org](mailto:abell@imaps.org)), 202-548-8717. Space is limited, so reserve yours as soon as possible.

To promote collaboration and interaction with industry, a limited number of tabletop exhibit spaces have been reserved for non-commercial organizations such as universities and national laboratories. This space will be made available, on a first come first served basis, to qualifying organizations. Contact Sam Horowitz ([Samuel.j.horowitz@usa.dupont.com](mailto:Samuel.j.horowitz@usa.dupont.com)) or David Wilcox ([Dwilcox1@cox.net](mailto:Dwilcox1@cox.net)) for more information.

The 1<sup>st</sup> International Conference on Ceramic Interconnect and Ceramic Microsystems Technologies has all of the ingredients of a successful meeting; please join us in Baltimore, April 10-13, 2005.

Samuel J. Horowitz and David L. Wilcox  
General Co-Chairs



Sunday, April 10

REGISTRATION: 4 PM - 7 PM

**FRONTIER OF SCIENCE AND SOCIETY - RUSTUM ROY LECTURE: 5 PM - 6 PM**

**SPEAKER:** DR. ARDEN L. BEMENT, JR., NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY

CICMT WELCOME RECEPTION: 6 PM – 7 PM

Monday, April 11

REGISTRATION: 7 AM - 5 PM

CONTINENTAL BREAKFAST: 7 AM - 8 AM

OPENING REMARKS: 8 AM - 8:30 AM

CONFERENCE CHAIRS

**KEYNOTE PRESENTATION: 8:30 AM - 9:30 AM**

**TITLE:** FUTURE CHALLENGES AND OPPORTUNITIES IN MULTILAYER CERAMIC TECHNOLOGY

**SPEAKER:** CLIVE A. RANDALL, THE PENNSYLVANIA STATE UNIVERSITY

**CO-AUTHORS:** G. YANG, E. DICKEY, R. EITEL, K. RAJAB, M. IWASKI, E. SEMOUCHKINA, G. SEMOUCHKINA, A. BAKER, S. RHEE, K. UCHINO, M. J. LANAGAN, THE PENNSYLVANIA STATE UNIVERSITY

**KEYNOTE PRESENTATION: 9:30 AM - 10:30 AM**

**TITLE:** CURRENT AND FUTURE DIRECTIONS FOR CERAMIC INTERCONNECT

**SPEAKER:** CHRISTIAN HOFFMANN, EPCOS OHG

**CO-AUTHORS:** SEBASTIAN BRUNNER, MARKUS NOREN, EPCOS OHG

BREAK: 10:30 AM – 11 AM

**EDWARD ORTON, JR. MEMORIAL LECTURE: 11 AM – NOON**

**TITLE:** AN INNOVATIVE CERAMIC TECHNOLOGY SUCCESS - LTCC FROM LABORATORY TO ELECTRONICS APPLICATIONS IN THE MARKET PLACE

**SPEAKER:** DR. PETER BARNWELL, CUSTOM INTERCONNECT LTD, UK

LUNCH: NOON – 1 PM

**KEYNOTE PRESENTATION: 1 PM - 1:55 PM**

**TITLE:** MATERIALS PROCESS AND MANUFACTURING: CURRENT AND FUTURE DIRECTIONS

**SPEAKER:** ANDREAS ROOSEN, UNIVERSITY OF ERLANGEN – NUREMBERG

## SESSION MP1

### MATERIALS SOLUTION FOR MICROSYSTEMS

Chair: Heiko Thust, Technical University of Ilmenau

**2 pm – 3:20 pm**

ON-BOARD FIBER ALIGNMENT IN LTCC OPTOELECTRONIC PACKAGES  
Richard E. Eitel, Amanda Baker, Jose Agraz, Mike Lanagan, Kenji Uchino, Clive Randall, The Pennsylvania State University

PHOTOSENSITIVE DIELECTRIC PASTE FOR MICRO-PATTERNING TECHNOLOGY IN LTCC SYSTEM

Hyo Tae Kim, Kui Won Kang, T. Masaki, Kwang Jin Kim, Jonghee Kim, Korea Institute of Ceramic Engineering & Technology

MICRO CHANNEL FABRICATION IN LTCC SUBSTRATE

W. Kinzy Jones, Surya Kappagantula, Jaing Wang, Florida International University

DEVELOPMENT AND EVALUATION OF HERMETIC CERAMIC MICROWAVE PACKAGES FOR SPACE APPLICATIONS

Jens Mueller, J. Pohlner, D. Schwanke, G. Reppe, H. Thust, R. Perrone, Micro Systems Engineering GmbH & Co.

## SESSION MP2

### COFIRING

Chairs: Fred Barlow, University of Arkansas;  
Martin Oppermann, EADS Deutschland GmbH

**2 pm – 3:20 pm**

CAMBER AND STRESS DEVELOPMENT DURING THE COFIRING OF BI-LAYER CERAMIC DIELECTRIC LAMINATE

Jau-Ho Jean, R. T. Hsu, National Tsing Hua University

THE STUDY OF GRADED JOINING OF ALUMINA AND ZIRCONIA CERAMICS IN GREEN STATE

Boran Tian, Jiachen Liu, Tianjin University

DIRECT INTERCONNECTING OF  $\text{CePO}_4/\text{ZrO}_2$  COMPOSITES IN GREEN STATE

Libin Liu, Jiachen Liu, Tianjin University

BREAK: 3:20 PM – 3:40 PM

## SESSION MP3

### MICROSYSTEM MATERIALS & INTEGRATION

Chair: Bob Freer, University of Manchester/UMIST

**3:40 pm – 5 pm**

INTEGRATION CONCEPTS FOR THE FABRICATION OF LTCC STRUCTURES

Amanda Baker, Michael Lanagan, Clive Randall, Elena Semouchkina, George Semouchkin, Sayed-Khaled Rajab, Sorah Rhee, Peter Geggier, Guenter Fuhr, The Pennsylvania State University

DEVELOPMENT AND PROCESSING OF AN ANODIC BONDABLE LTCC TAPE

Edda Müller, B. Pawlowski, P. Rothe, R. Ehrt, A. Heymel, E. Weiland, K. Kaschlik, VIA Electronic GmbH

FABRICATION OF LTCC MICRO-FLUIDIC DEVICES USING SACRIFICIAL CARBON LAYERS

Hansu Birol, T. Maeder, C. Jacq, R. Passerini, Y. Fournier, S. Straessler, P. Ryser, Swiss Federal Institute of Technology

LTCC PHASE SHIFTER MODULES FOR RF-MEMS-SWITCH INTEGRATION

Thomas Bartnitzek, Edda Müller, VIA Electronic GmbH; Raymond van Dijk, TNO-FEL

## SESSION MP4

### DIMENSIONAL CONTROL IN LTCC SYSTEMS

Chairs: Adam Schubring, Visteon Corporation;  
Walter Rothlingshofer, Robert Bosch GmbH

**3:40 pm – 5 pm**

ZERO SHRINKAGE OF LTCC BY SELF-CONSTRAINED SINTERING

Torsten Rabe, Wolfgang A. Schiller, Federal Institute for Materials Research and Testing; Thomas Hochheimer, Heraeus Inc. Circuit Materials Division, USA; Christina Modes, Annette Kipka, W.C. Heraeus GmbH, CMD, Germany

SELF CONSTRAINED SINTERING LTCC - A RELIABLE SOLUTION FOR AUTOMOTIVE ELECTRONIC APPLICATION

Christina Modes, Annette Kipka, Quentin Reynolds, Michael Neidert, Stefan Malkmus, Frieder Gora, Heraeus Circuit Materials Division

VIA FILL FOR ZERO X-Y SHRINK LTCC TAPES

Weiming Zhang, Tom Hochheimer, Peter Bokalo, Heraeus Incorporated-Circuit Materials Division

NOVEL SELF-CONSTRAINED SINTERED COMPOSITES OF DIELECTRIC AND FERRITE LTCC TAPES FOR MICROWAVE APPLICATIONS

Marcel Hagymasi, Andreas Roosen, University of Erlangen-Nuremberg; Roman Karmazin, Steffen Walter, Siemens AG

# Tuesday, April 12

REGISTRATION: 7 AM - 8 PM

CONTINENTAL BREAKFAST: 7 AM - 8 AM

EXHIBIT HOURS: 5 PM - 8 PM

RECEPTION & DINNER IN EXHIBIT HALL

**KEYNOTE PRESENTATION: 8 AM - 8:55 AM**

**TITLE:** CERAMIC MICROSYSTEMS FOR AUTOMOTIVE APPLICATIONS

**SPEAKER:** GERHARD SCHNEIDER, ROBERT BOSCH GMBH

## SESSION TA1

### CERAMIC MICROSYSTEMS AND APPLICATIONS I

Chair: Leszek Golonka, Wroclaw University of Technology  
**9 am – 10:20 am**

PROGRESS IN MEMS AND MICRO SYSTEMS RESEARCH  
Chang Liu, University of Illinois at Urbana

MICROFABRICATION OF HIGHLY PIEZOELECTRIC MICROCANTILEVERS FOR SENSOR APPLICATIONS  
Wei-Heng Shih, Zuyan Shen, Wan Y. Shih, Drexel University

MINIATURIZED SENSOR ELEMENTS BASED ON LTCC TECHNOLOGY FOR AUTOMOTIVE AND AIRBORNE APPLICATIONS  
Ulrich Schmid, Helmut Seidel, Thomas Becker, Saarland University

LTCC SENSORS FOR ENVIRONMENTAL MONITORING SYSTEM  
Mario R. Gongora Rubio, Patrick B. Verdonck, Sergio Takeo Kofuji, Antonio C. Seabra, Emilio Del Moral Hernandez, Eliphaz W. Simões, Marcelo Bariatto A. Fontes, Instituto de Pesquisas Tecnológica (IPT)

## SESSION TA2

### PROCESSING INTEGRATED PASSIVES IN LTCC

Chair: Raghu Settaluri, Oregon State University  
**9 am – 10:20 am**

POST-THERMAL HEAT TREATMENT FOR ADJUSTING BURIED RESISTOR VALUES IN DuPONT 943 LTCC  
Daniel S. Krueger, Elizabeth Parker, Gregg Barner, Honeywell FM&T; Fernando Uribe, Scott Reed, Sandia National Laboratories

THIN FILM TECHNOLOGIES FOR INTEGRATED PASSIVES  
Kyung-Ku Choi, Shigeki Satou, TDK Corporation

CHARACTERIZATION OF DRIED THICK-FILM RESISTORS  
Klaus Krueger, Helmut-Schmidt University

METHODS TO IMPROVE YIELD AND EFFICIENCY IN LASER TRIM OF EMBEDDED COMPONENTS  
Donald M. Hague, Alf Holtz, W. M. Hague Company, Inc.

BREAK: 10:20 AM – 10:40 AM

## SESSION TA3

### CERAMIC MICROSYSTEMS AND APPLICATIONS II

Chair: Amy Moll, Boise State University  
**10:40 am – Noon**

NOVEL MICROSYSTEM APPLICATIONS WITH NEW TECHNIQUES IN LTCC  
Ken A. Peterson, Kamlesh Patel, Clifford Ho, Steve Rohde, Chris Nordquist, Charles Walker, Brian Wroblewski, Sandia National Laboratories

REAL-TIME, IN SITU, BIODETECTION AND QUANTIFICATION USING PIEZOELECTRIC MICROCANTILEVERS  
John-Paul McGovern, Wei-Heng Shih, Wan Y. Shih, Drexel University

NERVE-GAS SIMULANT, DIMETHYL METHYLPHOSPHONATE (DMMP) DETECTION USING ARRAY PIEZOELECTRIC MICROCANTILEVERS  
Wei-Heng Shih, Qing Zhu, Wan Y. Shih, Drexel University

PREPARATION OF POLYMERIC MICROSPHERES BY AN EMULSIFICATION/SOLVENT DIFFUSION PROCESS EMPLOYING LTCC MICROFLUIDIC STRUCTURES  
Mário Ricardo Gongora-Rubio, Márcio Rodrigues da Cunha, Alcione Penido de Oliveira Costa, Maria Inês Ré, Instituto de Pesquisas Tecnológicas

## SESSION TA4

### MATERIALS INTEGRATION IN LTCC

Chair: Larry Zawicki, Honeywell Federal Manufacturing and Technologies, LLC  
**10:40 am – Noon**

LOW SINTERING Ni-Cu-Zn-FERRITE TAPES FOR LTCC INTEGRATED INDUCTORS  
Stefan Barth, F. Bechtold, E. Müller, VIA Electronic GmbH; J. Mürbe, J. Töpfer, Fachhochschule Jena, Hermsdorfer Institut für Technische Keramik

MICRON SCALE CONDUCTORS AND INTEGRATED PASSIVES IN LTCCs BY ELECTROPHORETIC DEPOSITION  
Jonathan Van Tassel, Clive A. Randall, The Pennsylvania State University

BULK MATERIALS IN LTCC MULTILAYERS  
Michael Hintz, Technical University of Ilmenau

MINIATURIZING THE SIZE OF MICROWAVE FILTERS BY USING LTCC TECHNOLOGY WITH HYBRID DIELECTRICS  
W. S. Lee, Y. C. Lee, Y. Z. Chung, National Cheng Kung University

**GLOBAL BUSINESS COUNCIL: 1:30 PM - 4:30 PM**

**BUSINESS OF EMERGING MICROSYSTEMS**

**CHAIRS: MICHAEL O'NEILL, HERAEUS INCORPORATED-CIRCUIT MATERIALS DIVISION;  
MICHAEL LANAGAN, THE PENNSYLVANIA STATE UNIVERSITY**

**PANEL DISCUSSION**

**CERAMIC MICROSYSTEMS: THE PATH FORWARD**

**MODERATOR: DR. D. L. WILCOX, CONSULTANT**

**PANEL MEMBERS:**

MR. DANIEL AMEY, E. I. DUPONT

MR. JONATHAN BOST, JRB CONSULTING, LLC

DR. ART CHAIT, EOPLEX TECHNOLOGIES, INC.

MR. WALTER ROETHLINGSHOEFER, ROBERT BOSCH GMBH

PROF. DR. ANDREAS ROOSEN, UNIVERSITY OF ERLANGEN-NUREMBERG

RECEPTION & DINNER IN THE EXHIBIT HALL: 5 PM – 8 PM

Wednesday, April 13

REGISTRATION: 7 AM - 5 PM

CONTINENTAL BREAKFAST: 7 AM - 8 AM

EXHIBIT HOURS: 10 AM - 2 PM

REFRESHMENT BREAK & LUNCH IN EXHIBIT HALL

**KEYNOTE PRESENTATION: 8 AM - 8:55 AM**

**TITLE: INTEGRATED DESIGN AND SIMULATION TOOLS FOR MICROSYSTEMS PACKAGING:  
CURRENT CAPABILITIES AND FUTURE NEEDS**

**SPEAKER: MARC DESMULLIEZ, HERIOT WATT UNIVERSITY**

**SESSION WA1**

**DESIGN AND FABRICATION OF CERAMIC MICROSYSTEMS  
AND DEVICES**

Chair: Torsten Rabe, Federal Institute for Materials  
Research and Testing

**9 am – 10:20 am**

MODULAR MICRO REACTION SYSTEM INCLUDING CERAMIC COMPONENTS

Tassilo Moritz, Reinhard Lenk, Jörg Adler, Michael Zins, Fraunhofer Institute for Ceramic Technologies and Sintered Materials

CERAMICS IN MICROT TECHNOLOGY - MATERIALS, PROCESSING, DESIGN  
Hans-Joachim Ritzhaupt-Kleissl, Jürgen Haußelt, Robert Ruprecht, Forschungszentrum Karlsruhe, Institut für Materialforschung III

INTEGRATED DESIGN AND SIMULATION OF MICROFLUIDIC DEVICES

S. Krish Krishnamoorthy, Jerry Feng, Aditya S. Bedekar, Shankar Sundaram, CFD Research Corporation

FABRICATION OF MICROFLUIDIC OSCILLATORS BY LASER MILLING IN SINTERED LTCC AND QUARTZ SUBSTRATES

Rogério Furlan, Miguel Perez Tolentino, Idalia Ramos, Jorge J. Santiago-Aviles, University of Puerto Rico at Humacao

**SESSION WA2**

**DESIGN, SIMULATION AND MODELING**

Chair: Daniel Amey, DuPont Microcircuit Materials

**9 am – 10:20 am**

MATERIAL SELECTION FOR CERAMIC T/R MODULE PACKAGES  
Reichi Yamada, Andrew Piloto, Ed Graddy, Gerardo Aguirre, Mark Eblen, Arne Knudsen, Kyocera America, Inc.

DESIGNING WITH LTCC IN HIGH FREQUENCY APPLICATIONS

Timothy P. Mobley, Daniel Amey, DuPont Microcircuit Materials

HIGH-PERFORMANCE CO-PLANAR FERRITE INDUCTORS FOR RF APPLICATIONS

Michael D. Phillips, Raghu K. Settaluri, Chih-Hung Chang, Oregon State University

NOVEL CROSSTALK SUPPRESSION SCHEMES EMPLOYING MAGNETIC THIN FILMS

Arien Sligar, Raghu K. Settaluri, Chih-Hung Chang, Oregon State University

BREAK: 10:20 AM – 10:40 AM

### SESSION WA3

#### CERAMIC MICROSYSTEMS AND DEVICES

Chair: Klaus-Dieter Lang, Fraunhofer IZM

**10:40 am - Noon**

##### LTCC MICROFLUIDIC SYSTEM

Leszek J. Golonka, J. Radojewski, H. Roguszczak, M. Stefanow, T. Zawada, Wrocław University of Technology

##### MESO-SCALE REMOTE PLASMA GENERATOR USING LTCC TECHNOLOGY

Roberto Katsuhiko Yamamoto, FATEC-SP/CEETEPS and LSI/PSI/USP, Patrick Bernard Verdonck - LSI/PSI/USP; Mário Ricardo Gongora-Rubio - IPT

##### MICRO-CHANNEL DEVICE IN LTCC

Amy J. Moll, John M. Youngsman, Donald G. Plumlee, Boise State University

##### PROCESSING OF CERAMIC MICROPARTS VIA LOW-PRESSURE INJECTION MOLDING

Marcus Müller, Werner Bauer, Hans-Joachim Ritzhaupt-Kleissl, Forschungszentrum Karlsruhe, Institut für Materialforschung III

### SESSION WA4

#### CHARACTERIZING MATERIALS INTEGRATION EFFECTS

Chair: Daniel Krueger, Honeywell FM&T

**10:40 am - Noon**

##### CHARACTERIZATION OF DIELECTRICS AND CONDUCTORS FOR CERAMIC MICROSYSTEMS AT MICROWAVE FREQUENCY

Michael T. Lanagan, L. Haney, S. Perini, K. Rajab, E. Semouchkina, The Pennsylvania State University

##### MATERIALS COMPATIBILITY ISSUES IN LTCC TECHNOLOGY AND THEIR EFFECTS ON STRUCTURE AND ELECTRICAL PROPERTIES

Hansu Birol, T. Maeder, C. Jacq, P. Ryser, Swiss Federal Institute of Technology

##### SINTERING BEHAVIOR OF LTCC AND INFLUENCE OF SILVER ON THE SINTERING BEHAVIOR

Dragan Tramosljika, Joerg Schaefer, Robert Bosch GmbH (AE/WZK); Georg Rixecker, Fritz Aldinger, Max Planck Institute

##### STUDY ON THE INTERFACIAL REACTION BETWEEN SILVER ELECTRODE AND LA-Si-B-O-MULLITE GLASS CERAMICS

Yu Ju Wang, Wen-Cheng J. Wei, National Taiwan University

LUNCH IN EXHIBIT HALL: NOON – 1 PM

### KEYNOTE PRESENTATION: 1 PM - 1:55 PM

**TITLE:** NEXT-GENERATION MICROSYSTEMS: INTEGRATION TECHNOLOGIES AND OPPORTUNITIES FOR CERAMICS

**SPEAKER:** DUANE DIMOS, SANDIA NATIONAL LABORATORIES

### SESSION WP1

#### CERAMICS: THE MICROSYSTEM DEVICE ENABLER

Chair: Paul Clem, Sandia National Laboratories

**2 pm – 3:20 pm**

##### LTCC WET CHEMICAL ANALYSIS MESO-SYSTEMS

Núria Ibáñez-García, Alonso Chamarro, Julián Mendes da Rocha, Mario Zaira Gongora-Rubio, University Autonomous of Barcelona

##### DEVELOPMENT OF MICROFLUIDIC DEVICES USING LTCC SUBSTRATES

Roberto Eduardo Bruzetti Leminski, Eliphaz Wagner Simões, Rogerio Furlan, Idalia Ramos, Mário Ricardo Gongora-Rubio, Nilton Itiro Morimoto, J. J. Santiago-Aviles, Universidade de São Paulo

##### HOT-PLATE GAS SENSORS - ARE CERAMICS BETTER?

Kita Jaroslaw, Frank Rettig, Ralf Moos, University of Bayreuth; Karl-Heinz Drüe, Heiko Thust, Technical University of Ilmenau

##### A COMPARATIVE STUDY OF TECHNOLOGY AND ARCHITECTURE FOR ACTUATORS REALIZED WITH PZT LAYERS IN LTCC STRUCTURES

Darko Belavic, Marko Hrovat, Janez Holc, Marija Kosec, Barbara Maliè, Marina Santo Zarnik, Sivo Drnovšek, Jena Cilensek, HIPOT-R&D and Jozef Stefan Institute

### SESSION WP2

#### INK JET PRINTING TECHNOLOGY

Chairs: Veena Tikare & Tom Swiler, Sandia National

Laboratories

**2 pm – 3:20 pm**

##### INK JET PRINTING AND SINTERING PZT

Brian Derby, Tianming Wang, University of Manchester

##### DoD-PRINTING OF CONDUCTIVE SILVER TRACKS

Dominik Cibis, Klaus Krueger, Prof. Dr.-Ing., Helmut-Schmidt University

BREAK: 3:20 PM – 3:40 PM

## SESSION WP3

### MICROSYSTEM MATERIALS AND FABRICATION

Chair: Dean Anderson, TRS Ceramics, Inc. and The Pennsylvania State University

**3:40 pm – 5 pm**

VIA FORMATION IN LTCC TAPE: A COMPARISON OF TECHNOLOGIES

Klaus-Jurgen Wolter, Dresden University of Technology; Gunter Hagen, KMS Kemmer Technology Center - Dresden

DIRECT-WRITE LASER EXPOSURE OF PHOTSENSITIVE CONDUCTIVE INKS USING SHAPED-BEAM OPTICS

Scott S. Corbett, Jeff Strole, Wilson Lu, MicroConnex; Edward Swenson, ElectroScientific Industries

HIGH-VOLUME PRINT FORMING, HVPF™ - A NEW METHOD FOR MANUFACTURING LARGE VOLUMES OF COMPLEX METAL-CERAMIC AND HYBRID COMPONENTS

Arthur L. Chait, EoPlex Technologies, Inc.

COLD LOW PRESSURE LAMINATION OF STRUCTURED CERAMIC GREEN TAPES

Andreas Roosen, Karin Schindler, University of Erlangen – Nuremberg

CLOSING REMARKS: 5 PM – 5:10 PM

### Technical Conference Registration

Your CICMT registration fee includes all Technical Sessions, Refreshment Breaks, Lunch, Receptions, Dinner and a Proceedings on CD.

### Conference Proceedings

If you are unable to attend the Conference and would like a copy of the Proceedings on CD, you may purchase a copy by using the registration form. Your copy will be mailed to you after the event.

The cost is \$150 for members; \$275 for nonmembers,\* plus shipping and handling. Reserve your copy on-line at [www.cicmt.org](http://www.cicmt.org) or call 202-548-4001.

\*includes 1 year IMAPS membership at no charge.

### Conference Hotel

BALTIMORE MARRIOTT WATERFRONT HOTEL  
700 ALICEANNA STREET  
BALTIMORE, MD 21202  
PHONE: 410-385-3000

SINGLE.....\$169

PLEASE REFERENCE THE AMERICAN CERAMIC SOCIETY WHEN MAKING RESERVATION TO RECEIVE THE SPECIAL GROUP RATE.

### Travel



FLY UNITED AND SAVE \$\$\$

Take 5% off any United, United Express or Shuttle by United published fares, including First Class, in effect when tickets are purchased, subject to all applicable restrictions, or take 10% off applicable BUA, or like fares, in effect when tickets are purchased 7 days in advance. Reservations and schedule information may be obtained by calling the United Meetings desk at 1-800-521-4041 and referencing Meeting ID #583IW.

## Tabletop Exhibition

*"An opportunity to talk to industry leaders"*

April 12 - 13, 2005

**Tuesday - April 12**      **5 pm - 8 pm (Exhibit Hours)**

Reception & Dinner will be held in the Exhibit Hall.

**Wednesday - April 13**      **10 am - 2 pm (Exhibit Hours)**

Refreshment Break & Lunch will be held in the Exhibit Hall.

### Tabletop Registration Fees

	On or before 3/15/05	After 3/15/05
IMAPS/ACerS Corporate/Organizational Member	\$600 per booth	\$700 per booth
IMAPS/ACerS Non-Corporate/Organizational Member	\$750 per booth	\$850 per booth

### Included With Your Registration

- one (1) six foot draped table
  - two (2) chairs
  - carpeting
- one (1) Technical Proceedings CD-ROM
- one (1) List of Attendees (*Sent after the event*)
- Exhibit Hall admission for two (2) booth personnel

Additional booth personnel are welcome at an extra cost of \$50 per person.  
Registrations for the full conference are not included, but are available at an additional cost.

Shipments are made to the hotel directly. You save money because no service contractor is involved!

Baltimore Marriott Waterfront Hotel  
700 Aliceanna Street  
Baltimore, MD 21202  
Ph: 410-385-3000; Fax: 410-385-0330

### Cancellation Policy

Booth cancellations made before 3/15/05 will receive a refund minus \$100 handling fee.  
Booths cancelled after 3/15/05 will not be refunded.

**For more information visit [www.cicmt.org](http://www.cicmt.org) or contact:**

Ann Bell, [abell@imaps.org](mailto:abell@imaps.org); 202-548-8717

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### Marketing Feature Available for Exhibitors

IMAPS will provide all exhibitors an opportunity to provide an unlimited amount of pages of company products, services and contact information to be included on the post-event Technical Proceedings CD-ROM. These CD-ROMs are provided to all technical conference attendees and are for sale through IMAPS to all industry professionals.

This new and unique feature will promote the Exhibitor's products and abilities much longer than just the Conference.

There is a charge of \$50 for this optional feature. This equates to unlimited pages of advertising for just \$50.

These submissions must be sent electronically, in Word or PDF format, to [abell@imaps.org](mailto:abell@imaps.org) no later than March 15, 2005.

## Upcoming Events...

**Advanced Technology Workshop on  
Reliability of Advanced Electronic Packages  
and Devices in Extreme Cold Environments**

Hilton Pasadena Hotel

Pasadena, CA

**February 21 - 23, 2005**

Visit [www.imaps.org/extremecold](http://www.imaps.org/extremecold) for more information

**International Conference and Exhibition on  
Device Packaging**

Hilton Scottsdale Resort & Villas

Scottsdale, AZ

**March 13 - 16, 2005**

Visit [www.imaps.org/devicepackaging](http://www.imaps.org/devicepackaging) for more information

**GBC Winter 2005 Meeting**

*Co-located with Device Packaging Conference and Exhibition*

**The Business of Device Packaging and 2005 Industry Forecast**

Hilton Scottsdale Resort & Villas

Scottsdale, AZ

**March 16 - 17, 2005**

Visit [www.imaps.org/gbc](http://www.imaps.org/gbc) for more information

**Advanced Technology Workshop and Tabletop Exhibition on  
Military, Aerospace, Space and Homeland Security:  
Packaging Issues and Applications**

Sacramento Marriott Rancho Cordova

Rancho Cordova, CA

**May 3 - 5, 2005**

Visit [www.imaps.org/military](http://www.imaps.org/military) for more information

**Topical Workshop and Tabletop Exhibition on  
Flip Chip Technologies**

Marriott Austin at the Capitol

Austin, TX

**June 20 - 23, 2005**

Visit [www.imaps.org/flipchip](http://www.imaps.org/flipchip) for more information

**IMAPS 2005**

**38th International Symposium on Microelectronics**

Philadelphia Convention Center

Philadelphia, PA

**September 25 - 29, 2005**

Visit [www.imaps2005.org](http://www.imaps2005.org) for more information

# REGISTRATION FORM

Ceramic Interconnect and Ceramic Microsystems Technologies Conference (CICMT) - April 10-13, 2005

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

CO-LOCATED WITH THE 107<sup>TH</sup> ANNUAL MEETING & EXPOSITION WITH TECHNOLOGY FAIR ([WWW.CERAMICS.ORG/MEETINGS/AM2005](http://WWW.CERAMICS.ORG/MEETINGS/AM2005))

Dr.  Mr.  Ms. IMAPS Member ID# \_\_\_\_\_ ACerS Member ID# \_\_\_\_\_  
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## REGISTRATION FEES: EARLY REGISTRATION ENDS 3/15/05

### CICMT PROGRAM ONLY

(On or before 3/15) (After 3/15)

<input type="checkbox"/> IMAPS/ACerS Member	\$545	\$645
<input type="checkbox"/> Non-member*	\$645	\$745
*Nonmember fee includes a 1 year IMAPS membership.		
<input type="checkbox"/> Speaker/Chair/Student	\$375	\$475

### CICMT & 107<sup>TH</sup> ANNUAL MEETING

<input type="checkbox"/> IMAPS/ACerS Member	\$700	\$800
<input type="checkbox"/> Non-member	\$800	\$900

For more information on the 107<sup>th</sup> Annual Meeting, Exposition & Technology Fair visit [www.ceramics.org/meetings/am2005](http://www.ceramics.org/meetings/am2005)

### WHICH SOCIETY ARE YOU A MEMBER OF?

IMAPS  ACerS  Both  Neither

### ADDITIONAL PURCHASES

<input type="checkbox"/> Spouse/Guest (meals only)	\$150	\$150
<input type="checkbox"/> CD Proceedings (IMAPS/ACerS Member Rate)	\$150	\$150
<input type="checkbox"/> CD Proceedings (Non-Member Rate)	\$275	\$275
<input type="checkbox"/> Add to Ship in the US	\$7	\$7
<input type="checkbox"/> Add to Ship Overseas	\$25	\$25

### CICMT Tabletop Exhibits (April 12 & 13)

<input type="checkbox"/> IMAPS/ACerS Member (Corporate/Org.)	\$600	\$700
<input type="checkbox"/> Non-member	\$750	\$850
<input type="checkbox"/> Yes, we will participate in the CD-ROM*	\$50	\$50

\*Must be submitted electronically as a Word or PDF file to Ann Bell ([abell@imaps.org](mailto:abell@imaps.org)) no later than March 15, 2005. Visit [www.cicmt.org](http://www.cicmt.org) for detailed information.

### Housing (Hotel Cut-off is March 11, 2005)

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

Baltimore Marriott Waterfront Hotel  
700 Aliceanna Street  
Baltimore, MD 21202

Phone: 410-385-3000; Fax: 410-385-0330

When making reservation, please reference The American Ceramic Society

**Single \$169**

A deposit for the first night's room and tax is required to hold your room. Deposit refunded if reservation is cancelled more than 72 hours prior to arrival.

## PAYMENT

AM05CI

Registration Fee: \$ \_\_\_\_\_  
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Tabletop Exhibits: \$ \_\_\_\_\_  
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Check enclosed payable in US funds to The American Ceramic Society

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Mail this form with payment to: The American Ceramic Society \* L-2625 \* P. O. Box 600001 \* Columbus, OH 43265-0866 USA. For credit card transactions, register on-line: [www.cicmt.org](http://www.cicmt.org); or register by phone with your credit card by calling 614-794-5890; Fax: 614-794-5892. Cancellations will be refunded (less a \$50 processing fee) only if written notice is postmarked on or before April 4, 2005. No refunds will be granted after April 4, 2005.

The American Ceramic Society

L-2625

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