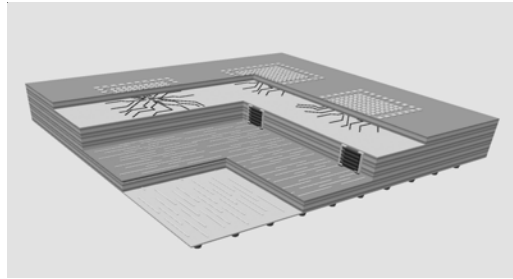


IMAPS/ACerS 2nd International Conference and Exhibition on Ceramic Interconnect and Ceramic Microsystems Technologies (CICMT)

GRAND HYATT HOTEL
DENVER, COLORADO - USA
APRIL 24 - 27, 2006



GENERAL CO-CHAIRS:

Kevin G. Ewsuk, Sandia National Laboratories
kgewsuk@sandia.gov

Michael Ehlert, Barry Industries Inc.
mike.ehlert@barryind.com

TECHNICAL PROGRAM CO-CHAIRS:

Christian Hoffmann, EPCOS OHG
christian.hoffmann@epcos.com

Michael Lanagan, Penn State University
mlanagan@psu.edu

CO-SPONSORED BY:

INTERNATIONAL MICROELECTRONICS AND
PACKAGING SOCIETY (IMAPS)

Everything in electronics between the chip
and the system!

&

THE AMERICAN CERAMIC SOCIETY (ACERS)



CICMT SESSION OUTLINE

Session TA1: Materials and Processes for Microsystems

Chairs: Dan Krueger, Honeywell; Heiko Thust, Technical University of Ilmenau

Session TA2: Co-Firing Processes and Dimensional Control in LTCC

Chair: Weiming Zhang, Heraeus Microcircuits

Session TP1: Microsystems Applications I

Chairs: W. Kinzy Jones, Florida International University; S. (Krish) Krishnamoorthy, CFD Research Corporation

Session TP2: Processing and Design of Integrated Passives in LTCC I

Chair: Tim Mobley, DuPont

Session TP3: Novel Synthesis Technology for Multilayer Electronics I

Chairs: David Cann, Oregon State University; Jun Akedo, Advanced Manufacturing Research Institute

Session TP4: Processing and Design of Integrated Passives in LTCC II

Chairs: Torsten Rabe, Federal Institute for Materials Research and Testing; Klaus-Dieter Lang, Fraunhofer IZM

Session WA1: International Session on Microsystems

Chair: Dean Anderson, Penn State University

Session WA2: Microsystem Applications II

Chairs: Amy Moll, Boise State University; Jens Mueller, Technical University of Ilmenau, ZIK MacroNano

Session WA3: Direct Write Technology

Chair: Paul Clem, Sandia National Laboratories

Session WP1: Microsystem Materials and Processes

Chairs: Ken Peterson, Sandia National Laboratories; Larry Zawicki, Honeywell

Session WP2: High Frequency Characterization

Chairs: Michael Janezic, NIST – Boulder; Raghu Settaluri, Oregon State University

Session WP3: Interactive Forum (Poster Session)

Chairs: Martin Oppermann, EADS Deutschland GmbH; Walter Rothlingshofer, Robert Bosch GmbH

Session THA1: International Session on Microsystems

Chairs: Dave Wilcox, Consultant; Leszek Golonka, Wroclaw University

Session THA2: Novel Synthesis Technology for Multilayer Electronics II - Aerosol Deposition

Chair: Yong Cho, Yonsei University

Early Registration Discount Ends: March 25, 2006
Hotel Cut-off: March 25, 2006

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 2nd 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. Experience shows this conference is THE premier global forum on ceramic interconnect and ceramic microsystems, two of the fastest growing areas of ceramic technology.

We thank our 22 member international advisory board (see www.cicmt.org), the Technical Co-Chairs, Michael Lanaghan (Penn State University) and Christian Hoffmann (EPCOS) the session organizers/leaders, and the IMAPS and ACerS staff for their support and leadership in putting this program together.

The participation of speakers from more than 70 different organizations across Europe, Asia, North and South America reflect the international scope of this three-day conference. These speakers represent a range of interests from University Research through Manufactures to Users. Three invited keynote speakers will provide comprehensive overviews of current and future directions in key areas, including: Government R&D, Medical Devices and Industrial Uses. Additionally, 88 contributed papers in 14 different sessions including oral presentations and 1:1 interactions will address the latest advances in ceramic interconnect and ceramic microsystems.

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 or contact Ann Bell (abell@imaps.org), 202-548-8717. Space is limited, so reserve yours as soon as possible.

The 2nd International Conference on Ceramic Interconnect and Ceramic Microsystems Technologies has all of the ingredients of a very successful meeting; please join us in Denver, April 24-27, 2006.

Kevin Ewsuk and Mike Ehlert
General Chairs

CICMT Program Grid			
Monday, April 24			
4:00 pm – 7:00 pm	Registration		
6:00 pm - 7:00 pm	Opening Reception		
Tuesday, April 25			
7:00 am – 5:30 pm	Registration		
10:00 am - 7:00 pm	Exhibit Hours		
8:30 am – 9:00 am	Keynote Presentation Title: MEMS Technologies for Single-Chip RF Front Ends Speaker: Clark Nguyen, University of Michigan		
9:00 am – 9:30 am	Keynote Presentation Title: New Applications in Implantable Medical Devices Speaker: Joyce Yamamoto, Medtronic		
9:30 am – 10:00 am	Keynote Presentation Title: A Specialist Manufacturer's Outlook on the Future of Ceramics and Ceramic Microsystems Speaker: Franz Bechtold, Via Electronics		
10:00 am – 10:30 am	Break in Exhibit Hall		
	<table border="0" style="width: 100%;"> <tr> <td style="width: 50%; text-align: center;">Ceramic Micro Systems Track</td> <td style="width: 50%; text-align: center;">Ceramic Interconnect Track</td> </tr> </table>	Ceramic Micro Systems Track	Ceramic Interconnect Track
Ceramic Micro Systems Track	Ceramic Interconnect Track		
Topical Sessions: 10:30 am - 12:10 pm	<table border="0" style="width: 100%;"> <tr> <td style="width: 50%;"> Session TA1: Materials and Processes for Microsystems Chairs: Dan Krueger, Honeywell; Heiko Thust, Technical University of Ilmenau </td> <td style="width: 50%;"> Session TA2: Co-Firing Processes and Dimensional Control in LTCC Chair: Weiming Zhang, Heraeus Microcircuits </td> </tr> </table>	Session TA1: Materials and Processes for Microsystems Chairs: Dan Krueger, Honeywell; Heiko Thust, Technical University of Ilmenau	Session TA2: Co-Firing Processes and Dimensional Control in LTCC Chair: Weiming Zhang, Heraeus Microcircuits
Session TA1: Materials and Processes for Microsystems Chairs: Dan Krueger, Honeywell; Heiko Thust, Technical University of Ilmenau	Session TA2: Co-Firing Processes and Dimensional Control in LTCC Chair: Weiming Zhang, Heraeus Microcircuits		
12:10 pm - 1:20 pm	Lunch in Exhibit Hall		
Topical Session: 1:20 pm - 3:00 pm	<table border="0" style="width: 100%;"> <tr> <td style="width: 50%;"> Session TP1: Microsystems Applications I Chairs: W. Kinzy Jones, Florida International University; S. (Krish) Krishnamoorthy, CFD Research Corporation </td> <td style="width: 50%;"> Session TP2: Processing and Design of Integrated Passives in LTCC I Chair: Tim Mobley, DuPont </td> </tr> </table>	Session TP1: Microsystems Applications I Chairs: W. Kinzy Jones, Florida International University; S. (Krish) Krishnamoorthy, CFD Research Corporation	Session TP2: Processing and Design of Integrated Passives in LTCC I Chair: Tim Mobley, DuPont
Session TP1: Microsystems Applications I Chairs: W. Kinzy Jones, Florida International University; S. (Krish) Krishnamoorthy, CFD Research Corporation	Session TP2: Processing and Design of Integrated Passives in LTCC I Chair: Tim Mobley, DuPont		
3:00 pm - 3:30 pm	Break in Exhibit Hall		
Topical Session: 3:30 pm - 5:30 pm	<table border="0" style="width: 100%;"> <tr> <td style="width: 50%;"> Session TP3: Novel Synthesis Technology for Multilayer Electronics I Chairs: David Cann, Oregon State University; Jun Akedo, Advanced Manufacturing Research Institute </td> <td style="width: 50%;"> Session TP4: Processing and Design of Integrated Passives in LTCC II Chairs: Torsten Rabe, Federal Institute for Materials Research and Testing; Klaus-Dieter Lang, Fraunhofer IZM </td> </tr> </table>	Session TP3: Novel Synthesis Technology for Multilayer Electronics I Chairs: David Cann, Oregon State University; Jun Akedo, Advanced Manufacturing Research Institute	Session TP4: Processing and Design of Integrated Passives in LTCC II Chairs: Torsten Rabe, Federal Institute for Materials Research and Testing; Klaus-Dieter Lang, Fraunhofer IZM
Session TP3: Novel Synthesis Technology for Multilayer Electronics I Chairs: David Cann, Oregon State University; Jun Akedo, Advanced Manufacturing Research Institute	Session TP4: Processing and Design of Integrated Passives in LTCC II Chairs: Torsten Rabe, Federal Institute for Materials Research and Testing; Klaus-Dieter Lang, Fraunhofer IZM		
5:30 pm - 7:00 pm	Reception in Exhibit Hall		
Wednesday, April 26			
7:00 am - 5:00 pm	Registration		
10:00 am - 4:00 pm	Exhibit Hours		
8:30 am - 10:00 am	Session WA1: International Session on Microsystems Chair: Dean Anderson, Penn State University		
10:00 am - 10:30 am	Break in Exhibit Hall		
Topical Sessions: 10:30 am - 12:10 pm	<table border="0" style="width: 100%;"> <tr> <td style="width: 50%;"> Session WA2: Microsystem Applications II Chairs: Amy Moll, Boise State University; Jens Mueller, Technical Univ. of Ilmenau, ZIK MacroNano </td> <td style="width: 50%;"> Session WA3: Direct Write Technology Chair: Paul Clem, Sandia National Laboratories </td> </tr> </table>	Session WA2: Microsystem Applications II Chairs: Amy Moll, Boise State University; Jens Mueller, Technical Univ. of Ilmenau, ZIK MacroNano	Session WA3: Direct Write Technology Chair: Paul Clem, Sandia National Laboratories
Session WA2: Microsystem Applications II Chairs: Amy Moll, Boise State University; Jens Mueller, Technical Univ. of Ilmenau, ZIK MacroNano	Session WA3: Direct Write Technology Chair: Paul Clem, Sandia National Laboratories		
12:10 pm - 1:20 pm	Lunch in Exhibit Hall		
Topical Sessions: 1:20 pm - 3:00 pm	<table border="0" style="width: 100%;"> <tr> <td style="width: 50%;"> Session WP1: Microsystem Materials and Processes Chairs: Ken Peterson, Sandia National Laboratories; Larry Zawicki, Honeywell </td> <td style="width: 50%;"> Session WP2: High Frequency Characterization Chairs: Michael Janezic, NIST – Boulder; Raghu Settalur, Oregon State University </td> </tr> </table>	Session WP1: Microsystem Materials and Processes Chairs: Ken Peterson, Sandia National Laboratories; Larry Zawicki, Honeywell	Session WP2: High Frequency Characterization Chairs: Michael Janezic, NIST – Boulder; Raghu Settalur, Oregon State University
Session WP1: Microsystem Materials and Processes Chairs: Ken Peterson, Sandia National Laboratories; Larry Zawicki, Honeywell	Session WP2: High Frequency Characterization Chairs: Michael Janezic, NIST – Boulder; Raghu Settalur, Oregon State University		
3:00 pm - 5:00 pm	Session WP3: Interactive Forum (Poster Session) <i>One-on-One Interactive Forum. This is your chance for detailed interaction with authors whose work is too good to miss.</i> Chairs: Martin Oppermann, EADS Deutschland GmbH; Walter Rothlingshofer, Robert Bosch		
Thursday, April 27			
7:30 am - Noon	Registration		
8:20 am - 9:50 am	Session THA1: International Session on Microsystems Chairs: Dave Wilcox, Consultant; Leszek Golonka, Wroclaw University		
9:50 am - 10:20 am	Break		
10:20 am - Noon	Session THA2: Novel Synthesis Technology for Multilayer Electronics II - Aerosol Deposition Chair: Yong Cho, Yonsei University		
Noon	Closing Remarks		

Monday, April 24

REGISTRATION: 4:00 PM - 7:00 PM

WELCOME RECEPTION: 6:00 PM – 7:00 PM

Tuesday, April 25

REGISTRATION: 7:00 AM - 5:30 PM

CONTINENTAL BREAKFAST: 7:00 AM - 8:00 AM

EXHIBIT HOURS: 10:00 AM - 7:00 PM

REFRESHMENT BREAKS, LUNCH & RECEPTION IN EXHIBIT HALL

OPENING REMARKS: 8:15 AM - 8:30 AM

CONFERENCE CHAIRS

KEYNOTE PRESENTATION: 8:30 AM - 9:00 AM

TITLE: MEMS TECHNOLOGIES FOR SINGLE-CHIP RF FRONT ENDS

SPEAKER: CLARK NGUYEN, UNIVERSITY OF MICHIGAN

KEYNOTE PRESENTATION: 9:00 AM - 9:30 AM

TITLE: NEW APPLICATIONS IN IMPLANTABLE MEDICAL DEVICES

SPEAKER: JOYCE YAMAMOTO, MEDTRONIC

KEYNOTE PRESENTATION: 9:30 AM - 10:00 AM

TITLE: A SPECIALIST MANUFACTURER'S OUTLOOK ON THE FUTURE OF CERAMICS AND CERAMIC MICROSYSTEMS

SPEAKER: FRANZ BECHTOLD, VIA ELECTRONICS

BREAK IN EXHIBIT HALL: 10:00 AM – 10:30 AM

CICMT Tabletop Exhibition

Tuesday, April 25th

10:00 am - 7:00 pm

(Reception in the Exhibit Hall: 5:30 PM - 7:00 PM)

Wednesday, April 26th

10:00 am - 4:00 pm

SESSION TA1: MATERIALS AND PROCESSES FOR MICROSYSTEMS

Chairs: Dan Krueger, Honeywell; Heiko Thust, Technical
University of Ilmenau
10:30 am – 12:10 pm

COMPUTER-AIDED DESIGN AND PROCESSING OF 3D MICRO-CERAMIC STRUCTURES

Yoshinari Miyamoto, Soshu Kiriahra, Hideaki Kanaoka, Keitarou Hino,
Osaka University

FABRICATION OF A THREE-DIMENSIONAL TERAHERTZ WAVE PHOTONIC CRYSTALS BY ASSEMBLING MONOSIZED SPHERICAL PARTICLES

Akira Kawasaki, Kenta Takagi, Tohoku University

SYNTHESIS OF 10- μ m-THICK LEAD ZIRCONATE TITANATE FILMS ON 2 INCH Si SUBSTRATES FOR PIEZOELECTRIC FILM DEVICES

Takashi Iijima, Satoko Osone, Yoshiro Shimojo, Hideki Nagai, National
Institute of Advanced Industrial Science and Technology (AIST)

MEMS ULTRASONIC SENSOR ARRAY WITH THICK FILM PZT TRANSDUCERS

Soeren Hirsch, University of Magdeburg

AN INVESTIGATION OF PIEZOELECTRIC PROPERTIES OF THE THICK-FILM PZT ACTUATORS ON CERAMIC SUBSTRATES

Darko Belavic, Marina Santo Zarnik, Janez Holc, Marko Hrovat, Marija
Kosec, Silvo Drnovsek, Jena Cilensek, Srecko Macek, Jozef Stefan In-
stitute

SESSION TA2: CO-FIRING PROCESSES AND DIMENSIONAL CONTROL IN LTCC

Chair: Weiming Zhang, Heraeus Microcircuits
10:30 am – 12:10 pm

HOT EMBOSsing - AN ALTERNATIVE METHOD TO PRODUCE CAVITIES IN CERAMIC MULTILAYER

Torsten Rabe, Martin Schmidt, Petra Kuchenbecker, Baerbel Schulz,
Federal Institute for Materials Research and Testing

DEVELOPMENT OF SELF-CONSTRAINED LTCC STRUCTURES

Tom Hochheimer, Frans Lautzenhiser, Weiming Zhang, Heraeus TFD

FACTORS INFLUENCING THE SHRINKAGE TOLERANCE OF LTCC GREEN TAPES

Georg Besendörfer, Andreas Roosen, University of Erlangen-Nuremberg;
Christina Modes, W.C. Heraeus GmbH; Thomas Betz, Kerafol GmbH

DISCONTINUOUS SINTER-FORGING OF A GLASS-CERAMIC COMPOSITE USED IN LTCC TECHNOLOGY

Jean-Baptiste Ollagnier, Jürgen Rödel, Darmstadt University of Tech-
nology

LIQUID PHASES IN LTCC – KEY TO TAILORED MATERIALS

Markus Eberstein, Torsten Rabe, Wolfgang.A. Schiller, Federal Insti-
tute for Materials Research and Testing (BAM)

LUNCH IN EXHIBIT HALL: 12:10 PM – 1:20 PM

SESSION TP1: MICROSYSTEMS APPLICATIONS I

Chairs: W. Kinzy Jones, Florida International University;
S. (Krish) Krishnamoorthy, CFD Research Corporation
1:20 pm – 3:00 pm

DEVELOPMENT OF AN LTCC BASED SMALL COMBUSTOR

Jorge J. Santiago-Avilés, Rogerio Furlan, Patricio Espinoza-Vallejos,
Miguel Perez-Tolentino, University of Pennsylvania

DEVELOPMENT OF A MULTI-CHANNEL ELECTRON MULTIPLIER USING A LTCC / THICK SILVER COFIREd STRUCTURE

Feng Zhang, W. Kinzy Jones, Florida International University

LTCC-BASED MICROTHRUSTERS FOR NANOSATELLITE PROPULSION

Kamlesh D. Patel, Kenneth A. Peterson, Robert W. Crocker, Sandia
National Laboratory

FABRICATION OF A MONOPROPELLANT MICRO-NOZZLE USING LOW TEMPERATURE CO-FIRED CERAMICS

Matthew McCrink, D. G. Plumlee, A. J. Moll, Boise State University; J.
Steciak, University of Idaho

HIGH POWER LED PACKAGE BASED ON LTCC

Byeung Gyu Chang, Ki Pyo Hong, Sung Yeol Park, Seung Gyo Jeong,
Jung Kyu Park, Samsung Electro-Mechanics

SESSION TP2: PROCESSING AND DESIGN OF INTEGRATED PASSIVES IN LTCC I

Chair: Tim Mobley, DuPont
1:20 pm – 3:00 pm

INCREASED USAGE OF INTEGRATED PASSIVE COMPONENTS IN LOW TEMPERATURE CO-FIRED CERAMIC (LTCC) FOR THE MICROELEC- TRONIC INDUSTRY

Steve Annas, Paul Alpers, Natel Engineering Company, Inc.

AEROSOL DEPOSITION PROCESS AS ROOM-TEMPERATURE FABRICA- TION TECHNOLOGY FOR INTEGRATED RF MODULES

Takaaki Tsurumi, Song-Min Nam, Mihoko Momotani, Hirofumi Kakemoto,
Satoshi Wada, Tokyo Institute of Technology; Jun Akedo, National Insti-
tute of Advanced Industrial Science and Technology

PHYSICAL MODEL BASED DESIGN OPTIMIZATION FOR LTCC RF INDUCTORS

Jens Mueller, Rubén Perrone, Technical Univ. of Ilmenau, ZIK MacroNano

SOFT MAGNETIC PROPERTIES OF Fe/Ni-Zn-Cu-FERRITE FILM BY AEROSOL DEPOSITION

Seiich Miyai, Kaoru Kobayashi, Satoshi Sugimoto, Jun Akedo, Sony Cor-
poration

NOVEL THROUGH-GROUND VIA MODELS FOR THE DESIGN OF MULTILAYERED COMPACT PASSIVES

Raghu K. Settaluri, Oregon State University

BREAK IN EXHIBIT HALL: 3:00 PM – 3:30 PM

**SESSION TP3: NOVEL SYNTHESIS TECHNOLOGY
FOR MULTILAYER ELECTRONICS I**

Chairs: David Cann, Oregon State University; Jun Akedo,
Advanced Manufacturing Research Institute
3:30 pm – 5:30 pm

MICRO-PATTERNING OF PZT THIN FILMS WITH OXIDE ELECTRODE BY
USING SELF-ASSEMBLED MONOLAYER
Hisao Suzuki, Tatsuo Fujinami, Shizuoka University; Hidetoshi Miyazaki,
Shimane University

LOW TEMPERATURE GROWTH OF EPITAXIAL $Pb(Zr,Ti)O_3$ FILM ON
VARIOUS SUBSTRATES BY EXCIMER LASER-ASSISTED METAL ORGANIC
DEPOSITION(ELAMOD)
Tetsuo Tsuchiya, K. Daoudi, T. Manabe, I. Yamabuchi, T. Kumagai, S.
Mizuta, National Institute of Advanced Industrial Science and Technol-
ogy (AIST)

ORIGIN OF ULTRAHIGH DIELECTRIC CONSTANTS FOR BARIUM TITANATE
NANOPARTICLES
Satoshi Wada, Takuya Hoshina, Kayo Takizawa, Aki Yazawa, Masanori
Ohishi, Hiroaki Yasuno, Hirofumi Kakemoto, Takaaki Tsurumi, Tokyo
Institute of Technology

LEAD LANTHANUM ZIRCONATE TITANATE THIN FILMS ON LOW COST CU
FOIL SUBSTRATES FOR DIELECTRIC AND FERROELECTRIC APPLICA-
TIONS
Taeyun Kim, Angus I. Kingon, North Carolina State University

ATOMIC LAYER DEPOSITION-BASED CERAMIC COATING FOR WAFER-
LEVEL MEMS PACKAGING
Y. C. Lee, Markus Groner, University of Colorado

CENTRIFUGAL SINTERING OF THICK FILM ON SUBSTRATE
Koji Watari, Yoshiaki Kinemuchi, National Institute of Advanced Indus-
trial Science and Technology; Hirohide Ishiguro, Sinto V-Cerax

**SESSION TP4: PROCESSING AND DESIGN OF INTEGRATED
PASSIVES IN LTCC II**

Chairs: Torsten Rabe, Federal Institute for Materials
Research and Testing; Klaus-Dieter Lang, Fraunhofer IZM
3:30 pm – 5:30 pm

COFIRING OF INTEGRATED FERRITE/DIELECTRIC CERAMIC PASSIVES
Jau-Ho Jean, Te-Ming Peng, Rung-Tsung Hsu, National Tsing Hua Uni-
versity; S.C. Lin, ACX Corp.

SOFT FERRITE MATERIALS FOR MULTILAYER INDUCTORS
Jörg Töpfer, J. Mürbe, A. Angermann, S. Barth, E. Müller, F. Bechtold,
FH Jena

A FRONT END MODULE AND A FILTER USING LTCC TECHNOLOGY WITH
HETEROGENEOUS DIELECTRICS
Jun Chul Kim, Dongsu Kim, Hyun Min Cho, Nam kee Kang, Jong Chul
Park, Korea Electronics Technology Institute

COFIRING BEHAVIOR OF LOW-TEMPERATURE SINTERING COMPOSITE
MULTILAYER CERAMIC DEVICES
Zhilun Gui, Hong Cai, Longtu Li, Tsinghua University

STUDY ON DENSIFICATION BEHAVIOR OF LOW-TEMPERATURE CO-
FIRING CERAMICS
Longtu Li, Zhenxing Yue, Ruzhong Zuo, Zhilun Gui, Tsinghua University

FACTORS INFLUENCING THE CONDUCTIVITY OF INKJET PRINTED SILVER
LINES
Ulrike Currlé, Klaus Krueger, Helmut-Schmidt-University

RECEPTION IN EXHIBIT HALL: 5:30 PM – 7:00 PM

Wednesday, April 26

REGISTRATION: 7 AM - 5 PM

CONTINENTAL BREAKFAST: 7 AM - 8 AM

EXHIBIT HOURS: 10 AM - 4 PM
REFRESHMENT BREAK & LUNCH IN EXHIBIT HALL

SESSION WA1: INTERNATIONAL SESSION ON MICROSYSTEMS

Chair: Dean Anderson, Penn State University
8:30 am – 10:00 am

NOVEL LTCC SYSTEM OF CO-FIRED LOW- α /HIGH- α MATERIALS FOR WIRELESS COMMUNICATIONS
Yukio Sakabe, Jun Harada, Yasutaka Sugimoto, Yukio Higuchi, Murata Manufacturing Co. Ltd.

IS LTCC A GOOD CHOICE FOR RF MODULES?
Neal Mellen, TDK R&D Corporation

NEW LTCC TECHNOLOGY WITH INTEGRATED COMPONENTS - 'DEVELOPMENTS AND FUTURE TRENDS' - MODULE MINIATURIZATION FOR WIRELESS
NETWORK APPLICATIONS
Chihiro Makihara, Kyocera Corporation

BREAK IN EXHIBIT HALL: 10:00 AM – 10:30 AM

SESSION WA2: MICROSYSTEM APPLICATIONS II

Chairs: Amy Moll, Boise State University; Jens Mueller,
Technical University of Ilmenau, ZIK MacroNano
10:30 am – 12:10 pm

THREE-DIMENSIONAL FLUIDIC MICROSYSTEM FABRICATED IN LOW TEMPERATURE CO-FIRED CERAMIC TECHNOLOGY
Leszek J. Golonka, T. Zawada, H. Roguszczyk, K. Malecha, M. Chudy, D. Stadnik, A. Dybko, Wrocław University of Technology

LTCC PACKAGING FOR BIO-APPLICATION'S DEMANDS
Lars Rebenklau, G. Schlottig, J. Uhlemann, G. Vollmer, K.-J. Wolter, Dresden University of Technology

DEVELOPMENT OF LTCC SMART CHANNELS FOR INTEGRATED CHEMICAL, TEMPERATURE, AND FLOW SENSING
Clifford K. Ho, Kenneth A. Peterson, Lucas K. McGrath, Timothy S. Turner, Sandia National Laboratories

MINIATURE MULTI-ELECTRODE ELECTROCHEMICAL CELL IN LTCC
John Youngsman, Scott Wolter, Jeff Glass, Amy Moll, Boise State University

LTCC MICROSYSTEMS AND MICROSYSTEM PACKAGING AND INTEGRATION APPLICATIONS
Ken A. Peterson, K. D. Patel, C. K. Ho, B. R. Rohrer, C. D. Nordquist, B. D. Wroblewski, K. B. Pfeifer, Sandia National Laboratories

SESSION WA3: DIRECT WRITE TECHNOLOGY

Chair: Paul Clem, Sandia National Laboratories
10:30 am – 12:10 pm

FABRICATION OF CONDUCTORS AND INDUCTORS BY NANO-PARTICLE DEPOSITION THROUGH DIRECT WRITE TECHNOLOGY
James W. Sears, Jacob Colvin, Michael Carter, South Dakota School of Mines & Technology

DIRECT THICK FILM WRITING FOR ADVANCED MICROSYSTEM APPLICATIONS
William J. Grande, OhmCraft Inc.

DIRECT WRITING OF MULTIMATERIAL THREE DIMENSIONAL STRUCTURES
Jim Smay, Oklahoma State University

DIRECT-WRITE APPROACHES TO FABRICATION AND PRECISION PRINTING AT SANDIA NATIONAL LABORATORIES
Joe Cesarano, Sandia National Laboratories

IMPACT OF CONDUCTOR CROSS-SECTIONAL SHAPE ON COMPONENT PERFORMANCE AND TOTAL LOSSES IN A MICROSYSTEM
Michele H. Lim, J. D. van Wyk, Zhenxian Liang, Virginia Polytechnic Institute and State University

LUNCH IN EXHIBIT HALL: 12:10 PM – 1:20 PM

SESSION WP1: MICROSYSTEM MATERIALS AND PROCESSES

Chairs: Ken Peterson, Sandia National Laboratories;
Larry Zawicki, Honeywell
1:20 pm – 3:00 pm

RAPID PROTOTYPING OF NOVEL FUNCTIONAL COMPONENTS & DEVICES
A. Safari, E. K. Akdogan, M. Vittadello, Rutgers University

DESIGN OF A DISSOLVED OXYGEN MICROSENSOR USING LOW TEMPERATURE CO-FIRED CERAMICS (LTCC)
Marcos Aparecido Chaves Ferreira, Antonio Carlos Seabra, Zaira Mendes da Rocha, LSI-PSI-EPUSP - University of São Paulo

BLOOD FLOW SYSTEM FABRICATED USING LOW TEMPERATURE CO-FIRED CERAMICS (LTCC)
Eliphaz Wagner Simões, Roberto Eduardo Bruzetti Leminski, Mário Ricardo Gongora-Rubio, Francisco Garcia Soriano, Lúcio Angnes, Rogerio Furlan, Marcelo Bariatto Andrade Fontes, Escola Politécnica da Universidade de São Paulo

LTCC POST LOAD CELL
Mário Ricardo Gongora-Rubio, Franco M. Roberti, Liliana Fraigi, Instituto de Pesquisas Tecnológica (IPT); Zaira M. da Rocha, Instituto de Tecnologia Industrial (INTI) & CITEI

FABRICATION OF REFERENCE ELECTRODES FOR LTCC MINIATURIZED CHEMICAL SENSORS
Zaira Mendes da Rocha, Marcos Aparecido Chaves Ferreira, Mario Ricardo Gongora Rubio, Antonio Carlos Seabra, LSI-PSI-EPUSP - University of São Paulo

SESSION WP2: HIGH FREQUENCY CHARACTERIZATION

Chairs: Michael Janezic, NIST – Boulder;
Raghu Settaluri, Oregon State University
1:20 pm – 3:00 pm

DEVELOPMENT OF HIGH DENSITY CERAMIC SUBSTRATE TESTER
Bruce C. Kim, University of Alabama

3D INTERCONNECTION TECHNOLOGY FOR LTCC RF MODULES UP TO 60 GHz
Rubén Perrone, Jens Müller, Heiko Thust, Technical University of Ilmenau

TEMPERATURE-DEPENDENT PERMITTIVITY MEASUREMENTS OF LOW-LOSS DIELECTRIC SUBSTRATES USING A SPLIT-CYLINDER RESONATOR
Michael D. Janezic, National Institute of Standards and Technology (NIST); B. Riddle, D. Amey, T. Mobley, DuPont

FULL-WAVE ANALYSIS AND CHARACTERIZATION OF VIA GROUNDING TECHNIQUES USED TO ISOLATE STRIPLINES FOR EMBEDDED PASSIVE INTERCONNECTS
Jerry Aguirre, Paul Garland, Kyocera America, Inc.; Tim Mobley, DuPont Electronic Technologies; Marcos Vargas, Paula Lucchini, Nathan Roberts, Mikaya Lumori, Ernie Kim, University of San Diego

20 TO 90GHz BROADBAND CHARACTERIZATION OF LTCC MATERIALS FOR TRANSCEIVER MODULES AND INTEGRATED ANTENNAS
Timothy P. Mobley, Michael Smith, DuPont Electronic Technologies; David Zimmerman, Michael Miller, Deepukumar Nair, Matthew Walsh, Delphi

SESSION WP3: INTERACTIVE FORUM (POSTER SESSION)

One-on-One Interactive Forum. This is your chance for detailed interaction with authors whose work is too good to miss.

Chairs: Martin Oppermann, EADS Deutschland GmbH; Walter Rothlingshofer, Robert Bosch GmbH

3:00 pm – 5:00 pm

A PROTOTYPE CONTINUOUS FLOW POLYMERASE CHAIN REACTION LTCC DEVICE

Korey Moeller, J. Besecker, J. M. Hampikian, A. Moll, D. Plumlee, J. Youngsman, G. Hampikian, Boise State University

MAGNETIC PROPERTIES OF BI SUBSTITUTED GARNET THIN FILM ON GGG(100) AND (110) SUBSTRATE FOR MO INDICATOR

Daisuke Uematsu, N. Adachi, T. Ota, T. Okuda, T. Machi, N. Koshizuka, Nagoya Institute of Technology

ELECTROSPUN HYDROXYAPATITE FIBERS VIA SOL-GEL ROUTINE USING PVA AS PRECURSOR

Xiaoshu Dai, Satya Shivkumar, Worcester Polytechnic Institute

A NEW APPROACH TO ZERO SHRINKAGE LTCC

Yong Jun Seo, Yong S. Cho, Yonsei University

LTCC TECHNOLOGY - AN INTEGRATION SOLUTION FOR POWER ELECTRONICS

Michele H. Lim, J. D. van Wyk, Zhenxian Liang, Virginia Polytechnic Institute and State University

MECHANICAL PROPERTIES AND MORPHOLOGY OF POLYIMIDE FILMS FILLED WITH BARIUM TITANATE

Jin-Hyun Hwang, Hiroki Maie, Burtrand I. Lee, Clemson University

BROADBAND DIELECTRIC CHARACTERIZATION OF CERAMICS

Michael T. Lanagan, Khalid Rajab, Steve Perini, Joe Dougherty, Do-Kyun Kwon, Matsato Iwasaki, The Pennsylvania State University

STUDY OF LASER MILLING OF SINTERED LTCC, QUARTZ, AND PYREX SUBSTRATES FOR MESO AND MICRO FLUIDIC APPLICATIONS

Rogerio Furlan, Jose Manuel Castillo Colon, Idalia Ramos, Jorge J. Santiago-Aviles, University of Puerto Rico at Humacao

ENERGY SCAVENGING DEVICE IN LOW TEMPERATURE CO-FIRED CERAMICS

Sarah Scherrer, Boise State University

FABRICATION OF MICROSTRUCTURE IN TRANSPARENT MATERIALS USING FEMTOSECOND LASER IRRADIATION

Shingo Kanehira, J. Si, K. Miura, K. Fujita, K. Hirao, Kyoto University

HIGH TEMPERATURE RAMAN STUDY OF CVD DIAMOND FILMS

Jui-Chen Pu, Sea-Fue Wang and James C. Sung, National Taipei University of Technology

EFFECT OF RE-OXIDATION FIRING ON PTCR PROPERTIES OF SM-DOPED BARIUM TITANATE CERAMICS

Myoung-Pyo Chun, Jung-Ho Cho, Byung-Ik Kim, Korea Institute of Ceramics Engineering and Technology (KICET)

A NOVEL PROCESS TO SYNTHESIZE HOLLOW ZNO PARTICLES USING BUBBLES AS TEMPLATES

Yong Sheng Han, Li Wei Lin, Masayoshi Fuji, Minoru Takahashi, Hiroaki Takegami, Nagoya Institute of Technology

THE APPLICATION OF ARTIFICIAL NEURAL NETWORK TO CALIBRATE MICRO-ACTUATOR

Y. B. Zhang, J. G. He, G. M. Liu, Z. M. Pan, T. Yang, Y. K. Fang, Institute of Machinery Manufacturing Technology

EFFECT OF CUO ON THE SINTERING BEHAVIOR AND DIELECTRIC CHARACTERISTICS OF TITANIUM DIOXIDE

Yeong-Kyeun Paek, Chang-Keun Shin, Andong National University – Korea

FABRICATION OF MICRO TUBULAR SOFCs AND THEIR SOFC PERFORMANCE IN THE INTERMEDIATE TEMPERATURE

Toshio Suzuki, National Institute of Advanced Industrial Science and Technology

MICROSTRUCTURE AND ELECTRICAL PROPERTIES OF SPUTTERED BA(SR)TiO₃ FILMS: DOPANT AND CRYSTAL STRUCTURE EFFECTS

C. H. Wu, Jinn P. Chu, S. F. Wang, National Taiwan Ocean University

ADVANCED FABRICATION TECHNIQUES FOR AN ION MOBILITY SPECTROMETER IN LOW TEMPERATURE CO-FIRED CERAMICS

Brian Jaques, H. Weston, D. G. Plumlee, A. J. Moll, Boise State University

MAGNETIC DOMAIN STRUCTURE OF NdFeB THIN FILM ON Si SUBSTRATE

Nobuyasu Adachi, Y. Isa, T. Yoshimura, T. Ota, I. Sakamoto, T. Okuda, Nagoya Institute of Technology

THREE-DIMENSIONAL PACKAGING OF INTEGRATED HYBRID MICROSYSTEMS

Valery Marinov, eTracia, LLC

FABRICATION OF BARIUM STRONTIUM TITANATE FILMS DIRECTLY ON COPPER ELECTRODES BY AEROSOL DEPOSITION METHOD FOR MULTILAYER DIELECTRIC DEVICES

Jae-Hyuk Park, Sewoong Oh, Masakazu Mori, Jun Akedo, National Institute of Advanced Industrial Science and Technology (AIST)

CERAMIC SUBSTRATE WITH HIDDEN HEAT SOURCES FOR SOLDERING OF ELECTRICAL COMPONENTS

Eli Meroz, Jacob David, Dan Har-Even, soreq NRC

INTEGRATION CONCEPTS FOR MINIATURIZED LTCC ANTENNAS

Amanda Baker, Michael Lanagan, George Semouchkin, Elena Semouchkina, Khalid Rajab, The Pennsylvania State University

Conference Hotel

GRAND HYATT DENVER HOTEL
1750 WELTON STREET
DENVER, COLORADO 80202
PHONE: 303-295-1234 OR 800-233-1234

HOTEL CUT-OFF: MARCH 25, 2006

SINGLE/DOUBLE.....\$179

PLEASE REFERENCE IMAPS WHEN MAKING RESERVATION TO RECEIVE THE SPECIAL GROUP RATE.

Thursday, April 27

REGISTRATION: 7:30 AM - NOON

CONTINENTAL BREAKFAST: 7:30 AM - 8:20 AM

SESSION THA1: INTERNATIONAL SESSION ON MICROSYSTEMS

Chairs: Dave Wilcox, Consultant; Leszek Golonka, Wroclaw University

8:20 am – 9:50 am

AN OVERVIEW OF LTCC-RELATED TECHNOLOGIES IN KOREA

Yong S. Cho, Yonsei University; Jun Chul Kim, Nam Kee Kang, Korea Electronics Technology Institute

LTCC AN ENABLING TECHNOLOGY FOR RF-, MICROWAVE, BIO- AND CHEMICAL SYSTEMS

Jens Mueller, Rubén Perrone, Sven Rentsch, Torsten Thelemann, Michael Hinz, Andreas Schober, Thomas Friedrich, Technical Univ. of Ilmenau, ZIK MacroNano; Dieter Schwanke, Thomas Haas, MSE GmbH & Co.; Lars Rebenklau, TU Dresden

LTCC TOOLBOX FOR PHOTONIC INTEGRATION

Pentti Karioja, Kimmo Keränen, Kari Kautio, Jyrki Ollila, Jukka-Tapani Mäkinen, Kari Kataja, Pentti Korhonen, Mikko Karppinen, Veli Heikkinen, Teemu Alajoki, Antti Tanskanen, Juhani Heilala, VTT (Technical Research Center of Finland)

BREAK: 9:50 AM - 10:20 AM

SESSION THA2: NOVEL SYNTHESIS TECHNOLOGY FOR MULTILAYER ELECTRONICS II - AEROSOL DEPOSITION

Chair: Yong Cho, Yonsei University

10:20 am - Noon

ROOM TEMPERATURE IMPACT CONSOLIDATION (R.T.I.C.) OF CERAMIC FINE POWDER ON AEROSOL DEPOSITION

Jun Akedo, Hisato Ogiso, National Institute of Advanced Industrial Science & Technology

EMBEDDED CAPACITOR TECHNOLOGY ON PRINTED WIRING BOARD USING AEROSOL DEPOSITION

Yoshihiko Imanaka, Nobuyuki Hayashi, Masatoshi Takenouchi, Jun Akedo, Fujitsu Limited

AEROSOL DEPOSITION FABRICATION OF TRANSPARENT ELECTRO-OPTIC FILMS FOR OPTICAL MODULATOR

Masafumi Nakada, Keishi Ohashia, Hiroki Tsudab, Jun Akedo, NEC

PREPARATION OF THICK MAGNETIC GARNET FILMS WITH AEROSOL DEPOSITION METHOD AND THEIR MAGNETIC PROPERTIES

Mitsuteru Inoue, Masahiko Mizoguchi, Pan Boey Lim, Hironaga Uchida, Toyohashi University of Technology

MULTILAYER CONSTRUCTION WITH VARIOUS CERAMIC FILMS FOR ELECTRONIC DEVICES FABRICATED BY AEROSOL DEPOSITION

Hironori Hatono, Tomokazu Ito, Kengo Iwata, Toto Ltd.; Jun Akedo, Advanced Manufacturing Research Institute

CLOSING REMARKS: NOON

Technical Conference Registration

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

Conference Proceedings CD-ROM

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 or call 202-548-4001.

*includes 1 year IMAPS membership at no charge.

CICMT Tabletop Exhibition
“An opportunity to talk to industry leaders”

April 25 - 26, 2006

Tuesday - April 25 **10:00 am - 7:00 pm (Exhibit Hours)**
Refreshment Breaks, Lunch & Reception will be held in the Exhibit Hall.

Wednesday - April 26 **10 am - 4 pm (Exhibit Hours)**
Refreshment Breaks & Lunch will be held in the Exhibit Hall.

Tabletop Registration Fees

	On or before 3/25/06	After 3/25/06
IMAPS/ACerS Corporate/Organizational Member	\$500 per booth	\$600 per booth
IMAPS/ACerS Non-Corporate/Organizational Member	\$650 per booth	\$750 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) tabletop personnel

Additional tabletop 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 should be sent directly to the hotel. You save money because no service contractor is involved!

Grand Hyatt Denver Hotel
1750 Welton Street
Denver, Colorado 80202
Ph: 303-295-1234 or 800-233-1234

Cancellation Policy

Tabletop cancellations made before 3/25/06 will receive a refund minus \$100 handling fee.
Tabletops cancelled after 3/25/06 will not be refunded.

For more information visit www.cicmt.org or contact:
Ann Bell, abell@imaps.org; 202-548-8717

Marketing Feature Available for Exhibitors

IMAPS will extend all exhibitors an opportunity to provide an unlimited amount of pages of company products, services and contact information to be included Technical on the 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.

Submissions must be sent electronically in one (1) file, either PDF or Word, that is easy to open, not password-protected and in a logical format. Any materials not sent in the required format or that arrive after the deadline, may not appear on the CD-ROM and no refunds will be made. **Send files to abell@imaps.org on or before March 25, 2006.**

Upcoming  **Events...**

**International Conference and Exhibition on
Device Packaging**
Doubletree Paradise Valley Resort
Scottsdale, Arizona - USA
March 20 - 23, 2006

Visit www.imaps.org/devicepackaging for
more information

**Global Business Council (GBC)
Spring Conference**

Co-located with Device Packaging Conference and Exhibition

Doubletree Paradise Valley Resort
Scottsdale, Arizona - USA
March 19 & 20, 2006

Visit www.imaps.org/gbc for more information

**International Conference & Tabletop
Exhibition on
High Temperature Electronics (HiTEC 2006)**
Hilton of Santa Fe
Santa Fe, New Mexico - USA
May 15 - 18, 2006

Visit www.imaps.org/hitec for more information

**Topical Workshop and Tabletop Exhibition on
Military, Aerospace, Space and
Homeland Security (MASH):
Packaging Issues and Applications**
Doubletree Hotel
Washington, DC - USA
June 6 - 8, 2006

Visit www.imaps.org/mash for more information

IMAPS 2006

**39th International Symposium on
Microelectronics**
San Diego Convention Center
San Diego, California - USA
October 8 - 12, 2006

Visit www.imaps2006.org for more information

Upcoming  **Events...**

**30th International Conference & Exposition on
Advanced Ceramics & Composites**
Doubletree Oceanfront & Hilton Cocoa
Beach Hotels
Cocoa Beach, FL
January 22 - 27, 2006

**Structural Clay Products Division
Meeting**
The Cornhusker, A Marriott Hotel
Lincoln, NB
April 23 - 25, 2006

**Glass and Optical Materials Division
Meeting**
Hyatt Regency Greenville
Greenville, NC
May 16 - 19, 2006

**1st International Congress on
Ceramics**
The Westin Harbour Castle
Toronto, Ontario, Canada
June 25 - 29, 2006

**International Symposium on
Crystallization in Glass & Liquids
Crystallization 2006**
Snake River Lodge & Spa
Jackson Hole, WY
September 24 - 28, 2006

**MS& T' 06 - Material Science & Tech-
nology 2006 Conference & Exhibition
Combined with ACerS 108th Annual Meeting**
Cincinnati Convention Center
Cincinnati, OH
October 15 - 19, 2006

**31st International Cocoa Beach Conference
& Exposition on
Advanced Ceramics & Composites**
Hilton Daytona Beach Resort & Ocean
Center
Daytona Beach, FL
January 21 - 26, 2007

Visit www.ceramics.org for more information

REGISTRATION FORM

Ceramic Interconnect and Ceramic Microsystems Technologies Conference (CICMT): April 24 - 27, 2006

REGISTER ON-LINE AT WWW.CICMT.ORG

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

REGISTRATION FEES: **EARLY REGISTRATION ENDS 3/25/06**

CONFERENCE FEES

	(On or before 3/25)	(After 3/25)
<input type="checkbox"/> IMAPS Member	\$550	\$650
<input type="checkbox"/> ACerS Member	\$550	\$650
<input type="checkbox"/> Non-member*	\$650	\$750

*Nonmember fee includes one-year individual membership in your choice of IMAPS or ACerS. Check one: IMAPS ACerS

<input type="checkbox"/> Speaker	<input type="checkbox"/> Chair	\$375	\$475
<input type="checkbox"/> Student	<input type="checkbox"/> Chapter Officer	\$375	\$475
<input type="checkbox"/> Exhibits Only		Free	\$10

WHICH SOCIETY ARE YOU A MEMBER OF?

IMAPS ACerS Both Neither

HOW DID YOU HEAR ABOUT THIS EVENT?

Direct Mail Website E-Mail
 Advancing Microelectronics IMAPS Weekly Bulletin
 Industry/Trade Magazine Personal Phone Call
 Colleague Other _____

ADDITIONAL PURCHASES

<input type="checkbox"/> Guest/Family Member (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

Tabletop Exhibits (April 25 & 26)

<input type="checkbox"/> IMAPS/ACerS Member (Corporate/Org.)	\$500	\$600
<input type="checkbox"/> Non-member	\$650	\$750
<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) no later than March 25, 2006. Visit www.cicmt.org for detailed information.

Housing (Hotel Cut-off is *March 25, 2006*)

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

Grand Hyatt Denver Hotel

1750 Welton Street

Denver, Colorado 80202

Phone: 303-295-1234 or 800-233-1234

When making reservation, please reference IMAPS.

TO RESERVE ROOM ON-LINE, VISIT:

<http://granddenver.hyatt.com/groupbooking/denrdimap2006>

Single/Double: \$179

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

Registration Fee: \$ _____ **CICMT06**

Additional Purchases: \$ _____

Tabletop Exhibits: \$ _____

Total Payment Due: \$ _____

Check enclosed payable in US funds to IMAPS

Charge my fees to:

Visa MasterCard Amex Discover Diners Club

Card# _____ Exp. _____

Signature _____

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

Email address required to receive confirmation of registration.

For Wire Transfer information call 202-548-4001.

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, April 7, 2006**. No refunds will be issued after that date.

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

"Address Service Requested"

Presorted
First-Class Mail
U.S. Postage
PAID
Merrifield, VA
Permit No. 6418