

# MIM 2011

International Conference on Injection Molding  
of Metals, Ceramics and Carbides

MARCH 14–16 • ORLANDO

*The Hilton in the Walt Disney World Resort, Lake Buena Vista (Orlando), FL*

## ***Plan to Attend the Only International Powder and Metal Injection Molding Event of the Year!***

### **CO-CHAIRMEN:**

**Animesh Bose, FAPMI**  
Materials Processing, Inc.

**Bruce Dionne**  
Megamet Solid Metals, Inc.

*Sponsored by:  
Metal Injection Molding Association*



**REGISTER BY FEBRUARY 11 AND SAVE!**

*PLUS OPTIONAL...*

## **Powder Injection Molding Tutorial**

Monday, March 14

Conducted by: Randall M. German, FAPMI, San Diego State University

REGISTER BY FEBRUARY 11 AND SAVE!

# MIM 2011

International Conference on Injection Molding  
of Metals, Ceramics and Carbides

MARCH 14–16 • ORLANDO

*The Hilton in the Walt Disney World Resort, Lake Buena Vista (Orlando), FL*

## Make plans to attend the only international powder and metal injection molding event of the year!

The PIM industry (MIM—metal injection molding; CIM—ceramic injection molding; and CCIM—cemented carbide injection molding) has estimated sales of over \$1 billion and could possibly double in a span of five years. With this continued growth and interest, the industry has realized major technological advances and overcome numerous business challenges.

The objective of the conference is to explore these advances, assist in the transfer of technology, and investigate new developments in the field of injection molding of metal, ceramics, and carbides.

The conference is targeted at product designers, engineers, consumers, manufacturers, researchers, educators, and students. All individuals with an interest in this fascinating technology and application of its parts are encouraged to attend.



**MIMA**  

*Sponsored by the Metal Injection Molding Association, a trade association of MPIF, and its affiliate APMI International*

### **Special Opportunity:**

All conference and tutorial registrants will receive *Injection Molding of Metals and Ceramics & MPIF Standard 35, Materials Standards for Metal Injection Molded Parts* with their registration. The books will be distributed at the conference.

### **CO-CHAIRMEN:**

**Animesh Bose, FAPMI**  
Materials Processing, Inc.

**Bruce Dionne**  
Megamet Solid Metals, Inc.

## **PLUS OPTIONAL...**

### **Powder Injection Molding Tutorial**

**Monday, March 14**

**Conducted by: Randall M. German, FAPMI, San Diego State University**

This course will provide a basis for determining options, uses, properties, applications, and opportunities for cost-effective PIM manufacturing. Individuals who will benefit from the tutorial include engineers, business managers, procurement managers, component designers, and technicians. This course is a must for consumers of PIM components and organizations that are exploring the opportunities associated with developing their own PIM manufacturing facilities. Registrants will receive the publication *Powder Injection Molding Design Applications User's Guide*.

# Daily Schedule

monday, march 14

## Tutorial

9:00 a.m.–4:00 p.m. (includes lunch)  
**Powder Injection Molding Tutorial**  
Randall M. German, FAPMI  
San Diego State University

This optional course, which requires a separate registration fee, is an ideal way for anyone looking for a solid grounding in the technology of PIM to obtain a comprehensive foundation in a short period of time.

Here is a partial list of topics that will be covered during the tutorial:

**Introduction** to the manufacturing processes: feedstocks, molding, debinding, sintering, and finishing

**Definition** of what constitutes a viable PIM component

**Selection** of materials based on component expectations and required properties

**Assessment** of the critical features of dimensional accuracy and material performance

**Comparison** of PIM to competing technologies

**Review** of the economical advantages of PIM

**New applications**, emerging markets, and examples of products never thought possible in net-shape manufacturing until PIM

5:00–6:00 p.m.

### WELCOMING RECEPTION

Open to all conference and tutorial attendees.  
(Cash Bar)



## Timetable

### MONDAY, MARCH 14, 2011

8:00–9:00 a.m. Registration  
9:00 a.m.–4:00 p.m. PIM Tutorial  
5:00–6:00 p.m. Welcoming Reception

### TUESDAY, MARCH 15, 2011

7:00–8:00 a.m. Registration & Continental Breakfast  
8:00 a.m.–6:00 p.m. Program (includes lunch)  
6:00–7:30 p.m. Tabletop Exhibition/Networking Reception

### WEDNESDAY, MARCH 16, 2011

7:00–7:30 a.m. Continental Breakfast  
7:30 a.m.–5:00 p.m. Program (includes lunch)

tuesday, march 15

8:00 a.m.–6:00 p.m. (includes lunch)  
**GENERAL SESSION**

**State of the North American MIM Industry**  
Matthew Bulger, USA  
NetShape Technologies-MIM

**State of the European MIM Industry**  
Martin Bloemacher, Germany  
BASF Aktiengesellschaft

**Update of the Business and Technical Climate of the Asian MIM Industry**  
Yoshiyuki Kato, Japan  
Kato Professional Engineer Office

**Current Analysis of the Metal Injection Molding Industry in China**  
Michael Godin, Hong Kong  
Mate Consulting Ltd.

**New Equipment for PIM Micromolding**  
Uwe Haupt, Germany  
ARBURG GmbH + Co KG

**Microstructural Evaluation of Injection Molded Ni 625 Superalloys**  
Antonyraj Arockiasamy, USA  
Mississippi State University

**Metal Injection Molding of High Strength Porous Aluminium Alloy Parts**  
Peng Yu, Australia  
University of Queensland

**Effect of Particle Size on Sintering Characteristics of Injection Molded 316L Powder**  
Antonyraj Arockiasamy, USA  
Mississippi State University

**The Role of Powder Particle Size Distribution on the Processability of PIM Compounds**  
Berenika Hausnerova, Czech Republic  
Polymer Centre, TBU in Zlin

**Experimental Characterization and Manufacturing of Micro-Structured Die Mold Replications using Hot Embossing Process**  
Thierry Barriere, France  
Femto-ST Institute

## KEYNOTE LUNCHEON

**Motivation Behind the Vertical Integration of MIM at Stryker Instruments**  
Aaron Price

Senior Project Manager, Stryker Instruments

Stryker Instruments, a division of Stryker Corporation specializing in surgical power tools and other operating room equipment, released their first internally produced MIM component in 2010 following the vertical integration of this technology. Stryker's decision to vertically integrate may provide valuable insight for the MIM industry.



## TECHNOLOGICAL PROCESS & PRODUCT INNOVATIONS

This session will be dedicated to the exchange of commercial capabilities and products.

Tabletop exhibitors will have the opportunity to offer a 10 minute presentation.

6:00–7:30 p.m. (Cash Bar)

## TABLETOP EXHIBITION & NETWORKING RECEPTION

### DESIGN CASE STUDIES

Numerous case studies will be presented throughout the conference

wednesday, march 16

7:30 a.m.–5:00 p.m. (includes lunch)  
**GENERAL SESSION**

**MIM Superalloys for Automotive Applications**  
Vince Haas, USA  
BASF Corporation

**Powder Injection Molding for Critical Applications**  
Randall M. German, USA  
San Diego State University

**Production Cost Savings through Point of Use Nitrogen Generation**  
Brian J. Larson, USA  
Great Lakes Air Products, Inc.

**A Case Study on MIM Bipolar Plates for PEM Fuel Cells**  
Bruce Dionne, USA  
Megamet Solid Metals, Inc.

**Micro-MIM Process with 316L Stainless Steel Feedstock and Numerical Simulations of the Sintering Stage**  
J.C. Gelin, France  
Femto-ST Institute

**Analysis and Optimization of Process Variables in Metal Injection Molding**  
Praveen Pachauri, India  
Aligarh Muslim University

**3D Visualization of Flow Pattern in Injection Molded Green Parts**  
Anne Mannschatz, Germany  
Fraunhofer-Institut für Keramische Technologien und Systeme

**A Case Study of Implementation of Carbon Control in Metal Injection Molding (MIM) Furnaces.**  
Akin Malas, Germany  
Linde Group

**Metal Injection Molding Manufacturing Best Practices for Medical Device Components**  
Alan Sago, USA  
Accellent Inc.

**Metal Injection Molding of Titanium Based Powders: The Affect of Mixing on Feedstock Homogeneity, Green Part Quality and the Handling Strength of the Brown Part**  
Paul Ewart, New Zealand  
University of Waikato

**Applying Resonant Inspection to MIM Parts**  
Gail R. Stultz, USA  
Modal Shop, Inc.

**Properties of 4140 MIM Parts made via Prealloy and Master Alloy Routes**  
Toby Tingskog, USA  
Sandvik Osprey Ltd.

**Micro Feature-Enhanced Sinter Bonding of Metal Injection Molded Parts to Solid Substrates**  
Thomas Martens, USA  
Clemson University

**Dimensional Variation of a Cylindrical MIM Component**  
Mike Stucky, USA  
NetShape Technologies-MIM

**Process Development for Components with 0.0045" Wall Thickness**  
Ashley Nichols, USA  
FloMet LLC

**The Effects of Powder Atomization Source on the Performance of MIM 316L Parts**  
David Novatnak, USA  
Carpenter Powder Products, Inc.

**Effects of Powder-Particle Size on the Properties of MIM Sintered Bodies Produced from Titanium and Ti64 Alloy Powder**  
Junichi Hayashi, Japan  
Epson Atmix Corporation

# General Information

## CONFERENCE & TUTORIAL LOCATION:

**Hilton in the Walt Disney World Resort**  
1751 Hotel Plaza Boulevard  
Lake Buena Vista, Florida, USA 32830  
Tel: 1-407-827-4000 Fax: 1-407-827-3890

## REGISTRATION AND FEES:

All those planning to attend the PIM Tutorial and/or the MIM2011 conference must register and receive badges. The MIM2011 conference registration fee includes participation in the March 14–16 technical program and tabletop reception & exhibit, refreshment breaks, breakfasts, and lunches.

Members of MPIF and APMI have special rates. Advanced and late registration rates are offered, as well as special rates for students, speakers and exhibitors. Only full-time students are eligible for the student rate, and proof of active student status must be provided if requested.

## EXHIBITOR REGISTRATION:

All exhibitor personnel must register for the conference by selecting either of the two options shown.

## REGISTRATION CANCELLATION POLICY:

Registration fees will be refunded in full if a written request is received no later than February 11, 2011. Thereafter, written requests received up to March 11 will be subject to \$325 cancellation fee. Registrants who fail to attend, and who have not cancelled as noted, are liable for the entire fee. Substitutions of attendees can be made at any time.

## ACCOMMODATIONS:

Rooms have been reserved at the Hilton in the Walt Disney World Resort, Lake Buena Vista (Orlando), FL, for Saturday, March 12, through Wednesday, March 16. Rates are \$129 single/double per room plus applicable taxes. All hotel reservations must be made through the online conference registration at [www.mimaweb.org](http://www.mimaweb.org) or [www.mpif.org](http://www.mpif.org).

*Hotel Deposit & Cancellation Policy:* Credit card information must be provided in order to process your reservation. Your card will not be charged for a deposit. Cancellations received less than 72 hours prior to arrival date will result in your being charged one night's stay plus taxes.



## SUGGESTED DRESS:

The suggested dress for all activities is business casual.

## REQUEST FOR FOREIGN VISAS:

Special letters of invitation that can be used in applying for entrance visas will be provided to participants upon written request to Susan Wright at [swright@mpif.org](mailto:swright@mpif.org).

## ADVANCE REGISTRATION:

Take advantage of special early registration discounts by registering in advance online before February 11, 2011. If you do not receive a "Registration Acknowledgement" by e-mail within 10 business days, please contact Susan Wright at [swright@mpif.org](mailto:swright@mpif.org).

## TO REGISTER:

All registrations must be made through the MPIF Web site [www.mimaweb.org](http://www.mimaweb.org) or [www.mpif.org](http://www.mpif.org). Any problems or questions please contact MPIF at 609-452-7700.

## CONFERENCE CANCELLATION POLICY:

*MPIF may cancel or postpone this program because of unforeseen circumstances. If a program is cancelled or postponed, MPIF will refund registration fees but cannot be held responsible for any other related costs, charges, or expenses, including cancellation/change charges assessed by airlines or travel agencies. Programming is subject to change.*

## Registration Fees

	Advance Paid by Feb. 11	After Feb. 11
<b>MIM2011 Conference Registration</b> <i>Includes all conference sessions and meal events Does not include optional PIM Tutorial (see below)</i>		
Employees of MPIF Member Co.	\$ 895	\$ 995
APMI Members	995	1,095
Non-Members	1,100	1,200
Speakers/Students	795	895
<b>Exhibitor Registration</b> <i>(Required of all exhibitor personnel)</i>		
<b>Exhibitor Option 1</b> Full Conference Attendance <i>Includes all conference events as above</i>	795	895
<b>Exhibitor Option 2</b> <i>Keynote Luncheon only</i>	150	200
<b>Optional PIM Tutorial Registration</b> <i>Includes lunch</i>		
	495	595

Visit  
[mimaweb.org/MIM2011](http://mimaweb.org/MIM2011)  
or  
[mpif.org](http://mpif.org) to register