

# CALL FOR PAPERS & POSTERS



## **PowderMet 2011**

**May 18–21 • MPIF/APMI SAN FRANCISCO**

### **2011 International Conference on Powder Metallurgy & Particulate Materials**

*May 18–21 • Marriott Marquis • San Francisco, California*

*A "Call for Papers & Posters" is being issued to solicit contributions for the technical program for PowderMet2011 organized and sponsored by the Metal Powder Industries Federation in cooperation with APMI International. The conference will take place at The Marriott Marquis, San Francisco California.*

*You are encouraged to submit abstracts for papers to be presented in the general technical sessions, poster program, and special interest programs. Abstracts can address all aspects of powder metallurgy and particulate materials technology. Several select topic areas have also been identified for in-depth discussion/focus within the special interest programs.*

*All abstracts are subject to review by the Technical Program Committee and must be received by the deadline for consideration. To submit an abstract visit Conference & Exhibits at [www.mpif.org](http://www.mpif.org).*

**SUBMISSION DEADLINE: September 27, 2010**  
Go to [www.mpif.org](http://www.mpif.org)



This event is sponsored by:  
**METAL POWDER INDUSTRIES FEDERATION**  
**APMI INTERNATIONAL**

**I. TECHNICAL SESSIONS**

Papers of original and unpublished work addressing recent advances in the full spectrum of powder metallurgy & particulate materials technologies are planned. The technical sessions are forums to review and publicize recent work contributing to the state of the art and/or discussing emerging areas of interest. All submissions should clearly outline the results of the latest research, innovations, or improvements in PM processing or products.

**Category 1—Design & Modeling of PM Materials, Components & Processes**

- a. Particulate Production
- b. Compaction & Forming
- c. Powder Injection Molding
- d. Pre-Sintering & Sintering
- e. Materials
- f. Refractory Metals & Ceramics

**Category 2—Particulate Production**

- a. General
- b. Atomization
- c. Handling
- d. Production Methods & Processes
- e. Material Characterization
- f. Particulate Size Classification

**Category 3—General Compaction & Forming Processes**

- a. General
- b. Lubricants
- c. Spray Forming
- d. Rapid Prototyping (desktop manufacturing)
- e. Pressing Techniques & Advances
- f. Die Filling
- g. Hot Forming & Compacting
- h. Powder Forging
- i. Equipment Advances
- j. Pore-Free Consolidation
- k. Roll Compacting
- l. PM Tooling & Design
- m. PM Extrusion
- n. Slip Casting
- o. Isostatic Pressing
- p. Non-Pressing Techniques for Powder Application
- q. Semi-Solid Forming
- r. Green Properties

**Category 4—Powder Injection Molding (Metals & Ceramics)**

- a. General
- b. Powders
- c. Binder Technology
- d. Sintering Technology
- e. Equipment Advances
- f. Process Automation
- g. Advanced PIM Materials
- h. New Products/Applications
- i. Design Criteria
- j. Debinding
- k. Size/Distortion Control
- l. Tooling Design
- m. Feedstock
- n. Green Properties

**Category 5—Pre-Sintering & Sintering**

- a. General
- b. Sintering Thermodynamics/Kinetics
- c. Atmospheres—Control—Sintering
- d. Furnaces
- e. Processing Variables
- f. Belt Materials
- g. Quality Control of Sintered Parts
- h. High-Temperature Sintering
- i. Liquid-Phase Sintering
- j. Sinter Hardening
- k. Solid-State Sintering

**Category 6—Secondary Operations**

- a. General

- b. Joining
- c. Machinability
- d. Machining Additives
- e. Heat Treatment
- f. Steam Treating
- g. Coatings
- h. Spray Coating
- i. Wear-Resistant Coatings
- j. Surface Hardening
- k. Carburizing
- l. Nitriding
- m. Lapping
- n. Edge Preparation & Burr Removal
- o. Surface Modification & Densification
- p. Copper Infiltration
- q. Surface Plating & Protection
- r. Brazing
- s. Welding

**Category 7—Materials**

- a. General
- b. Iron & Steel
- c. Stainless Steel
- d. Tool Steels
- e. Reactive Metals (Ti, Zr, B, Be, Ta, Rh, Rare Earths, etc.)
- f. Aluminum, Magnesium, and Alloys
- g. Copper, Brass, Bronze and Alloys
- h. Chromium, Nickel & Superalloys
- i. Additives

**Category 8—Refractory Metals, Carbides & Ceramics**

- a. General
- b. Tungsten Carbides
- c. Tungsten, Alloys & Composites
- d. Refractory Metal-Based Hard Materials
- e. Microstructures-Processing-Properties
- f. Ceramics

**Category 9—Advanced Particulate Materials & Processes**

- a. General
- b. Composites
- c. Intermetallics
- d. Consolidation
- e. Metal Fibers
- f. Thermal Spray Coating
- g. Nanocrystalline Materials
- h. Hybrid Packaging & Other Electronic Materials
- i. SHS-Self-Propagating High-Temperature Synthesis
- j. Mechanical Alloying
- k. Functionally Graded Materials
- l. Rapid Solidification Technology
- m. Superconductors
- n. Lightweight Alloy Processing
- o. Energy Storage Materials
- p. Materials Exhibiting Unique Thermal Properties
- q. Graphite Carbon Nanofibers (GCNF)
- r. Advanced Magnetic Materials
- s. Porous & Open-Cell Structures

**Category 10—Material Properties**

- a. General
- b. High-Density PM
- c. Wear-Resistant Properties
- d. Dynamic Properties—Impact, Fatigue, Compressive Yield
- e. Mechanical Properties
- f. Corrosion Resistance
- g. Magnetic Properties of PM Materials
- h. Microstructures & Solidification Structures

**Category 11—Test & Evaluation**

- a. General
- b. Quality Management, Tools, ISO
- c. Corrosion Test Methods
- d. Non-Destructive Evaluation Techniques
- e. Measurement & Control
- f. Manufacturing Accuracy & Reproducibility
- g. Testing Methodologies
- h. Surface Finish Measurement

- i. Density Measurements
- j. Crack Detection Methods & Prevention
- k. Metallography
- l. Standards

**Category 12—Applications**

- a. General
- b. Gears
- c. Sintered Bearings & Filters
- d. Cutting Tools & Abrasives

**Category 13—Management Issues**

- a. General
- b. Health, Safety & Environmental Issues
- c. Cost Benefits of New Equipment
- d. Statistics of PM Parts Behavior
- e. Concurrent Engineering—JIT
- f. Intelligent Processing of Materials
- g. Economics of PM
- h. Conversion Processes—Dual-Use Technology
- i. Marketing, Analysis & Trends
- j. Sustainability

Abstracts submitted for the general technical session programming will not be considered for poster presentation.

**II. POSTER PROGRAM**

**Poster Program Chairman:**

Nicholas T. Mares, Asbury Graphite Mills, Inc.

In order to accommodate the widest possible range of PM and particulate technological developments possible while also offering authors an alternate means of presenting their research results, a Call for Posters is issued. Posters are a key part of the technical programming and the same criteria established to judge suitability of abstracts submitted for the general technical sessions will be applied to the submitted poster abstracts.

This alternate presentation format is suitable for authors who wish to report important work in-progress—research that catches the cutting edge of PM or particulate technology. Poster authors may submit abstracts on original and unpublished work addressing all aspects of PM technologies. Refer to the non-limiting topics listed in Section I.

The poster format lends itself to reporting preliminary research results which may have large potential for industrial development, or simply where this alternate form of presentation is deemed more attractive. Abstracts submitted for the poster program will not be considered for presentation in the general technical sessions.

Authors of accepted posters are encouraged to submit a manuscript for publication in the conference proceedings. Papers will be subject to review in accordance with the rules governing manuscript submission.

All poster program participants will be eligible for Poster Awards. The designation of "Outstanding Poster" and "Poster of Merit" will be awarded by the Poster Program Awards Committee based on the following criteria:

1. Technical, scientific and professional integrity (no overt/blatant commercialism)
  2. Presentation clarity and overall esthetic appearance
  3. Enhances practical or industrial value for the industry
- Ribbons will be awarded at the conference to the posters that best meet the above criteria.

**III. SPECIAL INTEREST PROGRAMS**

As part of the technology transfer and educational mission for PowderMet2011, several special interest programs are being organized. Presentations in these programs may be limited to invited presentations (or supplemented from the abstracts submitted); may include publishable material in the form of preprinted handouts where no other proceedings will be available; may be oral only in nature or may require a publishable manuscript for inclusion in the conference proceedings. Program organizers will select the presentation and any publication mode most suitable for the topic and audience.

The planned Special Interest Programs topics are as follows:

#### A. Advances in Titanium Powder Metallurgy: Powder Production to Parts Manufacturing

Satyajit Banerjee, DSH Technologies, LLC  
Colin McCracken, Ametek/Reading Alloys  
Hideshi Miura, Kyushu University  
James W. Sears, South Dakota School of Mines & Tech.

- Powder Production: HDH, close-coupled atomization, PREP, direct reduction, spheroidization; Parts manufacturing: MIM, HIP, additive manufacturing, SPS, press & sinter, extrusion

#### B. Electronic Material Applications

Bhanu Chelluri, IAP Research, Inc.  
Ian Donaldson, GKN Sinter Metals  
Thomas F. Stephenson, SMART Metal Powders

- electronic materials, sensors, engine management, energy efficiency, powder processing technologies, powder fillers for RF/EMI shielding, electro-static dissipation, wind turbines, metal powders in conductive layers (capacitors, thermistors, varistors), conductive fillers for polymers, thermoelectrics for energy efficient heating/cooling, vehicle electrification, electrification of engine driven auxiliaries, vehicle fuel efficiency, automotive heating /ventilation/ air conditioning

#### C. Sinter Hardening and Leaner/Economic Powders

Carl Blais, Laval University  
Scott Davis, PMG  
Gilles L'Espérance, FAPMI, École Polytechnique de Montréal

Anthony Miller, PMT, Micro Metals, Inc.

- sinter hardening, heat transfer, hardenability, lean alloys, master alloys, hybrid alloys, hardenability characterization, materials selection, cost-efficiency, microstructure vs. properties

#### D. Tribology

Russell A. Chernenkoff, Metaldyne LLC  
Nicholas T. Mares, Asbury Graphite Mills, Inc.  
Steven R. Schmid, University of Notre Dame

- friction, lubrication, wear, surface interaction, motion, gears, bearings, adhesion, abrasion, corrosion, erosion, surface finish

#### E. PM Materials for Alternative Energy

K. S. Narasimhan, FAPMI, Hoeganaes Corporation  
Thomas J. Jesberger, Abbott Furnace Company  
Ashley Nichols, FloMet LLC

John W. von Arx, NetShape Technologies, Inc.

- fuel cells, energy storage, batteries, next generation, sustainable materials, life-cycle assessment

#### F. Automotive Today & Tomorrow

Blaine Stebick, Phoenix Sintered Metals  
Sylvan St. Laurent, Rio Tinto Metal Powders (QMP)  
Roger Lawcock, Gates Canada, Inc.

Eric S. Boreczky, Hoeganaes Corporation

- global growth, hybrid vehicles, powertrain, engine, body & chassis, light-weighting, fuel efficiency, extreme applications

### OTHER CONFERENCE ACTIVITIES

- APMI is pleased to announce the new "Excellence in Metallography Award" to recognize the individual(s) responsible for metallography used to support and provide evidence for the ideas set forth in a conference technical paper. Any author(s) submitting a publishable manuscript is eligible for consideration. Award information will be included in the Speaker Guide.
- Plenary sessions are planned focusing on the international PM industry and topical issues.
- An expanded trade exhibition will feature international suppliers of metal powders, components, equipment and related services.
- Special events, luncheons, receptions and meal functions will be planned.

### TO PRESENT A PAPER/POSTER

Persons interested in presenting/authoring a paper or poster should have a strong background and knowledge of a particular segment of the PM industry, i.e., powder producers, component manufacturers, end users, R&D, and consultant organizations and academic institutions.

**Commercialism in abstracts, technical presentations, visuals, manuscripts, or posters will not be permitted.**

**Technical Sessions**—authors will be provided 25 minutes total time for formal, oral presentation and questions-and-answers. In addition, time will be provided for informal, private discussion. All presentations must be given in English and are limited to one speaker per presentation.

**Poster Program**—Accepted posters will be on display throughout the conference. In addition, authors will be provided specific time for one-on-one discussion.

### HOWARD I. SANDEROW OUTSTANDING TECHNICAL PAPER AWARD

To recognize authors of manuscripts for excellence in scientific and technical written communications; to enhance the quality of technology transfer in the PM literature; and to enhance and promote the science and technology which is fundamental to powder metallurgy products, processes, and materials, MPIF has established the "Howard I. Sanderow Outstanding Technical Paper Award." Eligibility for the award is open to authors of manuscripts of original and unpublished work that are submitted and presented for publication in the proceedings of the conference. Authors must follow established guidelines regarding manuscript preparation, preview, and publication (submission) schedule. Complete award criteria will be sent to each qualifying speaker with their Speaker Guide.

### PROCEEDINGS PUBLICATION

All papers presented in the technical sessions (mandatory manuscript publication), designated special interest programs, and those poster manuscripts submitted (optional publication) meeting the publication requirements, will be subsequently published in the conference proceedings "Advances in Powder Metallurgy & Particulate Materials – 2011." **A draft copy of the manuscript to be presented and published must be reviewed by the designated Session Chairman during the following time period: March 1–25, 2011. The final, typed manuscript for proceedings publication and final outstanding technical paper award consideration must be submitted prior to the conference by April 15, 2011.**

### THE CONFERENCE ORGANIZER

The Metal Powder Industries Federation is a worldwide, non-profit organization that combines the trade and technical interests of the metal powder producing and consuming industries. MPIF serves as the "voice" of the international PM community and is the world's leading sponsor of PM conferences. MPIF is comprised of the following individual trade associations: Powder Metallurgy Parts Association, Metal Powder Producers Association, Powder Metallurgy Equipment Association, Refractory Metals Association, Iso-static Pressing Association, and Metal Injection Molding Association. MPIF represents all segments of the PM industry, including member consultants, research organizations and overseas companies.

The conference is organized in cooperation with APMI International. APMI is a worldwide professional and technical society for individuals involved or interested in the practice, application, and development of PM and particulate technology. Its members number several thousand persons, located in 50 countries.

### TO SUBMIT AN ABSTRACT

Abstracts may be submitted online ONLY using the online submission form. To submit an abstract visit Conferences & Exhibits at [www.mpif.org](http://www.mpif.org). **No e-mail, fax, or mail submissions.** If you are unable to complete an online submission please contact Susan Wright at [swright@mpif.org](mailto:swright@mpif.org).

The following information will be required during the online submission process:

1. Abstract must be 100–150 words (maximum) and all text (no figures, graphs or tables). *Please use generic terminology rather than chemical symbol designations, and all units or measurement must be expressed in SI units and the English equivalent (e.g., inch-pound) provided in parenthesis.*

2. Complete title of the abstract.
3. Name and full contact information for the speaker and all co-authors.
4. Submitters must designate for which program the abstract is being submitted. For the general technical sessions and poster program, authors must provide a primary topic category number and letter (see Section I of this document) which best describes the work. Up to two secondary topic numbers may also be provided. Poster authors must indicate in advance whether or not they will submit a paper for publication in the proceedings. Special interest program submissions should use the letter designator to indicate the specific program.

Abstract/paper must be on previously unpublished work of current interest. Abstract will be judged on technical merit and should emphasize results and conclusions in addition to what is new about the work. *Abstract must not emphasize product names after the first mention of a trade named product.*

**Presentation at the conference must be made by the person designated as the speaker or one of the co-authors (where applicable)—one speaker per presentation. Only papers presented at the conference will be published in the conference proceedings.**

Abstracts accepted for presentation in the technical sessions require a typewritten manuscript prior to the conference in the prescribed format. Authors agree to abide by all rules and regulations regarding manuscript/extended abstract preview, submission, and paper presentation.

Titles and abstracts selected for presentation are subject to editorial revision by the Program Committee. All selected titles and abstracts will be published on the MPIF Web site and in the conference registration materials.

**Deadline for submission of abstracts: September 27, 2010.**

Authors will be notified of the committee's decision in December 2010. All correspondence will be addressed to the attention of the author designated as the "Speaker"; second- and third-party correspondence cannot be accommodated. Receipt of submission will be acknowledged.

**Participation:** Persons submitting abstracts for program presentation do so with the full understanding that **all costs associated with conference participation, including travel, hotel, and meal expenses, are the responsibility of the individual participant/speaker and not of the conference organizers.** A registration discount will be available for participating speakers. Special letters of invitation which can be used in applying for entrance (visas) will be provided to participants upon written request to MPIF.

Comments or questions regarding abstract submission or the technical program should be directed to:

**PowderMet2011**

Attn: Sandra Leatherman  
**Metal Powder Industries Federation**  
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Princeton, New Jersey 08540-6692 U.S.A.  
TEL: (609) 452-7700 • FAX: (609) 987-8523  
E-mail: [info@mpif.org](mailto:info@mpif.org)



### DEADLINE FOR SUBMISSION OF ABSTRACTS: SEPTEMBER 27, 2010

Because of the size and scope of PowderMet2011, the abstract review process, and the large number of abstracts to be reviewed, the Technical Program Committee must adhere to the published deadline of September 27, 2010. Authors are to submit abstracts online ONLY through the MPIF Web site using the online submission form.