

Special Interest Programs

SIP 1

BENCHMARKING CONVENTIONAL PM WITH ALTERNATIVE METALWORKING TECHNOLOGIES

Monday, May 14

Program Organizers:

Eric Boreczky, Hoeganaes Corporation
Ryu Goto, Engineered Sintered Components

PM has been successful by using technical solutions to solve commercial problems. Much of PM's success is attributed to converting wrought components to PM with equal or better properties at a lower cost. To meet these technical demands, ongoing R&D and product development have been providing innovative materials and processes to better compete in the metalworking market. To improve response time, new processes such as rapid prototyping, using computer-driven analytical tools, and planning aggressive product launches provide one avenue. In this program, specific examples of leveraging these new developments in expanding PM market presence will be provided, as will challenges being faced in this competitive environment.

Individual presentations will run approximately 30 minutes each, including questions. Manuscripts that are submitted will be published in the conference proceedings.

Monday morning

9:45–11:15 a.m. (09:45–11:15)

Session Chairman:

Ryu Goto, Engineered Sintered Components

0155 U.S.A.

Optimizing the Strength of the Materials Used to Manufacture Powder-Forged Connecting Rods

Edmond Ilia, Kevin Tutton, Michael O'Neill, George Lanni, Steve Letourneau, Metaldyne Sintered Components

0020 U.S.A.

Take the Pain Out of PM

Steve W. Tuszynski, Algoryx, Inc.

0188 U.S.A.

Overview of the Forging Industry

George Thanopoulos, Hephaestus Holdings

SIP 2

PM IN ELECTRONICS & THERMAL MANAGEMENT

Monday, May 14

Program Organizers:

K. S. Narasimhan, FAPMI, Hoeganaes Corporation
Thomas W. Pelletiers, SCM Metal Products, Inc.
Howard I. Sanderow, Management & Engineering Technologies
John A. Shields, Jr., H. C. Starck, Inc.

PM has a history of being used in various applications in the electrical and electronics industry, from brushes to contacts, from sensors to solders. Here we highlight a few new developments in the electromagnetic applications field along with applications for metallic ink and thermal processing. It is obvious from a review of the conference content that the use of PM in electronic/electrical applications is alive and well with many more exciting developments to come.

Individual presentations will run approximately 30 minutes each, including questions. Manuscripts that are submitted will be published in the conference proceedings.

PART 1: ELECTROMAGNETICS

Monday morning

9:45–11:15 a.m. (09:45–11:15)

Session Chairman:

K. S. Narasimhan, FAPMI, Hoeganaes Corporation

0142 U.S.A.

A New High-Density Magnetic Material to Replace Lamination Steels

Francis Hanejko, Kalathur S. Narasimhan, Jack Hamill, Hoeganaes Corporation

0105 Japan

Development of Electromagnetic PM Stainless Steel

Chio Ishihara, Kazuo Asaka, Hitachi Powdered Metals Co., Ltd., Atsushi Watanabe, Epson Atmix Co. & Tomoaki Fukuoka, Masahiro Mizoguchi, Nikki Co., Ltd.

0084 U.S.A.

High-Density Stainless Steel and Iron Base Alloys for Electromagnetic Applications

Richard R. Phillips, Engineered Pressed Materials & Dennis Hammond, Apex Advanced Technologies, LLC

// These meetings have an open structure that permits extensive discussions of active research topics ... MPIF annual conferences have formed the basis for much of my professional network. //



Iver Eric Anderson
Sr. Metallurgist
Ames Laboratory/
Iowa State University
USA

Special Interest Programs

PART 2: METALLIC INK AND THERMAL MANAGEMENT

Monday afternoon

3:30–5:00 p.m. (15:30–17:00)

Session Chairman:

Thomas W. Pelletiers
SCM Metal Products, Inc.

0043 U.S.A.

Photonic Curing for Sintering of Nano-Particulate Material

James W. Sears, Michael J. Carter, South Dakota School of Mines & Technology

0072 U.S.A. & Korea

Microstructure of Tungsten Copper and Model to Predict Thermal Conductivity

Seong Jin Park, Reza Yassar, Randall M. German, Center for Advanced Vehicular Systems, Mississippi State University, John L. Johnson, Kennametal Inc., Young-Sam Kwon, CetaTech, Inc. & Ralph B. Dinwiddie, Wallace D. Porter, Oak Ridge National Laboratory

0137 India

Powder Metallurgical Processing of Silver and Cr-Cu Alloys for Thermal Management and Vacuum Interrupter Applications

Anish Upadhyaya, E. R. Tagore, Indian Institute of Technology

SIP 3

ADVANCED COMPACTION TECHNOLOGIES: A PRESSING NEED

Tuesday, May 15

Program Organizers:

Denis Christopherson, PMT, Federal-Mogul Sintered Products
Bruce Lindsley, Hoeganaes Corporation

The requirements of higher strength, performance, and quality in PM components emphasize the criticality of the compaction process. Further understanding and development of this core technology

is required for continued growth opportunities in the PM industry. Advances in this technology include the modeling of the compaction process, compaction equipment, and enhanced powder/lubricant properties. Several techniques are in practice or in development to achieve improved compaction prior to sintering. Various options to obtain higher-performance components are presented in this program.

Individual presentations will run approximately 30 minutes each, including questions. Manuscripts that are submitted will be published in the conference proceedings.

PART 1

Tuesday morning

8:00–9:30 a.m. (08:00–09:30)

Session Chairman:

Denis Christopherson, PMT
Federal-Mogul Sintered Products

0164 Sweden

High-Density PM Components by High-Velocity Compaction: A Compilation of Publications on the Process and Equipment

Dirk Sterkenburg, Hydropulsor AB

0165 U.S.A.

Advanced Compaction Technologies: A Pressing Need

Dennis Massey, UTRON Inc.

0163 U.S.A.

Physics, Modeling, and Simulation of Cold Compaction: State-of-the-Art and Open Problems

Antonios Zavaliangos, Drexel University

PART 2

Tuesday morning

10:45 a.m.–12:15 p.m. (10:45–12:15)

Session Chairman:

Denis Christopherson, PMT
Federal-Mogul Sintered Products

0162 Sweden

Warm Compaction and Warm Die Compaction: A Comparison

Mats Larsson, Per Knutsson, Mikael Dahlberg, Höganäs AB

0146 U.S.A.

High-Density Processing of Powder Metallurgy Materials

Francis Hanejko, Patrick King, Bruce Lindsley, George Poszmik, Hoeganaes Corporation

0178 U.S.A.

A Comprehensive Powder Control for Compaction

Karol Z. Korczak, KZK Powder Tech Corp.

PART 3

Tuesday afternoon

3:15–4:45 p.m. (15:15–16:45)

Session Chairman:

Bruce Lindsley
Hoeganaes Corporation

0179 Switzerland

Advanced Press Controls and Programming for High-Quality PM Products

Paul Zbinden, Daniel Felber, Osterwalder AG

0181 U.S.A.

Coordinated Systems Approach to Achieving High Density

Robert Unkel, Cincinnati Incorporated & Francis J. Hanejko, Hoeganaes Corporation

0180 U.S.A.

Single Press to Full Density: A “Stretch” Goal for the PM Industry

Howard I. Sanderow, Center for Powder Metallurgy Technology

WEIRD PM: NEXT GENERATION MATERIALS, PROCESSES, AND APPLICATIONS

Tuesday, May 15

Program Organizers:

Matthew Bulger, Hawk MIM/Net Shape Technologies
Alan Lawley, FAPMI, Drexel University
Joseph Tunick Strauss, HJE Company, Inc.

PM is generally associated with the high-productivity manufacturing of parts via press-and-sinter or MIM. These PM parts are commonplace as they are part of many of the consumer products that we purchase. There are many other applications involving metal powder and some that are just as common in everyday life. However, most people are unaware that these products are a creation of PM as well. This program will present several unusual PM applications, some quite common and some esoteric, that are as well-incorporated into consumer products as traditional PM parts.

Individual presentations will run approximately 30 minutes each, including questions. Manuscripts that are submitted will be published in the conference proceedings.

PART 1: ATOMIZATION

Tuesday morning

8:00–9:30 a.m. (08:00–09:30)

Session Chairman:

Alan Lawley, FAPMI
Drexel University

0076 U.S.A.

Gas-Atomized Oxide Dispersion-Strengthened Stainless Steel

Joel R. Rieken, Iver Eric Anderson, Robert L. Terpstra, F. C. Laabs, Ames Laboratory, Iowa State University

0171 United Kingdom

Centrifugal Atomisation of Metal Powders

John J. Dunkley, Dirk Aderhold, Atomising Systems Limited

0091 U.S.A.

Generation of Iron-Based Powders and Spray Deposits with Oxide Dispersoids by Gas Atomization Reaction Synthesis (GARS)

Iver E. Anderson, Robert L. Terpstra, F. Laabs, Joel R. Rieken, Ames Laboratory, Iowa State University

PART 2: MATERIALS

Tuesday morning

10:45 a.m.–12:15 p.m. (10:45–12:15)

Session Chairman:

Joseph Tunick Strauss
HJE Company, Inc.

0139 U.S.A.

A Novel Transformer-Oil Additive to Extend Transformer Rating and/or Life

Lane H. Donoho, J. Davidson, W. P. Kang, F. Wells, J. Barnett, P. Taylor, A. Strauss, K. L. Soh, K. Holmes, Vanderbilt University, D. Bradshaw, F. Campbell, M. Ingram, Tennessee Valley Authority & T. Fisher, Purdue University

0097 U.S.A.

Development of Full-Density Co-W Sputtering Targets for Data-Storage Applications

Fenglin Yang, Heraeus Inc.

0169 U.S.A.

The Powder Metallurgy Behind Dental Amalgams

Robert J. O'Neill, Dentsply Caulk

PART 3: PROCESSES

Tuesday afternoon

3:15–4:45 p.m. (15:15–16:45)

Session Chairman:

Matthew Bulger
Hawk MIM/Net Shape Technologies

0021 U.S.A.

Powder-Infused Putty Materials and Their Possible Applications

Travis E. Puz, Randall M. German, Antonyraj Arockiasamy, Matthew T. Tucker, Center for Advanced Vehicular Systems, Mississippi State University, James J. Oakes, ATI Alldyne & Steven G. Caldwell, ATI Firth Sterling

0100 Germany

Processing and Characterization Methods for Open Porous Metallic Foams Produced by the SlipReactionFoamSintering (SRFS) Process

Stefanie Angel, Wolfgang Bleck, IEHK, RWTH, Aachen University

0168 U.S.A.

Production of Bimetal Strip by Powder Metallurgy for Use in Engine Bearings and Bushings

David M. Saxton, James Carpenter, Federal-Mogul Corporation

ADVANCED MATERIALS AND PROCESSES APPLIED TO NON-AUTOMOTIVE APPLICATIONS

Wednesday, May 16

Program Organizers:

Ulf Engström, Höganäs, AB
Jeffrey F. Hamilton, Cloyes Gear & Products, Inc.
John W. von Arx, PMG Indiana Corporation

It can be said that in many instances innovation in PM is driven by the automotive industry due to the commercial reward of high-volume manufacturing. Innovation that has come out of the automotive world, as well as other advancements, have use beyond automotive. This program will examine this innovation and focus on its non-automotive application.

Individual presentations will run approximately 30 minutes each, including questions. Manuscripts that are submitted will be published in the conference proceedings.

Special Interest Programs

PART 1

Wednesday morning

8:00–9:30 a.m. (08:00–09:30)

Session Chairman:

Jeffrey R. Hamilton
Cloyes Gear & Products, Inc.

0157 U.S.A.

Near-Full-Density Process for Making Low-Alloy Steels and Ductile Cast Irons

Dennis Hammond, Apex Advanced Technologies, LLC

0177 U.S.A.

High-Performance, Low-Volume PM Applications

John F. Sweet, FMS Corporation

0170 U.S.A.

Non-Automotive Markets & Materials for MIM

Matthew Bulger, Hawk MIM/Net Shape Technologies, Hawk Precision Components Group

PART 2

Wednesday morning

10:45 a.m.–12:15 p.m. (10:45–12:15)

Session Chairman:

Ulf Engström
North American Höganäs, Inc.

0037 Poland

The Investigation of Nd-Fe-B Dielectromagnets in Negative Temperature

Barbara M. Slusarek, Piotr Gawrys, Tele & Radio Research Institute

0187 Sweden

High-Performance PM Materials for Non-Automotive Applications

Ulf Engstrom, Fredrik Vinnerborg, Höganäs AB

0186 U.S.A.

The Economics of HIP PM Shapes: Factors that Influence Price and Application

Stephen J. Mashl, Donald R. MacGinnis, Bodycote HIP

// The annual MPIF conference offers the chance to meet with many suppliers and customers in one place. With one plane ticket, I am able to participate in face-to-face meetings that would otherwise require significantly more travel and time away from the plant. //



Denis Christopherson
Manager, Research and Development
Federal-Mogul Sintered Products
USA