

TECHNICAL PROGRAM FORMAT

Five to seven technical sessions and/or special interest programs will take place concurrently throughout the conference.

SPECIAL INTEREST PROGRAMS

The titles, parts, and times for the six special interest programs are listed on the daily program schedule. Detailed descriptions of the individual programs are shown on pages 22–25.

TECHNICAL SESSIONS

Following is a detailed description of the 34 conference technical sessions. Each session will consist of 3 technical papers presented by authors in English. Individual presentations will last approximately 20 minutes with an additional 5 minutes for questions and answers. Manuscripts from the technical sessions will be included in the conference proceedings.

SPEAKER INTERACT

At the end of each technical session there will be a 15-minute period for informal discussion in the rear of the room with session speakers. This concept is designed to foster and encourage technical dialogue and information exchange.

TECHNICAL PROGRAM LISTINGS AS OF DECEMBER 20.

Presentation numbers are listed before the author's country(ies). Be sure to visit the MPIF Web site at www.mpiif.org for changes to the technical program and to view submitted abstracts, where applicable.

SPECIAL INTEREST PROGRAMS

(See pages 22–23 for details)

9:45 a.m.–4:30 p.m. (09:45–16:30)

SIP 1: Global Automotive Change: The Move to the Eco-Car, Part 1 & 2 (of 2)

SIP 2: Advances in Tooling to Meet Today's Demanding PM Applications, Part 1 & 2 (of 2)

SIP 3: Advances in Nanoparticle Science & Technology, Part 1 & 2 (of 3)

TECHNICAL SESSIONS

Monday morning

9:45–11:15 a.m. (09:45–11:15)

SESSION 1

TESTING & EVALUATION

Session Chairman:

Leigh Duren
Nichols Portland–Parker Hannifin

0124 U.S.A.

New Methodology Applying Resonant Inspection for Quality Testing of Very Small Powder Metal Components

Richard W. Bono, Scott A. Sorensen,
Gail R. Stultz, The Modal Shop, Inc.

0025 U.S.A.

New Advances in Automated Magnetic Property Testing

Patrick W. Sansieri, Odyssey
Technology Corp.

0108 U.S.A.

Quantifying the Bond Strength of HIP Clad Components

Jane L. LaGoy, Bodycote

SESSION 2

SINTERING I: SINTERED PROPERTIES

Session Chairman:

Thomas Philips
Air Products and Chemicals, Inc.

0072 Spain

Influence of Ni on Hardenability of PM Steels

Francisco Castro, Shandra Sainz, CEIT

0144 U.S.A. & Canada

Blistering in Powder Metal Nickel Steels—the Catalytic Effect of Fine Ni

Chaman Lall, Metal Powder Products Company, Claude Gelinis, Rio Tinto Metal Powders & Leander F. Pease III, Powder-Tech Associates

0110 Italy

Dimensional and Geometrical Control of PM Parts Sintered at Low and High Temperatures

Ilaria Cristofolini, Alberto Molinari,
Andrea Rao, University of Trento

SESSION 3

COATING & FUNCTIONALLY GRADED MATERIALS

Session Chairman:

Kyu Cho
U.S. Army Research Lab

0069 U.S.A.

Structure–Processing–Property Relationships in Bulk Copper Produced by Cold Gas Dynamic Spray Processing

Paul D. Eason, Jason A. Fewkes,
Shane C. Kennett, University of North Florida, K. Tello, Michael J. Kaufman, Colorado School of Mines & Timothy J. Eden, The Pennsylvania State University

0036 *Portugal*
Mechanical Evaluation of Functionally Graded Powder Metallurgy Components
 Oscar Carvalho, University of Minho

0037 *Portugal*
Fatigue-Life Characterization of Carbon Nanotube Reinforcement in a Stainless Steel Functionally Graded Powder Metallurgy Composite
 Nuno Costa, Oscar Carvalho, Delfim Soares, Fillipe S. Silva, University of Minho

SESSION 4

LOW-ALLOY STEEL

Session Chairman:
 Mark R. Haas, PMT
 Burgess-Norton Mfg. Co.

0053 *U.S.A. & Sweden*
Comparison of Cost-Effective Cr-Ni Steel with Common High-Performance Powder Metal Steels
 Roland T. Warzel III, Alexander Klekovkin, Ian Howe, North American Höganäs, Inc. & Sven Bengtsson, Höganäs AB

0102 *U.S.A.*
PM Steels that Contain Manganese
 Bruce A. Lindsley, W. Brian James, Hoeganaes Corporation

0071 *Spain*
Developing Novel Cr-Mo-Ni PM Steels
 Francisco Castro, Arulkumar Karuppannagounder, Shandra Sainz, CEIT

Monday afternoon
 3:00–4:30 p.m. (15:00–16:30)

SESSION 5

PIM I: PROPERTIES

Session Chairman:
 Martin A. Kearns
 Sandvik Osprey Ltd.
United Kingdom

0017 *Japan*
The Influence of Density and Oxygen Content on the Mechanical Properties of Injection-Molded Ti-6Al-4V Alloys
 Hideshi Miura, Kyushu University & Yoshinori Itoh, Toshiaki Uematsu, Kenji Sato, Hamamatsu Technical Support Center of Industrial Research Institute of Shizuoka Prefecture

0033 *U.S.A., Austria & Serbia and Montenegro*
Investigation of the Influence of Carbon Content Caused by the Variation of Sintering Parameters on the Magnetic Properties of Semi-Hard Magnetic Fe-Co-V Samples Produced by Metal Powder Injection Molding (PIM)
 Satyajit Banerjee, DSH Technologies, Claus J. Joens, Elnik Systems, Branislav S. Zlatkov, FOTEC Forschungs- und Technologietransfer GmbH & Maria-Vesna Nikolic, Obrad S. Aleksic, Institute for Multidisciplinary Research

0152 *U.S.A.*
Manufacturing of Implantable Biomedical Devices by Metal Injection Molding
 J. Alan Sago, Mark W. Broadley, John K. Eckert, Accellent Inc.

SESSION 6

SINTERING II: FURNACE CONTROL

Session Chairman:
 John F. Sweet, PMT
 FMS Corporation

0056 *U.S.A.*
Techniques and Tricks to Optimize, Control, and Stabilize the Atmosphere Inside a Continuous Sintering Furnace
 Thomas Philips, John Dwyer, Jr., Zbigniew Zurecki, Air Products & Chemicals, Inc.

0006 *United Kingdom & Germany*
New Furnace Atmosphere Technologies to Convert a Sintering Furnace into a Sinter-Hardening Furnace
 Akin Malas, Linde Group & Christoph Laumen, Linde AG

0074 *India*
A Relook at Mesh-Belt Type Sintering Furnace
 Ravi P. Malhotra, Malhotra Engineers

SESSION 7

COMPOSITE MATERIALS

Session Chairman:
 David E. Dombrowski
 Los Alamos National Laboratory

0082 *U.S.A.*
Analytical Characterizations and First Principles Calculations of Dispersoids in Trimodal Aluminum Metal Matrix Composite
 Bo Yao, Clara Hofmeister, Yongho Sohn, University of Central Florida & Kyu Cho, U.S. Army Research Laboratory

0048 *Canada*
Sintered Lamellar Soft-Magnetic Composite Fabricated with Fe, FeNi, and Fe₃Si
 Patrick Lemieux, Mihaiela Isac, Roderick Guthrie, McGill Metal Processing Center & Sylvain Pelletier, Yannig Thomas, IMI-NRCC

0046 *Germany*
Development of Metal-Supported Gas-Separation Membranes
 Hans Peter Buchkremer, Felix Hauler, Katharina Brands, Oliver Buechler, Martin Bram, Tim van Gestel, Detlev Stoeber, Forschungszentrum Juelich

SESSION **8**

FATIGUE

Session Chairman:

Russell A. Chernenkoff
Metaldyne Sintered Components

0101 *Germany*

Influence of Slip on RCF of a Case-Hardened Steel at Full Density

Thomas L. Janitzky, Paul Beiss,
RWTH Aachen-IWM

0104 *Germany*

Influence of Loading Mode on Fatigue Behavior of a Sintered FE-CU-C Steel

Ali Zafari, Paul Beiss, Institute for Materials Applications in Mechanical Engineering (IWM), RWTH Aachen University

0031 *Colombia & Spain*

Small and Long Fatigue-Crack Growth in PM Steels

Jorge L. Bris, Universidad del Norte, Yadir Torres, Universidad de Sevilla, Jose Calero, AMES S.A. & Luis Llanes, Universidad Politécnic de Cataluña



Tuesday, June **29**

SPECIAL INTEREST PROGRAMS

(See pages 23–25 for details)

8:00–9:30 a.m. (08:00–09:30)

SIP 3: Advances in Nanoparticle Science & Technology, Part 3 (of 3)

SIP 4: Rapid Manufacturing and Direct Manufacturing of Metal Parts, Part 1 (of 3)

SIP 5: The Characterization and Testing of Metal Powders and PM Products, Part 1 (of 4)

10:45 a.m.–5:00 p.m. (10:45–17:00)

SIP 4: Rapid Manufacturing and Direct Manufacturing of Metal Parts 2 & 3 (of 3)

SIP 5: The Characterization and Testing of Metal Powders and PM Products, Parts 2 & 3 (of 4)

3:30–5:00 p.m. (15:30–17:00)

SIP 6: Machinability of PM Components: Materials, Processes, and Beyond, Part 1 (of 4)

TECHNICAL SESSIONS

Tuesday morning

8:00–9:30 a.m. (08:00–09:30)

SESSION **9**

PIM II: STAINLESS STEELS

Session Chairman:

Hideshi Miura
Kyushu University
Japan

0058 *Canada*

Parametric Modeling of MIM As-Sintered Properties of Stainless Steel 17-4PH and 316L Using a Statistical Model

Benoit Julien, Michael Ste-Marie, Roger Pelletier, Maetta Sciences Inc. & Turenne Sylvain, École Polytechnique de Montréal

0018 *Malaysia & U.S.A.*

Effect of Sintering Environments on Corrosion of Powder Injection Molded 316L Stainless Steel Parts

Faiz Ahmad, Mohammad Rafi Raza, University Technology Petronas, Mohd Afian Omar, SIRIM & Randall M. German, FAPMI, San Diego State University

0140 *U.S.A. & United Kingdom*

Effect of Particle-Size Distribution on Processing and Properties of MIM 17-4PH

Torbjorn A. Tingskog, Martin A. Kearns, Sandvik Osprey Ltd. & Donald T. Whychell, Sr., FAPMI, CM Furnaces, Inc.

SESSION **10**

PM STEELS I

Session Chairman:

Suresh O. Shah
Cloyes Gear & Products, Inc.

0089 *U.S.A.*

Effect of Copper Alloy Addition Method on the Dimensional Response of Sintered Fe-Cu-C Steels

Michael L. Marucci, Francis G. Hanejko, Hoeganaes Corporation

0096 *U.S.A.*

Properties and Applications of a Newly Developed Low-Apparent-Density Atomized Powder

Peter K. Sokolowski, Francis G. Hanejko, Hoeganaes Corporation

0034 *Austria & Germany*
Thermal Expansion and Thermal Conductivity of Sintered Steels—The Real Effect of the Porosity
 Herbert Danninger, Christian Gierl, Vienna University of Technology & Monica Silva, Schmidt Jürgen, Specht Eckehard, Mgdeburg University

SESSION 11

ADVANCES IN COMPACTION EQUIPMENT

Session Chairman:
 Joseph P. Polito, PMT SMS Meer

0137 *Germany*
Servo-Motor Drive Concept for Compaction Press Combines Speed with Precision and Convenience
 Wolfgang Schuebl, Dorst Maschinen und Analagenbau

0117 *Canada*
Implementation and Testing of a New Intelligent Compaction-Press Controller
 Michel Guillot, Laval University

0116 *Canada*
Presentation and Testing in Production of a New Die-Filling Shoe
 Michel Guillot, Laval University & Tandjoui Baazi, Maxtech Metal Powder Division

SESSION 12

HARDMETALS

Session Chairman:
 Animesh Bose, FAPMI Materials Processing, Inc.

0084 *U.S.A.*
The Effects of Grain-Growth-Inhibitor Additives on Cobalt Gradient Formation in Cemented Carbides
 Jun Guo, Peng Fan, Xu Wang, Zhigang Z. Fang, University of Utah

0008 *U.S.A.*
Cemented Carbide Material for Hot-Metal-Rolling Applications
 Leonid I. Frayman, General Carbide Corporation

0128 *U.S.A.*
Hydrogen Reduction of Heterogenite to Make Submicron Cobalt Metal Powder
 Raj P. Singh-Gaur, Global Tungsten & Powders, Plansee Group

Tuesday morning
 10:45 a.m.–12:15 p.m. (10:45–12:15)

SESSION 13

PIM III: TITANIUM ALLOYS

Session Chairman:
 J. Alan Sago
 Accellent Inc.

0077 *U.S.A.*
Conceptual Optimization of Titanium Metal Powder Injection Molding
 Randall M. German, FAPMI, San Diego State University

0001 *U.S.A.*
Sintering Atmospheres for Powder Metal Injection Molded (MIM) Titanium Alloys
 Satyajit Banerjee, DSH Technologies & Claus J. Joens, Elnik Systems

0007 *Malaysia*
Injection Molding Parameter Optimization of Titanium-Alloy Powder Mix with Palm Stearin and Polyethylene for Green Defects Using Taguchi Method
 Nor Hafiez Mohamad Nor, Norhamidi Muhamad, Khairur Rijal Jamaludin, Sufizar Ahmad Ahmad, Mohd Halim Irwan Ibrahim, Universiti Teknologi MARA, (UiTM)

SESSION 14

PM STEELS II

Session Chairman:
 Sylvain St. Laurent
 Rio Tinto Metal Powders
 Canada

0143 *U.S.A.*
Properties and Processing of Dual-Phase PM Steels
 Christopher T. Schade, Thomas F. Murphy, FAPMI, Hoeganaes Corporation & Alan Lawley, FAPMI, Roger Doherty, Drexel University

0054 *U.S.A.*
High-Performance Components Utilizing Bonded Mixes
 Ian Howe, Denis O'Keefe, Roland T. Warzel III, North American Höganäs, Inc.

0105 *U.S.A.*
Properties of Advanced Binder-Treated FY4500
 Francis G. Hanejko, William Tambussi, Hoeganaes Corporation

SESSION 15

ATOMIZATION I

Session Chairman:
 Robert M. Gasior
 Carpenter Powder Products Inc.

0028 *U.S.A.*
Gas-Atomized Chemical Reservoir ODS Ferritic Stainless Steels
 Joel R. Rieken, Iver E. Anderson, FAPMI, Matthew J. Kramer, Danny Shechtman, Ames Laboratory

0085 *Austria*
Application of New Gas-Atomization System for Alloys and Chalcogenides
 Christoph Wagner, Stefan Luidold, Helmut Antrekowitsch, University of Leoben & Karl Rimmer, IMR Metal Powder Technologies GmbH

0059 U.S.A.

Development of Large-Scale Gas Atomization of Precursor Powders for Simplified Production of Oxide Dispersion Strengthened (ODS) Ferritic Alloys

John L. Meyer, Joel R. Rieken, Iowa State University & Iver E. Anderson, FAPMI, David J. Byrd, Ames Laboratory, U.S. DOE

SESSION **16**

REFRACTORY METALS

Session Chairman:

David A. Alven
Aerojet Ordnance Tennessee

0129 U.S.A.

Grain Growth during Liquid-Phase Sintering of W-Cu

John L. Johnson, ATI Engineered Products

0127 Belgium

Deformation Behavior of Pure, Doped, and Ultrafine-Grained Tungsten

Subba Rao Mekala, Havells-Sylvania Lighting Belgium NV

0119 U.S.A.

Development of the Technological Process for Manufacturing of Sputtering Targets from the Metal Oxides via HIP PM

Victor Samarov, Charles J. Barre, Roman Haykin, Anthony Makielsky, Synertech PM Inc. & Dennis L. Poor, Kittyhawk Products

SESSION **17**

SURFACE COATINGS

Session Chairman:

John Engquist
Burgess-Norton Mfg. Co.

0029 U.S.A.

Solving Coating Problems in Powder Metal and Ceramic Parts

Michael L. Ballou, Peter T. Gebhard, Impco Inc.

0041 Germany

Spray Forming of Multilayer Materials

Volker Uhlenwinkel, Institut für Werkstofftechnik, Christoph Meyer, Reinhard Ristau, Universität Bremen, Peter Jahn, Zollern BHW, Hilmar Müller, Wieland Werke AG, Peter Krug, PEAK Werkstoff GmbH & Werner Trojahn, Schaeffler

0026 Russia

The Coating Structure Formed by Electric Exploding of Contact

Evgeny G. Grigoryev, Moscow Engineering Physics Institute

Tuesday afternoon
3:30–5:00 p.m. (15:30–17:00)

SESSION **18**

PIM IV: CERAMIC MATERIALS

Session Chairman:

Mitchell N. Gross, PMT
Raytheon Missile Systems

0087 Germany

Precision Manufacturing of Micro Ceramic Injection Moulded Implants

Natalie Salk, Benjamin Tröger, Fraunhofer IFAM

0064 U.S.A.

Injection Molding of SiC and AlN Feedstocks with Bimodal Powder Mixture

Nathan P. Onbattuvelli, Greg Purdy, Grant Kim, Sriram Ramamoorthi, Sundar Atre, Oregon State University

0013 China & U.S.A.

Investigation of Powder Injection Molding of Cemented Carbide Powder for Micro-Sized Parts

Haiqing Yin, Jinyan Tong, University of Science and Technology Beijing & Yixiong Liu, Jack Zheng, Kennametal Inc.

SESSION **19**

MAGNETIC MATERIALS

Session Chairman:

John W. von Arx
NetShape Technologies, Inc.

0035 U.S.A.

A Multiscale Analysis of the Structural and Magnetic Properties of Oxide Coatings for Iron Powders Used in Electromagnetic Applications

Steven R. Spurgeon, Mitra L. Taheri, Christopher Winkler, Drexel University, Gowtam Atthipalli, Jonathan Guthrie, Jennifer Gray, University of Pittsburgh & Brian Kirby, National Institute of Standards and Technology

0086 Poland

Hybrid Magnetic Elements

Barbara M. Slusarek, Marek Przybylski, Tele and Radio Research Institute

0021 Korea

Effect of Thermal Stress on (Nd, Dy)-Fe-B Sintered Magnets by Cyclic Heat Treatment

Se Hoon Kim, Hoon-sup Kim, Tae Sun Jo, Young Jung Lee, Young Do Kim, Hanyang University

SESSION **20**

ATOMIZATION II

Session Chairman:

Michael L. Marucci
Hoeganaes Corporation

0118 U.S.A.

Initial Results for Advanced Gas-Atomization Processing of Ti and Ti Alloy Powder

Iver E. Anderson, FAPMI, David Byrd, Joel R. Rieken, Andrew Heidloff, Ames Laboratory, Iowa State University

0039 *Germany*
New Approach to Generate Composite Particles
 Volker Uhlenwinkel, Lutz Mädler, Stiftung Institut für Werkstofftechnik & Lydia Achelis, University Bremen

0115 *U.S.A.*
Three-Layer Composite Plasma-Sprayed Pour Tubes for Titanium Atomization
 David J. Byrd, Iver E. Anderson, FAPMI, Matthew F. Besser, Joel R. Rieken, Andrew Heidloff, Ames Laboratory, Iowa State University

SESSION **21**
BRAZING & SHOT PEENING
Session Chairman:
 Larry F. Totzke, PMT PSM Industries

0094 *U.S.A.*
Considerations in Sinter Brazing PM Components
 Peter K. Sokolowski, Thomas F. Murphy, FAPMI, Bruce A. Lindsley, Hoeganaes Corporation

0045 *Canada & U.S.A.*
Effects of Shot Peening on Aluminum Powder Metallurgy Alloys
 Matthew D. Harding, D. Paul Bishop, Dalhousie University & Ian W. Donaldson, GKN Sinter Metals

0111 *Italy*
Effect of Shot Peening on the Fatigue Resistance of a Cr-Mo Sintered Steel
 Alberto Molinari, Elena Santuliana, University of Trento, Stefano Libardi, TFM SpA & Paolo Marconi, 2Effe Engineering



Wednesday, June 30

SPECIAL INTEREST PROGRAMS

(See pages 24–25 for details)

8:00–9:30 a.m. (08:00–09:30)

SIP 5: The Characterization and Testing of Metal Powders and PM Products, Part 4 (of 4)

SIP 6: Machinability of PM Components: Materials, Processes, and Beyond, Part 2 (of 4)

9:45 a.m.–2:00 p.m. (09:45–14:00)

SIP 6: Machinability of PM Components: Materials, Processes, and Beyond, Parts 3 & 4 (of 4)

TECHNICAL SESSIONS

Wednesday morning
 8:00–9:30 a.m. (08:00–09:30)

SESSION **22**
PIM V: PROCESS OPTIMIZATION

Session Chairman:
 Ashley Nichols
 FloMet LLC

0012 *Austria*
Process Optimization for Sintering of Metal Injection Molded Copper through Advanced Kinetics Analysis
 Ijaz Mohsin, Insitute of Chemcial Technology, TU Wien, Herbert Danninger, Christian Gierl, TU Wien and Daniel Lager, Austrian Institute of Technology-AIT

0019 *Malaysia*
Rheology Study of Carbon-Nanotubes-Reinforced Copper Feedstock for Powder Injection Molding
 Faiz Ahmad, G. Goudah, Othman Mamat, University Technology Petronas, Mohammad Afian Omar, SIRIM

0049 *U.S.A. & Korea*
Gas-Assisted Injection Molding of Polymer and Powder Metal Feedstock in a Stereolithography Mold
 Nambiar Rajiv, Kyehwan Lee, Edna Orozoco, Seokyoung Ahn, Miguel A. Gonzalez, The University of Texas Pan-American & Seong Jin Park, Pohang University of Science and Technology

SESSION **23**

STAINLESS STEELS

Session Chairman:

Francois Chagnon
Rio Tinto Metal Powders
Canada

0113 U.S.A.

Higher-Pressure Combustion-Driven Powder Consolidation of Advanced Higher-Strength Stainless Steels and Materials Behavior

Karthik Nagarathnam, Dennis Massey, UTRON Kinetics, LLC

0093 U.S.A.

Corrosion-Resistant PM Stainless Steel

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

0009 U.S.A. & Sweden

Mechanical Properties of PM HIPped Stainless Steel: A Comparison to Conventional Forged/Rolled Material

James F. Scanlon, Greg Del Corso, Carpenter Technology Corporation & Anders Eklund, Björn-Olof Bengtsson, Carpenter Powder Products

SESSION **24**

POWDER SYNTHESIS I

Session Chairman:

Lou Koehler
Koehler Associates

0125 Canada

Modification of Grain Size through Milling and Heat Treatment for Improved Processing

David Levasseur, Mathieu Brochu, McGill University

0022 U.S.A.

Advanced Screening to Produce High-Performance PM Powder

Greg Riter, Minox/Elcan

0167 China

The Morphology Evolution Process of Electrolytic Copper Powder

Linshan Wang, Jinghuai Zhang, Limin Wang, GRIPM Advanced Materials Co., Ltd. & General Research Institute for Nonferrous Metals

SESSION **25**

NEW FRONTIERS IN DEFENSE, ENVIRONMENT & HEALTH

Session Chairman:

Jane LaGoy
Bodycote

0061 U.S.A.

Update on PM and MIM in the Defense Industry

Mitchell N. Gross, Raytheon

0098 U.S.A.

Novel Lead-Free Composite Bronze Bearing Alloys Produced by Infused Powder Processing

Greg A. Vetterick, Iver E. Anderson, FAPMI, Matthew F. Besser, Ames Laboratory, Iowa State University

0020 Korea

Antibacterial Filtering Characteristics of Surface-Modified Al Alloy Filter with In Situ-Dispersed Ag Nanoparticles

Young Ik Seo, Yong Jin Joen, Dae Gun Kim, Young Do Kim, Hanyang University & Kyu Hwan Lee, Korea Institute of Science and Technology

Wednesday morning

9:45–11:15 a.m. (09:45–11:15)

SESSION **26**

POWDER SYNTHESIS II

Session Chairman:

Susan M. Abkowitz
Dynamet Technology, Inc.

0057 U.S.A.

Review of Current Hydride-Dehydride (HDH) Powder Production Methods that Impact the Chemistry, Morphology, and Particle-Size Distribution of Titanium-Based Powders

Colin G. McCracken, Daniel P. Barbis, Ametek-Reading Alloys

0138 Japan

Effect of Aluminium Content on the Mechanochemical Synthesis of Ti-AlN Nanocomposite Powder by Explosive Compaction

Hossein Amini Mashhadi, R. Suetsugu, Shigeru Tanaka, P. Manikandan, K. Hokamoto, Kumamoto University

0070 China

Ti(C,N) Nanograins of Reaction Synthesizing Assisted by Spark Discharge

Shiquan Zhou, Shuang Guo, Bo Li, Huazhong University of Science and Technology

SESSION **27**

HIGH-DENSITY PROCESSING

Session Chairman:

Virendra S. Warke
Bodycote

0120 U.S.A.

Development and Manufacturing of Shrouded Impellers for Turbo-Pump and Gas Compressors via Selectively Net-Shape PM HIP

Charles J. Barre, Victor Samarov, Eugene Khomyakov, Dmitry Seliverstov, Synertech PM Inc.

0099 U.S.A.

Spray-Formed Tooling with Micro-Scale Features

Kevin M. McHugh, Manohar Sohal,
Idaho National Laboratory

0079 Germany

Direct Hot Pressing

Jens Huber, Pascal Schreyer, Dr.
Fritsch Sondermaschinen GmbH

SESSION 28

NANOMATERIAL CONSOLIDATION

Session Chairman:

Bhanu Chelluri
IAP Research, Inc.

0067 U.S.A.

Fabrication of Iron-Based Amorphous Alloys Reinforced with Carbon Nanotubes Using Spark Plasma Sintering

Ashish K. Singh, Sandip P. Harimkar,
Oklahoma State University

0122 Canada

Nanostructured Al-2024 Alloy Fabricated by Cryogenic Milling and Consolidated via Spark Plasma Sintering

Ramona R. Vintila, Mathieu Brochu,
McGill University & Robin A. Drew,
Concordia University

0002 U.S.A.

Uniaxial Compaction of Tungsten Nanoparticles

Brady G. Butler, Booz Allen
Hamilton, Judy Hays, Bowhead, Kris
Darling, Battelle, Bradley Klotz, DSI
& Eric Klier, U.S. Army Research
Laboratory

SESSION 29

PM ALUMINUM ALLOYS

Session Chairman:

Chaman Lall
Metal Powder Products Company

0090 Australia

The Effect of Hydrogen and Alloy Concentration on the Sintering of Al-Cu-Mg-Si Alloys

Shuhai Huo, Stephen Bonner,
Graham Schaffer, Qian Ma,
University of Queensland

0083 Canada & U.S.A.

On the Development of an Aluminum PM Alloy for "Press-Sinter-Size" Technology

Donald P. Bishop, Christopher D.
Boland, Dalhousie University & Rich
L. Hexemer, Ian W. Donaldson,
GKN Sinter Metals

0010 Iran & Austria

Evolution of Properties and Micro-structure during Liquid-Phase Sintering of PM Alumix 431

Maziyar Azadbeh, Sahand University
of Technology & Christian Gierl,
Herbert Danninger, Vienna
University of Technology

SESSION 30

COMPUTER SIMULATION OF PM PROCESSES

Session Chairman:

Daniel Reardon
Abbott Furnace Company

0051 Canada

Computer Modeling of the Die-Wall Lubrication Process Using the "Confining Block" Technique

Patrick Lemieux, Kinnor
Chattopadhyay, Imfine Corp. &
Mainul Hasan, McGill University

0016 Brazil

Simple Model to Calculate Wear on Metallic Interactions

Andre Ferrarese, Ana Keiko
Mizukami, Mahle

0091 India

Finite Element Simulation-Based Fatigue-Life Estimation of Powder-Compacted Product & Compacting Dies

N. L. Santhosh, G. Chidanand, S.
Shamasundar, ProSIM R&D Pvt. Ltd.

Wednesday morning

11:30 a.m. - 1:00 p.m. (11:30-13:00)

SESSION 31

ADVANCES IN TITANIUM PM

Session Chairman:

Stephen J. Mashl
Bodycote

0114 U.S.A.

Affordable Titanium-Sheet Fabrication via Roll Compaction

William H. Peter, Yukinori
Yamamoto, Craig A. Blue, David C.
Harper, Oak Ridge National
Laboratory, John E. Barnes, Chad
Henry, Lockheed Martin
Aeronautics Company & Joe A.
Capone, Ametek, Inc.

0112 U.S.A.

Low-Cost Titanium Near-Net-Shape Manufacturing Using Armstrong and/or Hydride-Dehydride CP-Ti/Ti-6Al-4V Powders

Yukinori Yamamoto, William H.
Peter, Adrian S. Sabau, Sarma B.
Gorti, James O Kiggans, Stephen D.
Nunn, Craig A. Blue, Oak Ridge
National Laboratory

0107 U.S.A.

Process Simulation of Cold Pressing and Sintering of Titanium Armstrong CP-Ti/Ti-6Al-4V Powders

Adrian S. Sabau, Sarma B. Gorti,
William H. Peter, Yukinori
Yamamoto, Oak Ridge National
Laboratory

MATERIAL PROPERTIES**Session Chairman:**

Steven R. Schmid
University of Notre Dame

0106 *U.S.A.*

Material Properties for the Simulation of Cold Pressing of Titanium Armstrong CP-Ti/Ti-6Al-4V Powders

Adrian S. Sabau, Sarma B. Gorti, James O. Kiggans, William H. Peter, Donald L. Erdman, Oak Ridge National Laboratory

0133 *U.S.A.*

Near-Full-Density Copper-Based Alloys

Dennis Hammond, Apex Advanced Technologies, LLC, Richard R. Phillips, Engineered Pressed Materials & Thomas M. Zwitter, PMT, Webster-Hoff Corporation

0095 *Sweden*

The Role of Oxygen Content on Properties of PM Materials

Ulrik Beste, Stefan Sundin, Daniel Petrini, Erasteel

POWDER FABRICATION**Session Chairman:**

Rajiv Tandon
Magnesium Elektron Powders

0131 *U.S.A. & Egypt*

Powder-Fabrication Role in the Sintering and Properties of Tungsten-Copper Alloys

Randall M. German, FAPMI, San Diego State University & Sayed Moustafa, Z. Abdel-Hamid, Central Metallurgical R&D Institute

0130 *U.S.A.*

Study of the Reduction of Tungsten Trioxide and Tungsten Blue Oxide Doped with the Alternative Dopants NaX (X= Br, NO₂, NO₃) and Na₂CO₃

Hans-Joachim Lunk, Global Tungsten & Powders Corp.

0173 *India*

Enhanced Material Properties of Sintered Aluminum Powders Using Pre-Alloyed Aluminum in Combination with Scavenging and Sacrificial Reducing Elements

P. Sundarandian, The Metal Powder Company Ltd. & C. Arun, MSP

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Brian H. Pittenger
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0004 *Canada*

Effect of Powder Characteristics, Mix Formulation, and Compacting Parameters on Green Density of PM Parts

Francois Chagnon, Rio Tinto Metal Powders

0078 *U.S.A.*

Sintering Response of Reinforced Al6061 Alloy by Rapid Solidification: Effect of Additives

Antonyraj Arockiasamy, Will Morgan, Paul Wang, Mark F. Horstemeyer, Center for Advanced Vehicular Systems, Mississippi State University & Randall M. German, FAPMI, San Diego State University

0014 *Serbia and Montenegro*

Effect of Aggregate Granulation on the Compressive Mechanical Strength, Porosity, and Sintering Process of Bauxite and Corundum Composites

Anja M. Terzic, Ljubica M. Pavlovic, Institute for Technology of Nuclear and Other Raw Mineral Materials

