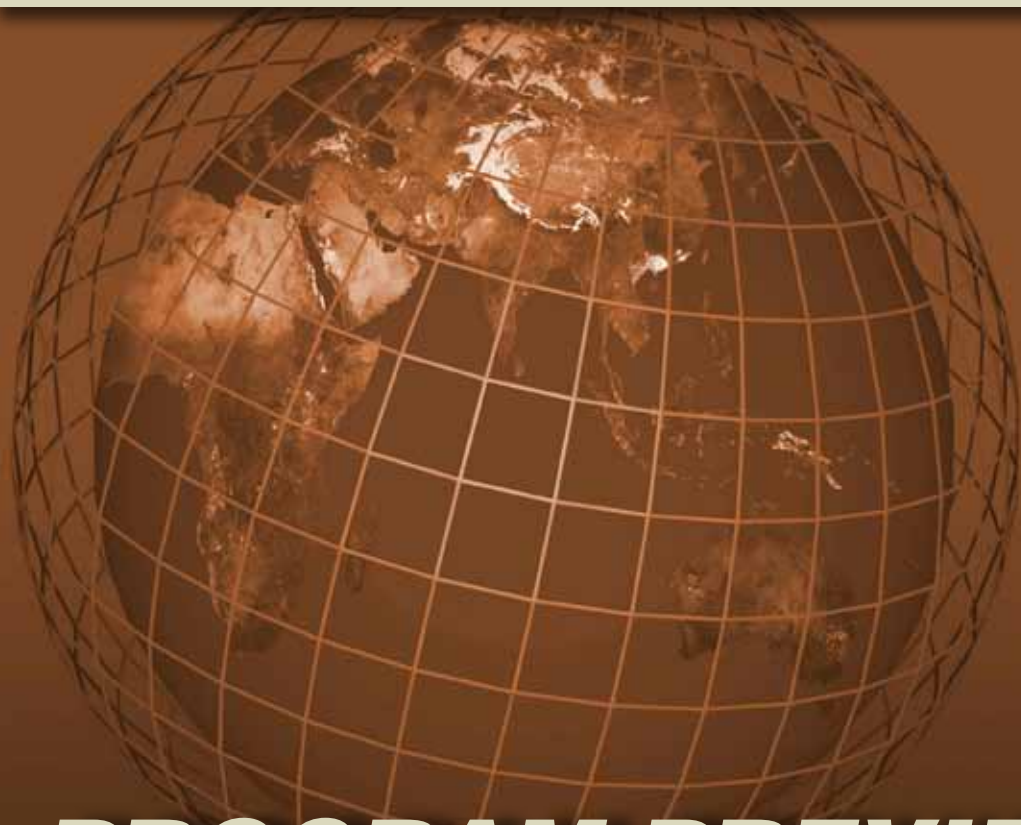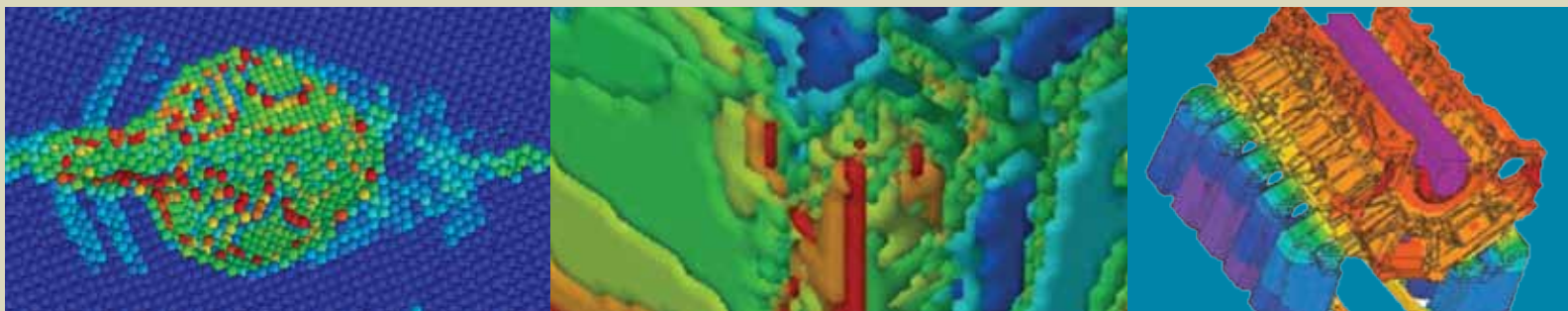# TMS ICME

MANUFACTURING

DESIGN MATERIALS

1st World Congress
on Integrated Computational
Materials Engineering (ICME)

July 10-14, 2011
Seven Springs Mountain Resort
Seven Springs, PA

PROGRAM PREVIEW

Register by June 10 and Save!

http://www.tms.org/Meetings/Specialty/ICME2011/home.aspx

TMS ICME

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1st World Congress
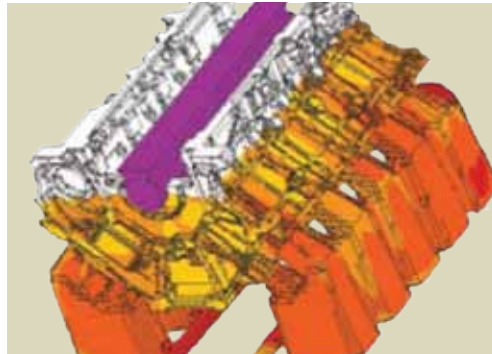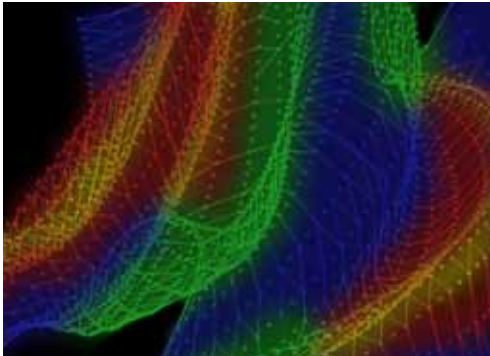### on Integrated Computational Materials Engineering (ICME)

July 10-14, 2011
Seven Springs Mountain Resort
Seven Springs, PA

REGISTER NOW for the 1st World Congress on Integrated Computational Materials Engineering!

As an attendee at this First World Congress on ICME, you will be a part of history! This prestigious conference was born of an international advisory committee representing 14 countries – United States, Canada, Japan, France, Spain, Sweden, Germany, China, Korea, United Kingdom, Australia, Brazil, New Zealand, and Denmark. Led by The Minerals, Metals & Materials Society (TMS), this World Congress is also co-sponsored by five international materials societies representing four countries – Canada, Australia, Brazil, and Japan. It features a single session symposia format with 50 podium presentations to allow active discussion and rich interactions. An extraordinary poster session featuring over 140 presentations will be seamlessly integrated into the main conference hall. Table-top exhibits from relevant companies will round out the congress.

Integrated Computational Materials Engineering (ICME) has recently been highlighted as a methodology that can unlock great potential for significant benefits in cost-effective, efficient materials and process design. This conference will provide a forum for presentations and discussions centering on critical ICME-related topics.

Register by June 10 and save!

REGISTRATION

All ICME 2011 attendees, including authors, presenters, and session chairs are required to register. To receive the advance registration discount, register on-line at: **www.tms.org/Meetings/Specialty/ICME2011/registration.aspx by June 10.**

Registration Fees		
	Through June 10	On-site
Full Conference:	$550	$650
Student:	$375	$425

Registration Package Includes:

- One hard copy and CD-ROM of conference proceedings
- Round-trip shuttle from Pittsburgh International Airport
- 50 oral presentations in a single session symposia format
- Sunday night Keynote Reception
- Monday & Wednesday night Poster Sessions & Receptions
- Monday lunch
- Tuesday barbecue/social
- Wednesday banquet

Sessions

All presentations will be held in the Exhibit Hall. Interactive discussions will follow keynote presentations and groups of speakers during each session.

HOUSING & TRAVEL

Seven Springs Resort

The Seven Springs Mountain Resort also offers a multitude of on-site activities including a 6,685-yard, 18-hole golf course, as well as a tennis center, volleyball area, year-round swimming pool, exercise room, racquetball courts, bowling lanes, indoor miniature golf, family recreation center with video games, and numerous hiking trails surrounding the resort. (Additional fees may apply)

For details on booking your accommodations please visit on-line at: **http://www.tms.org/Meetings/specialty/ICME2011/housing.aspx**

Shuttle Service:

Round trip bus service from and to Pittsburgh International Airport will be available on Sunday and Thursday afternoons.

NETWORKING

SUNDAY, July 10

Conference Reception
Main Convention Hall
Time: 8 p.m. to midnight.

Conference Keynote Speaker
Barry Farmer, chief scientist, Materials Laboratory – U.S. Air Force Research Laboratory, USA
Changing the Paradigm of Materials Science and Engineering
Time: 8:05 to 8:45 p.m.

Keynote Discussion
Time: 8:45 to 9 p.m.

Post-Keynote Cocktail Reception
Time: 9 p.m. to midnight
Sponsored by UES, Inc.

MONDAY, July 11

Congress Welcome & Logistics
Main Dining Room
Time: 8:15 to 8:20 a.m.

Speakers
Congress Organizers

SOCIAL EVENTS

MONDAY, July 11

Volleyball Game - Modelers vs. Experimentalists
Time: 3 to 5 p.m.
Location: Seven Springs Volleyball area
Poster Session & Reception - I Drinks & Hors d'oeuvres
Exhibit Hall
Time: 9:50 p.m. to 12:30 a.m.

TUESDAY, July 12

Conference Barbecue
Ski Lodge Deck
Time: 6 to 8 p.m.

Amateur Hour & Bonfire
Next to Lodge
Time: 8 to 9 p.m.

Social – Drinks & Hors d'oeuvres
Time: 9:30 p.m. to 12:30 a.m.

WEDNESDAY, July 13

Poster Session & Reception - II Drinks & Hors d'oeuvres
Exhibit Hall
Time: 10 p.m. to 12:30 a.m.

MONDAY, July 11

Congress Keynote Opening Speakers

Time: 8:20 to 8:45 a.m.	Tresa Pollock, University of California – Santa Barbara, USA *Keynote Talk to Open the ICME Congress*
	Julie Christodoulou, Office of Naval Research, USA *Keynote Talk to Open the ICME Congress*

Session 1: Modeling Processing-Microstructure Relationships – I

	Keynote Speaker
Time: 8:45 to 9:20 a.m.	Armen Katchaturyan, Rutgers University, USA *ICME Keynote Talk on Modeling Processing-Microstructure Relationships*
Time: 9:20 to 9:30 a.m.	**Keynote Discussion**
	Speakers
Time: 9:45 to 10:10 a.m.	Yunzhi Wang, Ohio State University, USA *"Phase Field Modeling for ICME"*
Time: 10:10 to 10:35 a.m.	Tony Rollett, Carnegie Mellon University, USA *"Tools for ICME: Characterizing and Modeling Materials in Three Dimensions"*
Time: 10:35 to 11 a.m.	Rollie Dutton, Air Force Research Laboratory, USA *"Property Models for the Transient Constitutive Properties of Superalloys"*
Time: 11 to 11:15 a.m.	**Discussion**
Time: 11:30 to 11:55 a.m.	Jin-Feng Nie, Monash Univ., Australia *"Correlated Nucleation of Precipitates in Magnesium Alloy WE54"*
Time: 11:55 to 12:20 p.m.	Rajarshi Banerjee, University of North Texas, USA *"Coupling Advanced Characterization with First-Principles Computations to Investigate Omega Precipitation in Titanium Alloys"*
Time: 12:20 to 12:45 p.m.	Paul Mason, Thermo-Calc, USA *"Developing Integrated CALPHAD Tools and Databases for the ICME Community"*
Time: 12:45 to 1 p.m.	**Discussion**

Session 2: Modeling Processing-Microstructure Relationships – II

	Keynote Speaker
Time: 6:15 to 6:50 p.m.	Gunter Gottstein, Aachen University, Germany *ICME Keynote Talk on Modeling Processing-Microstructure Relationships*
Time: 6:50 to 7 p.m.	**Keynote Discussion**
	Speakers
Time: 7 to 7:25 p.m.	Robert DeHoff, University of Florida, USA *"Topological Mechanism of Grain Growth - Simulation and Experimental Studies"*
Time: 7:25 to 7:50 p.m.	Dorte Jensen, DTU Risø, Denmark *"Advancements in Characterization and Modelling of Boundary Migration During Recrystallization"*
Time: 7:50 to 8:05 p.m.	**Discussion**
Time: 8:20 to 8:45 p.m.	Zhiqiang Han, Tsinghua University, China *"A Nucleation Model for Pressurized Solidification of A356 Alloy"*

Tentative Programming as of 4/11/11	
Time: 8:45 to 9:10 p.m.	Nitin Singh, Novelis Global Technology Center, Canada *"Through Process Modeling Approach to Optimizing Hot Rolling Process Parameters for Microstructural Control in Al Alloys"*
Time: 9:10 to 9:35 p.m.	Warren Poole, University of British Columbia, Canada "Process Modelling of Extrusion of AA3xxx Aluminum Alloys"
Time: 9:35 to 9:50 p.m.	**Discussion**

TUESDAY, July 12	
Session 3: Modeling Microstructure-Property Relationships - I	
	Keynote Speaker
Time: 8:15 to 8:50 a.m.	Peter Gumbsch, Fraunhofer Institute, Germany *ICME Keynote Talk on Modeling Microstructure-Property Relationships*
Time: 8:50 to 9 a.m.	**Keynote Discussion**
	Speakers
Time: 9 to 9:25 a.m.	Henry Proudhon, Mines Paris, France *"Large Scale Finite Element Computations Using Real Grain Microstructures"*
Time: 9:25 to 9:50 a.m.	Philip Withers, University of Manchester, UK *"3D Modeling and Measurement of Plastic Deformation and Grain Rotation at the Grain-to-Grain Level"*
Time: 9:50 to 10:15 a.m.	Somnath Ghosh, Ohio State University, USA *"Multi-Time Scaling Crystal Plasticity FE Models Dwell Fatigue Initiation in Polycrystalline Alloys"*
Time: 10:15 to 10:30 a.m.	**Discussion**
Time: 10:50 to 11:15 a.m.	Michael Mills, Ohio State University *"Coupling of Deformation Mechanisms with Phase Field and Crystal Plasticity Modeling of Polycrystalline Ni Base Superalloys at Higher Temperatures"*
Time: 11:15 to 11:40 a.m.	Tresa Pollock, University of California – Santa Barbara, USA *"ICME for Turbine Blades: Progress and Challenges"*
Time: 11:40 a.m. to 12:05 p.m.	Zi-Kui Liu, Pennsylvania State University, USA *"ICME of Magnesium: From Electronic Structures to Mechanical Properties"*
Time: 12:05 to 12:20 p.m.	**Discussion**
Session 4: Modeling Microstructure-Property Relationships - II	
	Keynote Speaker
Time: 1:45 to 2:20 p.m.	Elizabeth Holm, Sandia National Laboratories, USA *Modeling Microstructure-Property Relationships in ICME*
Time: 2:20 to 2:30 p.m.	**Keynote Discussion**
	Speakers
Time: 2:30 to 2:55 p.m.	Katsuyo Thornton, University of Michigan, USA *"Smoothed-Boundary-Method for Determining Elastic Stress Distribution in Complex Microstructures"*
Time: 2:55 to 3:20 p.m.	Stephen Christensen, Boeing, USA *"Computational Methods for New Materials Development: The "Atoms to Airplanes" Concept"*

Time: 3:20 to 3:45 pm	**Javier Llorca**, Polytechnic University of Madrid/IMDEA Materials Institute, Spain *"Virtual Mechanical Testing of Composites: From Materials to Components"*
Time: 3:45 to 4:00 p.m.	**Discussion**
Time: 4:20 to 4:45 p.m.	**Masaaki Sugiyama**, Nippon Steel Corporation, Japan *"Development of Dislocation Structure Under Shear Deformation in Single and Poly Crystals of Steels with BCC Structure"*
Time: 4:45 to 5:10 p.m.	**James Guest**, Johns Hopkins University, USA *"Design of Multifunctional Materials Using Topology Optimization with Fabrication-Driven Feature Control"*
Time: 5:10 to 5:35 p.m.	**Hamish Fraser**, Ohio State University, USA *"Development of Neural Networks for the Prediction of the Interrelationship Between Microstructure and Properties of Ti Alloys"*
Time: 5:35 to 5:50 p.m.	**Discussion**

WEDNESDAY, July 13

Session 5: ICME in Education

	Keynote Speaker
Time: 8:30 to 9:05 a.m.	**Greg Olson**, Northwestern University, USA *ICME Education*
Time: 9:05 to 9:15 a.m.	**Keynote Discussion**
	Speakers
Time: 9:15 to 9:40 a.m.	**Gregory Rohrer**, Carnegie Mellon University, USA *"Integrated Computational Materials Engineering in the Materials Science and Engineering Curriculum"*
Time: 9:40 to 10:05 a.m.	**JC Zhao**, Ohio State University, USA *"Application of the Diffusion-Multiple Approach and Materials Property Microscopy Tools for Accelerated Establishment of Materials Databases for ICME"*
Time: 10:05 to 10:30 a.m.	**Adrian Sutton**, Imperial College, UK *"The Doctoral Training Centre (DTC) on Theory and Simulation of Materials (TSM) at Imperial College London"*
Time: 10:30 to 10:45 a.m.	**Discussion**
	Speakers
Time: 11:05 to 11:30 a.m.	**James McGuffin-Cawley**, Case Western Reserve University, USA *"Teaching Transport Phenomena Through Spreadsheet Programming and Numerical Methods"*
Time: 11:30 a.m. to 11:55 a.m.	**Laura Bartolo**, Kent State University, USA *"ICME-Related* *"Scripts/Examples/Modules" for Undergraduate Classroom Use"*
Time: 11:55 a.m. to 12:20 p.m.	**Juergen Hirsch,** Hydro Aluminum Rolled Products, Germany *"History of ICME in the European Aluminum Industry"*
Time: 12:20 to 12:35 p.m.	**Discussion**

Session 6: Information Infrastructure

	Keynote Speaker
Time: 6:15 to 6:50 p.m.	**Alan Blatecky**, National Science Foundation, USA *ICME Keynote Talk on Information Infrastructure*

http://www.tms.org/Meetings/Specialty/ICME2011/home.aspx

	Tentative Programming as of 4/11/11
Time: 6:50 to 7 p.m.	**Keynote Discussion**
	Speakers
Time: 7 to 7:25 p.m.	Andy Geltmacher, Naval Research Laboratory USA *"Interactive Data Storage and Collaboration Tools for ICME Research"*
Time: 7:25 to 7:50 p.m.	Alejandro Strachan, Purdue University, USA *"Cyber-Enabled Materials Simulations Via Nanohub.Org"*
Time: 7:50 to 8:15 p.m.	Surya Kalidindi, Drexel University, USA *"Microstructure Databases and RVEs Based on Higher-Order Spatial Correlations"*
Time: 8:15 to 8:30 p.m.	**Discussion**
Time: 8:45 to 9:10 p.m.	Will Mardsen, Granta, UK *"Materials Information Management and the Future of ICME"*
Time: 9:10 to 9:35 p.m.	Chandler Becker, NIST, USA *"Atomistic Simulation and ICME: Workshops, Repositories, and Comparisons"*
Time: 9:35 to 10 p.m.	Ronald Miller, Carleton University, Canada *"Open Knowledge Base of Interatomic Models (Openkim.Org): An Online Platform for Developing, Testing and Archiving Empirical Potentials"*
Time: 10 to 10:15 p.m.	**Discussion**

THURSDAY, July 14	
Session 7: Success Stories	
	Keynote Speaker
Time: 8:15 to 8:50 a.m.	David Furrer, Pratt & Whitney, USA *ICME Success Stories*
Time: 8:50 to 9 a.m.	**Keynote Discussion**
	Speakers
Time: 9 to 9:25 a.m.	Patrick Anderson, The Timken Company, USA *"ICME Success at Timken – The Virtual Bearing Fatigue Life Model"*
Time: 9:25 to 9:50 a.m.	Mei Li, Ford Motor Corp., USA *"Development of ICME Tools for the Prediction of Automotive Transmission Gear Distortion During Heat Treatment"*
Time: 9:50 to 10:15 a.m.	Qigui Wang, General Motors, USA *"Advances in Computational Tools for Virtual Casting of Aluminum Components"*
Time: 10:15 to 10:30 a.m.	**Discussion**
Time: 10:50 to 11:15 a.m.	Shesh Srivatsa, GE Aviation, USA *"Accelerating Insertion of Materials at GE Aviation"*
Time: 11:15 to 11:40 a.m.	Ulrich Prahl, Aachen University, Germany *"Modelling the Process Chain of Microalloyed Case Hardening Steel for Energy Efficient High Temperature Carburising"*
Time: 11:40 a.m. to 12:05 p.m.	Charles Kuehmann, Ques Tek, USA *"From Concept to Flight: An Example of Computational Design and Qualification for Aerospace Structural Alloys"*
Time: 12:05 to 12:20 p.m.	**Discussion**
	Closing Comments
Time: 12:20 to 12:45 p.m.	Conference Organizers