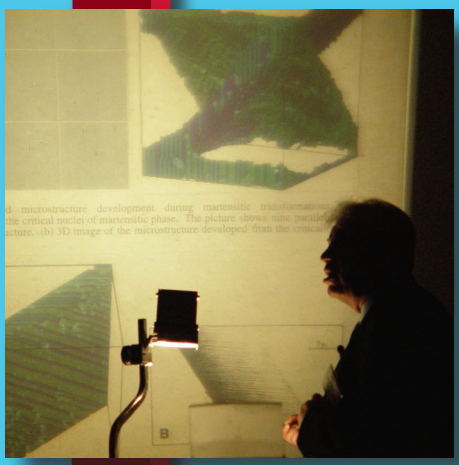


TMS 2006

135th Annual Meeting & Exhibition

Linking science and technology for global solutions

PROGRAM HIGHLIGHTS:
COMPUTATIONAL MODELING and SIMULATION

March 12-16, 2006
Henry B. Gonzalez Convention Center
San Antonio, Texas, USA

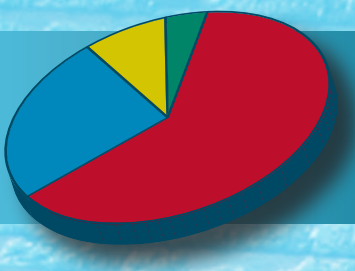
http://www.tms.org/AnnualMeeting.html

TMS2006

135th Annual Meeting & Exhibition

Linking science and technology for global solutions

This unique networking experience links the worlds of industry, government and academia for an outstanding exchange of technical information, cutting-edge processes, and novel solutions in the fields of minerals, metals, and materials. Through presentations of scientific research, plenary sessions, developed as well as impromptu discussions, and an exhibition of today's latest product and service solutions, scientists, engineers, researchers and academicians will gain useful knowledge and valuable contacts to advance their work.



2005 Attendees

3,818

Industry	63%	Government	8%
University	25%	Retired/Other	4%

TMS 2006 Annual Meeting & Exhibition features 49 symposia. The following pages present programs of special interest to participants involved in Computational Modeling and Simulation.

TMS

The Minerals, Metals & Materials Society (TMS) is a professional organization encompassing the entire range of materials and engineering, from minerals processing and primary metals production to basic research and the advanced applications of materials.

Included among its professional and student members are metallurgical and materials engineers, scientists, researchers, educators, and administrators from more than 70 countries on six continents.

TMS' mission is to promote the global science and engineering professions concerned with minerals, metals, and materials.

To learn more, visit www.tms.org.

Simulation of Aluminum Shape Casting Processing: From Alloy Design to Mechanical Properties

Sponsored by: Light Metals Division, Materials Processing & Manufacturing Division, Structural Materials Division, LMD-Aluminum Committee, MPMD-Computational Materials Science & Engineering-(Jt. ASM-MSCTS), SMD-Mechanical Behavior of Materials Committee-(Jt. ASM-MSCTS), EPD/MPMD-Process Modeling Analysis and Control Committee, MPMD-Solidification Committee

The wide use of aluminum shape castings in critical structures has required high quality, reliable and quantifiable performance. Numerous computational modeling and simulation techniques have been developed and applied in practice for aluminum casting and subsequent processing that enable both casting designers and process engineers to better design and develop sound shape cast components with minimum lead time and cost. The objectives of this symposium are to review and discuss the latest development and applications of modeling and simulation techniques in aluminum shape castings and to explore further the needs for improvement of these computational techniques. This symposium will provide a forum for both developers and users of computational techniques applied to aluminum shape castings, as well as the end users of the castings. The symposium organizers are seeking papers on the following key topics: cast aluminum alloy design; aluminum casting and gating system design; casting process modeling, simulation, and optimization; heat treatment process modeling, simulation, and optimization; casting defect modeling and simulation; microstructure modeling and simulation; prediction of mechanical performance; and influence of subsequent processing on final performance.

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Solidification Modeling and Microstructure Formation: A Symposium in Honor of Professor John Hunt

Sponsored by: Materials Processing & Manufacturing Division, MPMD-Solidification Committee

This symposium is being organized to honor Professor John Hunt for his seminal contributions to the science and technology of solidification in a career that spans more than 40 years at Cambridge University (UK), Bell Laboratories and Oxford University. His papers covering eutectic growth, cellular and dendritic solidification and the columnar-to-equiaxed transition have had a sustained influence in the field. The symposium will focus on both theoretical and experimental investigations of solidification and casting with emphasis on aspects such as eutectic growth, cellular and dendritic solidification, spacing selection mechanisms, macrosegregation, measurements of thermophysical parameters (e.g., surface energy, diffusion coefficient), hot tearing, microporosity formation, developments in twin roll casting (including process modeling), etc. In addition to invited speakers, contributed papers addressing one or more of the above topics are solicited.

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Computational Thermodynamics and Phase Transformations

Sponsored by: Electronic, Magnetic & Photonic Materials Division, Materials Processing & Manufacturing Division, Structural Materials Division, EMPMD/SMD-Chemistry and Physics of Materials Committee, MPMD-Computational Materials Science & Engineering-(Jt. ASM-MSCTS)

Phase equilibria, phase transformations, and microstructural evolution pervade most materials processing technologies. Computational modeling and simulation can yield significant cost savings by mitigating the need to perform time-consuming laboratory experiments to test a new material, process, or design. Computational work also provides a powerful tool for increasing understanding through precisely controlled virtual experiments and analysis. This symposium is the fifth in a series of annual TMS symposia focusing on computational thermodynamics and kinetics of phase transformations. The intent is to assemble materials scientists in both computational and experimental disciplines to assess the current status of computational models and simulation techniques at different time and length scales. Attention will be given to the mechanistic fundamentals and practical applications of phase and microstructure transformation in advanced materials including metals, ceramics, and semiconductors. Of particular interest are computational models that treat the challenges of nanoscale modeling, research that integrates different approaches, analyses that compare the relative merits of various simulation techniques, and validation of simulation results with experimental data. Six sessions are anticipated with several invited speakers in each. Topics of relevance include but are not limited to: Classical and first principles atomistic simulation techniques; Thermodynamic properties of equilibrium and nonequilibrium phases; Fundamental properties of nanoparticles, surfaces, and interfaces; Kinetics of grain growth, recrystallization, and phase coarsening; Effects of interface properties, impurities, and deformation on microstructural evolution; and Novel approaches to simulating phase transformations and microstructural evolution.

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Hume Rothery Symposium: Multi-Component Alloy Thermodynamics

Sponsored by: Electronic, Magnetic & Photonic Materials Division, EMPMD/SMD-Alloy Phases Committee

This symposium will focus upon the means for handling the problems which are introduced when the thermodynamic properties of multi-component, as opposed to binary, alloys have to be considered. Topics of interest include the modeling of substitutional and interstitial phases, extrapolation and estimation procedures, the calculation of phase diagrams for multi-component, multi-phase systems and the ways in which thermodynamic properties are used in the prediction of microstructure and materials properties. Papers from 'first principles' through semi-empirical to phenomenological approaches are to be presented.

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Phase Transformations in Magnetic Materials

Sponsored by: Structural Materials Division, SMD-Phase Transformations Committee-(Jt. ASM-MSCTS)

This symposium will cover recent advances in the study of phase transformations in magnetic materials. The application of magnetic materials are rapidly expanding; in addition to applications such as power electronics and conventional data storage media, they are also being studied for applications such as spintronic devices, patterned array magnetic media for data storage, magnetically tunable photonic crystals and as magnetic particles for bioengineering applications. The role of phase transformations and an understanding of phase stability is crucial to optimizing the properties of most magnetic materials in bulk, thin film and particle form. Topics include, but are not limited to, applications of phase transformations in magnetic materials used in power electronics, data storage, photonics and bioengineering applications. Presentations related to nanomagnetic materials and recent advances in modeling and experimental techniques are welcome.

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Materials Design Approaches and Experiences II

Sponsored by: Structural Materials Division, SMD-High Temperature Alloys Committee

The TMS symposium entitled “Materials Design Approaches and Experiences” held in the fall of 2001 provided a forum for interaction between the alloy development community and people who create state-of-the-art design tools and methodologies. The proposed symposium “Materials Design Approaches and Experiences II” is intended to serve a similar purpose by addressing a wide range of alloy families from light-weight alloys to Ni-base superalloys. Its central scheme will be providing answers to the following questions: 1) To what extent and how successfully were these four modern tools utilized in recent materials designs? 2) What new tools and methodologies have emerged since then? This symposium seeks to encompass both product and process modeling with special emphasis on model integration.

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Conference Proceedings Publications

To provide added value for attendees, topical publications that combine multiple symposia on a single CD-ROM will be made available at the 2006 Annual Meeting & Exhibition. As part of the full conference registration fee, a CD-ROM from one of three topics, Light Metals; Structure, Extraction, Processing and Properties; and Emerging Materials, may be chosen by each attendee at no charge. The other two CD-ROM topical publications will be available for purchase on the advance registration form and at the meeting. The CD-ROMs will include multiple symposium proceedings in the topic area, keynote presentations, links to additional resource information (post-conference publications), and featured presentations. Some symposia will appear on more than one topical CD-ROM. Additionally, individual symposia that are included on the topical CD-ROMs will be available for purchase as a printed book. The CD-ROM product will only be available for order in advance and at the meeting; books will be available for purchase before, during and after the meeting. Look for additional publication details to come in the TMS 2006 Annual Meeting & Exhibition advance brochure or online at www.tms.org.

Short Courses

A broad range of short courses are in development to coincide with the subject matter at TMS 2006. These courses offer intensive training on current topics in the minerals, metals and materials fields. Look to your mailbox (and e-mail) for details in the near future.

Exhibition

An important part of TMS 2006 is the exhibition of the latest products and services available to industry, government, and academia to provide solutions to technological challenges. More than 150 companies are anticipated to be on the exhibit floor in 2006, with new features, such as educational, invite-only demonstrations, planned. If your company is interested in participating in this exciting venue, contact Cindy Wilson, TMS exhibits coordinator, at (724) 776-9000, ext. 231, or e-mail wilson@tms.org for an exhibition prospectus.

Registration

Registration for the conference will be accepted via the Web, fax or mail. An online registration form will be available at http://www.tms.org/AnnualMeeting.html, and a paper form will be included in the advance mailer. Registration is expected to begin in August 2005.

Accommodations

The headquarters hotel for TMS 2006 is the Marriott River Center Hotel in the heart of San Antonio. Rooms will be available at reduced rates there and at a number of hotels surrounding the Henry B. Gonzalez Convention Center. To receive the special conference rates, attendees must use the housing form which will be available online in August 2005 at http://www.tms.org/Annual Meeting.html and in the advance mailer.