



Materials Theory ↔ Experiment

Processing ↔ Properties

Materials ↔ Applications

TMS2005

134th Annual Meeting & Exhibition

February 13-17, 2005

Moscone West Convention Center • San Francisco, CA

Where The Connection Is Made

Featuring programming sponsored & co-sponsored by:

- TMS Education Committee
- TMS Electronic, Magnetic & Photonic Materials Division
- TMS Extraction & Processing Division
- TMS Light Metals Division
- TMS Materials Processing & Manufacturing Division
- TMS Public & Governmental Affairs Committee
- TMS Structural Materials Division
- TMS Young Leaders Committee
- Aluminum Association
- ASM International's Materials Science Critical Technologies Sector
- International Magnesium Association
- The Japan Institute of Metals
- National Science Foundation
- Society for Biomaterials
- Surfaces in Biomaterials Foundation



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

TECHNICAL PROGRAM GRID

MONDAY		TUESDAY		WEDNESDAY		THURSDAY	
	PM	AM	PM	AM	PM	AM	
Industrial Energy Reduction: Materials Opportunity Analysis		The Role of Technology in the Global Primary Aluminum Industry Today and in the Future		Products, Services, Suppliers Showcase			2000
Cast Shop Technology: Cast Shop Safety	Cast Shop Technology: Aluminum Melting: Strategies and Sourcing	Cast Shop Technology: Aluminum Melting: Furnace Design and Refractories	Cast Shop Technology: Melt Treatment: Degassing and Filtration	Cast Shop Technology: DC Casting: Melt Flow and Cooling	Cast Shop Technology: DC Casting: Microstructure and Hot Tearing	Cast Shop Technology: Foundry	2001
Aluminum Alloys For Packaging	Cast Shop Technology: Melt Treatment: Fluxing, Alloying and Grain Refinement				Aluminum Reduction Technology: Cell Stability		2002
Aluminum Reduction Technology: Environmental and Modernization	Aluminum Reduction Technology: Cell Development & Operations - Part 1		Aluminum Reduction Technology: Cell Development & Operations - Part 2	Aluminum Reduction Technology: Pot Control	Aluminum Reduction Technology: Emerging Technologies	Aluminum Reduction Technology: Fundamentals	2003
Magnesium Technology 2005: Magnesium, Primary Production and Environmental	Magnesium Technology 2005: Magnesium and Alloys - Refining, Recycling and Fundamentals	Magnesium Technology 2005: Thermodynamics (Magnesium Alloys)	Magnesium Technology 2005: Magnesium Alloy Development	Magnesium Technology 2005: Magnesium Alloy Processing	Magnesium Technology 2005: Creep Resistant Magnesium Alloys and Welding-Joining	Magnesium Technology 2005: Corrosion and Surface Finishing - Magnesium Alloys	2004
Alumina and Bauxite: Industry Trends and Developments & Bayer Process Chemistry Part I	Alumina and Bauxite: Bayer Process Chemistry Part II & HES and Control & Modelling	6th Global Innovations Symposium: Trends in Materials and Manufacturing Technologies for Transportation Industries: Rapid Prototyping	Alumina and Bauxite: Influences of Alumina on Smelter Performance	Alumina and Bauxite: Bauxite and Bayer Process Red Side	Alumina and Bauxite: Precipitation	Alumina and Bauxite: Alumina Quality	2005
Magnesium Technology 2005: Wrought Magnesium Alloys I	Magnesium Technology 2005: Wrought Magnesium Alloys II	Magnesium Technology 2005: Wrought Magnesium Alloys III	Automotive Alloys 2005: Session I	Automotive Alloys 2005: Session II	Automotive Alloys 2005: Session III	General Abstracts: Mechanical Behavior—Quasi-Static Loading	2006
Carbon Technology: Anode Raw Materials	Carbon Technology: Green Anodes	General Abstracts: Nanostructured and Lightweight Materials		Carbon Technology: Anode Baking	Carbon Technology: Cathode Materials and Corrosion I	Carbon Technology: Cathode Materials and Corrosion II	2007
Shape Casting – The John Campbell Symposium: Liquid Metal Quality	Shape Casting – The John Campbell Symposium: Filling and Feeding	Shape Casting – The John Campbell Symposium: Solidification	Shape Casting – The John Campbell Symposium: Structure and Properties	Shape Casting – The John Campbell Symposium: Modeling	Shape Casting – The John Campbell Symposium: Applications		2008
Globalization of Materials R&D	6th Global Innovations Symposium: Trends in Materials and Manufacturing Technologies for Transportation Industries: Keynote Session	6th Global Innovations Symposium: Trends in Materials and Manufacturing Technologies for Transportation Industries: Sheet Metal Forming	6th Global Innovations Symposium: Trends in Materials and Manufacturing Technologies for Transportation Industries: Sheet Metal Processing	6th Global Innovations Symposium: Trends in Materials and Manufacturing Technologies for Transportation Industries: Novel Processes I	6th Global Innovations Symposium: Trends in Materials and Manufacturing Technologies for Transportation Industries: Novel Processes II	6th Global Innovations Symposium: Trends in Materials and Manufacturing Technologies for Transportation Industries: Bulk Metal Processing	2009

TECHNICAL PROGRAM GRID

		MONDAY		TUESDAY		WEDNESDAY		THURSDAY
		AM	PM	AM	PM	AM	PM	AM
2010		Characterization of Minerals, Metals and Materials: Extraction and Processing Applications	Characterization of Minerals, Metals and Materials: Characterization of Structural Engineering Materials – I	Characterization of Minerals, Metals and Materials: Characterization of Structural Engineering Materials – II	Characterization of Minerals, Metals and Materials: Characterization of Light Weight Materials – II	Characterization of Minerals, Metals and Materials: Materials Testing and Evaluation	Characterization of Minerals, Metals and Materials: Materials Preparation and Characterization	
2011		General Abstracts: Electronic Materials	General Abstracts: Composites and Coatings	General Abstracts: Advances in Steels	General Abstracts: Environmental Damage and Durability	Recycling - General Sessions: Aluminum and Consumer Goods Recycling	Recycling - General Sessions: Non-Ferrous Recycling	Recycling - General Sessions: Post-Consumer Recycling
2012		General Abstracts: Temperature Treatments and Casting	Characterization of Minerals, Metals and Materials: Characterization of Industrial Products	Characterization of Minerals, Metals and Materials: Characterization of Light Weight Materials – I	Metallurgical Technology for Waste Minimization: Session I	Metallurgical Technology for Waste Minimization: Session II	Metallurgical Technology for Waste Minimization: Session III	
2014		Arsenic Metallurgy: Fundamentals & Applications: Plenary Session	Arsenic Metallurgy: Fundamentals & Applications: Removal of Arsenic and its Precipitation from Process Streams I	Arsenic Metallurgy: Fundamentals & Applications: Thermodynamics and Pyrometallurgy	Arsenic Metallurgy: Fundamentals & Applications: Removal of Arsenic and its Precipitation from Process Streams II	Arsenic Metallurgy: Fundamentals & Applications: Process Metallurgy		
2016		Converter and Fire Refining Practices: Plenary	Converter and Fire Refining Practices: Operations and Modernization	Converter and Fire Refining Practices: Process Improvements and Anode Casting	Converter and Fire Refining Practices: Processing Fundamentals	Converter and Fire Refining Practices: Advanced Technologies	TMS Featured Presentations	
2018		Extractive Metallurgy: Pyrometallurgy I	Extractive Metallurgy: Hydrometallurgy	Extractive Metallurgy: Recycling and Waste Minimization	Extractive Metallurgy: Copper	Extractive Metallurgy: Pyrometallurgy II		
2020		Frontiers in Solidification Science: Morphological Evolution and Mushy Zone Phenomena I	Frontiers in Solidification Science: Morphological Evolution and Mushy Zone Phenomena II	Frontiers in Solidification Science: Nucleation	Frontiers in Solidification Science: Crystal-Melt Interfaces: Fundamental Properties and Related Behavior – and – Poster Session	General Abstracts: Mechanical Behavior— Dynamic Loading		
2022		Precious Metals: Au, Ag, Pt, Pd, Os, Rh, Ir, Ru	Surface Engineering in Materials Science III: Laser Processing for Surface Modification	Surface Engineering in Materials Science III: Nanocoatings	Surface Engineering in Materials Science III: Thin Films	Surface Engineering in Materials Science III: Characterization of Surfaces and Films/Coating	Surface Engineering in Materials Science III: Plasma Processing for Surface Modification	Surface Engineering in Materials Science III: Coating Properties and Processing Effects
2024		Mechanical Behavior of Thin Films and Small Structures: Strengthening Mechanisms at Small Length Scale	Mechanical Behavior of Thin Films and Small Structures: Plasticity and Deformation Mechanisms at Small Length Scale	Mechanical Behavior of Thin Films and Small Structures: Stability, Strain and Stress	Mechanical Behavior of Thin Films and Small Structures: Fatigue, Fracture, and Reliability of MEMs and Thin Structures I	Mechanical Behavior of Thin Films and Small Structures: Fatigue, Fracture, and Reliability of MEMs and Thin Structures II	Mechanical Behavior of Thin Films and Small Structures: Advanced Characterization Techniques	
3000		Micromechanics of Advanced Materials II (Symposium in Honor of James C.M. Li's 80th Birthday: Dislocation Mechanics of Plasticity	Micromechanics of Advanced Materials II (Symposium in Honor of James C.M. Li's 80th Birthday: Impression and Indentation Testing	Micromechanics of Advanced Materials II (Symposium in Honor of James C.M. Li's 80th Birthday: Diffusion and Atomistic Modeling	Micromechanics of Advanced Materials II (Symposium in Honor of James C.M. Li's 80th Birthday: Microstructure and System Stability	Micromechanics of Advanced Materials II (Symposium in Honor of James C.M. Li's 80th Birthday: Mechanics of Nanostructures	Micromechanics of Advanced Materials II (Symposium in Honor of James C.M. Li's 80th Birthday: Fatigue, Fracture and Failure	Micromechanics of Advanced Materials II (Symposium in Honor of James C.M. Li's 80th Birthday: Thin Films and Multilayers – and – Shock Compression
3001		Materials Processing Fundamentals: Solidification & Casting	Materials Processing Fundamentals: Liquid Metal Processing	Materials Processing Fundamentals: Smelting and Refining I	Materials Processing Fundamentals: Smelting and Refining II	Materials Processing Fundamentals: Powders, Composites & Coatings	Rare Earths, Science, Technology, and Applications V: Reactive Metal Processing	Rare Earths, Science, Technology, and Applications V: Rare Earths

TECHNICAL PROGRAM GRID

MONDAY		TUESDAY		WEDNESDAY		THURSDAY	
AM	PM	AM	PM	AM	PM	AM	
Phase Transformations Within Small-Size Systems: Thermodynamics, Phase Equilibria and Kinetics	Phase Transformations Within Small-Size Systems: Order-Disorder Transformations	Phase Transformations Within Small-Size Systems: Phase Separation, Precipitation and Displacive Transformations	Phase Transformations Within Small-Size Systems: Magnetic and Structural Transformations	Phase Transformations Within Small-Size Systems: Amorphous to Nanocrystal Transformations	Phase Transformations Within Small-Size Systems: Transformations in Thin/Thick Films and Multilayers		3002
The Armen G. Khachaturyan Symposium on Phase Transformation and Microstructural Evolution in Crystalline Solids: Session I	The Armen G. Khachaturyan Symposium on Phase Transformation and Microstructural Evolution in Crystalline Solids: Session II	The Armen G. Khachaturyan Symposium on Phase Transformation and Microstructural Evolution in Crystalline Solids: Session III	The Armen G. Khachaturyan Symposium on Phase Transformation and Microstructural Evolution in Crystalline Solids: Session IV	The Armen G. Khachaturyan Symposium on Phase Transformation and Microstructural Evolution in Crystalline Solids: Session V	The Armen G. Khachaturyan Symposium on Phase Transformation and Microstructural Evolution in Crystalline Solids: Session VI	The Armen G. Khachaturyan Symposium on Phase Transformation and Microstructural Evolution in Crystalline Solids: Session VII	3003
Neutron Diffraction Characterization of Mechanical Behavior: Facilities, Techniques, and Capabilities	Neutron Diffraction Characterization of Mechanical Behavior: Deformation I	Neutron Diffraction Characterization of Mechanical Behavior: Deformation II	Neutron Diffraction Characterization of Mechanical Behavior: Deformation III	Neutron Diffraction Characterization of Mechanical Behavior: Residual Stress I	Neutron Diffraction Characterization of Mechanical Behavior: Residual Stress II	Neutron Diffraction Characterization of Mechanical Behavior: Phase Transformation	3004
Computational Thermodynamics and Phase Transformations: Grain Boundaries and Interfaces I	Computational Thermodynamics and Phase Transformations: Materials Design and Development	Computational Thermodynamics and Phase Transformations: Grain Boundaries and Interfaces II	Computational Thermodynamics and Phase Transformations: Atomistic and Ab Initio Methods	Computational Thermodynamics and Phase Transformations: Theory and Simulation of Alloys	Computational Thermodynamics and Phase Transformations: Thermodynamic Models and Databases	Computational Thermodynamics and Phase Transformations: Phase Field Models and Related Methods	3005
Bulk Metallic Glasses: Processing and Fabrication I	Bulk Metallic Glasses: Processing and Fabrication II	Bulk Metallic Glasses: Fatigue and Fracture	Bulk Metallic Glasses: Shear Banding and Deformation	Bulk Metallic Glasses: Corrosion, Oxidation and Phase Transformation	Bulk Metallic Glasses: Mechanical Behavior	Bulk Metallic Glasses: Mechanical Behavior and Phase Transformation	3006
Multicomponent Multiphase Diffusion Symposium in Honor of John E. Morral: Analysis of Interdiffusion Microstructures: Session I	Multicomponent Multiphase Diffusion Symposium in Honor of John E. Morral: Analysis of Interdiffusion Microstructures: Session II	Multicomponent Multiphase Diffusion Symposium in Honor of John E. Morral: Experimental Methods for Determining Diffusion Mechanisms	Multicomponent Multiphase Diffusion Symposium in Honor of John E. Morral: Diffusion in Oxide Systems	Multicomponent Multiphase Diffusion Symposium in Honor of John E. Morral: Computational Tools for Understanding Diffusion Mechanisms	Multicomponent Multiphase Diffusion Symposium in Honor of John E. Morral: Applications of Multicomponent Multiphase Diffusion		3007
Hume Rothery Symposium: The Science of Complex Alloys	Hume Rothery Symposium: The Science of Complex Alloys	Hume Rothery Symposium: The Science of Complex Alloys	Hume Rothery Symposium: The Science of Complex Alloys	Powder Metallurgy Research and Development in the Transportation Industry: Titanium Alloys - P/M Developments	Powder Metallurgy Research and Development in the Transportation Industry: Sintering and Densification - P/M Processing	Powder Metallurgy Research and Development in the Transportation Industry: Nano-Matls., Inter-metallics, Amorphous and Composites - P/M Developments	3008
Biological Materials Science and Engineering: Biological Materials I	Biological Materials Science and Engineering: Biological Materials II	Biological Materials Science and Engineering: Biological Materials/Bio-Medical Applications I	Biological Materials Science and Engineering: Biological Materials/Bio-Medical Applications II	Biological Materials Science and Engineering: Biological Materials Characterization and Biomimetics I	Biological Materials Science and Engineering: Biological Materials Characterization and Biomimetics II		3009
Texture and Microstructure in Thin Films and Coatings: Copper Metallization	Texture and Microstructure in Thin Films and Coatings: Techniques and Coatings	Texture & Microstructure in Thin Films & Coatings: Coatings	Refractory Metals in Electronic Applications: Joint Session with Texture and Microstructure in Thin Films and Coatings: Texture and Thin Films	Refractory Metals in Electronic Applications: Applications	Refractory Metals in Electronic Applications: Processing and Properties		3010
Microstructural Processes in Irradiated Materials: Modelling Defect Evolution	Microstructural Processes in Irradiated Materials: Modelling Defect Evolution and Oxide Dispersion Strengthened Alloys	Microstructural Processes in Irradiated Materials: RPV Embrittlement and Oxide Dispersion Strengthened Alloys	Microstructural Processes in Irradiated Materials: Microstructure Evolution and Segregation – and - Poster Session	Microstructural Processes in Irradiated Materials: He/H Interactions and Ferritic/Martensitic Steels	Microstructural Processes in Irradiated Materials: Carbides, Nitrides and Oxides	Microstructural Processes in Irradiated Materials: Mechanical Behavior of Irradiated Materials	3011

TECHNICAL PROGRAM GRID

	MONDAY		TUESDAY		WEDNESDAY		THURSDAY
	AM	PM	AM	PM	AM	PM	AM
3012	Computational Aspects of Mechanical Properties of Materials: Atomistic Methods	Computational Aspects of Mechanical Properties of Materials: Atomistic Scale Modeling	Computational Aspects of Mechanical Properties of Materials: Nano-Scale and Meso-Scale Modeling	Computational Aspects of Mechanical Properties of Materials: Meso-Scale and Continuum Modeling	Materials Issues for Advanced Nuclear Systems: Materials for Gen IV and Space Nuclear Systems	Materials Issues for Advanced Nuclear Systems: Materials for Nuclear Waste Storage	Materials Issues for Advanced Nuclear Systems: Materials Compatibility
3014	Lead Free Solder Implementation: Reliability, Alloy Development, New Tech.: Interfacial Reactions and Phase Stability in Lead Free Solder Alloys	Lead Free Solder Implementation: Reliability, Alloy Development, New Technology: Intermetallic Growth in Lead-Free Solder Joints	Lead Free Solder Implementation: Reliability, Alloy Development, New Technology: Lead-Free Solder Alloy Development	Lead Free Solder Implementation: Reliability, Alloy Development, New Technology: Electromigration, & Electrical "Aging" of Lead-Free Solder Joints	Lead Free Solder Implementation: Reliability, Alloy Development, New Technology: Thermal Fatigue and Reliability of Lead-Free Solder Joints	Lead Free Solder Implementation: Reliability, Alloy Development, New Technology: Mech. Properties of Lead-Free Solder Alloys and Solder Joints	
3016	Phase Stability, Phase Transformation and Reactive Phase Formation in Electronic Materials IV: Magnetic and Semiconducting Materials	Phase Stability, Phase Transformation and Reactive Phase Formation in Electronic Materials IV: Thin Film Stability and Reactions, Electro- and Thermomigration Phenomena	Phase Stability, Phase Transformation and Reactive Phase Formation in Electronic Materials IV: Aging, Crystallographic Texturing and Characterization of Solder Joints	Phase Stability, Phase Transformation and Reactive Phase Formation in Electronic Materials IV: Phase Equilibria, Interfacial Energy and Wetting Phenomena in Solder Joints	Phase Stability, Phase Transformation and Reactive Phase Formation in Electronic Materials IV: Interfacial Reactions and IMC Formation in Solder Joints	Phase Stability, Phase Transformation and Reactive Phase Formation in Electronic Materials IV: Effects of Alloying Additions on the Microstructural Evolution of Solders and Solder Joints	
3018	Corrosion Sensors and Monitoring	Applications and Fundamentals of High Aspect Ratio Nanomaterials: Simulation & Control of Carbon Nanotube Formation	Applications and Fundamentals of High Aspect Ratio Nanomaterials: Inorganic Nanostructures	Applications and Fundamentals of High Aspect Ratio Nanomaterials: Applications of Carbon-Based and Inorganic Nanostructures	Applications and Fundamentals of High Aspect Ratio Nanomaterials: Nanostructured Composites	Applications and Fundamentals of High Aspect Ratio Nanomaterials: Monitor and Control of Nanostructure Synthesis	
3020	Frontiers in Thin Film Growth and Nanostructured Materials: A Symposium in Honor of Prof. Jagdish Narayan: Nanostructures and Nanocomposites I	Frontiers in Thin Film Growth and Nanostructured Materials: A Symposium in Honor of Prof. Jagdish Narayan: Nanostructures and Nanocomposites II	Frontiers in Thin Film Growth and Nanostructured Materials: A Symposium in Honor of Prof. Jagdish Narayan: Thin Films, Coatings and Nanostructures	Frontiers in Thin Film Growth and Nanostructured Materials: A Symposium in Honor of Prof. Jagdish Narayan: Semiconductors	Frontiers in Thin Film Growth and Nanostructured Materials: A Symposium in Honor of Prof. Jagdish Narayan: Advanced Technology and Applications I	Frontiers in Thin Film Growth and Nanostructured Materials: A Symposium in Honor of Prof. Jagdish Narayan: Advanced Technology and Applications II	
3022	Functional Thin Films for Sensors: The Physics and Applications of Functional Thin Films in Sensors	Functional Thin Films for Sensors: Novel Synthesis Methods and Applications of Functional Thin Films	Neutron Scattering in Materials Research: Diffraction, Phases, and Micromechanics	Neutron Scattering in Materials Research: Diffraction: Instruments and Nanostructure	Neutron Scattering in Materials Research: Dynamics and Inelastic Scattering	Neutron Scattering in Materials Research: Diffusion and Other Processes	
3024	The Langdon Symposium: Flow and Forming of Crystalline Materials: Creep	The Langdon Symposium: Flow and Forming of Crystalline Materials: High Temperature Deformation Including Superplasticity	The Langdon Symposium: Flow and Forming of Crystalline Materials: Grain Boundary Properties and Severe Plastic Deformation	The Langdon Symposium: Flow and Forming of Crystalline Materials: Equal Channel Angular Pressing – and – Poster Session	The Langdon Symposium: Flow and Forming of Crystalline Materials: Ultrafine-Grained Materials I	The Langdon Symposium: Flow and Forming of Crystalline Materials: Ultrafine-Grained Materials II	
↓ MARRIOTT HOTEL ↓							
Nob Hill A/B	Superalloys and Coatings for High Temperature Applications: Bond-Coat Technologies – I	Superalloys and Coatings for High Temperature Applications: Bond-Coat Technologies – II	Superalloys and Coatings for High Temperature Applications: Oxidation Behavior – I	Superalloys and Coatings for High Temperature Applications: Ceramic Materials for TBCs	Superalloys and Coatings for High Temperature Applications: Superalloys – I	Superalloys and Coatings for High Temperature Applications: Superalloys – II	Superalloys and Coatings for High Temperature Applications: Superalloys – III
Nob Hill C/D	Friction Stir Welding and Processing III: Aluminum Alloys	Friction Stir Welding and Processing III: High-Temperature Materials	Friction Stir Welding and Processing III: Friction Stir Processing	Friction Stir Welding and Processing III: Process/Applications	Friction Stir Welding and Processing III: Modeling	Friction Stir Welding and Processing III: Microstructure and Texture	
Salon 10/11	Beta Titanium Alloys of the 00's: Applications I	Beta Titanium Alloys of the 00's: Applications II	Beta Titanium Alloys of the 00's: Phase Equilibria	Beta Titanium Alloys of the 00's: Composites and Processing	Beta Titanium Alloys of the 00's: Corrosion and Biomedical	Beta Titanium Alloys of the 00's: Mechanical Response	