For our members, MRS Meetings and publications are essential to their career growth and advancement, providing trusted and valued avenues to share their cutting-edge research and impact the world in which we live.

Michael R. Fitzsimmons
2019 MRS President

Promoting materials research and innovation

In the April 2018 issue of *MRS Bulletin*, an article entitled, "The materials science and engineering undergraduate enrollment floodgates are open," by R. Allen Kimel and Susan B. Sinnott, notes the dramatic increase in materials science and engineering (MS&E) enrollment—as much as 175% in some instances—observed at many universities during the past 10 years. The article also points to favorable trends in employment of MS&E graduates in academia, national laboratories, and industry. The future appears bright for the materials field. And that is great news for the Materials Research Society (MRS) as well, as we stand ready to provide professional development and career services that will help prepare these students for the critical transitions from undergraduate STEM education, to graduate MS&E programs, and finally to careers in materials science.

As mentioned in my July 2019 "Letter from the President," the MRS Board of Directors set forth a strategic plan in 2017 "to engage our members across generations to advance their careers and promote materials research and innovation," and we are making great strides. For example, in collaboration with four leading scientific societies, MRS is participating in the NSF INCLUDES-funded Inclusive Graduate Education Network (IGEN), created to support and increase the number of underrepresented ethnic minority students pursuing PhDs in the physical sciences.

In addition, while we continue to offer a broad range of career services at the MRS Spring and Fall Meetings—sessions on presentation and communication skills, salary negotiations, publishing opportunities, resume writing, and more—the online Career Central on the MRS website now provides an array of valuable resources. Besides the Job Board, our members will find international funding lists, templates, and tip sheets for job seekers and free access to the archived Salary Negotiation Workshop and MRS OnDemand® Career Webinars. The *iMatSci Innovation Showcase* has become an increasingly valuable platform for innovators to demonstrate their newest materials-related technologies. And the *Journal of Materials Research* (*JMR*) now publishes an annual "Early Career Scholars in Materials Science" issue, providing a unique opportunity for researchers to be highlighted and promoted early in their careers.

MRS has long been known for its vibrant meetings and high-quality publications, featuring energy and sustainability, nanomaterials, structural materials, soft materials, and much more. To support these growing needs, the Society has introduced late-news

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programming and new topical areas, including artificial intelligence for materials design, emerging biomaterials, quantum materials, and responsive and adaptive materials, to our meetings and publication portfolios.

To reinforce these efforts and to provide expanded networking opportunities for our members, we held the *MRS Frontiers Reception* at the 2019 MRS Spring Meeting in Phoenix. During that energetic brainstorming session, we shared refreshments, hors d'oeuvres, and ideas for forging new content and communities at the frontiers of materials research. The reception was lively and so well received, that we've decided to do it again! If you're attending the 2019 MRS Fall Meeting in Boston, I invite you to join us on Thursday evening for another round of exciting and thought-provoking discussions on hot-topic areas in materials research. It's an excellent opportunity to connect with peers working in these critical areas of materials research. And, your input can help influence the direction of the Society in which we all take such pride.

Finally, as my year as MRS President draws to a close, I thank and celebrate the nearly 1000 volunteers as well as our members, leadership, headquarters staff, vendors, exhibitors, sponsors, host cities, and the materials community, without whom our accomplishments would not be possible. Together, we are the Materials Research Society … engaging our members across generations to advance their careers and promote materials research and innovation.

Michael R. Fitzsimmons

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2019 MRS® FALL MEETING & EXHIBIT
December 1–6, 2019 | Boston, Massachusetts

mrs.org/fall2019

Register Online by November 18, 5:00 pm (ET)

ON-SITE REGISTRATON OPENS ON SUNDAY, DECEMBER 1

Fall Meeting registrations include MRS Membership January – December 2020

BROADER IMPACT

BI01 Materials Data Science—Transformations in Interdisciplinary Education

ELECTRONIC, PHOTONIC AND MAGNETIC MATERIALS

EL01 Emerging Material Platforms and Approaches for Plasmonics, Metamaterials and Metasurfaces
EL02 Molecular and Organic Ferro- and Piezoelectrics—Science and Applications
EL03 Multiferroics and Magnetoelectrics
EL04 Emerging Chalcogenide Electronic Materials—From Theory to Applications
EL05 Diamond and Diamond Heterojunctions—From Growth and Technology to Applications

ENERGY AND ENVIRONMENT

EN01 Challenges in Battery Technologies for Next-Generation Electric Vehicles and Grid Storage Applications
EN02 Materials for High-Energy and Safe Electrochemical Energy Storage
EN03 Green Electrochemical Energy Storage Solutions—Materials, Processes and Devices
EN04 Advanced Membranes for Energy-Efficient Molecular Separation and Ion Conduction
EN05 Chemomechanical and Interfacial Challenges in Energy Storage and Conversion—Batteries and Fuel Cells
EN06 Development in Catalytic Materials for Sustainable Energy—Bridging the Homogeneous/Heterogeneous Divide
EN07 Materials Science for Efficient Water Splitting
EN08 Halide Perovskites for Photovoltaic Applications—Devices, Stability and Upscaling
EN09 Advances in the Fundamental Science of Halide Perovskite Optoelectronics
EN10 Emerging Light-Emitting Materials and Devices—Perovskite Emitters, Quantum Dots and Other Low-Dimensional Nanoscale Emitters
EN11 Silicon for Photovoltaics
EN12 Structure–Function Relationships and Interfacial Processes in Organic Semiconductors for Optoelectronics
EN13 Flexible and Miniaturized Thermoelectric Devices Based on Organic Semiconductors and Hybrid Materials
EN14 Thermoelectric Energy Conversion (TEC)—Complex Materials and Novel Theoretical Methods
EN15 Nanomaterials for Sensing and Control of Energy Systems—Processing, Characterization and Theory
EN16 Advanced Materials, Fabrication Routes and Devices for Environmental Monitoring
EN17 Structure–Property Processing Performance Relationships in Materials for Nuclear Technologies

FABRICATION OF FUNCTIONAL MATERIALS AND NANOMATERIALS

FF01 Beyond Graphene 2D Materials—Synthesis, Properties and Device Applications
FF02 2D Nanomaterials-Based Nanofluidics
FF03 Building Advanced Materials via Particle-Based Crystallization and Self-Assembly of Molecules with Aggregation-Induced Emission
FF04 Crystal Engineering of Functional Materials—Solution-Based Strategies
FF05 Advanced Atomic Layer Deposition and Chemical Vapor Deposition Techniques and Applications
FF06 Advances in the Fundamental Understanding and Functionalization of Reactive Materials

MATERIALS FOR QUANTUM TECHNOLOGY

MQ01 Coherent and Correlated Magnetic Materials for Hybrid Quantum Interfaces
MQ02 Materials for Quantum Computing Applications
MQ03 Predictive Synthesis and Advanced Characterization of Emerging Quantum Materials

MATERIALS THEORY, COMPUTATION AND CHARACTERIZATION

MT01 Advanced Atomistic Algorithms in Materials Science
MT02 Closing the Loop—Using Machine Learning in High-Throughput Discovery of New Materials
MT03 Automated and Data-Driven Approaches to Materials Development—Bridging the Gap Between Theory and Industry
MT04 Advanced Materials Exploration with Neutrons
MT05 Emerging Prospects and Capabilities in Focused Ion-Beam Technologies and Applications
MT06 *In Situ* Characterization of Dynamic Phenomena During Materials Synthesis
MT07 *In Situ/Operando* Studies of Dynamic Processes in Ferroelectric, Magnetic and Multiferroic Materials

MECHANICAL BEHAVIOR AND STRUCTURAL MATERIALS

MS01 Extreme Mechanics
MS02 Mechanically Coupled and Defect-Enabled Functionality in Atomically Thin Materials
MS03 Mechanics of Nanocomposites and Hybrid Materials
MS04 High-Entropy Alloys and Other Novel High-Temperature Structural Alloys

SOFT MATERIALS AND BIOMATERIALS

SB01 Multifunctional Materials—From Conceptual Design to Application-Motivated Systems
SB02 Multiscale Materials Engineering Within Biological Systems
SB03 Smart Materials, Devices and Systems for Interface with Plants and Microorganisms
SB04 Hydrogel Materials—From Theory to Applications via 3D and 4D Printing
SB05 Light–Matter Interactions at the Interface with Living Cells, Tissues and Organisms
SB06 Bringing Mechanobiology to Materials—From Molecular Understanding to Biological Design
SB07 Bioelectrical Interfaces
SB08 Advanced Neural Materials and Devices
SB09 Interfacing Bio/Nano Materials with Cancer and the Immune System
SB10 Electronic Textiles
SB11 Multiphase Fluids for Materials Science—Droplets, Bubbles and Emulsions

Download the MRS.org/MeetingApp

Meeting Chairs

Bryan D. Huey University of Connecticut
Stéphanie P. Lacour École Polytechnique Fédérale de Lausanne
Conal E. Murray IBM T.J. Watson Research Center
Jeffrey B. Neaton University of California, Berkeley, and Lawrence Berkeley National Laboratory
Iris Visoly-Fisher Ben-Gurion University of the Negev

Don't Miss These Future MRS Meetings!

2020 MRS Spring Meeting & Exhibit
April 13–17, 2020, Phoenix, Arizona

2020 MRS Fall Meeting & Exhibit
November 29–December 4, 2020, Boston, Massachusetts

MRS MATERIALS RESEARCH SOCIETY®
Advancing materials. Improving the quality of life.

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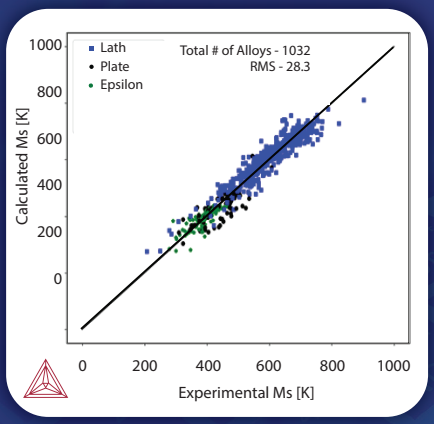
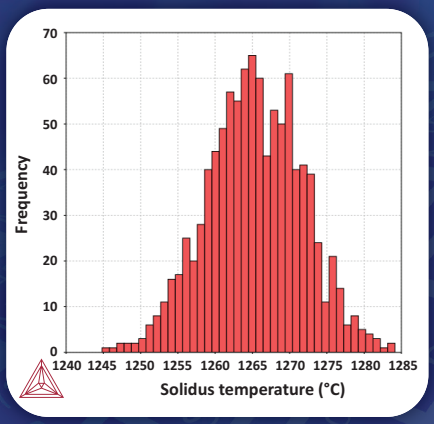


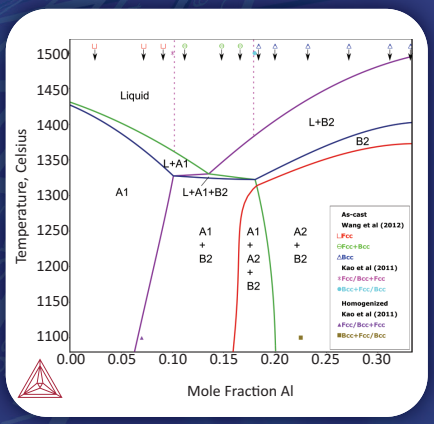
Comparison of calculated and experimental Ms temperatures for a wide range of steels

Nickel Based Alloys



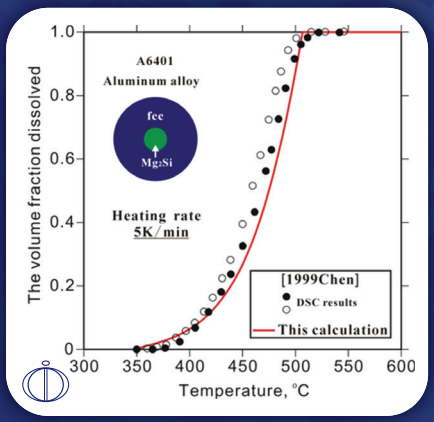
Variation in solidus temperature over 1000 compositions within alloy 718 specification

High Entropy Alloys



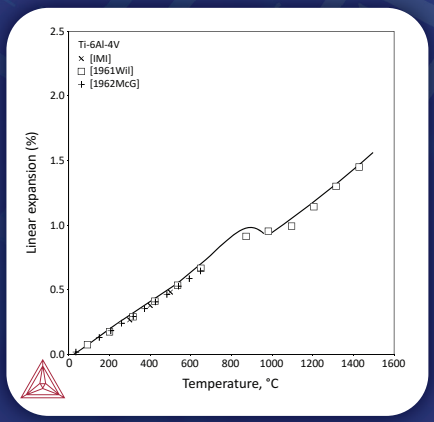
Calculated phase diagram along the composition line of CoCrFeNi-Al

Al Alloys



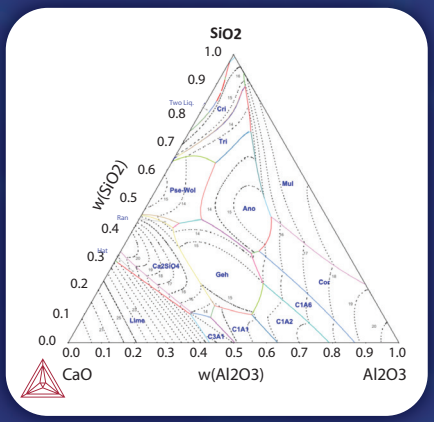
Dissolution of Mg2Si precipitate in Alloy A6401

Ti and TiAl Alloys



Linear expansion vs Temperature for Ti-6Al-4V

Oxides



Ternary liquidus projection in oxide systems

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