Physical Metallurgy (GRS)
Gordon Research Seminar

Modern Processing Science in Physical Metallurgy

July 22 - 23, 2017

Chair
Victoria Miller

University of New England
11 Hills Beach Road
Biddeford, ME, US

Conference Description

The Gordon Research Seminar on Physical Metallurgy is a unique forum for graduate students, post-docs, and other scientists with comparable levels of experience and education to present and exchange new data and cutting edge ideas.

Advances in physical metallurgy have the potential to transform a wide range of advanced engineering systems; however, to have impact, these alloys must by processed into useful engineered objects with properties that are precisely controlled. Understanding the processing-structure relationship is a key component in the development of new materials and the advancement of mature systems. The focus of this meeting is the development of experimental methodologies and computational tools which examine the evolution of material structure during processing and inform predictive relationships.

Related Meeting

This GRS will be held in conjunction with the "Physical Metallurgy" Gordon Research Conference (GRC). Those interested in attending both meetings must submit an application for the GRC in addition to an application for the GRS. Refer to the associated GRC program page for more information.

Conference Program

Saturday	
2:00 pm - 5:00 pm	Arrival and Check-in
3:30 pm - 3:45 pm	Introductory Comments by GRC Site Staff / Welcome from the GRS Chair
3:45 pm - 4:30 pm	**Keynote Session: Opportunities and Challenges in Metals Processing Research** Discussion Leader: **Thomas Reeve** (Purdue University, USA)
3:45 pm - 4:15 pm	**Suveen Mathaudhu** (University of California, Riverside, USA) "The Continued Quest for Low-Temperature Formability in Mg-Alloys: Historical Developments and Future Opportunities"
4:15 pm - 4:30 pm	Discussion
4:30 pm - 6:00 pm	**Poster Session**
6:00 pm - 7:00 pm	Dinner
7:30 pm - 9:30 pm	**Advances in Thermomechanical Processing** Discussion Leader: **Suveen Mathaudhu** (University of California, Riverside, USA)
7:30 pm - 7:50 pm	**Anirudh Raju Natarajan** (University of California, Santa Barbara, USA) "Modeling Precipitation in Alloys: From Atoms to the Mesoscale"
7:50 pm - 8:00 pm	Discussion
8:00 pm - 8:20 pm	**Aeriel Murphy** (University of Michigan, USA) "The Effect of Aluminum Content on Static Recrystallization and Grain Growth in Magnesium"
8:20 pm - 8:30 pm	Discussion
8:30 pm - 8:50 pm	**Patrick Shower** (Oak Ridge National Laboratory, USA) "The Evolution of Theta Prime Precipitates in an Al-Cu Alloy Investigated with Phase Field Theory "
8:50 pm - 9:00 pm	Discussion

9:00 pm - 9:20 pm	**Kamalika Chatterjee** (University of Illinois at Urbana-Champaign, USA) "Intermittent Plasticity in Individual Grains of a Polycrystalline Alloy"
9:20 pm - 9:30 pm	Discussion
Sunday	
7:30 am - 8:30 am	Breakfast
9:00 am - 11:00 am	**Solidification: Casting and Additive Manufacturing** Discussion Leader: **Allison Beese** (Pennsylvania State University, USA)
9:00 am - 9:20 am	**Sudipto Mandal** (Carnegie Mellon University, USA) "Quantification of Processing-Microstructure-Property Relationships in Titanium Alloys"
9:20 am - 9:30 am	Discussion
9:30 am - 9:50 am	**Lily Nguyen** (U.S. Naval Research Laboratory, USA) "Advancing High Resolution 3D Characterization Using Mechanical Serial Sectioning"
9:50 am - 10:00 am	Discussion
10:00 am - 10:20 am	**Chinnapat Panwisawas** (University of Birmingham, United Kingdom) "Materials Physics of Additive Manufacturing: An ICME approach"
10:20 am - 10:30 am	Discussion
10:30 am - 10:50 am	**Theron Rodgers** (Sandia National Laboratories, USA) "Modeling Microstructure Evolution During Metal Additive Manufacturing "
10:50 am - 11:00 am	Discussion
11:00 am - 12:30 pm	**Poster Session** *Coffee will be served in the poster area from 11:00 am - 11:30 am*
12:30 pm - 1:30 pm	Lunch

1:30 pm - 2:30 pm	**Mentorship Component: Career Opportunities in Physical Metallurgy After Grad School** Discussion Leader: **Ji-Cheng Zhao** (The Ohio State University, USA)
1:30 pm - 2:30 pm	**Panel Discussion** *Bridging the Gap from Student to Professional Life* • **Allison Beese** (Pennsylvania State University, USA) • **Peter Gumbsch** (Fraunhofer Institute for Mechanics of Materials IWM, Germany) • **Suveen Mathaudhu** (University of California, Riverside, USA) • **Luke Rettberg** (Pratt & Whitney, USA)
2:30 pm - 3:00 pm	**Evaluation Period** *Fill in GRS Evaluation Forms*
3:00 pm	Seminar Concludes

Contributors