

PRELIMINARY PROGRAM

Recent Advances in Integrated Computational and Experimental Methods for Additive Manufacturing

Green Center, Colorado School of Mines

Wednesday, September 6, 2017

7:00 – 8:00 am	Registration
8:00 – 8:30 am	Introduction and welcome
8:30 – 9:00 am	Lyle Levine , <i>National Institute of Standards and Technology</i> Additive Manufacturing of Metals: An Integrated Measurement-Modeling Approach
9:00 – 9:30 am	Suresh Babu , <i>University of Tennessee, ORNL</i> Metal Additive Manufacturing: Towards Qualification through In-Situ Process Control, Ex-Situ Characterization and High-Performance Computational Modeling
9:30 – 10:00 am	Manyalibo Matthews , <i>Lawrence Livermore Laboratories</i> Understanding Light-Matter Interaction, Melt Pool Dynamics and Spatter Formation in Laser Powder Bed Fusion Processing
10:00 – 10:30 am	Break
10:30 – 11:00 am	Bernhard Peters , <i>University of Luxembourg</i> A Multiphysics Simulation Approach Towards Additive Manufacturing
11:00 – 11:30 am	Kamel Fezzaa , <i>Advanced Photon Source</i> Ultrafast Imaging and Diffraction at 32-ID Beamline of the APS: Application to AM Process Characterization
11:30 – 12:00 pm	Jonathan Madison , <i>Sandia National Laboratories</i> Synthetic Microstructures for Additive Manufacturing: Generation, Quantification, and Partnering Efforts
12:00 – 1:00 pm	Lunch
1:00 – 1:30 pm	Tony Rollett , <i>Carnegie Mellon University</i> Additive Manufacturing Inspired Synchrotron Experiments and Computation: Diffraction and Dynamic X-ray Radiography
1:30 – 2:00 pm	Jeffery Brooks , <i>University of Birmingham</i> The Application of Multiscale Modelling to Additive Manufacturing
2:00 – 2:30 pm	Amy Clarke , <i>Colorado School of Mines</i> In-situ Imaging of Metallic Alloy Solidification Dynamics for Advanced Manufacturing
2:30 – 3:00 pm	Break

- 3:00 – 3:30 pm **Allen Roach**, *Sandia National Laboratories*
Overview of Sandia's Born Qualified Project
- 3:30 – 4:00 pm **Aaron Stebner**, *Colorado School of Mines*
Platforms for High Throughput Characterization and Machine Learning for Additive Manufacturing
- 4:00 – 4:30 pm **Deepankar Pal**, *3DSIM*
Adaptation of Predictive Approaches in AM Part Qualification and Experimental Validation
- 4:30 – 5:30 pm Break
5:30 – 7:30 Poster session and reception

Thursday, September 7

- 8:30 – 9:00 am **Jack Beuth**, *Carnegie Mellon University*
Effects of Beam Spot Size in Expanding the Usable AM Processing Space
- 9:00 – 9:30 am **John Turner**, *Oak Ridge National Laboratory*
What insights into additively manufactured materials will Exascale enable?
- 9:30 – 10:00 am **Joseph T. McKeown**, *Lawrence Livermore National Laboratory*
Microstructure Evolution During Laser-Induced Rapid Alloy Solidification
- 10:00 – 10:30 am Break
- 10:30 – 11:00 am **Peter Collins**, *Iowa State University*
Electron Beam Additive Manufacturing: Predicting microstructure, properties, and performance
- 11:00 – 11:30 am **Don Brown**, *Los Alamos National Laboratory*
Monitoring the Microstructure of Additively Manufactured Stainless Steel During Deposition
- 11:30 – 12:00 pm **Wei Xiong**, *University of Pittsburgh*
Materials and Processing Optimization for Metals Additive Manufacturing
- 12:00 – 1:00 pm Lunch
- 1:00 – 1:30 pm **Todd Palmer**, *Penn State University*
Impact of Size and Geometry on Process-Structure-Property Relationships for Size and Geometry in Directed Energy Deposition Processes
- 1:30 – 2:00 pm **Curt Bronkhorst**, *Los Alamos National Laboratory*
Quantifying the Structural State of Additively Manufactured Stainless Steels

2:00 – 2:30 pm	Josh Sugar , <i>Sandia National Laboratories</i> Microstructural Evolution, Mechanical Properties and Predictive Simulation of Additively Manufactured Austenitic Stainless Steel
2:30 – 3:00 pm	Nesma Aboulkhair , <i>University of Nottingham</i> Heat Inputs in Powder Bed Fusion of Metallic Materials
3:00 – 3:30 pm	Break
3:30 – 4:00 pm	Nima Shamsaei , <i>Auburn University</i> Porosity in Additive Manufactured Metallic Parts: Prediction, Remediation and Impact on Fatigue Behavior
4:00 – 4:30 pm	Hongkyu Yoon , <i>Sandia National Laboratories</i> Additive Manufacturing and Digital Rock Physics for Geoscience Applications
4:30 – 5:00 pm	Greg Wagner , <i>Northwestern University</i> Multiscale Process-Structure-Properties Modeling for Additive Manufacturing in Metals
6:30 – 8:00 pm	Conference dinner
Friday, September 8	
8:30 – 9:00 am	Wayne King , <i>Lawrence Livermore National Laboratory</i> Accelerating Qualification of Additively Manufactured Metal Parts
9:00 – 9:30 am	Lars-Erik Lindgren , <i>Lulea University of Technology</i> Calibration and validation of macroscopic models for additive manufacturing
9:30 – 10:00 am	Suman Das , <i>Georgia Institute of Technology</i> Modeling and experimental validation of powder bed fusion-based additive manufacturing in turbine engine hot-section alloys processed through scanning laser epitaxy
10:00 – 10:30 am	Break
10:30 – 11:00 am	Mario Martinez , <i>Sandia National Laboratories</i> Modeling of Selective Laser Melting: Impact of Laser Settings and Powder Morphology
11:00 – 11:30 am	Dan Thoma , <i>University of Wisconsin</i> Lightweight Design Using Direct Metal Laser Sintering: Optimized Topology vs. Lattice Structures
11:30 – 12:00 pm	Steve Liu , <i>Colorado School of Mines</i> Additive Manufacturing Research at the CSM Center for Welding, Joining and Coatings Research
12:00 – 1:00 pm	Lunch
1:00 – 3:00 pm	Possible tours