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, National Institute of Standards and Technology
Additive Manufacturing of Metals: An Integrated Measurement-Modeling Approach
9:00 – 9:30 am  Suresh Babu, University of Tennessee, ORNL
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, Lawrence Livermore Laboratories
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, University of Luxembourg
A Multiphysics Simulation Approach Towards Additive Manufacturing
11:00 – 11:30 am Kamel Fezzaa, Advanced Photon Source
Ultrafast Imaging and Diffraction at 32-ID Beamline of the APS: Application to AM Process Characterization
11:30 – 12:00 pm Jonathan Madison, Sandia National Laboratories
Synthetic Microstructures for Additive Manufacturing: Generation, Quantification, and Partnering Efforts
12:00 – 1:00 pm Lunch
1:00 – 1:30 pm Tony Rollett, Carnegie Mellon University
Additive Manufacturing Inspired Synchrotron Experiments and Computation: Diffraction and Dynamic X-ray Radiography
1:30 – 2:00 pm Jeffery Brooks, University of Birmingham
The Application of Multiscale Modelling to Additive Manufacturing
2:00 – 2:30 pm Amy Clarke, Colorado School of Mines
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
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<th>Time</th>
<th>Speaker</th>
<th>Institution</th>
<th>Title</th>
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<tbody>
<tr>
<td>2:00 – 2:30 pm</td>
<td><strong>Josh Sugar</strong>, <em>Sandia National Laboratories</em></td>
<td>Microstructural Evolution, Mechanical Properties and Predictive Simulation of Additively Manufactured Austenitic Stainless Steel</td>
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<td>2:30 – 3:00 pm</td>
<td><strong>Nesma Aboulkhair</strong>, <em>University of Nottingham</em></td>
<td>Heat Inputs in Powder Bed Fusion of Metallic Materials</td>
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<td>3:00 – 3:30 pm</td>
<td>Break</td>
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<td>3:30 – 4:00 pm</td>
<td><strong>Nima Shamsaei</strong>, <em>Auburn University</em></td>
<td>Porosity in Additive Manufactured Metallic Parts: Prediction, Remediation and Impact on Fatigue Behavior</td>
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<td>4:00 – 4:30 pm</td>
<td><strong>Hongkyu Yoon</strong>, <em>Sandia National Laboratories</em></td>
<td>Additive Manufacturing and Digital Rock Physics for Geoscience Applications</td>
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<td>4:30 – 5:00 pm</td>
<td><strong>Greg Wagner</strong>, <em>Northwestern University</em></td>
<td>Multiscale Process-Structure-Properties Modeling for Additive Manufacturing in Metals</td>
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<td>6:30 – 8:00 pm</td>
<td>Conference dinner</td>
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**Friday, September 8**

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<td>8:30 – 9:00 am</td>
<td><strong>Wayne King</strong>, <em>Lawrence Livermore National Laboratory</em></td>
<td>Accelerating Qualification of Additively Manufactured Metal Parts</td>
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<td>9:00 – 9:30 am</td>
<td><strong>Lars-Erik Lindgren</strong>, <em>Lulea University of Technology</em></td>
<td>Calibration and validation of macroscopic models for additive manufacturing</td>
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<td>9:30 – 10:00 am</td>
<td><strong>Suman Das</strong>, <em>Georgia Institute of Technology</em></td>
<td>Modeling and experimental validation of powder bed fusion-based additive manufacturing in turbine engine hot-section alloys processed through scanning laser epitaxy</td>
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<td>10:00 – 10:30 am</td>
<td>Break</td>
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<td>10:30 – 11:00 am</td>
<td><strong>Mario Martinez</strong>, <em>Sandia National Laboratories</em></td>
<td>Modeling of Selective Laser Melting: Impact of Laser Settings and Powder Morphology</td>
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<td>11:00 – 11:30 am</td>
<td><strong>Dan Thoma</strong>, <em>University of Wisconsin</em></td>
<td>Lightweight Design Using Direct Metal Laser Sintering: Optimized Topology vs. Lattice Structures</td>
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<td>11:30 – 12:00 pm</td>
<td><strong>Steve Liu</strong>, <em>Colorado School of Mines</em></td>
<td>Additive Manufacturing Research at the CSM Center for Welding, Joining and Coatings Research</td>
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<td>12:00 – 1:00 pm</td>
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<td>1:00 – 3:00 pm</td>
<td>Possible tours</td>
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