ADVANCED MANUFACTURING OFFICE
PEER REVIEW
JULY 17-19, 2018

Holiday Inn Washington Capitol
550 C Street, SW
Washington, DC 20024
Phone: (202) 479-4000

FINAL AGENDA

Day 1 (July 17)			
8:00 – 8:45 am	Peer Reviewer Briefing Breakfast **Rob Ivester, Valri Lightner, Isaac Chan, Mike McKittrick and Jay Wrobel, DOE-AMO**		
8:45 – 9:00 am	BREAK		
8:00 – 9:00 am	REGISTRATION FOR ATTENDEES		
9:00 – 9:20 am	Welcome and AMO Overview	**Rob Ivester** AMO Director	
9:20 – 9:40 am	Overview of the AMO Multiyear Program Plan	**Valri Lightner** Acting AMO Deputy Director	
9:40 – 10:00 am	AMO Strategic Analysis Activities	**Joe Cresko** AMO Analysis Lead	
10:00 – 10:10 am	BREAK AND TRANSITION TO TRACKS		
TRACK A		**TRACK B**	
Sustainable Manufacturing		***Materials for Harsh Service Conditions***	
10:10 – 10:50 am	Reducing Embodied-energy and Decreasing Emissions (REMADE) Institute Sustainable Manufacturing Innovation Alliance	10:10 – 10:30 am	Ultra-High Temperature Thermal Barrier Coating Development and Validation Solar Turbines
		10:30 – 10:50 am	Low Cost Ceramic-Matrix Composites for Harsh Environment Heat Exchanger Applications UTRC
Critical Materials		10:50 – 11:10 am	Boride-carbon Hybrid Technology to Produce Ultra-Wear and Corrosion Resistant Surfaces for Applications in Harsh Conditions Michigan State University
10:50 – 11:30 am	Critical Materials Institute Ames Laboratory		

Day 1 (July 17) Continued			
TRACK A		**TRACK B**	
11:30 – 11:50 am	Advanced Manufacturing of Alpha Double Prime Iron Nitride: An Innovative Rare Earth Element Free Ultra-High Performance Permanent Magnet for Clean Energy Applications FeNix Magnetics, Inc.	11:10 – 11:30 am	Novel Corrosion and Wear Resistant Coatings Using Innovative Cold Plasma Jet Surface Treatment to Enable Improved Bonding Performance of Dissimilar Material Joints Subject to Harsh Environmental Exposure Starfire Industries LLC
Motor-Driven Systems: Enabling Technologies		***Additive Manufacturing***	
11:50 am – 12:10 pm	Process Innovations for 2G HTS Wire Manufacturing Superconductor Technologies Inc	11:30 am – 12:10 pm	Manufacturing Demonstration Facility Oak Ridge National Laboratory
12:10 – 1:15 pm	LUNCH (Private Lunch for Reviewers)	12:10 – 1:15 pm	LUNCH (Private Lunch for Reviewers)
1:15 – 1:35 pm	Enhanced 2G HTS Wire for Electric Motor Applications American Superconductor	1:15 – 1:35 pm	Powder Synthesis and Alloy Design for Additive Manufacturing Ames Laboratory
1:35 – 1:55 pm	Highly Efficient Conical Air Gap Axial Motor Using Soft Magnetic Composites and Grain-Oriented Electrical Steel Regal-Beloit	1:35 – 1:55 pm	In-Situ Data Analysis and Tool Development for Additive Manufacturing Metal Powder Systems SLAC
1:55 – 2:15 pm	Nanometal-Interconnected Carbon Conductors for Advanced Electric Machines Rochester Institute of Technology	***Composite Materials***	
2:15 – 2:35 pm	Metal (Cu, Al) CNT Composite Wires for Energy Efficient Motors University of Central Florida	1:55 – 2:35 pm	Institute for Advanced Composite Materials Innovation Collaborative Composite Solutions Corporation
2:35 – 2:55 pm	Cost-effective Conductor, Cable, and Coils for High Field Rotating Electric Machines Florida State University	2:35 – 2:55 pm	Carbon Fiber Test Facility Oak Ridge National Laboratory
2:55 – 3:15 pm	Flexible Carbon Conductors for Lightweight Motors and Generators Rice University	2:55 – 3:15 pm	Energy Efficient Thermoplastic Composite Manufacturing The Boeing Company
3:15 – 3:35 pm	BREAK	3:15 – 3:35 pm	BREAK

Day 1 (July 17) Continued 2			
TRACK A		TRACK B	
3:35 – 3:55 pm	Amorphous and Nanocomposite Magnets for High Efficiency, High Speed Motor Designs Carnegie Mellon University	***Roll-to-Roll Processing***	
3:55 – 4:15 pm	High-Silicon Steel Strip By Single-Step Shear Deformation Processing Purdue University	3:35 – 4:15 pm	Roll-to-Roll Advanced Materials Lab Consortium Oak Ridge National Lab, Others
4:15 – 4:35 pm	Polydopamine/PTFE Composite Coating for Large-Scale Journal Bearings in Next Generation Electric Machines SurfTec, LLC	4:15 – 4:35 pm	Novel Membranes and Systems for Industrial and Municipal Water Purification and Reuse GE/University of Colorado
4:35 – 4:55 pm	Advanced Manufacturing of High Performance Superconductor Wires for NGEM University of Houston	***Workforce Development***	
		4:35 – 4:55 pm	Lab Embedded Entrepreneurship Programs
4:55 – 5:00 pm	Introduction to Poster Session AMO Staff	4:55 – 5:00 pm	Introduction to Poster Session AMO Staff

5:15 – 7:30 pm	POSTER SESSION AND NO-HOST RECEPTION

#	Project Title	Performer
1	LEEP: Cyclotron Road	Ilan Gur (LBNL)
2	LEEP: Chain Reaction Innovations	John Carlisle (ANL)
3	LEEP: Innovation Crossroads	Tom Rogers (ORNL)
4	Technologist in Residence Partnership (ANL and UOP): Development of Next Generation Process and Catalyst Technology for the Production of Energy and Chemicals	Chris Marshall (ANL)
5	Graduate Study and Research Program Focused on the Experimentation, Design, Development, and Manufacturing of WBG-Based Power Electronics, Grid Equipment, and High-Efficiency Electrical Systems	Rolando Burgos (Virginia Polytechnic Institute and State University)
6	Design-Oriented Education and Hands-On Training with Wide Bandgap Power Electronics for the Next-Generation Power Engineering Workforce	Leon Tolbert (University of Tennessee-Knoxville)
7	The Implications of Advanced Manufacturing in a Connected Economy for a Smart, Sustainable, and Productive Economy	Arman Shehabi (LBNL) Sujit Das (ORNL)
8	Industrial Water Use Characterization and Technology Opportunities for Efficient and Resilient Water Use	Prakash Rao (LBNL)
9	Sustainable Manufacturing Opportunities, Trends, and Technoeconomic Analysis	Alberta Carpenter (NREL)
10	Manufacturing Supply Chain Analysis: Criticality, Growth, Energy, Security, and Resiliency Implications	Diane Graziano (ANL)
11	Geospatial Combine Heat and Power Opportunity Mapping and Smart Power Electronics Potential for Smart Grid Integration	Sachin Nimbalkar (ORNL) Samantha Reese (NREL)
12	SMASH: Accelerated Discoveries of Amorphous Alloys by Combining AI with High Throughput Experiments	Apurva Mehta (SLAC)
13	CaloriCool - Caloric Materials Consortium	Vitalij Pecharsky (Ames Laboratory)
14	Cross-cutting Technologies R&D to Support Distributed Generation and CHP	Doug Longman (ANL)
15	Combined Heat and Power R&D	John Storey (ORNL)
16	Wear-Resistant Surface Technologies for Low-Leakage NG Compressors	Osman Eryilmaz (ANL)
17	Vertical Pillar GaN Based Transistors	Qinghui Shao (LLNL)
18	HPC4Mfg (LLNL and ZoomEssence): High Performance Computing Analysis for Energy Reduction of Industrial Spray Drying Technology	Ik Jang (LLNL)

19	HPC4Mfg (LBNL and PPG Industries): Modeling Paint Behavior During Rotary Bell Atomization	Robert Saye (LBNL)
20	HPC4Mfg (ORNL and Rolls Royce): Level-set Modeling Simulations of Chemical Vapor Infiltration for Ceramic Matrix Composites Manufacturing	Ramanan Sankaran (ORNL)
21	HPC4Mfg (ANL and Ford): Effect of Manufacturing Tolerances on Engine Stability	Sibendu Som (ANL)
22	SBIR: Fabrication of High-quality NaA Zeolite Membranes via a Novel Plate & Frame Configuration for Molecular-scale Mixture Separations	Haibing Wang (nGimat LLC)
23	SBIR: Transition Metal Blocking Microporous Polymer Separators for Energy-Dense and Long-Lived Li-ion Batteries	Peter Frischmann (Sepion Technologies)
24	SBIR: In-Line Quality and Process Control in Solar and Fuel Cell Manufacturing	Sergei Ostapenko (Ultrasonic Technologies)
25	Roll-to-Roll: Advanced Materials Manufacturing Laboratory Consortium CRADA Projects	Claus Daniel (ORNL)
26	Roll-to-Roll: Correlation of Dispersion Rheology and Structured Electrode Performance for Improved Lithium-Ion Cell Performance	David Wood (ORNL)
27	Roll-to-Roll: PEM Fuel Cell Gas-diffusion Electrodes (GDE) with Ionomer-rich Surface Layer	Mike Ulsh (NREL)
28	Roll-to-Roll: Data Mining for Predictive Synthesis of New Materials	Olga Kononova (LBNL)
29	Roll-to-Roll: Water Manufacture Process – Material for Water Technology	Yupo Lin (ANL)
30	Roll-to-Roll: Functional Materials: Understanding Materials Synthesis	Venkat Srinivasan (ANL)
31	SBIR: Photothermal Solar Cell	Youssef Habib (Aquaneers)
32	SBIR: Ionic Membrane Based Desalination System	Bamdad Bahar (Xergy)
33	SBIR: Solar Thermal Assisted Vacuum Freezing Desalination of Seawater at the Triple Point	Fangyu Cao (Advanced Cooling Technologies)
34	SBIR: Bio-inspired Macromolecules Containing Atomically Precise Catalytic Active Sites	Ted Amudsen (Mainstream Technology) Chris Schafmeister (Temple University)
35	SBIR: Atomically Precise Membranes for the Separation of Hydrocarbons	Ted Amudsen (Mainstream Technology) Chris Schafmeister (Temple University)
36	SBIR: Biologically Inspired Ammonia Production with Immobilized Nitrogenase	John Watkins (Fulcrum BioScience)
37	Blue Sky Manufacturing Competition (not reviewed)	Zhijian Pei

Day 2 (July 18)			
TRACK A		TRACK B	
8:00 – 9:00 am	REGISTRATION FOR ATTENDEES		
Motor-Driven Systems: Enabling Technologies (Continued)		9:00 – 9:20 am	OPEN
9:00 – 9:20 am	Si-Al-Cr-Mn Alloy for High Specific Resistivity AK Steel Corporation		
9:20 – 9:40 am	Resistively Graded Insulation System for Next-Generation Converter-Fed Motors General Electric	***Waste Heat Recovery and Direct Thermal Energy Conversion Materials***	
		9:20 – 9:40 am	Roll-to-Roll Manufactured Hybrid Metal-Polymer Heat Exchangers with Anti-Fouling and Self-Monitoring for Waste Heat Recovery University of Illinois
Advanced Materials Manufacturing		9:40 – 10:00 am	Turbocompression Cooling System for Ultra Low Temperature Waste Heat Recovery Colorado State University
9:40 – 10:00 am	High Performance Computing for Manufacturing LLNL		
10:00 – 10:20 am	A Novel Flash Ironmaking Process American Iron and Steel Institute	10:00 – 10:20 am	High Efficiency Waste Heat Harvesting Using Novel Thermal Oscillators Yale University
10:20 – 10:40 am	BREAK	10:20 – 10:40 am	BREAK
10:40 – 11:00 am	Flash Processed Steel for Automotive Applications (SBIR Phase III) SFP Works	***Process Intensification***	
		10:40 – 11:00 am	A Transient Kinetic Approach to Catalytic Materials for Energy-Efficient Routes to Ammonia, Ethylene and Related Chemicals Idaho National Laboratory
11:00 – 11:20 am	Fabrication of Advanced Nanocarbon-Metal Composites for Improved Energy Efficiency University of Maryland	11:00 – 11:20 am	New Design Methods and Algorithms for Energy Efficient Distillation Trains Purdue University
11:20 – 11:40 am	High Performance Electrical and Thermal Conductors Argonne National Laboratory	11:20 – 11:40 am	Integrated Hydrogen Combustion with Energy-Efficient Ethylene Production EcoCatalytic Inc.

Day 2 (July 18) Continued			
	TRACK A		**TRACK B**
11:40 am – 12:00 pm	Melt Processing of Covetic Materials National Energy Technology Laboratory	11:40 am – 12:00 pm	Low-Pressure Electrolytic Ammonia Production Energy & Environmental Research Center
12:00 – 1:15 pm	LUNCH (Private Lunch for Reviewers)	12:00 – 1:15 pm	LUNCH (Private Lunch for Reviewers)
1:15 – 1:35 pm	Improved Catalyst Selectivity and Longevity Using Atomic Layer Deposition Argonne National Laboratory	1:15 – 1:55 pm	Rapid Advancement in Process Intensification Deployment (RAPID) Institute AIChE
1:35 – 1:55 pm	Rational Design Platform for Transition Metal Catalyzed Electrochemical Synthesis Lawrence Livermore National Laboratory		
1:55 – 2:15 pm	The Radical Atom: Mechanosynthetic 3D Printing of an Atomically Precise SPM Tip UCLA	***Workforce Development***	
		1:55 – 2:15 pm	New Traineeship: Advanced Manufacturing for Energy Systems University of Connecticut
2:15 – 2:35 pm	DNA Strand Displacement Driven Molecular Additive Manufacturing Dana-Farber Cancer Institute	2:15 – 2:35 pm	New Traineeship: Enhanced Preparation for Intelligent Cybermanufacturing Systems Georgia Tech
2:35 – 2:55 pm	BREAK	2:35 – 2:55 pm	BREAK
2:55 – 3:15 pm	Developing Nanometer Scale, Atomically Precise Metallo-Catalysts With Molecular Lego Temple University	***Technology Partnerships***	
		2:55 – 3:20 pm	Tools and Training Jay Wrobel
3:15 – 3:35 pm	Atomically Precise Manufacturing for 2D-Designed Materials Zyvex Labs, LLC		
3:35 – 3:55 pm	A Platform Technology for High-throughput Atomically Precise Manufacturing: Mechatronics at the Atomic Scale University of Texas at Dallas	3:20 – 3:45 pm	Industrial Assessment Centers John Smegal
3:55 – 4:15 pm	Solving Materials and Structures using Heuristics and Machine Learning SLAC	3:45 – 4:15 pm	Better Plants Eli Levine

Day 2 (July 18) Continued 2			
TRACK A		TRACK B	
4:15 – 4:35 pm	Carbon-Free Iron for a Sustainable Future Boston Electrometallurgical	***Smart Manufacturing***	
4:35 – 4:55 pm	Lifetime Energy Savings Via Advanced Manufacturing of Low Density Steels For Transportation Applications AK Steel	4:15 – 4:55 pm	Clean Energy Smart Manufacturing Innovation Institute CESMII
4:55 pm	ADJOURN		
5:00 – 8:00 pm	Private Dinner and Discussion for Reviewers		

Day 3 (July 19)			
TRACK A		TRACK B	
8:00 – 9:00 am	REGISTRATION FOR ATTENDEES		
Wide Bandgap Semiconductors		***Smart Manufacturing (Continued)***	
9:00 – 9:40 am	Power America North Carolina State University	9:00 – 9:20 am	An Open-Source Framework for the Computational Analysis and Design of Autothermal Chemical Processes Iowa State University
		Technology Partnerships (Continued)	
		9:20 – 9:55 am	ISO 50001 Portfolio Jay Wrobel and Pete Langlois
9:40 – 10:00 am	Medium Voltage Integrated Drive and Motor CalNetix Technologies		
10:00 – 10:20 am	SiC enabled High-Frequency Medium Voltage Drive for High-Speed Motors General Electric	9:55 – 10:20 am	CHP Deployment Tarla Toomer
10:20 – 10:40 am	BREAK	10:20 – 10:40 am	BREAK
10:40 – 11:00 am	Integrated 10kV SiC VSD and High-Speed MW Motor for Gas Compression Systems Eaton Corporation	***Process Heating***	
		10:40 – 11:00 am	Coatings and Process Development Reduced Energy Automotive OEM Manufacturing PPG Industries, Inc.
11:00 – 11:20 am	Fully Integrated High Speed Megawatt Class Motor and High Frequency Variable Speed Drive System Clemson University	11:00 – 11:20 am	A Direct Process for Wire Production from Sulfide Concentrates MIT
11:20 – 11:40 am	Integrated Electric Drive with HV2 Modular Electric Machine and SiC Based Power Converters The Ohio State University	11:20 – 11:40 am	Low-temperature Electrochemical Activation of Ethane for Co-production of Chemicals/Fuels and Hydrogen Idaho National Laboratory
11:40 am	PEER REVIEW MEETING ENDS		
12:00 – 5:00 pm	PRIVATE MEETING OF REVIEW PANEL *(including lunch and time with AMO management to address outstanding questions)*		