

Registration Hours

Monday, May 8 7:00 AM - 4:30 PM
 Tuesday, May 9 7:00 AM - 5:00 PM
 Wednesday, May 10 7:00 AM - 5:00 PM
 Thursday, May 11 7:00 AM - 1:00 PM

Exhibit Hours


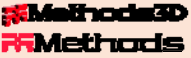





Tuesday, May 9 10:00 AM - 6:00 PM
 Wednesday, May 10 10:00 AM - 6:00 PM
 Thursday, May 11 10:00 AM - 2:00 PM










May 8 - 11, 2017 | David L. Lawrence Convention Center | Pittsburgh, Pennsylvania USA

Monday, May 8								
7:00 AM - 4:30 PM								
Registration								
<p>8:00 AM - Noon Facility Tours</p> <p>All morning programming runs concurrently <i>Choose Only One</i></p> <p>8:00 AM - 1:00 PM Workshops and Review Course</p>	<p>Facility Tour Arconic (Alcoa)</p>	<p>Facility Tour ExOne</p>	<p>Bioprinting Fundamentals Room: 321 Roger Narayan, UNC/NCSSU Joint Department of Biomedical Engineering Phil Campbell, Carnegie Mellon University Prashant Kumta, University of Pittsburgh Adam Feinberg, Carnegie Mellon University Ken Church, nScript</p>		<p>Realizing Value with Additive Manufacturing Room: 317/318 Mark Cotteleer: Jim Joyce Kelly Marchese: Mark Vitale: Brenna Sniderman Deloitte LLP</p>	<p>Regulatory & Quality System Considerations for 3D Printed Medical Devices Room: 319 Matthew DiPrima, Food & Drug Administration Kim Torluemke, 3D Systems Janelle Schrot & Jenny Jones, Materialise Beatrice Ogembo, American Preclinical Services Gilbert Cortes, Johnson & Johnson</p>	<p>3D Printing in Hospitals: What You Need to Know Room: 320 Jonathan Morris MD, Mayo Clinic Jane Matsumoto MD, Mayo Clinic Andy Christensen, LimbForge Amy Alexander, Mayo Clinic Nicole Wake, New York University Adam Jakus, Northwestern University</p>	
	<p>Fundamentals of Additive Manufacturing Room: 301/302 Graham Tromans GP Tromans Associates</p>	<p>Fundamentals of 3D Scanning and 3D Modeling Room: 304/305 Giles Gaskell Wenzel America Ltd</p>	<p>Metal Part Fabrication Using Additive Manufacturing Technologies Room: 315/316 Frank Medina PhD, EWI</p>	<p>Additive Manufacturing with Metals & Its Impact on Plastic Injection Molding Room: 306/307</p>	<p>Additive Manufacturing Certification Review Course Room: 334</p>			
	<p>Kickoff 1:30 PM - 5:00 PM</p> <p>Spirit of Pittsburgh Ballroom</p>							
<p>SME Additive Manufacturing Community Awards Dick Aubin Distinguished Paper Award Direct Digital Competition Award Industry Achievement Award</p>		<p>State of America Makes Rob Gorham, Director of Operations</p>		<p>KEYNOTE Networked Matter and the Nature of Things Mikey McManus Chairman, MAYA and Research Fellow Office of CTO/Future of Learning Autodesk</p>		<p>What's New: Roundup of the Latest 3D Printing and 3D Scanning Products Todd Grimm President T.A.Grimm & Associates Inc</p>		
<p>PANEL Transformation of Manufacturing Vyomesh Joshi, President & Chief Executive Officer, 3D Systems; Stephen Nigro, President-3D Printing, HP; Greg Morris, Additive Technologies Leader, GE Aviation; Fried Van Craen, Founder & CEO, Materialise</p>								







Tuesday, May 9 - morning





7:00 AM - 5:00 PM	Registration								
8:00 AM - 9:45 AM	PANEL New Frontiers in Metal 3D Printing Ric Fulop, CEO, Desktop Metal Kyle Nel, Founder & Executive Director, Lowe's Innovation Labs, Lowe's Companies Inc Don Jones, Director, Global Aftermarket Parts Strategy and Transformation, Caterpillar Inc				KEYNOTE Brilliant Factory: A New Era of Manufacturing Phillippe Cochet, Executive Vice President, GE				sponsored by: 
9:00 AM - 2:00 PM	Student Summit								
10:00 AM - 6:00 PM	Show Open								
10:00 AM - 5:00 PM	3D Playground Activities	America Makes ACADEMI ADX		ToolingU-SME Manufacturing Challenge					
Concurrent AM Sessions 10:15 AM - 12:15 PM	3D Imaging / Scanning: CT Scanning Room: 301/302	Digital Thread & Standards Power Up Room: 310/311	Post Processing I  Room: 304/305	Casting I  Room: 303	Applications  Room: 317/318	Materials I  Room: 319/320/321	Business & Economic Considerations - Execution I 	MMI: Clinical Applications I  Room: 306/307	Show Floor Theater Booth 2321
	10:15 AM - 10:40 AM Dynamic Industrial CT: Its Benefits Within Manufacturing and Inspection (Intermediate) Alex Doukas Kinetic Vision	10:15 AM - 10:25 AM Additive Manufacturing Standards Development Roadmap (Intermediate) Lauralyn McDaniel, SME and Jim Williams, All Points Additive 10:30 AM - 10:40 AM Framework for Developing Additive Manufacturing Standards (Expert) Mohsen Seifi PhD ASTM International	10:15 AM - 10:40 AM 3D Printing: The Impact of Post-processing (Novice) Frank Marangell Rize Inc	10:15 AM - 11:40 AM MetalCasting Seminar - Integrating Design Efficiency with Additive Manufacturing to Improve Time to Market (Novice) Zayna Connor PhD American Foundry Society	10:15 AM - 10:40 AM SLM-Optimization of Aero-Engine Components: SLM Bleed Valve (Intermediate) Scott P. Lathrope Meggitt Control Systems	10:15 AM - 10:40 AM The Value of Traditional Manufacturing Materials in the Age of Digital Fabrication (Intermediate) Graham Bredemeyer Collider	10:15 AM - 10:40 AM A 73 Year-Old Machine Shop's Journey into Metal Additive Manufacturing (Novice) Wesley J. Hart & Christian G. Joest Imperial Machine & Tool Co	10:15 AM - 10:25 AM Low Cost and Equipment Methods to Create Flexible Anatomical Models (Novice) Joseph P. Higgins Cardiovascular Systems Inc 10:25 AM - 10:45 AM Development of Low Cost Hand Prostheses by Additive Manufacturing (Expert) Jorge Lino Alves PhD & Daniel Sousa Ferreira University of Porto / Faculty of Engineering 10:45 AM - 10:55 AM Additive Manufacturing of Silicone Prosthetic Implants with Heterogeneous Properties (Intermediate) Farzad Liravi & Ehsan Toyserkani PhD University of Waterloo 10:55 AM - 11:05 AM Development of a Custom Ankle-Foot Orthosis (Novice) Arif Sirinterlikci PhD & April Krivoniak Robert Morris University	10:30 AM - 11:30 AM Tech Briefing: Fundamentals of 3D Scanning 11:30 AM - 12:30 PM Why TECH-BELT? America Makes and the Youngstown Business Incubator are presenting a series of short presentations from various regional Additive Manufacturing organizations. Each presenter will focus on "Why the Cleveland to Pittsburgh TECH-BELT Corridor is the nation's hub for 3D Printing and Additive Manufacturing". A panel discussion will follow to allow for questions. 12:30 PM - 1:30 PM Innovation Auditions
	10:45 AM - 11:10 AM New Advances in Computed Tomography Helping Accelerate Development & Quality of Additive Manufacturing Products & Processes (Intermediate) Brett A. Muehhauser North Star Imaging	10:45 AM - 10:55 AM American Welding Society D20 Committee Development of a Metal Additive Manufacturing Standard (Intermediate) Jessica Coughlin Naval Nuclear Laboratory 11:00 AM - 11:10 AM An Open Material Database for Additive Manufacturing (Novice) Yan Lu National Institute of Standards and Technology	10:45 AM - 11:10 AM Post-processing - The Untold Story Regarding Industrial Resin Based 3D Printing (Novice) Edward T. Graham ProtoCAM	10:45 AM - 11:10 AM Direct Digital Manufacturing of Custom Hardware for Unmanned Aircraft Systems (Intermediate) Shayne A. Kondor & Warren Lee Georgia Tech Research Institute	10:45 AM - 11:10 AM Effect of 3D Printing Process Parameters on Electrical & Mechanical Properties of Nylon/PEEK-CNT Composite (Intermediate) Yan Shao PhD Eaton	10:45 AM - 11:10 AM Additive Manufacturing - From Fiction to Factory (Novice) John Dulchinos Jabir	11:05 AM - 11:15 AM Simulation of Coronary Atrial Intervention Challenges, Learnings, and Final Methods (Intermediate) Joseph P. Higgins Cardiovascular Systems Inc	10:45 AM - 11:10 AM Development of a Custom Ankle-Foot Orthosis (Novice) Arif Sirinterlikci PhD & April Krivoniak Robert Morris University	12:30 PM - 1:30 PM Innovation Auditions
	11:15 AM - 11:40 AM High Resolution to High Volume: Keys to Controlling Industrial Processes (Intermediate) Leah L. Lavery PhD & Luke Hunter Carl Zeiss X-ray Microscopy Inc	11:15 AM - 11:25 AM Cybersecurity Risks in Additive Manufacturing (Intermediate) Kelly K. Marchese Deloitte Consulting and Gregg Schmidtmeller Deloitte & Touche LLP 11:30 AM - 11:40 AM A Copyright Protection Technology for 3D Printing Models (Novice) John Choi PhD MarkAny	11:15 AM - 11:40 AM Automation of Post-Processing Through Energy Optimization Daniel Hutchinson & Michael Frauens PostProcess Technologies	11:15 AM - 11:40 AM 3D Scanning/Printing for the Automotive Restoration and Customization Industry (Novice) Paul A. Vorbach & William R. Vorbach HV3Dworks LLC	11:15 AM - 11:40 AM From Desktop 3D Printing to Large Area Additive Manufacturing - The Challenges of Polymer Development (Intermediate) Kevin Cable PhD & Ed Ferber Eastman Chemical Company	11:15 AM - 11:40 AM Adaptive Manufacturing with Universal Metrology Automation (Intermediate) Paul M. Oberle 3D InfoTech	11:15 AM - 11:40 AM Using 3D Printing (Additive Manufacturing) to Produce Low Cost Simulation Models for Medical Training (Novice) Peter C. Liacouras PhD Walter Reed National Military Medical Center, Department of Radiology	1:30 PM - 2:30 PM ITEAM Launch	
	11:45 AM - 12:10 PM Assessing the Internal Features of Additive Manufactured Parts (Expert) Herminso Villarraga-Gómez Nikon Metrology Inc	11:45 AM - 11:55 AM The Intersection of 3D Printing and Intellectual Property (Novice) Christopher Higgins & Vann Pearce Orrick Herrington & Sutcliffe LLP Noon - 12:10 PM Covert Fingerprints for Intellectual Property Protection of Metal 3D Printing (Novice) Sharon Flank PhD InfraTrac	11:45 AM - 12:10 PM Integration of PAAW and Digital Workholding for Post-processing Additive Manufactured Parts (Expert) Chip Potter Advanced Simulation Technology Inc and Edward C. De Meter PhD Pennsylvania State University	11:45 AM - 12:10 PM Beyond Prototyping: The Future of Printed Patterns in Investment Casting (Novice) Thomas J. Mueller Mueller AMS	11:45 AM - 12:10 PM Development of Additive Manufactured Production Parts at Caterpillar (Intermediate) Paul A. Zwart Caterpillar Inc	11:45 AM - 12:10 PM The Impact of 3D Printing on Part Performance (Intermediate) Thomas Fabian PhD & Melissa Albrecht UL	11:45 AM - 12:10 PM Improving Industrial 3D Printing with MRP Integration, Big-O Analysis, and Generative Geometry (Intermediate) Michael Crockett PE HP	11:45 AM - 12:10 PM Potential Best Use Cases for 3D Printing for Cardiothoracic Surgery (Intermediate) Justin Ryan PhD Phoenix Children's Hospital	
10:30 AM - 11:30 AM	Attendee Show Floor Tour								
12:15 PM - 2:15 PM	Lunch on Exhibit Floor								

Tuesday, May 9 - afternoon

2:00 PM - 3:00 PM									
Attendee Show Floor Tour: Metal Additive Manufacturing									
Concurrent PM Sessions 2:15 PM - 4:15 PM	3D Imaging / Scanning: Surface Scanning	Direct Write Printed Materials / Electronics	Post Processing II	Casting II	Design Considerations	Material Properties I	Additive Manufacturing Standardization Forum	MMI: Clinical Applications II	Show Floor Theater
									
	Room: 301/302	Room: 317/318	Room: 304/305	Room: 303	Room: 315/316	Room: 319/320/321	Room: 310/311	Room: 306/307	Booth 2321
	2:15 PM-2:40 PM Longer Range Point Cloud Scanning and 3D Printers Used in the Production and Sale of Large Mining Haul Truck Components (Intermediate) LeRoy G. Hagenbuch PE & Quinton Burcar Philippi-Hagenbuch Inc	2:15 PM - 2:40 PM Fabrication of Multifunctional 3D Printed Devices via a Multitechnology Hybrid Printer (Intermediate) David Espalin, W.M. Keck Center for 3D Innovation / UTEP	2:15 PM - 2:40 PM Multiscale Post-processing of Metal Additive Manufactured Parts by Electro-polishing Technology (Intermediate) Lucas Hof Concordia University	2:15 PM - 2:40 PM 3D Printing - The Pattern Makers Friend (Novice) Steven R. Murray Hoosier Pattern Inc	2:15 PM - 2:40 PM A Computer-Aided Design System for Additive Manufacturing (Intermediate) David W. Rosen PhD Georgia Institute of Technology and Suraj Musuvathy PhD Siemens Corporate Technology	2:15 PM - 2:40 PM Metallographic Characterization Techniques for Additive Manufacturing Powders and Parts (Novice) Thomas F. Murphy Hoegaens Specialty Metal Powders LLC	2:00 PM – 5:00 PM Additive Manufacturing Standardization Forum: Accelerating Standards & Specs Development Welcome Debbie Holton, SME & Ed Morris, America Makes Additive Manufacturing Standards Collaborative Overview: Jim McCabe, ANSI Panel 1: Moderated by Jim Williams, All Points Additive and AMSC Chair Pat Picariello, ASTM Intl: Jennifer Herron, Action Engineering, Chair of the ASME Y14 Subcommittee: Laura Felix, SAE International	2:15 PM - 2:40 PM Retro Engineering the Feyh-Kastenbauer Retractor System for Transoral Robotic Surgery Using Surface Scanning & 3D Printing (Intermediate) Jonathan Morris MD Mayo Clinic 2:45 PM - 2:55 PM 3D Printed Wear Model to Simulate Tissue Ablation: Equipment, Materials, Technologies, and Tools Used by Interventionalists (Intermediate) Jacob Draxler & Joseph P. Higgins Cardiovascular Systems Inc 2:55 PM - 3:15 PM Single Institution Experience in 3D Modeling of Congenital Heart Defects (Novice) Robert Wesley Nicklaus Children's Hospital	2:30 PM – 3:30 PM Tech Briefing: Fundamentals of Additive Manufacturing 3:30 PM – 5:00 PM Technology LaunchPad
	2:45 PM-3:10 PM Techniques and Methods for 3D Scanning Internal Geometry with Replicating Rubber (Novice) Sloven B. Lelinski Advanced Simulation Technology Inc	2:45 PM - 3:10 PM 3D Printing of Soft Electronics & Functional Microfluidics via Liquid Metal Direct-Writing (Intermediate) Dishit P. Parekh North Carolina State University	2:45 PM - 3:10 PM CoolPulse Technology for Finishing of 3D Printed Parts (Intermediate) Patrick Matt Extrude Hone	2:45 PM - 3:10 PM Ceramic Additive Manufacturing for Complex Precision Castings (Intermediate) Dan Z. Sokol Renaissance Services Inc and Ben Rampulla PCC Structural	2:45 PM - 3:10 PM An Additive Design Revolution (Expert) Ted D. Blacker PhD Sandia National Laboratories	2:45 PM - 3:10 PM Z-axis Anisotropy Study of Additively Manufactured Components (Expert) Ravi Kunju solidThinking Inc	Panel 2: Moderated by Lauralyn McDaniel, SME and AMSC Vice Chair Annette Alonso, AWS; Allan Noordvyk, McKesson Imaging, MITA, DICOME WG-17 Co-chair: Joe Lewelling, AAMI; Paul Tykodi, Tykodi Consulting, IEEE-ISTO Printer Working Group Individual meetings with Standards Development Organizations	3:15 PM - 3:40 PM Creation of Functional Finger Prostheses Combining 3D Printing with Traditional Materials (Intermediate) Irene R. Healey New Attitude Prosthetic Designs Inc	
	3:15 PM-3:40 PM Non-Contact Methods for Validating Industrial and Additive Manufacturing Parts Ryan Timboe Industrial Inspection & Analysis Inc	3:15 PM - 3:40 PM 3D Printed Devices Employing Sculpted Dielectrics (Advanced) Raymond C. Rumpf PhD University of Texas at El Paso	3:15 PM - 3:40 PM Surface Finish Control of Additive Manufactured-Inconel 625 Components Using Combined Chemical-abrasive Polishing (Intermediate) Neda Mohammadian Polytechnique de Montreal and Sylvain Turenne PhD Ecole Polytechnique de Montreal	3:15 PM - 3:40 PM Multifunctional Composite Lattice Structures by Embedding in 3D Printed Sand Molds (Intermediate) Christopher Williams PhD & Alan Druschitz Virginia Tech	3:15 PM - 3:40 PM A Topology Optimization Paradigm for Additive Manufacturing (Intermediate) Ahmad Barari PhD PEng & Amirali Lalehpour University of Ontario Institute of Technology	3:15 PM - 3:40 PM Fracture Mechanics of Additively Manufactured Plastic Parts (Intermediate) Devendra Bajaj PhD & Peter Johnson PhD SABIC		3:15 PM - 3:40 PM Fatigue Life Prediction for AISI10Mg Parts Produced by Selective Laser Melting (Intermediate) Ming Tang & Petrus Pistorius PhD Carnegie Mellon University	
	3:45 PM-4:10 PM 3D Scanning Accuracy vs Resolution: Why it Matters and What it Means (Intermediate) Mike Formica threeRivers 3D	3:45 PM - 4:10 PM Powdered Metals - What to Expect When You Build Metal Additively (Intermediate) Himanshu Sahasrabudhe PhD Optomec Inc	3:45 PM - 4:10 PM Improving Mechanical Performance of Additive Manufactured Components by Chemical Accelerated Vibratory Finishing (Intermediate) Agustin Diaz PhD REM Surface Engineering	3:45 PM - 4:10 PM Prototype Castings, Shorter Lead Times for Less Money (Intermediate) David W. Rittmeyer Hoosier Pattern Inc	3:45 PM - 4:10 PM Hollow Metal Additive Manufacturing versus Conformal Cooling (Intermediate) Scott Kraemer PTI Engineered Plastics			3:45 PM - 4:10 PM Separating Conjoined Twins: Applying Virtual Surgical Planning and 3D Printing (Intermediate) Hayem L. Rudy Albert Einstein College of Medicine and Katie Weimer 3D Systems - Healthcare	
6:00 PM - 8:00 PM									
Welcome Event: Heinz Field									






Wednesday, May 10 - morning

7:00 AM - 5:00 PM Registration										
8:00 AM - 9:45 AM Spirit of Pittsburgh Ballroom		<p>KEYNOTE New Materials for 3D Printing in Medicine: What's Next is Closer than You Think Ramilie Shah PhD, Assistant Professor, Materials Science and Engineering, Assistant Professor, Surgery (Transplant Division), Northwestern University Sue Jordan MD PhD, Chief Resident-Plastic and Reconstructive Surgery, Northwestern Memorial Hospital</p>			<p>PANEL Medical 3D Printing Applications-Growth Beyond Surgical Guides Ramilie Shah PhD, Assistant Professor, Materials Science and Engineering, Assistant Professor, Surgery (Transplant Division), Northwestern University Carlos Carvalho, Process & Materials Development, EnvisionTEC William Wagner, Director, McGowan Institute for Regenerative Medicine, Professor of Surgery, Bioengineering and Chemical Engineering, University of Pittsburgh Fried Vancaeren, Founder & CEO, Materialise</p>				<p>sponsored by:</p> 	
9:00 AM - 2:00 PM Student Summit										
10:00 AM - 5:00 PM 3D Playground Activities America Makes ACADEMI ADX Tooling-U-SME Manufacturing Challenge										
Concurrent AM Sessions 10:15 AM - 12:15 PM	Academic Research I	Applications Power Up 	Building Regional Leadership in Additive Manufacturing I	Process Monitoring, Control, and Qualification	DoD Additive Manufacturing Research & Applications I 	Material Properties II 	Business & Economic Considerations - Execution II 	MMI: Biomaterials 	Show Floor Theater	
	Room: 303	Room: 317/318	Room: 304/305	Room: 310/311	Room: 301/302	Room: 319/320/321	Room: 315/316	Room: 306/307	Booth 2321	
	10:15 AM - 10:40 AM Combinatorial Assessment of High Entropy Alloys: Microstructure, Microhardness, and Magnetic Properties (Expert) Tushar Borkar PhD Cleveland State University and Rajarshi Banerjee PhD University of North Texas	10:15 AM - 10:25 AM Developing Teaching Aids for Blind Computer Science and Information Systems Students (Novice) Arif Simlerliki PhD Robert Morris University 10:30 AM - 10:40 AM 3D Printed Tooling and Fixtures for Assembly Operators with Disabilities (Novice) George R. Allman Liberty Electronics Inc	10:15 AM - 10:40 AM Additive Manufacturing's Role in the TechBelt Region's Renewed Growth (Intermediate) Ralph Resnick America Makes and Petra Mitchell Catalyst Connection	10:15 AM - 10:40 AM The Next Level of Additive Manufacturing Inspection and Control (Intermediate) Dieler Ghysbrecht Materialise	10:15 AM - 10:40 AM Integrated Printed Electronics and Additive Manufacturing Solutions for the US Army (Intermediate) James L. Zunino US Army ARDEC	10:15 AM - 10:40 AM Optimizing TIAI EBM Parameters for Aerospace Components (Intermediate) Francisco Medina PhD, EWI and Andrew Hedloff PhD Praxair Surface Technologies Inc	10:15 AM - 10:40 AM Utilizing Additive Manufacturing in Sustainment of Fielded Systems (Novice) Frederick J. Herman SHEPRA Inc and Jason Ray Paperless Parts	10:15 AM - 10:40 AM Drug-eluting Polymeric Additive Manufacturing for Applications in Orthopaedics (Intermediate) Martin J. Petrak PEng Precision ADM / Orthopaedic Innovation Centre and Trevor C. Gascoyne PEng Orthopaedic Innovation Centre	10:30 AM - 11:30 AM Tech Briefing: Fundamentals of Additive Manufacturing 11:30am - 12:30pm Additive Manufacturing: Where To Next? <u>Moderator:</u> Professor Milan Brandt Royal Melbourne Institute of Technology, Monash University	
	10:45 AM - 11:10 AM Microstructure Tailoring by Selective Laser Melting Pulse Optimization (Expert) Mathieu Brochu PhD McGill University	10:45 AM - 10:55 AM Reducing Build Failures Through Predictive Simulation (Intermediate) Brent Stucker, 3DSIM and Tim Gornet University of Louisville 11:00 AM - 11:10 AM Will It Break? Putting an Additive Manufactured Optimized Design to the Test (Novice) Adam Rivard LAI International	10:45 AM - 11:10 AM Industry-inspired Additive Manufacturing Processing Research at Carnegie Mellon (Intermediate) Jack Beuth PhD Carnegie Mellon University	10:45 AM - 11:10 AM Proactive Monitoring of Additive Builds Using Artificial Intelligence Based Optical Recognition (Expert) Joseph M. Sinclair Solid Innovations LLC and Christian M. Joest Imperial Machine & Tool Co	10:45 AM - 11:10 AM High Strain Rate Testing of Gyroid Cellular Structures (Expert) Miriam Dennis University of Florida and Amanda Schrand PhD Air Force Research Laboratory	10:45 AM - 11:10 AM Investigation of Minor Elements on Built Properties of C300 Maraging Steel Powder (Expert) Satyajeet Sharma PhD & Kumar Kandasamy PhD Oerlikon	10:45 AM - 11:10 AM Digital Technical Data Package Business Models for Spare Parts Produced Using Additive Manufacturing (Intermediate) Brett Conner PhD & Ashley Marlot Youngstown State University	10:45 AM - 10:55 AM 3D Printing Soft Polydimethylsiloxane (PDMS) Elastomer Toward Custom Fit Wearable Devices (Intermediate) Sara Abdollahi & Adam Feinberg PhD Carnegie Mellon University 10:55 AM - 11:05 AM 3D Bioprinting Collagen Scaffolds for Engineering Human Cardiac Tissue (Intermediate) Andrew Lee & Adam Feinberg PhD Carnegie Mellon University	Panelists: John E. Barnes Arconic Richard Grylls SLM Solutions NA, Inc Gene Kulesha Stryker Kirk Rogers PhD GE Center for Additive Technology Advancement (CATA) Mihaela Vlasea University of Waterloo	
	11:15 AM - 11:40 AM Control of Solidification Microstructure Across Additive Alloy Systems (Expert) Sneha Prabha Narra Carnegie Mellon University	11:15 AM - 11:25 AM Integrated Additive Manufacturing with MetaAFB1: Pushing 3D Printing into Industry for Full Functional Parts (Intermediate) Iko Bosman Additive Industries 11:30 AM - 11:40 AM Additive Manufacturing for Pattern Based Secondary Processes (Novice) Carl Dekker, MET-L-FLO	11:15 AM - 11:40 AM Industry-inspired Additive Manufacturing Materials Research at Carnegie Mellon (Intermediate) Anthony Rollett PhD Carnegie Mellon University	11:15 AM - 11:40 AM In-Process Monitoring and Control of Selective Laser Melting Using a Low-Cost Sensor Fusion Approach (Intermediate) John R. Middendorf Universal Technology Corp and Glen P. Peram PhD PE Air Force Institute of Technology	11:15 AM - 11:40 AM US Navy Additive Manufacturing Applications at the Naval Surface Warfare Center-Philadelphia Division (Novice) Philip Greiner & Scott A. Storms Naval Surface Warfare Center - Philadelphia Division	11:15 AM - 11:40 AM The Influence of Powder Ageing Characteristics on 316L Steel Processed by Selective Laser Melting (Intermediate) Keith Murray & Mary Kate Johnston Sandvik Osprey	11:15 AM - 11:40 AM Effective Ways to Manage the Combustible Dust Hazards Associated with Additive Manufacturing (Novice) Jason P. Reason Lewellyn Technology LLC	11:05 AM - 11:15 AM 3D Printing Collagen Type I Using Freeform Reversible Embedding of Suspended Hydrogels (FRESH) (Intermediate) Thomas J. Hinton & Adam Feinberg PhD Carnegie Mellon University 11:15 AM - 11:25 AM Control of Gelatin Particle Size and Uniformity to Improve Fidelity Using FRESH 3D Bioprinting (Expert) Andrew Hudson & Adam Feinberg PhD Carnegie Mellon University	Today, additive manufacturing is playing an ever-increasing role in a range of industries globally such as the aerospace, automotive, medical and defense because of the many benefits it offers compared to traditional subtractive technologies. The first 3D printers were used in the 1980s to make plastic prototypes, so that the engineers and designers could see and touch a full-size model of what the actual device would look like. Since then, the field of 3D printing has exploded and transformed from prototyping into manufacturing. Today, there are arrays of different types of 3D printers working with plastics, metal and ceramic powders, biological and organic feedstock. The technology is evolving rapidly with new 3D concepts, machines and suppliers entering the market almost on a monthly basis. The recent acquisition by GE of Arcam and Concept Laser is said to further accelerate the growth and adoption of Additive Manufacturing technology globally. A panel of experts will examine and explore current trends and future opportunities for AM technology globally.	
11:45 AM - 12:10 PM Melt Pool Geometry and Thermal Emission Monitoring in Laser Powder Bed Fusion (Expert) Brian A. Fisher & Jack Beuth PhD Carnegie Mellon University	11:45 AM - 11:55 AM 3D Printing for Large Aerospace Tooling (Novice) Rick Neff Cincinnati Incorporated Noon - 12:10 PM Geometrically Controlled Sound Dampening Using 3D Binder Jetting (Intermediate) Brandon Cary & Tom Pasterik The ExOne Company	11:45 AM - 11:55 AM Accelerating Industry Adoption of Additive Manufacturing: Perspectives from an Additive Manufacturing Demonstration Facility (Intermediate) Timothy W. Simpson PhD Penn State College of Engineering Noon - 12:10 PM Additive Manufacturing Research and Capabilities at the University of Pittsburgh (Intermediate) Markus Chmielus University of Pittsburgh	11:45 AM - 12:10 PM Additive Manufacturing Rocket Engine Qualification and Testing (Intermediate) Alison M. Park Aerojet Rocketdyne	11:45 AM - 12:10 PM Additive Manufacturing of a Wind Tunnel Force Balance (Intermediate) Devin Burns PhD NASA Langley Research Center	11:45 AM - 12:10 PM Effect of Compositional Variations in MetcoAdd HX-A Powder on Crack Susceptibility, Microstructure, and Mechanical Properties (Expert) Kumar Kandasamy PhD & Shawn Kelly PhD Oerlikon	11:45 AM - 12:10 PM Metal AM Process & Facility Safety. Are You Prepared? (Novice) Paul Bates & Norman Lowe UL	11:25 AM - 11:45 AM Additive Manufacturing of Biodegradable Photopolymers and Ceramics (Intermediate) Johannes Benedikt PhD Lithoz GmbH 11:45 AM - 12:10 PM Additive Manufacturing of Polymeric Biosensors and Drug Delivery Devices (Intermediate) Roger Narayan UNC/NCSU Joint Department of Biomedical Engineering			
10:30 AM - 11:30 AM Attendee Show Floor Tour										
12:15 PM - 2:15 PM Lunch on Exhibit Floor										

Wednesday, May 10 - afternoon									
1:00 PM - 6:00 PM	Poster Session								
2:00 PM - 3:00 PM	Attendee Show Floor Tour: MMI-New to Medical Applications								
Concurrent PM Sessions 2:15 PM - 4:15 PM	Academic Research II Room: 303	New Processes Power Up Room: 317/318	Building Regional Leadership in Additive Manufacturing II Room: 304/305	Quality and Inspection Room: 310/311	DoD Additive Manufacturing Research & Applications II  Room: 301/302	Materials II  e-Manufacturing Solutions Room: 319/320/321	Workforce Development  Room: 315/316	MMI: Quality, Regulatory & Implants  Room: 306/307	Show Floor Theater Booth 2321
	2:15 PM - 2:40 PM Multimaterial Additive Manufacture of RF Structures and Connectors (Expert) Zachary Larimore University of Delaware	2:15 PM - 2:25 PM 3D Printing: Breaking Barriers and Expanding Full Speed into Manufacturing (Intermediate) Roger Kelesoglu Stralasy 2:30 PM - 2:40 PM Development of New Metal Additive Manufacturing Concepts for Large Parts Manufacturing (Intermediate) Filipe R. Coutinho & Tiago Faro ADIRA Metal Forming Solutions S.A.	2:15 PM - 2:40 PM Empowering Metal Additive Manufacturing Through ANSYS Tools (Intermediate) David Conover ANSYS	2:15 PM - 2:40 PM Agile Quality Control Process for FDM Parts (Intermediate) Tim Yewchuk 3D Print Western	2:15 PM - 2:40 PM Influence of Processing Parameters on the Development of Microstructure and Texture in EBM Ti-6Al-4V (Expert) Kevin J. Chaput PhD Air Force Research Laboratory	2:15 PM - 2:40 PM Magnetic Particle Alignment for 3D Printed Composites (Expert) Madhuparna Roy Florida State University	2:15 PM - 2:40 PM 3DP Education and Workforce Outreach: Delivering Impact (Intermediate) Leanne Gluck America Makes	2:15 PM - 2:40 PM Quality Strategy Approach for Additive Manufacturing (Intermediate) Gilbert A. Cortes Johnson & Johnson	12:30 PM - 1:30 PM Medical Manufacturing Innovations Presentations MODERATOR: Lauralyn McDaniel, SME 12:30 PM - 12:50 PM SME Medical Additive Manufacturing/3D Printing Workgroup: Addressing Challenges 12:50 PM - 1:03 PM Standards, Quality Metrics, and Innovation with the FDA / CDRH 1:03 PM - 1:16 PM 3D Printing in Medical Imaging Standards 1:16 PM - 1:30 PM Special Interest Group for 3D Printing within the Radiologic Society of North America to Advance Medical Applications
	2:45 PM - 3:10 PM A Curvature-Based Direct Slicing Algorithm for Precision Additive Manufacturing Using Milne-Simpson Multistep Method (Expert) Ahmad Barari PhD PEng & Hossein Gohari, Univ of Ontario Institute of Technology (UOIT)	2:45 PM - 2:55 PM What the Next Generation of Hybrid CNCs Brings to Additive (Intermediate) Jason Jones PhD Hybrid Manufacturing Technologies 3:00 PM - 3:10 PM NanoParticle Jetting Technology - Redefining Metal Additive Manufacturing (Novice) Dror Danai, Xjet Ltd	2:45 PM - 3:10 PM GE CATA & SW PA - Mutually Assured Economic Success (Intermediate) Kirk Rogers PhD GE Center for Additive Technology Advancement (CATA)	2:45 PM - 3:10 PM Surface Metrology of Additive Manufacturing Components: Understanding the Complex Texture of Powder Bed-Based Surfaces (Intermediate) Agustin Diaz PhD REM Surface Engineering	2:45 PM - 3:10 PM Feature Based Fatigue Characterization for Powder Bed Fusion and Small Scale Propulsion Components (Intermediate) Onome E. Scott-Emuakpor PhD US Air Force Research Laboratory	2:45 PM - 3:10 PM Creating Highly Dense Copper Components via Binder Jetting (Intermediate) Yun Bai & Christopher Williams PhD Virginia Tech	2:45 PM - 3:10 PM Is Your Workforce Ready for Additive Manufacturing? (Novice) Joseph W. Lampinen CMiGE KellyOCG	2:45 PM - 3:10 PM A Study on Removal of Additive Manufacturing Residue from Complex Parts Matthew DiPrima & James Coburn US Food and Drug Administration	1:30 PM - 2:30 PM Crowdsourced Content 2:30 PM - 3:30 PM Tech Briefing: Fundamentals of 3D Scanning 3:30 PM - 5:00 PM Technology LaunchPad
	3:15 PM - 3:40 PM A Computationally Efficient Finite Element (FE) Framework to Predict Residual Stress Evolution in Parts During SLM (Expert) Ajit Achuthan Clarkson University	3:15 PM - 3:25 PM MagnetoJet Liquid Metal 3D Printing: Cutting the Costs Using a Drop-on-Demand Approach (Intermediate) Scott Vader Vader Systems LLC 3:30 PM - 3:40 PM Tailoring FFF Parts for Increased Strength Using Real 3D Printing (Intermediate) Natalie M. Rudolph Dr.-Ing. University of Wisconsin-Madison	3:15 PM - 3:40 PM Aerospace is Making a Future with Additive Manufacturing (Intermediate) John Barnes Arconic	3:15 PM - 3:40 PM Visual Identification, Error Detection, and Compensation for Additive Manufacturing Material Deposition Systems (Intermediate) Gijs van Houllum University of Waterloo / Eindhoven University of Technology	3:15 PM - 3:40 PM Enabling Expeditionary Battlefield Manufacturing Using Recycled, Reclaimed, and/or Indigenous Materials (Intermediate) Marc S. Pepi US Army Research Laboratory	3:15 PM - 3:40 PM Creation of an Affordable Aerospace Grade Aluminum Alloy via Computational Alloy Design Methods (Intermediate) Eric J. Fodran PhD & Eric Barnes Northrop Grumman	3:15 PM - 3:40 PM Training the Workforce for Future Fabrication (Intermediate) Sarah Bolsvert Fab Lab Hub and Mike Adelstein CPA Potomac Photonics Inc	3:15 PM - 3:40 PM Addressing Challenges in Custom Orthopedic Implants Using Additive Manufacturing (Novice) Maryam Jahanzad & Guha Manogharan PhD Pennsylvania State University	
3:45 PM - 4:10 PM Constructing the DMLS Processing Window from Computational Modeling (Intermediate) Patcharait Promopattum & Shi-Chune Yao PhD Carnegie Mellon University	3:45 PM - 3:55 PM Three-Dimensional Metal Printing by Thixotropic Metal-based Paste Deposition (Intermediate) Michael R. Sullivan University at Buffalo The State University of New York 4:00 PM - 4:10 PM Electromagnetic Nozzle Technologies for Material Extrusion Additive Manufacturing (Intermediate) Charles B. Sweeney Essentium Materials	3:45 PM - 4:10 PM Powder Characterization and Development for Additive Manufacturing (Intermediate) Brian Morrison ATI Specialty Metals	3:45 PM - 4:10 PM Update on Quality Assurance for Additive Manufacturing (Novice) Jeremy Straub North Dakota State University	3:45 PM - 4:10 PM Additive Manufacturing and Its Effect on Hybrid Rocket Motor Performance (Intermediate) Michael G. Morales United States Naval Academy	3:45 PM - 4:10 PM Gas Atomized Powder Synthesis Improvements for Additive Manufacturing (Expert) Iver E. Anderson PhD & Emma M. White PhD Ames Laboratory of USDOE	3:45 PM - 4:10 PM Bridging Educational Excellence with Advanced Manufacturing: How to Cultivate Win-Win Partnerships in Your Community (Novice) Owen Schoeniger MakerGear LLC	3:45 PM - 4:10 PM Anisotropic Behaviors of 3D Printed Dental Jaw Bone Implants (Intermediate) Xiong Yu PhD PE & Russel Wang Case Western Reserve University		
4:45 PM - 6:30 PM	Show Floor Reception Design Studio Fashion Show								

reception sponsored by:



Thursday, May 11									
7:00 AM - 1:00 PM	Registration								
8:00 AM - 9:45 AM	Spirit of Pittsburgh Ballroom So Where Do We Go From Here? Mark Cotteleer, Managing Director, Deloitte Services, LP Todd Grimm, President, T.A. Grimm & Associates Inc. Graham Tromans, Owner and Principal Industry Consultant, GP Tromans Associates Robin Wilson, Head of Manufacturing, Innovate UK			KEYNOTE The Future of Additive Manufacturing and 3D Printing Terry Wohlers Principal Consultant and President Wohlers Associates Inc			sponsored by Deloitte		
9:00 AM - 2:00 PM	Student Summit								
10:00 AM - 2:00 PM	Show Open								
Concurrent AM Sessions 10:15 AM - 12:15 PM	Academic Research III Room: 303	Innovative Applications Power Up  Room: 317/318	Material Properties III  Room: 301/302	Part / Product Certification Room: 310/311	Materials III  e-Manufacturing Solutions Room: 319/320/321	Business & Economic Considerations - Strategic Power Up  Room: 315/316	MMI: Metals  Room: 306/307	Show Floor Theater Booth 2321	
	10:15 AM - 10:40 AM Filled Thermoconductive Plastics for Fused Filament Fabrication (Intermediate) Tom Mulholland Univ of Wisconsin - Madison	10:15 AM - 10:25 AM Realizing the Promise of Next Generation Manufacturing with Additive Manufacturing (Intermediate) Ryan DeHoff PhD Oak Ridge National Laboratory Bruce Bradshaw, Arcam AB	10:15 AM - 10:40 AM Microstructure Improvement of SS17-4PH Fabricated by Laser Powder Bed Fusion by Modified Heat Treatment (Expert) Sunil B. Badwe PhD North American Hoganas and Somayeh Pasebani PhD Oregon State University	10:15 AM - 10:40 AM When Risks Cannot Be Seen: Regulating Uncertainty in Emerging Technologies (Intermediate) Jaime Bonnin Roca & Parth Vaishnav PhD Carnegie Mellon University	10:15 AM - 10:40 AM How Advances in Powder Metallurgy are making 3D Printing Accessible to Every Engineer (Intermediate) A. John Hart PhD Desktop Metal	10:15 AM - 10:25 AM Advanced Economies Collaborative Initiatives in Advanced Manufacturing (Novice) Bart Pascoli Italian Trade Agency	10:15 AM - 10:40 AM Additive Manufacture of Stiffness Matched Skeletal Fixation Devices (Expert) David Dean PhD The Ohio State University	10:15 AM - 11:00 AM Tech Briefing: MMI 11:30 AM - 12:30 PM Technology LaunchPad	
	10:45 AM - 11:10 AM Capacitance-based Nondestructive Evaluation of Three-dimensionally Printed Polymer (Expert) Deborah D.L. Chung PhD University at Buffalo The State University of New York	10:45 AM - 10:55 AM 3D Printing Kit for Technical Schools (Novice) Cristian Sandre INTI (National Institute of Industrial Technology) of Argentina	10:45 AM - 11:10 AM How Helium Improves Additive Manufacturing of Ti-6Al-4V and IN718 Parts (Expert) Grzegorz Moroz Linde LLC	10:45 AM - 11:10 AM Design to Certification - Additive Manufacturing for Aerospace Applications (Expert) Shaun Kroeger solidThinking Inc	10:45 AM - 11:10 AM Fracture Properties of Additively Manufactured Acrylonitrile-Butadiene-Styrene Materials Kevin R. Hart US Army Research Laboratory	10:45 AM - 10:55 AM How 3DP Can Create More Business and Create More Jobs (Novice) Steven R. Murray Hoosier Pattern Inc	10:45 AM - 11:10 AM Design Considerations and Capabilities for Implants Manufactured with Integrated Porous Structures Oscar Hedin Arcam AB		
	11:15 AM - 11:40 AM Raster Printing for Fiber Encapsulation and Sensor Manufacturing (Intermediate) Jolie B. Frketic FAMU-FSU College of Engrg	11:15 AM - 11:25 AM Next Generation Heat Exchangers Realized Through Ultrasonic Additive Manufacturing (Intermediate) Mark Norfolk PE Fabrisonic	11:15 AM - 11:40 AM Additive Manufacturing of Ceramics and Composites: Microstructure, Properties, and Applications Examples (Intermediate) Prashant Karandikar PhD M Cubed Technologies Inc	11:15 AM - 11:40 AM Evaluation of Standard Metal Additive Manufacturing Test Articles (Intermediate) Trevor Hicks & Jessica Coughlin Naval Nuclear Laboratory	11:15 AM - 11:40 AM Crack Remediation in Difficult to Weld NiCr-alloys When Processed by Additive Manufacturing Using the Laser Powder Bed Process (Intermediate) William J. Jarosinski Praxair Surface Technologies Inc	11:15 AM - 11:25 AM Creative Disruption: How Additive Manufacturing Can Impact Traditional Supply Chain. Lessons Learned for the Media and Entertainment Industries (Intermediate) Stephan Thomas Identify3D	11:15 AM - 11:40 AM Different Metal Additive Manufacturing Laser Methods Compared to EBM for Serialized Production of Orthopedic Implants (Intermediate) Emanuele Magalini Eurocoating s.p.a.		
	11:45 AM - 12:10 PM In-Situ Thermoplastic Impregnation of a Dry Composite Fiber Tow for Additive Manufacturing (Expert) Daniel F. Walczyk PhD PE & Daniel A. Kaczmarek Rensselaer Polytechnic Institute	11:45 AM - 11:55 AM Additive Manufacturing Techniques with Professional Championship Sports Rings (Novice) Anthony J. Maietta Herff Jones	11:45 AM - 12:10 PM Additive Manufacturing of Enhanced Alnico Magnets (Intermediate) Emma M. White PhD Ames Laboratory of USDOE	11:45 AM - 12:10 PM Qualifications Challenges in Printed Structures with Embedded Electronics (Intermediate) Nathan B. Crane PhD University of South Florida	11:45 AM - 12:10 PM Optimizing Metal Powder Chemistries for Use in Additive Manufacturing (Expert) Nathan Kistler LPW Technology Inc	11:45 AM - 11:55 AM Metal Additive Manufacturing: Cost Competitive Beyond Low Volumes (Intermediate) Ria Laureijs Carnegie Mellon University	11:45 AM - 12:10 PM Effect of Powder Morphology on Mechanical Properties of Cobalt-Chrome Alloy for the Dental Industry by Laser Powder Bed Fusion (Intermediate) Ivy Li CMiGE Material Technology Innovations Co Ltd		
	11:00 AM - Noon	Attendee Show Floor Tour: MMI-Advancements for Medical							
11:00 AM - 1:00 PM	3D Playground Activities			America Makes ACADEMI ADX			ToolingU-SME Manufacturing Challenge		
12:15 PM - 2:15 PM	Lunch on the Exhibit Floor								
1:00 PM - 5:00 PM	Facility Tours <i>Choose only one</i> Bally Design and MAYA Design	Arconic (Alcoa)							
1:00 PM - 5:00 PM	SME Medical AM/3DP Workgroup Meeting (Room: 327)								
1:00 PM - 4:30 PM	AM Certification Exam (Room: 334)								