

ICAM 2022 TENTATIVE PROGRAM AGENDA

Updated as of 16th September 2022



PROGRAM OVERVIEW & TIMETABLE

Click on any symposium/panel title to jump directly to the list of presentations and program schedule.

MONDAY 31 OCTOBER 2022		TUESDAY 1 NOVEMBER 2022		WEDNESDAY 2 NOVEMBER 2022		THURSDAY 3 NOVEMBER 2022		FRIDAY 4 NOVEMBER 2022	
AM PM	STUDENT PRESENTATION COMPETITION 01	AM PM	AM APPLICATIONS IN AVIATION	PM	AM APPLICATIONS IN AVIATION	AM PM	NON-DESTRUCTIVE EVALUATION METHODS FOR AM	AM PM	NON-DESTRUCTIVE EVALUATION METHODS FOR AM
AM PM	STUDENT PRESENTATION COMPETITION 02	AM PM	APPLICATION OF AM IN CONSTRUCTION ON EARTH AND BEYOND	PM	APPLICATION OF AM IN CONSTRUCTION ON EARTH AND BEYOND	AM PM	MICROSTRUCTURAL ASPECTS OF AM	AM PM	MICROSTRUCTURAL ASPECTS OF AM
AM PM	STUDENT PRESENTATION COMPETITION 03	AM PM	APPLICATION OF AM IN THE MEDICAL INDUSTRY	PM	APPLICATION OF AM IN THE MEDICAL INDUSTRY	AM PM	AM FOR SPACE APPLICATIONS	AM	AM FOR SPACE APPLICATIONS
AM PM	STUDENT PRESENTATION COMPETITION 04	AM PM	MECHANICAL TESTING OF AM MATERIALS	PM	MECHANICAL TESTING OF AM MATERIALS	AM PM	DESIGN, MODELING, AND SIMULATION METHODOLOGIES AND CONCEPTS FOR AM	PM	DESIGN, MODELING, AND SIMULATION METHODOLOGIES AND CONCEPTS FOR AM
AM PM	STUDENT PRESENTATION COMPETITION 05	AM PM	AM FOR DEFENSE APPLICATIONS	PM	ECONOMICS AND SUSTAINABILITY OF AM	AM PM	PROCESS CONTROL AND IN-SITU MONITORING TECHNIQUES IN AM	PM	PROCESS CONTROL AND IN-SITU MONITORING TECHNIQUES IN AM
AM PM	STUDENT PRESENTATION COMPETITION 06	AM PM	INDUSTRY 4.0: DATA MANAGEMENT FOR AM	PM	ROBOTICS, AUTOMATION AND ADDITIVE MANUFACTURING	AM PM	AM FEEDSTOCK: CHARACTERIZATION, SPECIFICATION AND REUSE	PM	AM FEEDSTOCK: CHARACTERIZATION, SPECIFICATION AND REUSE
AM PM	AM FOR ELECTRONIC APPLICATIONS	AM PM	FATIGUE AND FRACTURE OF AM MATERIALS AND PARTS	PM	FATIGUE AND FRACTURE OF AM MATERIALS AND PARTS	AM PM	ENVIRONMENTAL EFFECTS ON AM PARTS	AM PM	DIRECTED ENERGY DEPOSITION TECHNIQUES
AM PM	3D PRINTED POLYMERS AND POLYMER MATRIX COMPOSITES	AM PM	GENERAL TOPICS IN AM: MATERIALS AND PROCESSING, POST-PROCESSING, & SAFETY	PM	GENERAL TOPICS IN AM: MATERIALS AND PROCESSING, POST-PROCESSING, & SAFETY	AM PM	SINTER-BASED AM TECHNOLOGIES	AM PM	APPLICATION OF AM IN ENERGY, MARITIME AND OIL & GAS
AM	AM OF CERAMICS: CHALLENGES & OPPORTUNITIES	AM	PANEL – FEEDSTOCK [10:30 AM]	AM	KEYNOTES (TBA)	AM	PANEL – AVIATION [10:30 AM]	AM	INDUSTRY 4.0: ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING IN AM
AM PM	FATIGUE AND FRACTURE OF AM MATERIALS AND PARTS	PM	PANEL – ECONOMICS [13:30 PM]	PM	PANEL – MONITORING [13:30 PM]	PM	PANEL – ENERGY [13:30 PM]	AM	INDUSTRY 4.0: CYBER SECURITY ASPECTS OF AM
AM PM	GENERAL TOPICS IN AM: MATERIALS AND PROCESSING, POST-PROCESSING, & SAFETY	PM	PANEL – ELECTRONICS [15:30 PM]	PM	PANEL – DEFENSE [15:30 PM]	PM	PANEL – TRANSPORTATION [15:30 PM]	AM	AM APPLICATIONS FOR AUTOMOTIVE TRANSPORTATION/ HEAVY MACHINERY
PM	PANEL – MEDICAL [13:30 PM]	-	-	-	-	-	-	AM	PANEL – SPACE [10:30 AM]
PM	PANEL – CONSTRUCTION [15:30 PM]	-	-	-	-	-	-	-	-

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Research to Standards

STUDENT PRESENTATION COMPETITION

31ST OCT 2022 (MON)
DOGWOOD / CARDINAL (LEVEL 1)
IBIS / OSPREY (LEVEL 2)
SESSION CHAIR: TBA

31ST OCTOBER 2022

TBA STUDENT **Effects of Various Post-Processing Methods on the Fatigue Life of Laser Powder Bed Fused Ti-6Al-4V**
[Lauren Ednie](#)¹; Robert Lancaster¹; Mahesh Mani²; ¹Swansea University; ²GKN Aerospace

TBA STUDENT **Alumina Microlattice/Epoxy Composites with Ultrahigh Strength and Energy Absorption**
[Yida \(Ryan\) Zhao](#)¹; Zehui Du²; Chee Lip Gan¹; ¹Nanyang Technological University (NTU); ²Temasek Laboratories@NTU

TBA STUDENT **Study of the Effect of the Infill Pattern on the Mechanical Behavior of Parts Manufactured by Fused Deposition Modeling using PLA-Fiber Composite Carbon**
[Ricardo Júnior de Oliveira Silva](#)¹; [Fabiano Oscar Drozda](#)¹; [João Filipe de Rezende Martins](#)¹; ¹Federal University of Paraná

TBA STUDENT **Accelerated Creep Testing of Electron Beam Melted Ti-6Al-4V**
[Jacob T. Pellicotte](#)¹; Md Abir Hossain¹; Jaime Cano¹; David Alexander¹; Calvin M. Stewart¹; ¹University of Texas at El Paso

TBA STUDENT **High Cycle Fatigue Properties of Additively Repaired Stainless Steel**
[Bariş Telmen](#)¹; Anne-Lise Gloanec¹; Gilles Rolland²; Fabien Szmytka¹; Nicolas Thurieau¹; ¹ENSTA Paris - Institut Polytechnique de Paris; ²EDF R&D

TBA STUDENT **Linking Porosity Proximity with Fatigue Performance in Ti64 LPBF Produced Parts**
[Christopher Packer](#)¹; Sam Tammas-Williams¹; Ahmed Tawfik²; Liam Blunt²; George Maddison³; ¹University of Edinburgh; ²University of Huddersfield; ³University of Sheffield

TBA STUDENT **Mechanical Characterisation of Laser Metal Deposition Produced Super-Duplex Stainless Steel**
[Sébastien Ballésio](#)^{1,2}; Fabien Szmytka¹; Thai Le Hong¹; Cédric Doudard²; Matthieu Dhondt²; ¹ENSTA Paris (IMSIA) - Institut Polytechnique de Paris; ²ENSTA Bretagne (IRDL)

TBA STUDENT **Additive Manufactured Composite Parts with Tailored Properties in Each Layer**
[Gary Mac](#)¹; Nikhil Gupta¹; ¹New York University - Tandon School of Engineering

TBA STUDENT **Optimizing Bending Strength of CF-PEKK for Fracture Fixation**
[Aliza Rabinowitz](#)¹; ¹Drexel University

TBA STUDENT **Fatigue Behavior and Modeling of Additively Manufactured IN718: The Effect of Surface Treatments and Surface Measurement Techniques**
[Seungjong Lee](#)¹; Shuai Shao¹; Douglas Wells²; Miroslav Zetek³; Miloslav Kepka³; Nima Shamsaei¹; ¹Auburn University; ²NASA - Marshall Space Flight Center (MSFC); ³University of West Bohemia

TBA STUDENT **3D Printed Composite Layers for Mechanical Reinforcement and Intelligent Behaviors**
[Dharneedar Ravichandran](#)¹; Kenan Song¹; ¹Arizona State University

TBA STUDENT **Evaluation and Qualification of Composite-Based Additive Manufacturing (CBAM) Material Properties**
[Mathew Marinelli](#)¹; ¹Rochester Institute of Technology

TBA STUDENT **The Development of a Standard Measurement Practice for the Load-Bearing Cross-Sectional Areas of Mechanical Testing Coupons Fabricated by Additive Manufacturing**
[Sarah G. Bennett](#)¹; Jorge Ramirez Lujan¹; Garrison Hommer¹; Joy Gockel¹; ¹Colorado School of Mines - ADAPT

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- TBA**
STUDENT **A Comparison of Mechanical Properties for As-Built and HIP'd Additively Manufactured Stainless Steel 316L**
Rory J. Douglas¹; Robert Lancaster¹; Jack Adams²; ¹Swansea University; ²Rolls-Royce
- TBA**
STUDENT **High Cycle and Very High Cycle Fatigue Resistance of LB-PBF 17-4 Precipitation Hardening Stainless Steel Fabricated under Ar and N₂ Environments**
Jade Welsh¹; Indrajit Nandi²; Pooriya Dastranjy Nezhadfar²; Nima Shamsaei²; Shuai Shao²; Jutima Simsiriwong¹; ¹University of North Florida; ²Auburn University
- TBA**
STUDENT **HCF and VHCF Fatigue Behavior of Additively Manufactured Inconel 718: Effects of Stress-Relieving, Surface Roughness, and Build Orientation**
Muztahid Muhammad¹; Palmer Frye²; Jutima Simsiriwong²; Shuai Shao¹; Nima Shamsaei¹; ¹Auburn University; ²University of North Florida
- TBA**
STUDENT **High Cycle Fatigue Fractographic Pattern Recognition for Additively Manufactured and Rolled Inconel 718**
Nicole Van Handel¹; Paul Paradise¹; Shenghan Guo¹; Dhruv Bhate¹; ¹Arizona State University

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31ST OCTOBER 2022

TBA STUDENT From Lattice Sub-Unit Elements toward Fatigue-Optimized Spinal Implants
[Simone Murchio](#)¹; [Raffaele De Biasi](#)¹; [Gianluca Zappini](#)²; [Damiano Pasini](#)³; [Devid Maniglio](#)¹; [Matteo Benedetti](#)¹; ¹Università di Trento; ²Lincotek Medical; ³McGill Univeristy

TBA STUDENT Impact of Usage Cable Driven Parallel Robot for Large Scale Concrete 3D Printing
[Suad A. Alhaj Mustafa](#)¹; [Rashid Abu Al-Rub](#)¹; [Bashar Khasawneh](#)²; [Federico Renda](#)²; ¹Khalifa University - ADAM Center; ²Khalifa University

TBA STUDENT Investigation on 3D Printed Origami Structure-Based Non-Pneumatic Tire
[Weijun Shen](#)¹; [Hantang Qin](#)¹; [Xuepeng Jiang](#)¹; ¹Iowa State University

TBA STUDENT Corrosion Performance of Additively Manufactured 316L Stainless Steel Produced by Feedstock Modification
[Venkata Bhuvaneshwari Vukkum](#)¹; [Rajeev K. Gupta](#)¹; [Jijo Christudasjustus](#)¹; [Ahmed A. Darwish](#)¹; [Furkan Ozdemir](#)¹; [Steven Storck](#)²; ¹North Carolina State University; ²Johns Hopkins University - Applied Physics Laboratory (JHU - APL)

TBA STUDENT Towards a 3D Printed Custom Prosthesis for Talus Replacement: Design Considerations and Functional Evaluation
[Francesca Danielli](#)¹; [Francesca Berti](#)¹; [Luigi La Barbera](#)¹; [Adelaide Nespoli](#)²; [Chiara Giulia Fontanella](#)³; [Sofia Pettenuzzo](#)³; [Tomaso Villa](#)¹; [Lorenza Petrini](#)¹; ¹Politecnico di Milano; ²National Research Council of Italy (CNR-ICMATE); ³Università degli Studi di Padova

TBA STUDENT Modelling of Ergonomically Enhanced 3D Printed Smart Prosthetic Hand
[Surya Bharath](#)^{1,2}; [Harish Raj](#)^{1,2}; [M. Vignesh Kumar](#)¹; ¹KCG College of Technology; ²Anna University

TBA STUDENT Optimization of 3D-Printing Parameters to Minimize Shape Error in the Fabrication of Micro-Sized and Irregular Ti-6Al-4V Porous Structure for Orthopedics
[Hunyeong Ban](#)^{1,2,3}; [Dohyung Lim, Sr.](#)^{1,2}; [Jong-Chul Park](#)³; [Joohee Son](#)²; [Nara Youn](#)²; ¹RNX; ²Sejong University; ³Yonsei University

TBA STUDENT The Effects of Perturbation on the Energy Absorption Properties of Single and Dual-Phase Cellular Structures
[Irving E. Ramirez-Chavez](#)¹; [Dhruv Bhate](#)¹; ¹Arizona State University

TBA STUDENT Optimisation of Processing Parameters for LPBF of NdFeB Permanent Magnets for Aerospace Applications
[Yong Rong Chan](#)¹; [Jerry Ying Hsi Fuh](#)²; [Heow Pueh Lee](#)²; [Sankaranarayanan Seetharaman](#)¹; ¹A*STAR - Advanced Remanufacturing and Technology Centre (ARTC); ²National University of Singapore (NUS)

TBA STUDENT Relationships between Powder Rheology and Powder Feeder Configurations in Cold Spray
[Jack Grubbs](#)¹; [Bryer Sousa](#)¹; [Aurélien Neveu](#)²; [Filip Francqui](#)²; [Danielle Cote](#)¹; ¹Worcester Polytechnic Institute; ²Granutools

TBA STUDENT Additively Manufactured Inconel 718 in Thin-Wall and Narrow Flow Channel Geometries: Effects of Post-Processing and Geometry on Tensile and Fatigue Behaviors
[Nabeel Ahmad](#)¹; [Shuai Shao](#)¹; [Nima Shamsaei](#)¹; ¹Auburn University

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TBA
STUDENT **Heat Treatment Effects on
Metallographic and Mechanical
Characteristics of Additive-
Manufactured Anterior Cervical
Interbody Fusion Cage with Bone-
like Porous Structure**
Jinju Jang^{1,2}; Dohyung Lim, Sr.^{1,3};
Taeyang Kwak⁴; Young Chul Kim⁵;
¹RNX; ²Yonsei University; ³Sejong
University; ⁴Ruantech; ⁵Kyungpook
National University

TBA
STUDENT **In Situ Process Monitoring of
Powder Bed Fusion of Metals using
Eddy Current Testing**
Marvin Spurek¹; Adriaan Spierings¹;
Bernard Revaz²; Gilles Santi²; Marc
Lany²; Jonatan Wicht²; Konrad
Wegener³; ¹inspire - ETH Zürich;
²AMiquam; ³ETH Zürich

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31ST OCTOBER 2022

TBA STUDENT Effect of Microstructure Control on Mechanical Properties of 3D-Printed Zr-Cu-Al-Co Bulk Metallic Glass

Yu-Ping Wang¹; Che-Nan Kuo¹;
¹National Sun Yat-sen University

TBA STUDENT Texture Dependent Micromechanical Anisotropy of Laser Powder Bed Fused Inconel 718

Jakob Schröder¹; Jan Čapek²;
Giovanni Bruno¹; Gunther Mohr¹; Itziar Serrano-Munoz¹; Alexander Evans¹;
Efthymios Polatidis²; ¹Bundesanstalt für Materialforschung und -prüfung (BAM); ²Paul Scherrer Institut (PSI)

TBA STUDENT Microstructure Evolution and Mechanical Response of 3D Printed Cu-Cr-Nb Alloys

Dong Han Liu¹; Che-Nan Kuo¹;
¹National Sun Yat-sen University

TBA STUDENT Material Characterization and Reduction of Thermal Deformation of Continuous Carbon Fiber Reinforced Polyether-ether-ketone (PEEK) Parts Produced by Open Environment Fused Filament Fabrication

Alexander T. Prigge¹; Boran (Max) Cui¹; John Mertens¹; John Rindini¹;
¹Trinity College

TBA STUDENT Impact of Porosity Levels on the Mechanical and Microstructural Properties of Laser Powder Bed Fused BCC Structures

Bharath Bhushan Ravichander¹;
Sumanth Theeda¹; Shweta Hanmant Jagdale¹; Golden Kumar¹; ¹University of Texas at Dallas

TBA STUDENT Microstructure and Mechanical Properties of Additively Manufactured Duplex Stainless Steel

Maxime Piras¹; Anis Hor¹; Eric Charkaluk²; ¹Institut Clément Ader (ICA, CNRS UMR 5312); ²Laboratoire de Mécanique des Solides (LMS, CNRS UMR 7649)

TBA STUDENT Submicron Manufacturing of Polymer/Nanoparticle Composites via 3D Printing

Dhanush Patil¹; Arunachalam Ramanathan¹; Sayli Jambhulkar¹; Kenan Song¹; ¹Arizona State University

TBA STUDENT Cracking Sensitivity Reduction of Directed Energy Deposited Cobalt-Based Superalloys by a Microstructure Control

Thibaut Froeliger¹; Louise Toualbi¹; Didier Locq¹; Thomas Elcrin²; Rémy Dendievel³; ¹ONERA (The French Aerospace Lab); ²AddUp; ³Science et Ingénierie des Matériaux et Procédés (SIMaP)

TBA STUDENT An Investigation into the Tensile and Fatigue Behaviors of Additively Manufactured Titanium Alloys

Mohammad Salman Yasin¹; Arash Soltani-Tehrani¹; Shuai Shao¹; Nima Shamsaei¹; ¹Auburn University

TBA STUDENT Comparative Study of the Passive Films of Selective Laser Melting and Wrought 316L Austenitic Stainless Steel

Xavier Majnoni d'Intignano¹; Olivier Devos²; Mohamed El May²; Christine Labrugère Saroste³; Sébastien Mercier¹; Nicolas Saintier²; Jean-Paul Salvétat³; ¹ONERA (The French Aerospace Lab); ²I2M Bordeaux - Institut de mécanique et d'ingénierie; ³PLACAMAT - CNRS

TBA STUDENT Interfacial Characterization of Stainless Steel 420 and Inconel 718 Multi-Material Structures

Beytullah Aydogan¹; Himanshu Sahasrabudhe¹; ¹Michigan State University

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TBA
STUDENT **The Impact of the Metal X Printing Infill on the Tensile Properties of Atomic Diffusion Additively Manufactured 17-4PH Stainless Steel**
Mahmoud M. Naim^{1,2}; Mahdi Chemkhi¹; Akram Alhussein²; ¹EPF École d'Ingénieurs; ²Université de technologie de Troyes (UTT)

TBA
STUDENT **Microstructural and Electrochemical Analysis of Additively Manufactured 17-4 PH Steel for Improved Mechanical Properties**
Ali Raza¹; ¹Central Michigan University

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31ST OCTOBER 2022

TBA
STUDENT Additive Manufacturing of Recycled Carbon Fiber/Thermoset Composites

[Chunyan Zhang](#)¹; Kun Fu¹;
¹University Of Delaware

TBA
STUDENT Combined Hyperspectral Temperature and OCT Based Geometry Control in Directed Energy Deposition

[Jorge Sanchez Medina](#)¹; Julien Ertveldt¹; Patrick Guillaume¹; ¹Vrije Universiteit Brussel

TBA
STUDENT Crack Reduction in Selective Laser Melting Fabricated Inconel 939 with Si Addition

[Huan Ding](#)¹; Bin Zhang¹; Congyuan Zeng¹; Wen Jin Meng¹; Shengmin Guo¹; ¹Louisiana State University

TBA
STUDENT Multi-Stage Additive Manufacturing for Multi-Scale Porous Ceramics

[Zipeng Guo](#)¹; Chi Zhou¹; ¹The State University of New York at Buffalo

TBA
STUDENT Effect of Laser Variation on a Build Plates Topographical Melt Pool Geometry during L-PBF

[Jackson M. Jaworski](#)¹; Nicholas Tsolas¹; ¹Auburn University

TBA
STUDENT Effect of Post Processing Treatments on the Stress Corrosion Cracking Behavior of AM 7050 Aluminum Alloy

[Rupesh Rajendran](#)¹; Crosby T. Owens²; Jeffrey D. Eisenhaure²; David Spain²; Brant E. Stoner²; Alex H. Kinsey²; Preet M. Singh¹; ¹Georgia Institute of Technology; ²Northrop Grumman

TBA
STUDENT Quantifying Die-Swell in Material Extrusion via Instrumentation and Imaging

[Austin Colon](#)¹; Jonathan Seppala²; David Kazmer¹; Amy M. Peterson¹;
¹University of Massachusetts Lowell;
²NIST

TBA
STUDENT Warpage Control in Fused Deposition Modeling (FDM) of Thermoplastic ABS

[Yash G. Mittal](#)¹; Neel Kamal Gupta¹; Gopal Gote¹; Pushkar Kamble¹; Avinash Kumar Mehta¹; K. P. Karunakaran¹; ¹Indian Institute of Technology Bombay (IIT Bombay)

TBA
STUDENT Influence of H13 Powder Properties on Laser Powder Bed Fusion Processed Parts

[Edem Dugbenoo](#)¹; Mathieu Brochu¹;
¹McGill University

TBA
STUDENT Additive Manufacturing of Highly Filled Resins with Tailored Particle Size Distribution via the Digital Light Processing Technique

[Antoine Delarue](#)¹; Amy M. Peterson¹; Christopher J. Hansen¹; ¹University of Massachusetts Lowell

TBA
STUDENT Role of Dimensionless Numbers in Laser Directed Energy Deposition of an Inconel 625 – GRCop 42 Bimetallic Joint

[Sriram Manoharan](#)¹; Kuba Preis¹; Somayeh Pasebani¹; Brian K. Paul¹;
¹Oregon State University

TBA
STUDENT Influence of the L-PBF Bead Dimensions on Part Dimensional Accuracy

[Lucas Fournet-Fayard](#)^{1,2}; Charles Cayron¹; Imade Koutiri²; Anne-Françoise Obaton¹; ¹Laboratoire National de Métrologie et d'Essais (LNE); ²Arts et Métiers ParisTech - PIMM

TBA
STUDENT Relationships between Melting Behavior and Resulting Surface Roughness for Laser Powder Bed Fusion

[Edwin Glaubitz](#)¹; Joy Gockel¹; Jason Fox²; Orion L. Kafka²; ¹Colorado School of Mines; ²NIST

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Research to Standards

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STUDENT **Powder Characterization for Metal Additive Manufacturing through Different Methods and its Effect on the Additively Manufactured Parts**
[Parisa Bayati](#)¹; Mohammad Pourshams¹; Keyvan Safaei¹; Mohammadreza Nematollahi¹; Ahmadreza Jahadakbar¹; Kristin Lammers²; Kate Wamsley²; Edward Lim²; Behrang Poorganji¹; Mohammad Elahinia¹; ¹University of Toledo; ²Microtrac MRB

TBA
STUDENT **Characterization of Pure Photopolymers and Suspensions for Digital Light Processing (DLP)**
[Rajat Chaudhary](#)¹; Carlo Antonini¹; ¹Università degli Studi di Milano-Bicocca

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TBA STUDENT **A Statistical-Physical Framework for Uncertainty Quantification of Material Parameters in Computational Multi-Physics Modeling of Additive Manufacturing**
[Amanda Giam](#)¹; Jiaxiang Cai¹; Fan Chen¹; Wentao Yan¹; Zhisheng Ye¹; ¹National University of Singapore (NUS)

TBA STUDENT **Design and Optimization of High Energy Absorption Ti6Al4V Alloys with Gradient Porosity Structure Fabricated by Laser Powder Bed Fusion**
[Yu-Yao Chan](#)¹; Che-Nan Kuo¹; ¹National Sun Yat-sen University

TBA STUDENT **Comparison of Lattice Structures Fabricated by Additive Manufacturing Processes**
[Valerio Di Pompeo](#)¹; Stefano Spigarelli¹; Marcello Cabibbo¹; Eleonora Santecchia¹; Alberto Santoni¹; ¹Università Politecnica delle Marche (UNIVPM)

TBA STUDENT **Systematization and Structuring of AMC-Processes for Quality Assurance and Qualification Concepts**
[Birger Buschmann](#)¹; Tobias Ludwig¹; Daniel Talke¹; ¹Technical University of Munich

TBA STUDENT **Design Optimization of Additively Manufactured Metallic Parts for Catalytic Coating**
[Sima Mehdipour](#)¹; Christoph Klahn¹; Roland Dittmeyer¹; ¹Karlsruhe Institute of Technology (KIT)

TBA STUDENT **Thermal Modeling in Metal Additive Manufacturing using Graph Theory**
[Alex R. Riensche](#)¹; [Prahlada K. Rao](#)¹; Kevin K. Cole¹; Reza Yavari¹; ¹University of Nebraska-Lincoln

TBA STUDENT **In-Situ Failure Analysis of Lattice Structures**
[Elliott Jost](#)¹; Christopher Saldana¹; ¹Georgia Institute of Technology

TBA STUDENT **Tensile Behavior of Additively Manufactured Lattice Structures: Best Practices and Lessons Learned**
[Noah Gula](#)¹; ¹Ohio State University - Center for Design and Manufacturing Excellence (CDME)

TBA STUDENT **High Throughput Tensile Testing and Process Optimization of Additively Manufactured SS316L using Design of Experiments**
[Shweta Hanmant Jagdale](#)¹; Bharath Bhushan Ravichander¹; Sumanth Theeda¹; Golden Kumar¹; ¹University of Texas at Dallas

TBA STUDENT **Field Driven Design of TPMS Cellular Structures for Energy Absorption**
[Mandar Shinde](#)¹; Irving E. Ramirez-Chavez¹; Dhruv Bhate¹; ¹Arizona State University

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TBA STUDENT
Using Machine Learning to Model the Influence of Porosity and Build Parameters on Fatigue of AM IN718
Alexander N. Caputo¹; Rick Neu¹; Chaitanya Vallabh²; Xiayun Zhao²; ¹Georgia Institute of Technology; ²University of Pittsburgh

TBA STUDENT
Accelerating Additive Manufacturing Alloy Development Cycles through Efficient Neural Network-Based Surrogate Models
Jiahui Ye¹; Abdelrahman Kotb¹; Raymundo Arróyave¹; Ibrahim Karaman¹; Alaa Elwany¹; ¹Texas A&M University

TBA STUDENT
Machine Learning Based Property Evaluation of Selectively Laser Melted SS 316L
Sumanth Theeda¹; Shweta Hanmant Jagdale¹; Bharath Bhushan Ravichander¹; Golden Kumar¹; ¹University of Texas at Dallas

TBA STUDENT
In Situ Infrared Temperature Sensing for Real-Time Defect Detection in Additive Manufacturing
Rifat-E-Nur Hossain¹; Jerald Lewis¹; Arden Moore¹; ¹Louisiana Tech University

TBA STUDENT
Machine Learning-Based Framework for Defect Classification with X-Ray Computed Tomography in Laser-Powder Bed Fusion Process
Jiafeng Ye¹; Jia (Peter) Liu¹; ¹Auburn University

TBA STUDENT
Quality Control of Direct Energy Deposition Additive Manufacturing using a Proprietary Feedback Control GUI
Eden Binega Yemesegen¹; Olusegun Oladapo Olamoyegun¹; Ali Memari¹; ¹Pennsylvania State University

TBA STUDENT
Monitoring System Development Research to Inspect Product Quality in Real Time According to Changes in the Metal Additive Manufacturing Process
Eunsuk Lee^{1, 2, 3}; Dohyung Lim, Sr.^{1, 2}; Jong-Chul Park³; ¹RNX; ²Sejong University; ³Yonsei University

TBA STUDENT
Control-Oriented Modeling and Continuous Melt Pool Geometry Estimation using Deep Neural Network
John Shim¹; Xu Chen¹; ¹University of Washington

TBA STUDENT
A New Method for Spatter Monitoring in Additive Manufacturing using Artificial Intelligence (Machine Learning)
Gwenaëlle Chebil^{1, 2}; Yves Renollet¹; Dimitri Bettebghor¹; Pierre Lapouge²; Cécile Davoine¹; Marc Thomas¹; Véronique Favier²; Matthieu Schneider²; ¹ONERA (The French Aerospace Lab) - DMAS; ²Arts et Métiers ParisTech - PIMM

TBA STUDENT
Evaluation of Convolution-Based Architectures in Segmentation of AM Tomography Data
Saber Nemati¹; Leslie G. Butler¹; Shengmin Guo¹; ¹Louisiana State University

TBA STUDENT
Multivariate Statistical Process Control in PBF Metal AM: Role of Feedstock Quality Characteristics to Enable a Robust QVW Framework
Venkatavaradan Sunderarajan¹; Suman Das¹; ¹Georgia Institute of Technology

TBA STUDENT
Monitoring and Flaw Detection during Wire-Based Directed Energy Deposition using In-Situ Acoustic Sensing and Wavelet Graph Signal Analysis
Benjamin Bevans¹; Prahalada K. Rao¹; Ziyad Smoqi¹; Aniruddha Gaikwad¹; João P. Oliveira²; André Ramalho²; Telmo G. Santos²; ¹University of Nebraska-Lincoln; ²Universidade NOVA de Lisboa - FCT NOVA

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ICAM 2022 TENTATIVE PROGRAM AGENDA

Updated as of 16th September 2022



CENTER of
EXCELLENCE
Research to Standards

TBA
STUDENT **A Novel Robust Machine Learning
Approach for In-Situ Detection of
Complex Shape Deviations in AM**
Matteo Bugatti¹; Bianca Maria M.
Colosimo¹; Marco Grasso¹;
¹Politecnico di Milano

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ICAM 2022 TENTATIVE PROGRAM AGENDA

Updated as of 16th September 2022



CENTER of
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AM FOR ELECTRONIC APPLICATIONS

CO-ORGANIZERS:

Shweta Agarwala

Aarhus University,
Denmark

Masoud Mahjouri-Samani

Auburn University, USA

Jaim Nulman

Nano Dimension,
USA

Alireza Sarraf

Divergent, USA

31ST OCT 2022 (MON)

GRIFFIN A (LEVEL 1)

SESSION CHAIR: TBA

31ST OCTOBER 2022

08:00 AM
INVITED

Additive Manufacturing of Embedded Electronics for Smart and Soft Robotics: Current Progress and Future Perspectives
[Konstantinos Sierros](#)¹; ¹West Virginia University

08:30 AM
INVITED

3D Printing of Nanomaterials-Based Electronics and Ingestible Robots
[Yong Lin Kong](#)¹; ¹University of Utah

09:00 AM
REGULAR

Development & Integration of Flexible & Printed Electronic Solutions for Next Generation Army Applications
[Hayley B. Katz](#)¹; Matthew Brauer¹; ¹U.S. Army Combat Capabilities Development Command - Armaments Center

09:20 AM
INVITED

Development and Testing of a Multi-Element AM Antenna
[Robert Maloney](#)¹; Tara Spafford¹; ¹Northrop Grumman

09:50 AM

BREAK

10:30 AM
INVITED

3-D Printed RF Systems Experiment on the International Space Station
[Arthur Paoella](#)¹; ¹L3Harris

11:00 AM
INVITED

3D Printing of Passive Electronic Components from the Viewpoint of a Component Manufacturer
[Thomas Lenzen](#)¹; ¹TDK Electronics

11:30 AM
INVITED

Lightweight and Embedding Electronic Functionalities using Printed Electronic Materials and Processes

[Zachary J. Davis](#)¹; Torsten Lund-Olesen¹; Kasper Venstentoft¹; Anna Krzyzanowska¹; Jonas Daugaard Hulstrøm¹; ¹Danish Technological Institute

12:00 PM

LUNCH

13:30 PM
REGULAR

Printed Circuit Structure
[Kenneth Church](#)^{1,2}; Jason Benoit¹; Paul Deffenbaugh¹; Josh Goldfarb¹; Bryce Gray¹; Jasmine Hammonds¹; Mark Kloza¹; Sam LeBlanc¹; Nicholas Willey¹; ¹Sciperio; ²nScrypt

13:50 PM
REGULAR

Beamforming Behavior of a Waveguide Fed 3D-Printed Luneburg-Style Lens in Ku and Ka Bands
[Philip Lambert](#)¹; Shawn Rogers²; ¹Fortify; ²Envistacom

14:10 PM
REGULAR

Additive Manufacturing of Energy Storage Devices based on Mxenes
[Majid Beidaghi](#)¹; Jafar (Kian) Orangi¹; Fatima Hamade¹; Virginia Davis¹; ¹Auburn University

14:30 PM
INVITED

Printed Organic Electronics for Smart Sensor Systems
[Marco Fattori](#)¹; Eugenio Cantatore¹; ¹Eindhoven University of Technology (TU/e)

15:00 PM

BREAK

15:30 PM
INVITED

Integration of Sensors and Printed Electronics into PBF-LB Parts
[Simon Vervoort](#)¹; Jonas Mertin¹; ¹Fraunhofer Institute for Laser Technology ILT

16:00 PM
INVITED

Low-Cost, Low-Power Gas Detection: All-Aerosol-Jet-Printed Highly Sensitive and Selective Polyaniline-Based Ammonia Sensors
[Tolga Aytug](#)¹; Pooran Joshi¹; Christine Fisher²; Kai Li¹; ¹Oak Ridge National Laboratory (ORNL); ²City University of New York

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ICAM 2022 TENTATIVE PROGRAM AGENDA

Updated as of 16th September 2022



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Research to Standards

16:30 PM **Additive Nanomanufacturing and
INVITED Dry Printing of Flexible Hybrid
Electronics**
[Masoud Mahjouri-Samani](#)¹; Zabihollah
Ahmadi¹; Seungjong Lee¹; Aarsh
Patel¹; Nima Shamsaei¹; Raymond R.
Unocic²; ¹Auburn University; ²Oak
Ridge National Laboratory (ORNL)

17:00 PM **END OF DAY**

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ICAM 2022 TENTATIVE PROGRAM AGENDA

Updated as of 16th September 2022



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Research to Standards

3D PRINTED POLYMERS AND POLYMER MATRIX COMPOSITES

CO-ORGANIZERS:

Rachael Andrulonis
WSU-NIAR, USA
Cindy Ashforth
FAA, USA

Carl Dekker
Met-L-Flo, USA
Jonathan Seppala
NIST, USA

31ST OCT 2022 (MON)
GRIFFIN B (LEVEL 1)
SESSION CHAIR: TBA

31ST OCTOBER 2022

08:00 AM
INVITED **Additive Manufacturing of Carbon Scaffold for Thermoset Composites**
[Kun \(Kelvin\) Fu](#)¹; ¹University of Delaware

08:30 AM
REGULAR **Caverna: A Microporous, FFF-Printable Material for Lightweight and Flexible Structures**
[Ben Mac Murray](#)¹; [Jonathan Farren](#)¹; [Nathan Ockwig](#)¹; [Jeffrey Cernohous](#)¹; ¹Interfacial

08:50 AM
REGULAR **Additive Manufacturing of Thermally Conductive Polymer for Lighting Fixtures**
[John Hana](#)¹; [Shahab Zekriardehani](#)¹; [Felix Tran](#)¹; [John Trublowski](#)¹; [Javed Mapkar](#)¹; [Jeremy Santiago](#)²; ¹Eaton; ²Ford Motor Company

09:10 AM
REGULAR **Reactive Extrusion Additive Manufacturing (RX-AM™) for Volume Industrial Applications**
[Cora Leibig](#)¹; ¹Chromatic 3D Materials

09:30 AM
REGULAR **Process Uniformity and Properties of ABS Materials by Selective Thermoplastic Electrophotographic Process**
[Brian Mullen](#)¹; [Jerry A. Pickering](#)¹; [Jackson Muehlbauer](#)¹; ¹Evolve Additive Solutions

09:50 AM **BREAK**

10:30 AM
REGULAR **Chemical Upcycling of PLA: From FDM 3D Printed Wastes to Fresh SLA 3D Printing Resin**
[Yu-Chung Chang](#)¹; [Lin Shao](#)¹; [Jinwen Zhang](#)¹; ¹Washington State University - Composite Materials and Engineering Center (WSU - CMEC)

10:50 AM
INVITED **3D Printed Membranes for Next Generation Energy and Water Applications**
[Michael Hickner](#)¹; ¹Pennsylvania State University

11:20 AM
REGULAR **Programmed Fiber Orientation for Improved Geometric Tolerancing in Printed Composite Tools**
[Alexander Quinn](#)¹; ¹Fortify

11:40 AM
REGULAR **Evaluation of Structural Performance of Sandwich Panels Fabricated by Vat Photopolymerization**
[Sabrina Nilufar](#)¹; [Shukantu Dev Nath](#)¹; ¹Southern Illinois University Carbondale

12:00 PM **LUNCH**

13:30 PM
INVITED **Composite Materials Handbook-17 (CMH-17) - Non-Metallic Additive Manufacturing**
[Curtis R. Davies](#)¹; [Cindy Ashforth](#)¹; [Rachael Andrulonis](#)²; ¹Federal Aviation Administration (FAA); ²Wichita State University - National Institute for Aviation Research (WSU - NIAR)

14:00 PM
INVITED **Polymer Additive Manufacturing Qualification Programs**
[Royal Lovingfoss](#)¹; [Rachael Andrulonis](#)¹; [Brian Smith](#)¹; [Joel D. White](#)¹; ¹Wichita State University - National Institute for Aviation Research (WSU - NIAR)

14:30 PM
INVITED **Development of Overtest Factors for Powder Bed Fusion Nylon 11 Parts, Allowing a Single Design Acceptance Test Taking into Account Material and Process Variability**
[Joseph Costanzo](#)¹; ¹Boeing - Commercial Airplanes

15:00 PM **BREAK**

15:30 PM
INVITED **High Accuracy Temperature Measurements of Polymer Additive Manufacturing using Filament Material Extrusion**
[Richard Cole](#)¹; [Marc Genest](#)¹; [Liam Reynolds](#)¹; ¹National Research Council Canada (NRC Canada)

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ICAM 2022 TENTATIVE PROGRAM AGENDA

Updated as of 16th September 2022



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16:00 PM **Development of Tensile Testing**
INVITED **Method for Filaments Used in**
 Material Extrusion Based Additive
 Manufacturing Process
 Haibin Ning¹; George Chambers¹;
 Kirstie Snodderly²; Cody Johnson¹;
 Derrick Armstrong¹; Selvam Pillay¹;
 ¹University of Alabama at Birmingham
 (UAB); ²ASTM International

PENDING **TBA**

16:30 PM **END OF DAY**

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ICAM 2022 TENTATIVE PROGRAM AGENDA

Updated as of 16th September 2022



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FATIGUE AND FRACTURE OF AM MATERIALS AND PARTS

CO-ORGANIZERS:

Stefano Beretta

Politecnico di
Milano, Italy

Craig McClung

Southwest Research
Institute (SwRI), USA

Thomas Niendorf

University of Kassel,
Germany

Jutima Simsiriwong

University of
North Florida, USA

Douglas Wells

NASA-MSFC, USA

31ST OCT 2022 – 2ND NOV 2022 (MON-WED)
GRIFFIN C (LEVEL 1)
SESSION CHAIR: TBA

31ST OCTOBER 2022

08:00 AM
INVITED Review on Fracture-Based Fatigue Assessment for Net-Shape Metal Surfaces Manufactured by L-PBF and its Relation to Component Qualification
[Stefano Beretta](#)¹; ¹Politecnico di Milano

08:30 AM
REGULAR Tailoring Hot Isostatic Pressing Treatments to Homogenize Process-Dependent Microstructures and Mechanical Properties of Electron Beam Melted Ti-6Al-4V Parts
[Jake Benzing](#)¹; [Magnus Ahlfors](#)²; [Chad M. Beamer](#)²; [Julius Bonini](#)³; [Nik Hrabe](#)¹; [Sara Randall](#)³; ¹NIST; ²Quintus Technologies; ³Lucideon

08:50 AM
REGULAR From Defect-Related Fatigue Life Assessment to an Integral Strain-Based Structural Durability Approach
[Rainer Wagener](#)¹; [Benjamin Möller](#)¹; ¹Fraunhofer Institute for Structural Durability and System Reliability LBF

09:10 AM
REGULAR A Bayesian-Based Fatigue Characterization Sufficiency Criteria and Fatigue Life Prediction Framework for AM Applications
[Luke C. Sheridan](#)¹; ¹Air Force Research Laboratory (AFRL)

09:30 AM
INVITED Small Fatigue Crack Growth in AM Ti-6Al-4V under Axial, Torsion, and Combined Loadings
[Ali Fatemi](#)¹; [Matthew Markham](#)¹; [Reza Molaei](#)¹; [Nam Phan](#)²; ¹University of Memphis; ²Naval Air Systems Command (NAVAIR)

10:00 AM **BREAK**

10:30 AM
INVITED Process-Structure-Property-Fatigue Performance of Additively Manufactured Metallic Materials
[Mauro Madia](#)¹; ¹Bundesanstalt für Materialforschung und -prüfung (BAM)

11:00 AM
INVITED Validation of Multi-Laser Printing Technology for Additive Manufacturing
[Donald Godfrey](#)¹; [Jacky Diemann](#)¹; ¹SLM Solutions

11:30 AM
INVITED Surface Improvement of Laser Powder Bed Fusion Processed Ti6Al4V for Fatigue Applications
[Andrey Molotnikov](#)^{1,2}; [Marten Jurg](#)³; [Alexander Medvedev](#)²; ¹Royal Melbourne Institute of Technology (RMIT University); ²RMIT Centre for Additive Manufacturing (RCAM); ³Monash University

12:00 PM **LUNCH**

13:30 PM
INVITED Critical Effect of Defects on Axial Fatigue Behavior of Additively Manufactured Ti-6Al-4V
[Shuai Shao](#)¹; [Nima Shamsaei](#)¹; ¹Auburn University

14:00 PM
REGULAR Defect Acceptance Criteria and Simple Assessment of AM Components
[Stefano Beretta](#)¹; ¹Politecnico di Milano

14:20 PM
INVITED Developing Approaches for Certification of Uninspectable Fracture Critical AM Components
[William G. Tilson](#)¹; [Douglas Wells](#)¹; [Craig McClung](#)²; ¹NASA - Marshall Space Flight Center (MSFC); ²Southwest Research Institute (SwRI)

14:50 PM **BREAK**

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ICAM 2022 TENTATIVE PROGRAM AGENDA

Updated as of 16th September 2022



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15:30 PM
REGULAR **Fatigue of AM Metals in the Presence of Notches under Uniaxial and Multiaxial Service Load Histories**
Reza Molaei¹; Ali Fatemi¹; ¹University of Memphis

15:50 PM
INVITED **Process Induced Defects and their Effects on Resulting Fatigue Behavior**
Rakish Shrestha¹; Arash Soltani-Tehrani²; Jutima Simsiriwong³; Nima Shamsaei²; Mohsen Seifi⁴; Nam Phan⁵; ¹Sandia National Laboratories; ²Auburn University; ³University of North Florida; ⁴ASTM International; ⁵Naval Air Systems Command (NAVAIR)

16:20 PM
REGULAR **Impact of Surface Finishing/Texture on Fatigue Performance of L-PBF GRCop-42**
Agustin Diaz¹; Justin Michaud¹; Patrick McFadden¹; Paul R. Gradl²; Thomas Teasley²; ¹REM Surface Engineering; ²NASA - Marshall Space Flight Center (MSFC)

16:40 PM
REGULAR **The Relationship Between Microporosity and Fatigue Performance in Direct Energy Deposited (DED) Ti-6-4 for Aerospace Structural Applications**
Daniel R. Klenosky¹; Paul R. Toivonen¹; ¹Spirit AeroSystems

17:00 PM **END OF DAY**

1ST NOVEMBER 2022

08:00 AM
INVITED **Uniform Fatigue Damage Tolerance Assessment in Additive Manufactured Metals and Structures**
Frank Walther¹; Jochen Tenkamp¹; Felix Stern¹; Mohamed Merghany¹; Mirko Teschke¹; ¹TU Dortmund University - Department of Materials Test Engineering (WPT)

08:30 AM
REGULAR **Fatigue Response up to 10⁹ Cycles of Notched Specimens Made of SLM Ti6Al4V Alloy**
Andrea Tridello¹; Filippo Berto²; Davide S. Paolino¹; ¹Politecnico di Torino - DIMEAS; ²Norwegian University of Science and Technology (NTNU)

08:50 AM
REGULAR **Stress Corrosion Cracking and Hydrogen-Metal Interactions in Additively Manufactured 17-4PH**
James Burns¹; Trevor K. Shoemaker¹; Lauren Singer¹; Zachary Harris¹; John Scully¹; ¹University of Virginia

09:10 AM
REGULAR **The Effects of Chemical Composition and Heat Treatment on Fatigue Performance of Additively Manufactured Medical Implants**
Ryan S. Kircher¹; ¹rms Company

09:30 AM
INVITED **Additive Manufacturing Microstructural Engineering for Improved Fatigue Resistance**
Jonathan Pegues¹; ¹Sandia National Laboratories

10:00 AM **BREAK**

10:30 AM
INVITED **A Comprehensive Fatigue Life Prediction Tool for Probabilistic Prediction of the Life-Limiting Behavior of Additively Manufactured Materials**
Adam L. Pilchak¹; Michelle E. Harr¹; Manisha Banker¹; Ayman Salem¹; ¹Materials Resources (MRL)

11:00 AM
INVITED **The Role of Cyclic Strain Rate and Heat Treatment on High-Cycle and Very High-Cycle Fatigue Behavior of LB-PBF 17-4 PH Stainless Steel**
Jutima Simsiriwong¹; Pooriya Dastranjy Nezhadfar²; Jade Welsh¹; Indrajit Nandi²; Shuai Shao²; Nima Shamsaei²; ¹University of North Florida; ²Auburn University

11:30 AM
INVITED **Fatigue Response of AM Materials: A Methodology for the Statistical Analysis of the Experimental Data**
Davide S. Paolino¹; Andrea Tridello¹; ¹Politecnico di Torino - DIMEAS

12:00 PM **LUNCH**

13:30 PM
INVITED **Theory and Application of Probabilistic Damage Tolerance to Predict the Structural Integrity of Additively Manufactured Parts**
James C. Sobotka¹; Michael Enright¹; Craig McClung¹; ¹Southwest Research Institute (SwRI)

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ICAM 2022 TENTATIVE PROGRAM AGENDA

Updated as of 16th September 2022



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14:00 PM REGULAR	Mechanical Performance of Cold Spray Additively Manufactured Al-6061 Deposits Ahmad Nourian-Avval ¹ ; Sinan Muftu ¹ ; ¹ Northeastern University	14:50 PM BREAK	
14:20 PM INVITED	Characterization of Defects in Metal AM for Structural Integrity Assessment Michael Gorelik ¹ ; ¹ Federal Aviation Administration (FAA)	15:30 PM INVITED	On the Role of Powder Quality and Process Instabilities on the Fatigue Properties of Additively Manufactured Materials Thomas Niendorf ¹ ; ¹ University of Kassel
14:50 PM BREAK		16:00 PM REGULAR	Investigation of Residual Stresses and Activation Energies in PBF-EB Ti-6Al-4V Globular Surface Layers Nicholas A. Derimow ¹ ; Thomas A. Berfield ² ; Jake T. Benzing ¹ ; Nikolas Hrabec ¹ ; ¹ NIST; ² University of Louisville
15:30 PM REGULAR	Qualification Method for the Process Dependent Factors and Affecting the Fatigue Behavior of Laser Powder Bed Fusion Methods for Ti6Al4V Umit Aytar ¹ ; Erdem Mermer ¹ ; ¹ Turkish Aerospace	16:20 PM REGULAR	Fatigue Life and Effect of Defect for Various Engineering Alloys Made with Laser Powder Bed Fusion Emiel Amsterdam ¹ ; Enrico Scolaro ¹ ; ¹ Royal NLR - Netherlands Aerospace Centre
15:50 PM REGULAR	Mechanism-Based Characterization and Modeling of Additive Manufactured Medical Implants with Tailored Functionality Jochen Tenkamp ¹ ; Mirko Teschke ¹ ; Frank Walther ¹ ; ¹ TU Dortmund University - Department of Materials Test Engineering (WPT)	PENDING	TBA
PENDING	TBA	16:40 PM END OF DAY	
16:10 PM END OF DAY			

2ND NOVEMBER 2022

13:30 PM INVITED	What is Needed to Predict the Fatigue Performance of an AM Ti-6Al-4V Component? Derek Warner ¹ ; Peipei Li ^{1,2} ; Terrence Moran ¹ ; ¹ Cornell University - Cornell Fracture Group; ² Brown University
14:00 PM INVITED	Static and Dynamic Properties of 316L Stainless Steel Produced via Laser Powder Bed Fusion Michael K. Minor ¹ ; Cory D. Jamieson ² ; ¹ U.S. Army Redstone Test Center; ² Pennsylvania State University
14:30 PM REGULAR	Impact of Surface Roughness on Fatigue Performance in Additive Manufacturing Joy Gockel ¹ ; Rachel Evans ² ; Edwin Glaubitz ¹ ; Simon Richardsen ¹ ; Nathan Klingbeil ² ; ¹ Colorado School of Mines; ² Wright State University

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ICAM 2022 TENTATIVE PROGRAM AGENDA

Updated as of 16th September 2022



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GENERAL TOPICS IN AM: MATERIALS AND PROCESSING, POST-PROCESSING, QUALIFICATION & SAFETY

CO-ORGANIZERS:

Sara Bagherifard Politecnico di Milano, Italy
David Brackett The MTC, UK
Nik Hrabec NIST, USA
Jasmin Kathrin Saewe Fraunhofer ILT, Germany
Brian West NASA-MSFC, USA

31ST OCT 2022 – 2ND NOV 2022 (MON-WED)
CYPRESS (LEVEL 1)
SESSION CHAIR: TBA

31ST OCTOBER 2022

08:00 AM **AM Materials Data – Challenges and Opportunities**
INVITED
Richard Huff¹; ¹ASTM International

08:30 AM **Maturation of Additive Manufactured Aerospace Alloys and Development of Mechanical and Thermophysical Properties for Space Applications**
REGULAR
Paul R. Gradl¹; Reza Ghiaasiaan²; Shengmin Guo³; Colton Katsarelis¹; Omar Mireles¹; Alison Park⁴; Nima Shamsaei²; Shuai Shao²; Brian West¹; ¹NASA - Marshall Space Flight Center (MSFC); ²Auburn University; ³Louisiana State University; ⁴NASA Engineering and Safety Center (NECS)

08:50 AM **Parameter Development of High Strength Aluminium Alloys for PBF-LB**
INVITED
Joseph C. Chamberlin¹; Andrew Bobel²; Nick Cruchley¹; ¹The Manufacturing Technology Centre (MTC); ²General Motors

09:20 AM **Laser Powder Bed Fusion of High Strength Aluminum Alloys using Laser Stirring Technique**
REGULAR
Alber A. Sadek¹; ¹EWI

09:40 AM **Use of Reactive Additive Manufacturing (RAM) Techniques for New Alloy and Composite Development**
INVITED
Jeremy J. Iten¹; ¹Elementum 3D

10:10 AM **BREAK**

10:30 AM **Dissimilar Material Mixing in Directed Energy Deposition for Compositionally Complex Alloys**
INVITED
Sarah J. Wolff¹; ¹Texas A&M University

11:00 AM **Photopolymer Additive Manufacturing: Probing the Relationship Between Print Conditions and Final Part Fidelity the First-Ever NIST-Characterized Light Engine**
INVITED
Callie I. Higgins¹; Jason Killgore¹; ¹NIST

11:30 AM **Deep Learning Image Analysis Applied to Defects in Additive Manufacturing**
INVITED
Anton Du Plessis^{1,2}; ¹Object Research Systems; ²Stellenbosch University

12:00 PM **LUNCH**

13:30 PM **Predictive Process Parameter Development for Laser Powder Bed Fusion**
INVITED
Priyanshu Bajaj¹; ¹m4p material solutions

14:00 PM **Overcoming the Challenges of Changing Designs, Materials, and 3D Printers with X-Ray CT**
REGULAR
Curtis L. Frederick¹; ¹ZEISS

14:20 PM **Process Optimisation Strategies for Laser Powder Bed Fusion and Directed Energy Deposition**
INVITED
Maria L. Montero-Sistiaga¹; Marc J. de Smit¹; Ralph L. Haagsma¹; Timo Osinga¹; ¹Royal NLR - Netherlands Aerospace Centre

14:50 PM **BREAK**

15:30 PM **Coaxial Monitoring and Closed-Loop Control in Directed Energy Deposition using a Photodiode Array**
INVITED
Samantha A. Webster^{1,2}; Jihoon Jeong²; Alberto Castro³; Lars Jacquemetton³; Jian Cao²; ¹NIST; ²Northwestern University; ³Sigma Additive Solutions

16:00 PM **Advantages of NeuBeam Technology to Electron Beam AM**
INVITED
Peter Hansford¹; Ian Laidler¹; ¹Wayland Additive

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ICAM 2022 TENTATIVE PROGRAM AGENDA

Updated as of 16th September 2022



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PENDING	TBA	11:40 AM	Breaking Away the Challenges of Metal Additive Support Structures Samantha Welch ¹ ; ¹ Lockheed Martin Space
16:30 PM	END OF DAY	REGULAR	
<hr/>			
1ST NOVEMBER 2022			
<hr/>			
08:00 AM	A Design Guide for AM Post Processing Andrew Triantaphyllou ¹ ; Farhan M. Khan ² ; ¹ The Manufacturing Technology Centre (MTC); ² Xerox	12:00 PM	LUNCH
INVITED		13:30 PM	Laser Shock Peening to Tune Fatigue Performance in Laser Powder Bed Fusion Titanium Alloy Nik Hrabe ¹ ; Thomas Berfield ² ; Jake Benzing ¹ ; Newell Moser ¹ ; Orion L. Kafka ¹ ; Nicholas Derimow ¹ ; ¹ NIST; ² University of Louisville
08:30 AM	Influence of Post-Processing Techniques on the Properties of Laser Powder-Bed Fusion AISi10Mg Alloy Mario Guagliano ¹ ; ¹ Politecnico di Milano	14:00 PM	Development of a Roadmap for Computational Materials-Informed Qualification and Certification of Process Intensive Metallic Materials Edward H. Glaessgen ¹ ; Michael Gorelik ² ; ¹ NASA - Langley Research Center (LaRC); ² Federal Aviation Administration (FAA)
INVITED		INVITED	
09:00 AM	Strategizing with Unique Hot Isostatic Pressing Treatments to Increase Productivity during Post-Processing and Take Advantage of Microstructural Heterogeneities in Laser-Melted Inconel 718 Parts Jake Benzing ¹ ; Orion L. Kafka ¹ ; Chad M. Beamer ² ; Philipp Schumacher ³ ; Donald Godfrey ³ ; Nik Hrabe ¹ ; Frank DelRio ⁴ ; ¹ NIST; ² Quintus Technologies; ³ SLM Solutions; ⁴ Sandia National Laboratories	14:30 PM	PBF-LB Process Qualification Jacob Williams ¹ ; Mahdi Jamshidinia ¹ ; Douglas Wells ² ; Mohsen Seifi ¹ ; ¹ ASTM International; ² NASA - Marshall Space Flight Center (MSFC)
INVITED		INVITED	
09:30 AM	Latest Developments in HIP and High-Pressure Heat Treatment for Additive Chad M. Beamer ¹ ; James Shipley ¹ ; ¹ Quintus Technologies	15:00 PM	BREAK
REGULAR		15:30 PM	Additive Manufacturing Process Evaluation for Medical Applications Matthew Di Prima ¹ ; ¹ U.S. Food and Drug Administration (FDA)
09:50 AM	BREAK	REGULAR	
10:30 AM	Understanding and Predicting Distortion in Metal AM Corey Wardrop ¹ ; ¹ Sintavia	15:50 PM	Standard Guide for Density Measurement of Additively Manufactured Parts Mallory S. James ¹ ; Pooriya Dastranjy Nezhadfar ² ; ¹ NASA - Marshall Space Flight Center (MSFC); ² Auburn University
REGULAR		REGULAR	
10:50 AM	Surface Finishing for Metal AM Chris Dalton ¹ ; Annie Kerwin ¹ ; Hoda Amel ¹ ; ¹ The Manufacturing Technology Centre (MTC)	16:10 PM	A New Set of Guidelines for Additive Manufacturing Facility Safety Nick Estock ¹ ; ¹ AddUp
INVITED		REGULAR	
11:20 AM	Support Structure Strategy for Optimal Removal through a Controlled Chemical Process Agustin Diaz ¹ ; Justin Michaud ¹ ; Patrick McFadden ¹ ; Francisco Medina ² ; Bob Markley ³ ; ¹ REM Surface Engineering; ² University of Texas at El Paso; ³ Addman Engineering	16:30 PM	Ergonomic Design of Human-AM Machine Interface SJ Jones ¹ ; ¹ Velo3D
REGULAR		INVITED	
		17:00 PM	END OF DAY

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ICAM 2022 TENTATIVE PROGRAM AGENDA

Updated as of 16th September 2022



CENTER of
EXCELLENCE
Research to Standards

2 ND NOVEMBER 2022		16:30 PM	END OF DAY
13:30 PM INVITED	LPBF Surface Roughness of Gas Turbine Alloys from Multi-Size and Multi-Laser Machines, using Standardized Coupon Geometries Ramesh Subramanian ¹ ; ¹ Siemens Energy		
14:00 PM REGULAR	On the Determination of AM Repeatability and Round Robin Testing: A Retrospective Evan S. Handler ¹ ; Aidan Cowhig ¹ ; Akeel Channer ¹ ; Katherine Fowler ¹ ; Adam Gershen ¹ ; Caroline Vail ¹ ; ¹ Naval Surface Warfare Center (NSWC) - Carderock Division		
14:20 PM REGULAR	Directional Gas Flow Characterization and its Effect on Melt Pool Size in Laser Powder Bed Fusion Jordan S. Weaver ¹ ; David Deisenroth ¹ ; Shawn Moylan ¹ ; Alec Schlenoff ¹ ; ¹ NIST		
14:40 PM INVITED	Tensile Ductility and Fracture of AM Fabricated Inconel 718 with Voided Microstructures at High Strain Rate Paul Wood ¹ ; Urvashi Gunpath ¹ ; Pawel Platek ² ; ¹ University of Derby - Institute for Innovation in Sustainable Engineering (IISE); ² Military University of Technology		
15:10 PM	BREAK		
15:30 PM INVITED	Thickness Size Effects on Laser Powder Bed Fusion and Laser Powder Directed Energy Deposition GRCop-42 Copper Alloy Gabriel Demeneghi ¹ ; Paul R. Gradl ¹ ; Kavan Hazeli ² ; ¹ NASA - Marshall Space Flight Center (MSFC); ² University of Arizona		
16:00 PM INVITED	Shaping Microstructures and Mindsets: The Challenge of Switching Between Different Metal Additive Manufacturing Technologies Eleonora Santecchia ¹ ; Marcello Cabibbo ¹ ; Valerio Di Pompeo ¹ ; Alberto Santoni ¹ ; Stefano Spigarelli ¹ ; ¹ Università Politecnica delle Marche (UNIVPM)		
PENDING	TBA		

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ICAM 2022 TENTATIVE PROGRAM AGENDA

Updated as of 16th September 2022



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AM OF CERAMICS: CHALLENGES & OPPORTUNITIES

CO-ORGANIZERS:

Shawn Allan
Lithoz America, USA
Brandon Cox
Honeywell, USA
Sean Looi
Creatz3D, Singapore

Jason Jones
Moog, USA
Sadaf Sobhani
Cornell University, USA

31ST OCT 2022 (MON)
DOGWOOD (LEVEL 1)
SESSION CHAIR: TBA

10:50 AM **INVITED** **Innovative Zirconia-Based Material Shaped by SLA 3D Printing**
Richard Gaignon¹; Christophe Chaput¹; ¹3DCeram

11:20 AM **INVITED** **3D Printed Geometrically-Complex Ceramic Substrates for Electronics**
Eric MacDonald¹; ¹University of Texas at El Paso

11:50 AM **END OF DAY**

31ST OCTOBER 2022

08:00 AM **INVITED** **3D Printed Ceramic Structures - Properties, Performance and Applications**
Pedro Cortes¹; Eric MacDonald²; Bharat Yelamanchi¹; Bhargavi Mummareddy¹; ¹Youngstown State University; ²University of Texas at El Paso

08:30 AM **INVITED** **Single and Multi-Material 3D Printing of Ceramics: Material Properties and Applications**
Martin Schwentenwein¹; **Shawn Allan²**; ¹Lithoz; ²Lithoz America

09:00 AM **INVITED** **Influence of Post Processing Heat Treatments on the Mechanical Properties of Alumina Made via Lithography-Based Ceramic Manufacturing**
Sarah Boardman¹; Corinne E. Packard¹; ¹Colorado School of Mines

09:30 AM **INVITED** **3D Printing of Transparent Ceramics: Challenges, Mitigation Approaches and Potential Applications**
Chee Lip Gan¹; Zehui Du¹; Li Ying Liu¹; Pengcheng Ye²; ¹Nanyang Technological University (NTU); ²Creatz3D

10:00 AM **BREAK**

10:30 AM **REGULAR** **Mechanical Behavior of 3D Printed Gyroid Ceramic Structures**
Majid Minary¹; Ashley Myles¹; ¹Arizona State University

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ICAM 2022 TENTATIVE PROGRAM AGENDA

Updated as of 16th September 2022



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Research to Standards

AM FOR DEFENSE APPLICATIONS

CO-ORGANIZERS:

Mark Benedict
AFRL, USA
Eric Fodran
Northrop Grumman, USA
Travis Mayberry
Raytheon Missiles
and Defense, USA
Katherine Olson
U.S. Army CCDC-
AvMC, USA

Nam Phan
NAVAIR, USA
Brandon Ribic
NCDMM, USA
Jose Hector Sandoval
Lockheed Martin
MFC, USA

1ST NOV 2022 (TUE)
GRIFFIN A (LEVEL 1)
SESSION CHAIR: TBA

1ST NOVEMBER 2022

08:00 AM
INVITED **Metal Additive Manufacturing for Aerospace Sustainment and Fleet Readiness at Scale**
[Kevin Holder](#)¹; [Nirup Nagabandi](#)¹; [Elisa Teipel](#)¹; ¹Essentium

08:30 AM
INVITED **Hybrid Agile Manufacturing Integration Cells for Future Armaments**
[James L. Zunino, III](#)¹; [David Sabanosh](#)¹; ¹U.S. Army Combat Capabilities Development Command - Armaments Center

09:00 AM
REGULAR **Why it is Easier Said than Done: Sustaining a Legacy Aircraft Fleet with Additive Manufacturing**
[Joseph D. Sirmans](#)¹; ¹Lockheed Martin Aeronautics

09:20 AM
REGULAR **Additive Qualification Approach for Airworthy Defense Applications**
[Lyndsay Kibler](#)¹; ¹GE Additive

09:40 AM
REGULAR **Army AM Night Vision Clip - Path to Part Qualification**
[Daniel Smith](#)¹; [Stacey L. Clark](#)¹; ¹U.S. Army Combat Capabilities Development Command - C5ISR PIF

10:00 AM **BREAK**

10:30 AM
INVITED **Challenges of Adopting Additive Manufacturing in the Industry**
[Travis L. Mayberry](#)¹; ¹Raytheon Missiles and Defense

11:00 AM
INVITED **The Additive Manufacturing Link between Defense and Aerospace**
[Elizabeth Crisler](#)¹; ¹Textron Aviation

11:30 AM
INVITED **Relevance of Additive Manufacturing Standards in Highly Leveraged Process-Structure-Property-Performance Applications**
[Tyler LeBrun](#)¹; ¹Sandia National Laboratories

12:00 PM **LUNCH**

13:30 PM
INVITED **Additive Manufacturing: Adoption and Industrialization Challenges at Lockheed Martin**
[Prabhjot Singh](#)¹; ¹Lockheed Martin Space

14:00 PM
REGULAR **Developing the Workforce of Tomorrow – COMET: A Collaborative Operationalized Manufacturing Education & Training Strategy**
[David Sabanosh](#)¹; [James L. Zunino, III](#)¹; ¹U.S. Army Combat Capabilities Development Command - Armaments Center

14:20 PM
REGULAR **Feasibility of Using Recycled PET Water Bottle Flake as an Additive Manufacturing Feedstock at Forward Operating Bases**
[Samantha Snabes](#)¹; [Helen Little](#)¹; [Richard Heggs](#)²; [Prabhat Krishnaswamy](#)²; ¹re:3D; ²Engineering Mechanics Corporation of Columbus (Emc²)

14:40 PM
REGULAR **Additive Manufacturing of Aluminum Metal Matrix Composites for Defense and Space Applications**
[Ethan Parsons](#)¹; ¹MIT Lincoln Laboratory

15:00 PM **BREAK**

15:30 PM
INVITED **Thermal Aging Study for Additively Manufactured F357 Aluminum**
[Francisco Medina](#)¹; [Edel Arrieta](#)¹; [Mark Benedict](#)²; [Victor Medrano](#)¹; [Kevin Caballero](#)¹; ¹University of Texas at El Paso; ²Air Force Research Laboratory (AFRL)

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ICAM 2022 TENTATIVE PROGRAM AGENDA

Updated as of 16th September 2022



CENTER of
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16:00 PM
INVITED **Effect of Geometrically Seeded
Defects on the Mechanical
Properties and High Cycle Fatigue
Life of Stress Relieved L-PBF
AISI10Mg**
Steven M. Kraft¹; Jose Hector
Sandoval¹; ¹Lockheed Martin Missiles
and Fire Control (MFC)

16:30 PM
INVITED **Fatigue Behavior of Additively
Manufactured Ferrium C64**
Thomas Kozmel¹; Peter Jacobson¹;
Jacqueline Hardin¹; Kerem Taskin¹;
Chris Kantner¹; Jason Fetty²;
¹QuesTek; ²U.S. Army Combat
Capabilities Development Command -
Aviation & Missile Center

17:00 PM **END OF DAY**

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ICAM 2022 TENTATIVE PROGRAM AGENDA

Updated as of 16th September 2022



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AM APPLICATIONS IN AVIATION

CO-ORGANIZERS:

Thomas Broderick
AFRL, USA
Jim Dobbs
Boeing, USA

Michael Gorelik
FAA, USA
Mikkel Pedersen
Oerlikon AM, Germany

1ST NOV 2022 – 2ND NOV 2022 (TUE-WED)
GRIFFIN B (LEVEL 1)
SESSION CHAIR: TBA

1ST NOVEMBER 2022

08:00 AM
INVITED **A User and Developers Perspective on Standards in Additive Manufacturing**
[Jesse R. Boyer](#)^{1,2}; ¹Pratt & Whitney; ²Raytheon Technologies

08:30 AM
INVITED **Joint Metal Additive Database Definition (JMADD) Ti-6Al-4V Additive Manufacturing Qualification Program**
[Joel D. White](#)¹; [Rachael Andrulonis](#)¹; [Royal Lovingfoss](#)¹; ¹Wichita State University - National Institute for Aviation Research (WSU - NIAR)

09:00 AM
INVITED **Best Practice Guide on Part Family Certification for Aviation**
[Alberto Bordin](#)¹; [Mahdi Jamshidinia](#)¹; [Mohsen Seifi](#)¹; [Kirstie Snodderly](#)¹; [Martin White](#)¹; ¹ASTM International

09:30 AM
INVITED **Fatigue Data Generation, Reduction, and Presentation for Metallic Additive Manufacturing**
[Zachary Whitman](#)¹; ¹Boeing - Commercial Airplanes

10:00 AM **BREAK**

10:30 AM
REGULAR **Design Principles and Strategies for Prototyping and Large-Scale Additive Manufacturing**
[Paul R. Toivonen](#)¹; [Daniel R. Klenosky](#)¹; ¹Spirit AeroSystems

10:50 AM
INVITED **Innovative Aerospace and Space Structures Made by Additive Manufacturing**
[Christoph Leyens](#)^{1,2}; [Frank Brückner](#)^{1,3}; [Elena López](#)¹; ¹Fraunhofer Institute for Material and Beam Technology IWS; ²Technische Universität Dresden - Institute of Materials Research; ³Luleå University of Technology

11:20 AM
REGULAR **AM Developments within the Nadcap Program**
[Richard Freeman](#)¹; ¹Performance Review Institute (PRI)

11:40 AM
INVITED **Digital Additive Manufacturing at Boeing**
[Nicholas Mulé](#)¹; [Wentao Fu](#)¹; ¹Boeing

12:10 PM **LUNCH**

13:30 PM
REGULAR **Testing an Additively Manufactured Aircraft Primary Structure for Certification Purposes**
[David Backman](#)¹; [Priti Wanjara](#)¹; [Javad Gholipour](#)¹; [Saksham Jain](#)¹; [Sheida Sarafan](#)¹; [Sila Atabay](#)¹; [Robert Amos](#)¹; ¹National Research Council Canada (NRC Canada)

13:50 PM
INVITED **A Novel Approach for Evaluating Multiple Machine Platforms in Ti6Al4V Laser Powder Bed Fusion**
[Cory Cunningham](#)¹; [Jim Dobbs](#)¹; [Elaine MacDonald](#)¹; [Andrew Steevens](#)¹; [Zachary Whitman](#)¹; ¹Boeing

14:20 PM
REGULAR **Photo-Curing 3D Printing of Sacrificial Tooling for Fabricating Hollow Lightweight Composites**
[Baoming Zhao](#)¹; [Yu-Chung Chang](#)¹; [Cheng Hao](#)¹; [Jinwen Zhang](#)¹; ¹Washington State University - Composite Materials and Engineering Center (WSU - CMEC)

14:40 PM
INVITED **Volumetric Defects in Laser Beam Powder Bed Fused Ti-6Al-4V: Geometric Features, Classification, and Impacts on Short Crack Growth**
[Jia \(Peter\) Liu](#)¹; [Shuai Shao](#)¹; [Nima Shamsaei](#)¹; ¹Auburn University

15:10 PM **BREAK**

15:30 PM
REGULAR **Effect of Processing Parameters on Defect Populations and Fatigue Behavior for AM Aerospace Applications**
[Robert K. Rhein](#)¹; [Kathleen Chou](#)¹; [Jacob Kallivayalil](#)¹; [Harsha Phukan](#)¹; [Nilooofar Sanaei](#)¹; ¹Eaton

15:50 PM
REGULAR **Manufacturing Process Route Simplification: HIP Removal**
[Guillaume Fallot](#)¹; [Johannes Siebert](#)¹; [Andreas Neumann](#)¹; ¹Airbus Helicopters

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ICAM 2022 TENTATIVE PROGRAM AGENDA

Updated as of 16th September 2022



CENTER of
EXCELLENCE
Research to Standards

16:10 PM **Combining Forging and Arc Direct
REGULAR** **Energy Deposition (DED)
Techniques to Produce Dissimilar
Titanium Alloy Aerospace
Components**
Misael Pimentel Espirindio e Silva^{1,2};
Calum Hicks^{1,2}; Scott McKegney²;
Giribaskar Sivaswamy¹; Saeed
Tamimi¹; Stephen Fitzpatrick²;
¹University of Strathclyde - Advanced
Forming Research Centre (AFRC);
²National Manufacturing Institute
Scotland (NMIS)

16:30 PM **L-DED Process Monitoring &
INVITED** **Control Development**
Daniel Driemeyer¹; Baily Thomas¹;
¹Boeing Research & Technology

17:00 PM **END OF DAY**

2ND NOVEMBER 2022

13:30 PM **From Composites to AM: The
REGULAR** **Relationship Between
Specifications and Material Data**
Cindy Ashforth¹; Larry Ilcewicz¹;
¹Federal Aviation Administration
(FAA)

13:50 PM **The Meaning of Process Control for
INVITED** **AM Qualification and Certification
in Aerospace**
Christo Dordlofva¹; Fredrik
Kullenberg¹; ¹GKN Aerospace

14:20 PM **Risk-Based Certification for
INVITED** **Additive Manufacturing PMCs**
Mark D. Flores¹; Dennis Butcher¹;
¹Air Force Research Laboratory
(AFRL) - RXCCP

14:50 PM **BREAK**

15:30 PM **Progress Towards a Standard for
REGULAR** **Rapid Qualification of Additively
Manufactured Materials Based on
Defect Structures**
Krzysztof Stopka¹; Andrew
Desrosiers²; Tyler Nicodemus²; Amber
Andreaco²; Michael D. Sangid¹;
¹Purdue University; ²GE Additive

15:50 PM **Part Classifications for Aviation
INVITED** **Chul (Charles) Park¹; ¹Supernal**

PENDING **TBA**

16:20 PM **END OF DAY**

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ICAM 2022 TENTATIVE PROGRAM AGENDA

Updated as of 16th September 2022



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APPLICATION OF AM IN CONSTRUCTION ON EARTH AND BEYOND

CO-ORGANIZERS:

Michael Fiske
NASA-JSEG, USA

Giada Gasparini
University of Bologna, Italy

Ali Kazemian
Louisiana State
University, USA

Stephan Mansour
MaRiTama, Canada

Sam Ruben
Mighty Buildings, USA

Timothy Wangler
ETH Zürich,
Switzerland

1ST NOV 2022 – 2ND NOV 2022 (TUE-WED)
DOGWOOD (LEVEL 1)
SESSION CHAIR: TBA

1ST NOVEMBER 2022

08:00 AM
REGULAR **An Overview of Additive Construction Technologies for Planetary Surface Infrastructure Development**
[Michael R. Fiske](#)¹; ¹NASA - Jacobs Space Exploration Group (JSEG)

08:20 AM
INVITED **NASA's Moon-to-Mars Planetary Autonomous Construction Technology (MMPACT) Project: Additive Construction for Lunar Infrastructure**
[Raymond G. Clinton, Jr.](#)¹; Jason Ballard²; Jennifer E. Edmunson¹; Michael R. Effinger¹; Michael R. Fiske³; Evan Jensen²; ¹NASA - Marshall Space Flight Center (MSFC); ²ICON; ³NASA - Jacobs Space Exploration Group (JSEG)

08:50 AM
INVITED **Performance Characterization of 3D Printed Materials for Planetary Infrastructure Construction**
[Ali Kazemian](#)¹; Ilerioluwa Giwa¹; Hassan Ahmed¹; Dennis Duong¹; Michael R. Fiske²; ¹Louisiana State University; ²NASA - Jacobs Space Exploration Group (JSEG)

09:20 AM
INVITED **Scaleup of Microwave Powder Bed Fusion for Lunar Infrastructure Construction**
[Michael R. Effinger](#)¹; ¹NASA - Marshall Space Flight Center (MSFC)

09:50 AM **BREAK**

10:30 AM
INVITED **Geopolymer Lunar Concrete Design Utilizing a Response Surface Methodology**
[Aleksandra Radlinska](#)¹; [Peter Collins](#)¹; Jennifer E. Edmunson²; Michael R. Fiske³; ¹Pennsylvania State University; ²NASA - Marshall Space Flight Center (MSFC); ³NASA - Jacobs Space Exploration Group (JSEG)

11:00 AM
INVITED **Additive Manufacture at F+P: On- and Off-Earth Latest Research and Technological Advancements**
[Marina Konstantatou](#)¹; ¹Foster + Partners

11:30 AM
INVITED **Retrofitting and Repairing Printing Defects for 3D Printed Terrestrial and Planetary Structures**
[Hongyu \(Nick\) Zhou](#)¹; [Reese Sorgenfrei](#)¹; Michael R. Fiske²; ¹University of Tennessee, Knoxville; ²NASA - Jacobs Space Exploration Group (JSEG)

12:00 PM **LUNCH**

13:30 PM
INVITED **Additive Construction of Concrete Structures: A Research Roadmap**
[Jose P. Duarte](#)¹; Sven Bilén¹; Nathan Brown¹; Ali Memari¹; Shadi Nazarian¹; Aleksandra Radlinska¹; ¹Pennsylvania State University

14:00 PM
REGULAR **Achieving Urban and Infrastructural Resilience through Large-Scale Additive Construction**
[Michael R. Fiske](#)¹; Melodie Yashar²; ¹NASA - Jacobs Space Exploration Group (JSEG); ²ICON

14:20 PM
REGULAR **Just How Sustainable is 3D Concrete Printing? A Focus on Durability**
[Timothy Wangler](#)¹; ¹ETH Zürich

14:40 PM
INVITED **Additive Manufacturing: A Key Technology Towards Sustainable Construction**
[Harald Kloft](#)¹; [Norman Hack](#)¹; ¹Technische Universität Braunschweig - Institute of Structural Design

15:10 PM **BREAK**

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ICAM 2022 TENTATIVE PROGRAM AGENDA

Updated as of 16th September 2022



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Research to Standards

15:30 PM
INVITED **3D Concrete Printing – Are We There Yet?**
Ming-Jen Tan^{1,2}; Mingyang Li¹; Teck Neng Wong¹; Yi Wei Daniel Tay^{1,2}; ¹Nanyang Technological University (NTU); ²Singapore Centre for 3D Printing (SC3DP)

16:00 PM
REGULAR **Functional Cementitious Composites for Large-Scale Concrete 3D Printing**
Hongyu (Nick) Zhou¹; Yucen Li¹; Adam Brooks²; ¹University of Tennessee, Knoxville; ²Oak Ridge National Laboratory (ORNL)

16:20 PM
REGULAR **Digital Fabrication of Low-Carbon Cementitious Building Blocks: Integration of Waste Brick Aggregates**
Mehdi Chougan¹; Seyed Hamidreza Ghaffar¹; ¹Brunel University London

PENDING TBA

16:40 PM **END OF DAY**

2ND NOVEMBER 2022

13:30 PM
INVITED **First 3D Printed Houses in Canada: Process Management and Lessons Learned**
Fiona Coughlin¹; Sreekanta Das²; Bruno Paini^{1,2}; Marcos Silveira^{2,3}; Suvo Das¹; Pamela Breault¹; ¹Habitat for Humanity Windsor-Essex; ²University of Windsor; ³Universidade de São Paulo

14:00 PM
INVITED **Next Level - Construction 4.0**
Lambertus Nicolaas (Berry) Hendriks¹; ¹CyBe Construction

14:30 PM
REGULAR **3D Printable Translucent Concrete**
Yi Wei Daniel Tay^{1,2}; Ming-Jen Tan^{1,2}; Khalid Mosalam³; Paulo Monteiro⁴; ¹Nanyang Technological University (NTU); ²Singapore Centre for 3D Printing (SC3DP); ³University of California, Berkeley - Pacific Earthquake Engineering Research Center; ⁴University of California, Berkeley

14:50 PM
REGULAR **Optimizing the Rheology of 3D Printable Micro-Concrete**
Gary M. Boon¹; Didier Lootens¹; Sree Nanukuttan²; Marios Soutsos²; ¹Sika; ²Queen's University Belfast

15:10 PM **BREAK**

15:30 PM
INVITED **Structural Performance of 3D Printed Concrete Walls**
Babak Zareiyani¹; Hyun-Chae Loh¹; ¹Black Buffalo 3D

16:00 PM
REGULAR **Additive Construction Concepts and Development with Bridge and Building Applications**
Atorod Azizinamini¹; ¹Florida International University (FIU)

16:20 PM
REGULAR **Experimental and Numerical Results on Three-Point-Bending Tests of Wire-and-Arc Additively Manufactured Stainless Steel Bars**
Vittoria Laghi¹; Giada Gasparini¹; Michele Palermo¹; Tomaso Trombetti¹; ¹University of Bologna - DICAM

16:40 PM
REGULAR **Moment Rotation Characterization for Beam-to-Column WAAM Steel Joint for Structural Engineering Applications**
Zeina AL-Nabulsi¹; ¹University of Warwick

17:00 PM **END OF DAY**

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ICAM 2022 TENTATIVE PROGRAM AGENDA

Updated as of 16th September 2022



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APPLICATION OF AM IN THE MEDICAL INDUSTRY

CO-ORGANIZERS:

Matthew Di Prima

FDA, USA

David Heard

Stryker, USA

Eddie Kavanagh

Johnson & Johnson,

Ireland

Guha Manogharan

Pennsylvania State

University, USA

Michael Roach

University of Mississippi

Medical Center, USA

1ST NOV 2022 – 2ND NOV 2022 (TUE-WED)

CARDINAL (LEVEL 2)

SESSION CHAIR: TBA

1ST NOVEMBER 2022

08:00 AM
INVITED Design for Additive Manufacturing of Medical Devices

Zahra Soltani¹; Mary Frecker¹;

¹Pennsylvania State University

08:30 AM
INVITED Developing an Additive Manufacturing Ecosystem to Meet an Unmet Need

Anthony Jaconelli¹; ¹Stryker

09:00 AM
REGULAR Biomedical Applications of 3D Printing

Bianmei Cao^{1,2}; Ramanathan (Ram) Kadirvel¹; David Kallmes¹; Nureddin Ashammakhi³; ¹Mayo Clinic; ²National Institutes for Food and Drug Control (NIFDC); ³University of California, Los Angeles (UCLA)

09:20 AM
REGULAR Medical Additive Manufacturing: Building the Infrastructure for Innovation

Lauralyn McDaniel¹; ¹Metrix

09:40 AM
INVITED The Development and Evaluation of AM Medical Devices for Total Joint Arthroplasty

Mark L. Morrison¹; ¹Smith+Nephew

10:10 AM **BREAK**

10:30 AM
INVITED How Do We Make Personalization Scalable in Orthopedics?

Cambre Kelly¹; ¹restor3d

11:00 AM
INVITED Melt Electrowriting as a High-Resolution Additive Manufacturing Technology

Paul D. Dalton¹; ¹University of Oregon

11:30 AM
REGULAR Additive Manufacturing Application in Dentistry: A Real time Overview

Richa Pandey¹; Arpita Singh¹; ¹Birla

Institute of Technology, Mesra (BIT

Mesra)

11:50 AM
REGULAR 3D Printed Polymers for Pelvic Organ Prolapse (POP) Treatment

Kenan Song¹; Yuxiang Zhu¹; ¹Arizona

State University

12:10 PM **LUNCH**

13:30 PM
INVITED Development of a Hybrid 3D Printing Strategy for Nipple Reconstruction

Sarah Van Belleghem¹; Bhushan Mahadik¹; Kirstie Snodderly¹; Justine R. Yu¹; Shannon McLoughlin¹; Arthur J. Nam¹; John P. Fisher¹; ¹University of Maryland

14:00 PM
REGULAR Additive Manufacturing of Continuous Carbon Fiber Composites for Orthopedic Fixation Devices

Seyed Hamid Reza Sanei¹;

¹Pennsylvania State University

14:20 PM
INVITED Visible Light 3D Printed Hybrid-Hydrogel Scaffolds for Tissue Engineering

Maryam Tilton¹; Maria Astudillo Potes¹; Emily Camilleri¹; Lichun Lu¹; ¹Mayo Clinic

14:50 PM
REGULAR A Scalable 3D Printed Bioreactor for the Expansion of Anchorage-Dependent Stem Cells

Kreg Zimmern¹; Jian Ling¹;

¹Southwest Research Institute

15:10 PM **BREAK**

15:30 PM
REGULAR Patient-Matched Cranial Plate Manufacturing with FDM Printing of PEEK. Introduction of an End-to-End-Solution Including Regulatory Data, Cost-Saving Opportunities and Reduction of Waste

Martin Herzmann¹; ¹Kumovis

15:50 PM
INVITED Considerations for Regulating Point of Care Manufacturing of Medical Devices: Australia's Approach

Uphar Chamoli¹; Rebecca Bateson¹;

¹Therapeutic Goods Administration (TGA)

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ICAM 2022 TENTATIVE PROGRAM AGENDA

Updated as of 16th September 2022



CENTER of
EXCELLENCE
Research to Standards

16:20 PM **Technical Challenges of Point of
INVITED** **Care Additive Manufacturing – The
Veterans Health Care Perspective**
Beth A. Ripley¹; Dmitry Levin¹;
¹Veterans Health Administration

16:50 PM **END OF DAY**

2ND NOVEMBER 2022

13:30 PM **Influence of Topology Optimization
INVITED** **Parameters on the Mechanical
Response of an Additively
Manufactured Test Structure**
Daniel Porter¹; Myung Kyun Sung²;
¹U.S. Food and Drug Administration
(FDA); ²Oak Ridge Institute for
Science and Education (ORISE)

14:00 PM **Build Parameter Influence on Strut
INVITED** **Thickness and Mechanical
Response in AM Titanium Lattices**
Matthew Di Prima¹; ¹U.S. Food and
Drug Administration (FDA)

14:30 PM **Overcoming Orthopedic Implants
INVITED** **Limitations using Additive
Manufacturing**
Swee Leong Sing¹; ¹National
University of Singapore (NUS)

15:00 PM **BREAK**

15:30 PM **Amorphous Alloys – The Transition
INVITED** **from Scientific Innovation to
Validated Medical Application**
Valeska Melde¹; Jürgen Wachter¹;
¹Heraeus AMLOY

16:00 PM **Magnesium Alloy Design for
INVITED** **Additive Manufacturing of
Biodegradable Implants**
Mert Celikin¹; Eoin O’Cearbhaill¹;
¹University College Dublin

16:30 PM **Advances in Bio-Additive
INVITED** **Manufacturing for Biomimetic
Engineered Tissue Design**
Rohan Shirwaiker¹; ¹North Carolina
State University

17:00 PM **END OF DAY**

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ICAM 2022 TENTATIVE PROGRAM AGENDA

Updated as of 16th September 2022



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MECHANICAL TESTING OF AM MATERIALS

CO-ORGANIZERS:

Joy Gockel
Colorado School
of Mines, USA
Edward Herderick
Ohio State
University, USA
Robert Lancaster
Swansea
University, UK

Jason Jyi Sheuan Ten
A*STAR-SIMTech,
Singapore
Phuong (Jonathan) Tran
RMIT University,
Australia

1ST NOV 2022 – 2ND NOV 2022 (TUE-WED)
IBIS (LEVEL 2)
SESSION CHAIR: TBA

1ST NOVEMBER 2022

08:00 AM
INVITED
Surface Features and their Impact upon High Cycle Fatigue Behavior of Laser Powder Bed Fusion IN718
[Orion L. Kafka](#)¹; Chad M. Beamer²; Jake Benzing¹; Donald Godfrey³; Nikolas Hrabec¹; Philipp Schumacher³; ¹NIST; ²Quintus Technologies; ³SLM Solutions

08:30 AM
INVITED
Mechanical Polishing & Inspection of LPBF Surfaces to Achieve Bulk Material Properties for Nuclear Plant Components
[Thomas S. Jones](#)¹; ¹Rolls-Royce Submarines

09:00 AM
INVITED
Derivation of Mechanical Properties of Additive Manufactured Materials using Alternative Small Scale Test Methods
[Robert J. Lancaster](#)¹; Spencer Jeffs¹; Nicholas Barnard¹; Ben Haigh¹; Zachariah Nye¹; Elizabeth Sackett¹; Daniel Britton¹; ¹Swansea University

09:30 AM
INVITED
Influence of Precipitates on Fatigue Behavior In Wire Arc Additive Manufactured Nickel-Aluminum-Bronze
[Ariel D. Murphy-Leonard](#)¹; Veronika Mazanova¹; ¹Ohio State University

10:00 AM **BREAK**

10:30 AM
INVITED
Criticality of Defect Features in Failure of Additively Manufactured Components
[Christopher J. Saldaña](#)¹; Elliott Jost¹; Caroline Massey¹; John Miers¹; David Moore²; ¹Georgia Institute of Technology; ²Sandia National Laboratories

11:00 AM
REGULAR
Influence of Artificial Defects on Quasi-Static and Fatigue Tensile Testing of Additively Manufactured Ti6Al4V
[Anton Du Plessis](#)^{1,2}; ¹Object Research Systems; ²Stellenbosch University

11:20 AM
INVITED
Creep Performance of Additively Manufactured In718 Ni-Based Superalloy
[Aijun Huang](#)¹; Peter Hodgson²; Yuman Zhu¹; Shun Wu¹; ¹Monash University; ²Deakin University

11:50 AM **LUNCH**

13:30 PM
REGULAR
Mechanical Testing of Net-Shape Specimens from Powder Bed Fusion-Laser Beam Manufactured Superalloy Hastelloy X
[Håkan S. Brodin](#)¹; ¹Siemens Energy

13:50 PM
REGULAR
The Effect of Porosity on Profilometry-Based Indentation Plastometry (PIP), A Technique to Measure Stress-Strain Curves from Indentation
[Jimmy E. Campbell](#)¹; Rebecca Reiff-Musgrove¹; John Reidy²; Aadithya Chitrapur²; Animesh Bose²; Bill Clyne¹; ¹Plastometrex; ²Desktop Metal

14:10 PM
INVITED
Developments of Mechanical Testing of AM Materials within High Pressure Heat Exchanger Design & Manufacture
[William Sexton](#)¹; Tom Halhead¹; ¹HiETA Technologies

14:40 PM
REGULAR
Identifying Specimen Design for Compression Testing of Metallic Lattice Structures
[Arash Soltani-Tehrani](#)¹; Nima Shamsaei¹; David Hwang²; Jonathan Pegues³; Cambre Kelly⁴; ¹Auburn University; ²U.S. Food and Drug Administration (FDA); ³Sandia National Laboratories; ⁴restor3d

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ICAM 2022 TENTATIVE PROGRAM AGENDA

Updated as of 16th September 2022



CENTER of
EXCELLENCE
Research to Standards

15:00 PM **BREAK**

15:30 PM **REGULAR**
Specimen Geometry and Shielding Gas Effects on the Fatigue Behavior of LB-PBF 17-4PH Stainless Steel in the High Cycle and Very High Cycle Fatigue Regimes
Jutima Simsiriwong¹; Pooriya Dastranjy Nezhadfar²; Jade Welsh¹; Indrajit Nandi²; Shuai Shao²; Nima Shamsaei²; ¹University of North Florida; ²Auburn University

15:50 PM **REGULAR**
Overview of 4008 Aluminum Printed using Liquid Metal AM
Colin Fletcher¹; Miranda Moschel¹; ¹Xerox

16:10 PM **REGULAR**
Mechanical Behavior of 7050 Aluminum AM Lattice Structures
Ben DiMarco¹; Jeremy Seidt¹; Noah Gula¹; Edward Herderick¹; ¹Ohio State University

16:30 PM **INVITED**
AlSi10Mg and A205 Aluminum Alloys: Processing Route (Casting and Laser Powder Bed Fusion), Microstructure, and Mechanical Properties
Meysam Haghshenas¹; ¹University of Toledo

17:00 PM **END OF DAY**

2ND NOVEMBER 2022

13:30 PM **INVITED**
As-Printed Additive Manufacturing Miniature Tensile Specimen with 25 mm Total Length
Jason Jyi Sheuan Ten¹; Ming Quan Zheng²; Wen Jie Goh²; Chen Heng Lee²; ¹A*STAR - Singapore Institute of Manufacturing Technology (SIMTech); ²Professional Testing Services

14:00 PM **REGULAR**
Investigation of Tensile Specimen Out-of-Gage Failures in Additively Manufactured Polymers
Christopher J. Murphy¹; Britt Helten¹; ¹University of Maine - Advanced Structures & Composites Center (ASCC)

14:20 PM **REGULAR**
Section Area and Archimedes Density Estimation for Thin Wall Laser Powder Bed Fusion Mechanical Test Specimens
Dhruv Bhate¹; Daniel Bruce¹; Paul Paradise¹; ¹Arizona State University

14:40 PM **INVITED**
Translating Fatigue Testing of Subtractive Parts to Additive Manufactured Parts (Medical Devices): Lessons Learned
Dawn Lissy¹; Stacey Barber¹; ¹Empirical Technologies

15:10 PM **BREAK**

15:30 PM **INVITED**
Development and Mechanical Characterisation of Additively Manufactured Cellular Metamaterials at Different Strain Rates
Nejc Novak¹; Oraib Al-Ketan²; Matej Vesenjak¹; Zoran Ren¹; ¹University of Maribor; ²New York University Abu Dhabi

16:00 PM **INVITED**
Qualification of Low-Criticality AM Components in an Expeditionary Environment
Jonathan Torres¹; Jacob Aljundi²; Zach Heinkel²; Sam Pratt²; ¹Bucknell University; ²Naval Surface Warfare Center (NSWC) - Carderock Division

16:30 PM **INVITED**
A Comparative Study on Tensile Properties of Additively Manufactured Ni-Base Superalloys from Cryogenic to Elevated Temperatures
Seyed Reza Ghiaasiaan¹; Paul R. Gradl²; Shuai Shao¹; Nima Shamsaei¹; ¹Auburn University; ²NASA - Marshall Space Flight Center (MSFC)

17:00 PM **END OF DAY**

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ICAM 2022 TENTATIVE PROGRAM AGENDA

Updated as of 16th September 2022



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INDUSTRY 4.0: DATA MANAGEMENT FOR AM

CO-ORGANIZERS:

Amber Andreaco
GE Additive, USA
Matthew Jacobsen
AFRL, USA
Alex Kitt
EWI, USA

Yan Lu
NIST, USA
Nick Parry
Authentise, USA

1ST NOV 2022 (TUE)
OSPREY (LEVEL 2)
SESSION CHAIR: TBA

1ST NOVEMBER 2022

08:00 AM
INVITED
The Benefits of Making Additive Data Findable, Accessible, Interoperable, and Reusable
[Francis Raymundo](#)¹; [Hunter Macdonald](#)¹; [Matthew Jacobsen](#)²;
¹Hexagon Manufacturing Intelligence - MSC Software; ²Air Force Research Laboratory (AFRL)

08:30 AM
INVITED
Semantic Models for Accelerating AM Process Parameter Development and Data Sharing
[Kareem S. Aggour](#)¹; [Amber Andreaco](#)²; [Vipul K. Gupta](#)¹; ¹GE Research; ²GE Additive

09:00 AM
INVITED
Additively Manufactured Material Databases
[Rachael M. Andrulonis](#)¹; ¹Wichita State University - National Institute for Aviation Research (WSU - NIAR)

09:30 AM
INVITED
Additive Manufacturing Data Integration and Metadata Management for Continuous Process Improvement
[Yan Lu](#)¹; [Milica Perisic](#)¹; ¹NIST

10:00 AM
BREAK

10:30 AM
INVITED
Increased Process Stability by Transforming Data into Useful Knowledge
[Peter Lindecke](#)¹; ¹Fraunhofer Research Institution for Additive Manufacturing Technologies IAPT

11:00 AM
REGULAR
Making a Case for Data Continuity in Additive Manufacturing
[Alexandre Donnadieu](#)¹; [Devin Culham](#)¹; ¹YOURMIND

11:20 AM
INVITED
Delivering Repeatability and Sustainability through Digital Rule Enforcement
[Celina Gratton](#)¹; ¹Authentise

11:50 AM
LUNCH

13:30 PM
INVITED
AM Data Management for MMPDS – An Aerospace Approach
[Doug Hall](#)¹; [Jana Rubadue](#)¹; [Carinne Shannon](#)¹; ¹Battelle Memorial Institute

14:00 PM
INVITED
An Extensible File Format to Describe Multi-Source Powder Bed Fusion Build Plans
[David Toledano](#)¹; [Christopher Immer](#)¹; [Edwin Schwalbach](#)²; [Adam Hicks](#)²;
¹GE Research; ²Air Force Research Laboratory (AFRL)

14:30 PM
REGULAR
Technical and Intellectual Property Authentication and Protection for Additive Manufacturing
[Jérémie Farret](#)^{1,2}; [Zbigniew Sagan](#)³;
¹Inmind Technologies; ²Mind in a Box; ³Advanced Track & Trace

14:50 PM
REGULAR
Ensuring Quality of Additive Manufacturing Process via Trusted Traceable Records on the Blockchain
[Juan Carlos Flores](#)¹; [Mikhail Gladkikh](#)¹; [Carlo De Bernardi](#)²; [Jack Harvey](#)¹; [Faisal Iqbal](#)¹; [Maria Onufrow](#)³; [Hernan Rincon](#)²; [Enzo Savino](#)²; ¹Baker Hughes; ²ConocoPhillips; ³Data Gumbo

15:10 PM
BREAK

15:30 PM
INVITED
An Intelligent Data Infrastructure for Additive Manufacturing
[Shengyen Li](#)¹; ¹Southwest Research Institute (SwRI)

16:00 PM
REGULAR
Unlocking 3D Data from Additive Manufacturing
[Jay Marshall](#)¹; ¹Physna

16:20 PM
INVITED
Achieving Materials Intelligence by Capturing and Managing Additive Manufacturing Data
[Sak Arumugam](#)¹; [Austin Flanary](#)¹;
¹Ansys

16:50 PM
END OF DAY

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ICAM 2022 TENTATIVE PROGRAM AGENDA

Updated as of 16th September 2022



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ECONOMICS AND SUSTAINABILITY OF AM

CO-ORGANIZERS:

Olaf Diegel
University of Auckland,
New Zealand

Gary Ng
A*STAR-ARTC, Singapore

Behrang Poorganji
Morf3D, USA
Nicolas Sabo
General Electric, USA

2ND NOV 2022 (WED)
GRIFFIN A (LEVEL 1)
SESSION CHAIR: TBA

2ND NOVEMBER 2022

13:30 PM
REGULAR **Financial Analysis of Additive Manufacturing in the Department of Defense: Governing and Heuristic Equations**
[Stephen Kuhn-Hendricks](#)¹; Ernesto Ureta¹; William Peterson¹; Timothy Vorakoumane¹; ¹NAVSUP Weapon Systems Support (NAVSUP WSS) - Navy Price Fighters

13:50 PM
INVITED **Is the Notion of Sustainably Going to Cost My Organization More Money with Additive Manufacturing?**
[Greg Kline](#)¹; Eric Bono¹; ¹6K Additive

14:20 PM
REGULAR **Proving Additive Manufacturing Supports a Sustainable Future**
[Anna D'Alessio](#)¹; ¹Ivaldi

14:40 PM
REGULAR **Decarbonization: A Framework to Assess Sustainability of Additive Manufacturing on the Supply Chain**
[Jie Lun Tan](#)¹; Aditya Bose²;
¹ShipParts.com; ²American Bureau of Shipping (ABS)

15:00 PM **BREAK**

15:20 PM
INVITED **Life Cycle Assessment for Laser Powder Bed Fusion**
[Jasmin Saewe](#)¹; Christian Weiß¹;
Daniel Heußen¹; ¹Fraunhofer Institute for Laser Technology ILT

15:50 PM
REGULAR **Comparative Life Cycle Environmental Assessment of Aluminium, Titanium and Steel Components Manufactured by Wire Arc Additive Manufacturing**
[Filomeno Martina](#)¹; Emanuele Pagone²; ¹WAAM3D; ²Cranfield University

16:10 PM
REGULAR **Decoupling Resolution and Throughput: How to Achieve Faster Build Rates through Large Area LPBF**
[James DeMuth](#)¹; ¹Seurat

16:30 PM
REGULAR **Recyclability of Metal Powder in Direct Energy Deposition: A Case of Manufacturing Multi Material Rocket Nozzle**
[Jongwon Lim](#)¹; Jihyun Jang¹; Seokjin Shin¹; ¹InssTek

16:50 PM
REGULAR **Powder Processing Enhancements of 3D Building**
[Yuefeng Luo](#)¹; Stephen P. Harris¹;
Jasmine McKenzie¹; ¹Savannah River National Laboratory

17:10 PM **END OF DAY**

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ICAM 2022 TENTATIVE PROGRAM AGENDA

Updated as of 16th September 2022



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ROBOTICS, AUTOMATION AND ADDITIVE MANUFACTURING

CO-ORGANIZERS:

Mike Bearman
Vecna Robotics,
USA

Joseph Falco
NIST, USA

Philip L. Freeman
Boeing, USA

Adam Norton
University of Massachusetts
Lowell, USA

Aaron Prather
FedEx, USA

**2ND NOV 2022 (WED)
OSPREY (LEVEL 2)
SESSION CHAIR: TBA**

2ND NOVEMBER 2022

13:30 PM
INVITED
Industrialization of AM through Digitalization
Tim Bell¹; ¹Siemens Digital Industries

14:00 PM
INVITED
Improving Additive Manufacturing with Robots and Artificial Intelligence
Satyandra K. Gupta¹; ¹University of Southern California

14:30 PM
REGULAR
Automating Additive Manufacturing: The AGV in SLS
Kristin Mulherin¹; ¹Nexa3D

14:50 PM
REGULAR
The Journey to Serial Production – Automation as Key Success Factor for Increasing Productivity and Safety
Mario Schafnitzel¹; Oliver Elbert¹; Frédéric Erben¹; ¹Grenzebach Maschinenbau

15:10 PM
BREAK

15:30 PM
INVITED
Influence of Automation and Digitization on OEE KPIs of Additive Manufacturing Production Facilities
Marius Lakomic¹; ¹EOS

16:00 PM
REGULAR
Developing Processes for Integrating Hybrid Advanced Manufacturing Equipment for Streamlining the Production of DoD Commodity Items
Matthew Brauer¹; Hayley Katz¹; David Sabanosh¹; Tim Swaszek²; James Zunino¹; ¹U.S. Army Combat Capabilities Development Command - Armaments Center; ²AURA

16:20 PM
REGULAR
Laser Line Scanner Benchmarking and Automation of Laser Scanning
Bhupesh Verma¹; Jan Bremer²; Stefan Reich¹; Johannes Henrich Schleifenbaum¹; ¹RWTH Aachen University - Digital Additive Production DAP; ²BCT Steuerungs- und DV-Systeme

16:40 PM
REGULAR
Mechanical Evaluation of Topology- and Toolpath-Optimized Composite Structures Manufactured via Multi-Axis Material Extrusion
Joseph R. Kubalak¹; Christopher B. Williams¹; ¹Virginia Tech - DREAMS Lab

17:00 PM
INVITED
Closed-Loop Additive Manufacturing (AM) with Automated Metrology
Mingu Kang¹; ¹ARIS Technology

17:30 PM
END OF DAY

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ICAM 2022 TENTATIVE PROGRAM AGENDA

Updated as of 16th September 2022



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NON-DESTRUCTIVE EVALUATION METHODS FOR AM

CO-ORGANIZERS:

Alphons Antonysamy

GKN Aerospace, UK

Anton Du Plessis

Stellenbosch University,

South Africa / Object

Research Systems, Canada

Ben Dutton

The MTC, UK

Patrick Howard

GE Aviation, USA

3RD NOV 2022 – 4TH NOV 2022 (THU-FRI)

GRIFFIN A (LEVEL 1)

SESSION CHAIR: TBA

3RD NOVEMBER 2022

08:00 AM
INVITED

Role of Nondestructive Evaluation (NDE) and In Situ Process Monitoring in Managing Risk of Additive Manufactured (AM) Space Hardware
[Erin L. Lanigan](#)¹; ¹NASA - Marshall Space Flight Center (MSFC)

08:30 AM
INVITED

Enabling CT for AM: ASTM E07.01 – Overview of Subcommittee on Radiology (X and Gamma) Method
[Trey Gordon](#)¹; ¹PNW Digital X-Ray Consulting

09:00 AM
INVITED

Quality in Additive Manufacturing – Challenges, Opportunities and Progressions for NDE
[Wilson Vesga Rivera](#)¹; Ben Dutton¹;
¹The Manufacturing Technology Centre (MTC)

09:30 AM
INVITED

Novel Approaches for Quality Control and Strength Estimation of AM Fatigue Properties
[Simone Romano](#)¹; ¹Avio Aero

10:00 AM

BREAK

10:30 AM
INVITED

NDT for Emerging New Applications
[Ben Dutton](#)¹; [Wilson Vesga](#)¹; [Sandra Cabeza](#)²; [Ranggi Ramadhan](#)²; [Julian Wright](#)³; ¹The Manufacturing Technology Centre (MTC); ²Institut Laue-Langevin (ILL); ³Theta Technologies

11:00 AM
REGULAR

Evaluation of the Influence of Additive Manufacturing Process Parameters on Parts' Porosity using X-Ray Computed Tomography
[Shengkai Yu](#)¹; [Huiyuan Qu](#)¹; [Shihua Wang](#)¹; ¹A*STAR - National Metrology Centre (NMC)

11:20 AM
REGULAR

X-Ray Computed Tomography of Directed Energy Deposition Builds: New Mathematical Techniques to Analyze 3D Pore Morphology
[Orion L. Kafka](#)¹; [Jian Cao](#)²; [Edward Garboczi](#)¹; [Samantha Webster](#)²; [Newell Moser](#)¹; ¹NIST; ²Northwestern University

11:40 AM
INVITED

Developing X-Ray Computed Tomography Phantom and Data with Controlled Flaws
[Felix H. Kim](#)¹; [Edward J. Garboczi](#)¹; [Nikolai N. Klimov](#)¹; [Adam L. Pintar](#)¹; [Sarah M. Robinson](#)¹; [John Henry J. Scott](#)¹; ¹NIST

12:10 PM

LUNCH

13:30 PM
INVITED

Inspection Simulation to Enhance the Reliability and Validity of Automated X-Ray Data Analysis
[Robert A. Culver](#)¹; ¹The Manufacturing Technology Centre (MTC)

14:00 PM
REGULAR

Probability of Detection and Validation of X-Ray Computed Tomography of Additively Manufactured Ti-6Al-4V and AF-9628 Alloys
[Griffin Jones](#)¹; [Rachel Reed](#)²; [Veeraraghavan Sundar](#)²; [Jayme Keist](#)¹;
¹Pennsylvania State University - Applied Research Laboratory (PSU - ARL); ²UES

14:20 PM
INVITED

Quality and NDE in Metal Powder Bed Fusion
[Martin White](#)¹; [Paul Bates](#)¹; [Shane Collins](#)¹; [Steve James](#)²; [Youping Gao](#)²;
¹ASTM International; ²Castheon

14:50 PM
REGULAR

Approaches for Assessing the Capability of X-Ray Computed Tomography for Anomaly Detection in Additive Manufacturing
[Anjali Singhal](#)¹; [Patrick Howard](#)¹; ¹GE Aviation

15:10 PM

BREAK

15:30 PM
INVITED

X-Ray Based Inspection Routines for Additively Manufactured Parts
[Niils Achilles](#)¹; ¹YXLON

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ICAM 2022 TENTATIVE PROGRAM AGENDA

Updated as of 16th September 2022



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16:00 PM
REGULAR **Measuring the Fidelity of Additively Manufactured Parts: X-Ray Tomography and the Principal Axes of Inertia**
Edward Garboczi¹; Hajar Afarani²; Joseph Biernacki²; Ebrahim Esfahani²; Newell Moser¹; ¹NIST; ²Tennessee Technological University

16:20 PM
REGULAR **Considerations for Inspection of Additively-Manufactured Parts with Ultrasonic Testing (UT) and the Total Focusing Method (TFM)**
George D. Connolly¹; John P. Shingledecker¹; Anand Kulkarni²; Alex Bridges¹; Jeffrey L. Crandall³; ¹Electric Power Research Institute (EPRI); ²Siemens Energy; ³Connecticut Center for Advanced Technology (CCAT)

16:40 PM
INVITED **Resonance-Based Acoustic/Ultrasonic Testing for AM Quality Control**
Parisa Shokouhi¹; ¹Pennsylvania State University

17:10 PM **END OF DAY**

4TH NOVEMBER 2022

08:00 AM
INVITED **Process Compensated Resonance Testing for Reduction of Mechanical Testing Burden in AM Process Qualification, Monitoring and Control**
Eric Biedermann¹; Julieanne Heffernan¹; Ira Widmayer²; Niklas Höhn¹; Martin Bach²; Leanne Jauriqui¹; Thomas Köhler¹; ¹Vibrant; ²Airbus Helicopters

08:30 AM
REGULAR **CT Based Geometrical Analysis of Process Induced Defects in Thin Lattice Struts**
Philip Sperling¹; Frederik Coppens²; Moritz Ellenberger³; Guillaume Meyer³; Christian Mittelstedt³; Damiano Pasini⁴; ¹Volume Graphics; ²TESCAN XRE; ³Technical University of Darmstadt; ⁴McGill University

08:50 AM
REGULAR **Automated Laser Ultrasonic Phased Arrays for the Rapid Defect Detection within As-Deposited AM Components**
Don M. Pieris¹; Geo Davis¹; Peter Lukacs¹; Panagiotis Kamintzis¹; Theodosia Stratoudaki¹; Charles N. MacLeod¹; Stephen G. Pierce¹; Adam T. Clare²; Stewart Williams³; ¹University of Strathclyde; ²University of Nottingham; ³Cranfield University

09:10 AM
INVITED **In-Situ Monitoring for Additive Manufacturing: Towards Quality-as-you-Build**
Paul Hooper¹; ¹Imperial College London

09:40 AM
REGULAR **Towards Building and Inspecting Larger AM Parts In Situ via Hybrid Manufacturing**
Jason B. Jones¹; ¹Hybrid Manufacturing Technologies

10:00 AM **BREAK**

10:30 AM
INVITED **Additive Manufactured Metals: Execution of Non-Destructive Testing in Production**
Philip Riegler¹; ¹Norsk Titanium

11:00 AM
REGULAR **The Impact of Inter Layer Time on the Triaxial Residual Stress in Laser Powder Bed Fused 316L**
Alexander Evans¹; Simon Altenburg¹; Giovanni Bruno¹; Thomas Kannengiesser¹; Gunther Mohr¹; Thilo Pirling²; Itziar Serrano-Munoz¹; Maximilian Sprengel¹; ¹Bundesanstalt für Materialforschung und -prüfung (BAM); ²Institut Laue-Langevin (ILL)

11:20 AM
INVITED **Inconel 625 L-PBF Part Categorization by Process Parameters using Resonant Ultrasound Spectroscopy**
Anne-Françoise Obaton¹; Gregory Weaver²; Lucas Fournet-Fayard¹; Charles Cayron¹; Florian Montagner³; Olivier Burnet⁴; Alex Van den Bossche⁴; ¹Laboratoire National de Métrologie et d'Essais (LNE); ²WeaverNDT; ³Baker Hughes Digital Solutions; ⁴GrindoSonic

11:50 AM **LUNCH**

13:30 PM
INVITED **In-Situ Evaluation of Part Defects in Powder Laser Metal Deposition using Statistical Process Control**
Atakan Sahin¹; Pilar Rey²; George Panoutsos¹; ¹University of Sheffield; ²AIMEN Technology Centre

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ICAM 2022 TENTATIVE PROGRAM AGENDA

Updated as of 16th September 2022



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14:00 PM
INVITED **Developments of In-Process NDE Techniques for Wire + Arc Additive Manufacture at University of Strathclyde**
Stephen G. Pierce¹; Charles N. MacLeod¹; Ehsan Mohseni¹; Randika Wathavana Vithanage¹; Theodosia Stratoudaki¹; Yashar Javadi¹; Rastislav Zimmermann¹; Euan Foster¹; Momchil Vasilev¹; Charalampos Loukas¹; David Lines¹; Peter Lukacs¹; Geo Davis¹; Don Pieris¹; Panagiotis Kamintzis¹; Muhammad Rizwan¹; Anthony Gachagan¹; Stephen Fitzpatrick^{1, 2}; Misael Pimentel Espirindio e Silva^{1, 2}; Scott McKegney^{1, 2}; Kenneth Burnham^{1, 2}; William Kerr^{1, 2}; ¹University of Strathclyde; ²National Manufacturing Institute Scotland (NMIS)

14:30 PM
INVITED **Application of In Situ X-Ray Imaging of Metal Powders, Powder Bed Fusion Process, and its Manufactured Components**
Chu Lun Alex Leung¹; Yuze Huang¹; Samuel J. Clark²; David Rees¹; Samy Hocine¹; Sebastian Marussi¹; Marta Majkut³; Alexander Rack³; Peter D. Lee¹; ¹University College London (UCL); ²Argonne National Laboratory (ANL); ³European Synchrotron Radiation Facility (ESRF)

15:00 PM **BREAK**

15:30 PM
INVITED **Use of a Modified IQI Standard – A Way Forward in NDI of Metallic AM Parts?**
Josef Spachtholz¹; Andreas Fischersworing-Bunk¹; Stefan Neuhäusler¹; Josef Spachtholz¹; ¹MTU Aero Engines

16:00 PM
INVITED **In-Process Monitoring and Nondestructive Testing of AM: Lessons Learned from ASTM WK73289**
Brandon M. Lane¹; Surendra Singh²; Darren P. Beckett³; Lars Jacquemetton³; Scott Gold⁴; Erin L. Lanigan⁵; Steve James⁶; Abdalla R. Nassar⁷; ¹NIST; ²Honeywell; ³Sigma Additive Solutions; ⁴GE Aviation; ⁵NASA - Marshall Space Flight Center (MSFC); ⁶Castheon; ⁷John Deere

16:30 PM **END OF DAY**

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ICAM 2022 TENTATIVE PROGRAM AGENDA

Updated as of 16th September 2022



CENTER of
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Research to Standards

MICROSTRUCTURAL ASPECTS OF AM

CO-ORGANIZERS:

Jonathan Pegues
Sandia National
Laboratories, USA
Shuai Shao
Auburn University,
USA

Swee Leong Sing
National University of
Singapore (NUS), Singapore
Chantal Sudbrack
National Energy Technology
Laboratory (NETL), USA

3RD NOV 2022 – 4TH NOV 2022 (THU-FRI)
GRIFFIN B (LEVEL 1)
SESSION CHAIR: TBA

3RD NOVEMBER 2022

08:00 AM
INVITED
In-Situ Microstructural Characterization of Additively Manufactured Lattice Structures
[Donald W. Brown](#)¹; Nathan S. Johnson²; Maria Strantz³; Jenny Wang³; Manylibo Matthews³; Jun-Sang Park⁴; Peter Kenesei⁴; ¹Los Alamos National Laboratory (LANL); ²SLAC National Accelerator Laboratory; ³Lawrence Livermore National Laboratory (LLNL); ⁴Argonne National Laboratory (ANL)

08:30 AM
INVITED
Crystallographic Texture of DED AM Ti64 Revealed by Large-Area Quantitative Polarized-Light Microscopy
[Brian G. Hoover](#)¹; Jonathan W. Pegues²; Cesar H. Ornelas-Rascon¹; Andrew B. Kustas²; ¹Advanced Optical Technologies (AOT); ²Sandia National Laboratories

09:00 AM
INVITED
2D & 3D In-Situ Characterization of Metal AM Microstructure using SEM and X-Ray Diffraction Contrast Tomography
[Pradeep Bhattad](#)¹; Curtis Frederick¹; ¹ZEISS

09:30 AM
REGULAR
Melt Pool Analysis on PBF-LB/M Produced Stepped Samples Dependent on the Exposure Order
[Lisa Kersting](#)¹; Johannes Henrich Schleifenbaum²; Adrian Jacob³; ¹Siemens Energy; ²RWTH Aachen University - Digital Additive Production DAP; ³Technische Universität Berlin

09:50 AM
REGULAR
Microstructure of Extra Fine Feature Copper Alloy Parts Additively Manufactured through a High-Resolution Laser Powder Bed Fusion System
[Jason Jyi Sheuan Ten](#)¹; Junwei Tan¹; Fern Lan Ng¹; Hang Li Seet¹; Mui Ling Sharon Nai¹; ¹A*STAR - Singapore Institute of Manufacturing Technology (SIMTech)

10:10 AM
BREAK

10:30 AM
INVITED
Micromechanical Modeling of Porosity Defects in Additively Manufactured Alloys
[Krzysztof Stopka](#)¹; Michael D. Sangid¹; ¹Purdue University

11:00 AM
INVITED
Simulating Additive Manufacturing with SPPARKS – Process Modeling for Realistic 3D Microstructures
[Theron M. Rodgers](#)¹; Fadi Abdeljawad²; Joseph E. Bishop¹; Judith A. Brown¹; Kyle Johnson¹; Hojun Lim¹; Jonathan D. Madison¹; John A. Mitchell¹; Daniel Moser¹; Veena Tikare¹; Jeremy Trageser¹; ¹Sandia National Laboratories; ²Clemson University

11:30 AM
INVITED
Microstructural Control of Functional Structural Materials through Innovations in Additive Manufacturing
[Changquan Lai](#)¹; ¹Nanyang Technological University (NTU)

12:00 PM
LUNCH

13:30 PM
INVITED
Materials-by-Design Approach for Steels Tailored Towards Additive Manufacturing
[Amit Behera](#)¹; Greg Olson¹; Abhinav Saboo¹; ¹QuesTek

14:00 PM
INVITED
Leveraging Microstructure-Informed Design to Mitigate Manufacturing Risk
[Amberlee Haselhuhn](#)¹; David Hicks¹; ¹LIFT

14:30 PM
INVITED
Development of Advanced 3D Printed Light Metal Structural Materials Assisted by AI/MGI
[Che-Nan Kuo](#)¹; ¹National Sun Yat-sen University

15:00 PM
BREAK

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ICAM 2022 TENTATIVE PROGRAM AGENDA

Updated as of 16th September 2022



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Research to Standards

15:30 PM
INVITED
Advanced Materials and Manufacturing Development for Heat Exchanger Applications: Microstructural Comparison of Solid State and Liquid State Additive Manufacturing
Isabella J. van Rooyen¹; Saumyadeep Jana¹; Luis Nunez²; ¹Pacific Northwest National Laboratory (PNNL); ²Idaho National Laboratory

16:00 PM
INVITED
Initial Microstructure-Property Evaluation of Additively Manufactured IN625 for IGT Combustor Applications
Chantal K. Sudbrack¹; Kyle Rozman²; Kristin Tippey²; Rui Feng²; Martin Detrois¹; Lucas Teeter²; Omer Dogan¹; ¹National Energy Technology Laboratory (NETL); ²NETL Support Contractor

PENDING TBA

16:30 PM **END OF DAY**

4TH NOVEMBER 2022

08:00 AM
INVITED
Machine-to-Machine and Parameter Effects on Tensile Properties of 316L Stainless Steel Produced using Laser Powder Bed Fusion
Joy Gockel¹; Simon Richardsen¹; Garrison Hommer¹; Jorge Ramirez¹; Steve Midson¹; Craig Brice¹; ¹Colorado School of Mines

08:30 AM
INVITED
Revealing the Influence of Microstructure and Morphology on the Mechanical Behavior of Thin Wall Laser Powder Bed Fusion Structures
Dhruv Bhate¹; Paul Paradise¹; Tyler D. Smith¹; ¹Arizona State University

09:00 AM
INVITED
Experimental and Computational Characterization of the Effect of Process Parameters on Strength and Porosity of AISi10Mg by L-PBF
Vasyl Harik¹; Qixiang Luo²; Mallikharjun Marrey¹; Timothy Simpson²; Allison Beese²; Frank Abdi¹; ¹AlphaSTAR; ²Pennsylvania State University

09:30 AM
REGULAR
Effect of Heat Treatment on Micro-Machinability of Laser Powder Bed Fused AISi10Mg
Basil Kuriachen¹; Jino Joshy¹; Mohit Godara¹; Jose Mathew¹; ¹National Institute of Technology Calicut

09:50 AM
REGULAR
Heat Treatment of Aluminum A20X Fabricated using Laser Powder Bed Fusion
Étienne Martin¹; Heidar Karimi-Alavijeh¹; Martin Pröbstle²; Amber Andreaco²; Jean-Philippe Harvey¹; ¹Polytechnique Montréal; ²GE Additive

10:10 AM **BREAK**

10:30 AM
INVITED
Laser Additive Manufacturing of Fe-Co and Fe-Si Soft Magnetic Alloys
Andrew Kustas¹; Erin Barrick¹; Jonathan Pegues¹; Mark Wilson¹; Kyle Johnson¹; Eric Theisen²; Frank DelRio¹; Todd Monson¹; Don Susan¹; ¹Sandia National Laboratories; ²Metglas

11:00 AM
INVITED
Combined Effect of Defects and Stress State on Fracture of Additively Manufactured Metals
Allison M. Beese¹; ¹Pennsylvania State University

11:30 AM
INVITED
Chemistry-Processing-Microstructure Relationships in Materials for Advanced Manufacturing
Eric A. Lass¹; ¹University of Tennessee, Knoxville

12:00 PM **LUNCH**

13:30 PM
REGULAR
Microstructural Studies of Heat-Treated Alloy 625 Fabricated by Laser Powder Bed Fusion
Karen T. Henry¹; Steven A. Attanasio¹; Stephen M. Sabol¹; John A. Sutliff¹; Robert A. Morris¹; ¹Naval Nuclear Laboratory (NNL)

13:50 PM
INVITED
In-Situ Formation of Titanium Metal Matrix Composites Exploiting Invariant Reactions by Laser Powder Bed Fusion
James A. Coakley¹; William R. Hixson¹; Dieter Isheim²; Jonathan D. Poplawsky³; Howard J. Stone⁴; ¹University of Miami; ²Northwestern University; ³Oak Ridge National Laboratory (ORNL); ⁴University of Cambridge

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ICAM 2022 TENTATIVE PROGRAM AGENDA

Updated as of 16th September 2022



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Research to Standards

14:20 PM
REGULAR **Microtextured Composites of Additively Manufactured Molybdenum**
Christopher Ledford¹; Patxi Fernandez-Zelaia¹; Seokpum Kim¹; Quinn Campbell¹; Julio Ortega Rojas¹; Andres M. Rossy¹; Michael Kirka¹;
¹Oak Ridge National Laboratory (ORNL)

14:40 PM
REGULAR **Additive Manufacturing of 2000 Series Aluminum Alloys: Crack Mitigation, Microstructure and Mechanical Properties**
Graham Matheson^{1, 2}; Alper Evirgen¹;
¹Oerlikon AM; ²Technical University of Munich

15:00 PM **BREAK**

15:30 PM
INVITED **Microstructure and Properties of Additively Manufactured High Temperature Metals**
Patxi Fernandez-Zelaia¹; Christopher Ledford¹; Michael Kirka¹; ¹Oak Ridge National Laboratory (ORNL)

16:00 PM
REGULAR **Role of Heat Input on the Microstructure and Mechanical Properties of a PBF-LB Fabricated CM247 LC Superalloy**
Bikash Kumar¹; Shreehard Sahu¹; Nagamani Jaya Balila¹; Dheepa Srinivasan²; ¹Indian Institute of Technology Bombay (IIT Bombay); ²Indian Institute of Science, Bangalore (IISc) - Pratt & Whitney R&D Center

PENDING **TBA**

16:20 PM **END OF DAY**

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ICAM 2022 TENTATIVE PROGRAM AGENDA

Updated as of 16th September 2022



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AM FOR SPACE APPLICATIONS

CO-ORGANIZERS:

Faith Oehlerking
Beehive3D, USA
Rick Russell
NASA, USA

Kiley Versluys
Relativity Space, USA
John Vickers
NASA, USA

3RD NOV 2022 – 4TH NOV 2022 (THU-FRI)
GRIFFIN C (LEVEL 1)
SESSION CHAIR: TBA

3RD NOVEMBER 2022

08:00 AM
INVITED **Additive Manufacturing: Moving Beyond Parts to Production Systems for Space Applications**
[Behrang Poorganji](#)¹; Ivan Madera¹;
¹Morf3D

08:30 AM
INVITED **Achieving the Manufacturing Milestones Needed to Succeed in Space**
[Zach Murphree](#)¹; ¹Velo3D

09:00 AM
INVITED **Having a Come-Apart: Lessons Learned from Additively Manufactured Hardware Failures**
[Paul R. Gradl](#)¹; Gabriel Demeneghi¹;
David Ellis²; Colton Katsarelis¹; Alison Park³; William G. Tilson¹; Brian West¹;
Benjamin B. Williams¹; ¹NASA - Marshall Space Flight Center (MSFC);
²NASA - Glenn Research Center;
³NASA Engineering and Safety Center (NESC)

09:30 AM
INVITED **A Trial in Additive Manufacturing Certification for Human Space Flight, RS-25 POGO**
[Alan Fung](#)¹; Dan Matejczyk¹; Bryan Webb¹; ¹Aerojet Rocketdyne

10:00 AM **BREAK**

10:30 AM
INVITED **Indian AM Space Program – Design, Development, Qualification and Challenges**
[Ankit Sahu](#)¹; ¹Objectify Technologies

11:00 AM
INVITED **Pure Nickel Print Process for In-Space Propulsion Miniaturization**
[Carlos "Charlie" R. Garcia](#)¹; Prashanth Bangalore¹; ¹AGILE Space Industries

11:30 AM
REGULAR **Internal Channel Polishing and Controlled Orifice Geometry Modification via Chemical Polishing for Liquid Rocket Engine Fuel Injector Optimization**
[Patrick McFadden](#)¹; [Justin Michaud](#)¹;
[Agustin Diaz](#)¹; Paul R. Gradl²; Thomas Teasley²; ¹REM Surface Engineering;
²NASA - Marshall Space Flight Center (MSFC)

11:50 AM
REGULAR **Material Properties and Manufacturing Feasibility of Cold Spray Additive Manufactured (CSAM) Launcher Propulsion System Components**
[Mario Guagliano](#)¹; Jan Kondas²; Reeti Singh²; Max Meinicke²; Sara Bagherifard¹; Ondrej Kovarik³; Jan Cizek⁴; ¹Politecnico di Milano;
²Impact Innovations; ³Czech Technical University in Prague; ⁴Institute of Plasma Physics of the Czech Academy of Sciences

12:10 PM **LUNCH**

13:30 PM
INVITED **Challenges in Processing Alloy 718 using Cold Spray Additive Manufacturing**
[Philipp Kindermann](#)¹; Martin Wunderer¹; Ismail Ünsal¹; Christian Seidel^{1,2}; Georg Schlick¹;
¹Fraunhofer Institute for Casting, Composite and Processing Technology IGCV; ²HM Hochschule München University of Applied Sciences

14:00 PM
REGULAR **The Effect of Post-Processing on Tensile and Fatigue Behaviors of Additively Manufactured Haynes 282 Superalloy at Cryogenic and Elevated Temperatures**
[Seyed Reza Ghiaasiaan](#)¹; Paul R. Gradl²; Shuai Shao¹; Nima Shamsaei¹; ¹Auburn University;
²NASA - Marshall Space Flight Center (MSFC)

14:20 PM
INVITED **Additive Manufacturing for On Earth, In Orbit and On Planet Space Applications**
[Andrew Norman](#)¹; Thomas Rohr¹;
Tommaso Ghidini¹; ¹European Space Agency

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ICAM 2022 TENTATIVE PROGRAM AGENDA

Updated as of 16th September 2022



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- 14:50 PM** **Success of Nickel Alloys 939 and 282 in Space Applications**
REGULAR **Scott Volk¹; ¹Keselowski Advanced Manufacturing**
- 15:10 PM** **BREAK**
- 15:30 PM** **Additive Manufacturing of Tungsten Heavy Alloys for Space Applications**
REGULAR **Jacqueline Foradora¹; Mike Stawovy¹; ¹H.C. Starck Solutions**
- 15:50 PM** **AM of Ceramics - Opportunities and Challenges**
INVITED **Alicia Carey¹; Brandon Kirkland¹; ¹Redwire Space**
- 16:20 PM** **Production vs Performance: Manufacturing Heritage Designs with A.M.**
INVITED **Tim Berry¹; ¹Launcher**
- 16:50 PM** **END OF DAY**

4TH NOVEMBER 2022

- 08:00 AM** **Combining Laser Metal Fusion with Laser Metal Deposition to Open the Door to Space**
INVITED **Eliana Fu¹; Adam Simons¹; Zeke Sudbury¹; ¹TRUMPF**
- 08:30 AM** **Total Cost Factors Associated with L-PBF Manufacturing**
INVITED **Kiley Versluys¹; ¹Relativity Space**
- 09:00 AM** **Additive Manufacturing Probabilistic Methods for Aviation Applications**
INVITED **Martin White¹; Alberto Bordin¹; Mahdi Jamshidinia¹; Mohsen Seifi¹; Kirstie Snodderly¹; ¹ASTM International**
- PENDING** **TBA**
- 09:30 AM** **END OF DAY**

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ICAM 2022 TENTATIVE PROGRAM AGENDA

Updated as of 16th September 2022



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DESIGN, MODELING, AND SIMULATION METHODOLOGIES AND CONCEPTS FOR AM

CO-ORGANIZERS:

Eujin Pei

Brunel University
London, UK

David Rosen

Georgia Institute of
Technology, USA

Albert To

University of
Pittsburgh, USA

Andrew Triantaphyllou

The MTC, UK

**3RD NOV 2022 – 4TH NOV 2022 (THU-FRI)
CYPRESS (LEVEL 1)
SESSION CHAIR: TBA**

3RD NOVEMBER 2022

**08:00 AM
INVITED** **The Support of Bio-Inspired Multi-Functional and Multi-Scale Design through Function-Based Heterogeneous Lattice Modeling Approach**
[Yaoyao Fiona Zhao](#)¹; Nikita Letov¹; Pavan Velivela¹; ¹McGill University - Additive Design and Manufacturing Laboratory (ADML)

**08:30 AM
REGULAR** **Application of Multi-Scale Mesh-Refinement in Abaqus for Increased Efficiency of Metallic Additive Manufacturing Process Simulations**
[Johnathan Tran](#)¹; Elliot Haag¹; David Najera¹; Marc Russell¹; ¹ATA Engineering

**08:50 AM
REGULAR** **Bio-Inspired Design of Architected Materials**
[Alexander Grishin](#)¹; [Dhruv Bhate](#)²; Yash Mistry²; Swapnil Morankar³; Athul Rajeev²; Grace Cope⁴; Alexander Potts²; Clint Penick⁴; Nikhilesh Chawla³; ¹Phoenix Analysis & Design Technologies (PADT); ²Arizona State University; ³Purdue University; ⁴Kennesaw State University

**09:10 AM
REGULAR** **How the Full Digital Thread Improves the Value and Validity of Additive Manufacturing**
[Chris Robinson](#)¹; ¹Ansys

**09:30 AM
REGULAR** **Overheating in Ti6Al4V Laser Powder Bed Fusion Components: Properties, Prediction and Prevention**
[Tim Koenis](#)¹; Emiel Amsterdam¹; Marc J. de Smit¹; Maria L. Montero-Sistiaga¹; ¹Royal NLR - Netherlands Aerospace Centre

**09:50 AM
REGULAR** **Design for Additive Manufacturing of Fiber-Reinforced Polymer Composites: Review and Status**
[David W. Rosen](#)¹; [Janet Wong](#)¹; [Abdulmajeed Altassan](#)¹; ¹Georgia Institute of Technology

10:10 AM BREAK

**10:30 AM
REGULAR** **Digital Foam: The Padding Revolution**
[Jon Walker](#)¹; ¹EOS North America

**10:50 AM
INVITED** **The Impact of Multi-Axis Continuous Fiber AM on the Design Process**
[Ian Campbell](#)¹; ¹Wohlers Associates

**11:20 AM
REGULAR** **A Novel Multi-Spatial-Temporal Resolution Concurrent FE Model for Melt Pool and Residual Stress Prediction in Laser Power Bed Fusing Additive Manufacturing**
[Jiahao Cheng](#)¹; Xiaohua Hu¹; Yang Huo²; Mei Li²; Xin Sun¹; ¹Oak Ridge National Laboratory (ORNL); ²Ford Motor Company

**11:40 AM
INVITED** **Multi-Scale Modeling of Thermal/Residual Stress in Additive Manufacturing Across Grain-, Track- and Part-Scales**
[Wentao Yan](#)¹; Fan Chen¹; Daijun Hu¹; ¹National University of Singapore (NUS)

12:10 PM LUNCH

**13:30 PM
REGULAR** **A Residual Stress Investigation of Large-Scale Additively Manufactured Parts: Process Modeling and Validation**
[George Scarlat](#)¹; Kyle Warren¹; Robert Grout¹; ¹University of Maine - Advanced Structures and Composites Center

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ICAM 2022 TENTATIVE PROGRAM AGENDA

Updated as of 16th September 2022



CENTER of
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13:50 PM
REGULAR Numerical Quantification of DED Closed-Loop Melt Pool Temperature Control on Thermal History and Residual Stresses of Thin-Wall Structures
[Zoé Jardon](#)¹; Jorge Sanchez Medina¹; Julien Ertveldt¹; Patrick Guillaume¹; Lincy Pyl¹; ¹Vrije Universiteit Brussel

14:10 PM
REGULAR An Extended Goldak Heat Source Model for FE Simulation of Both Conduction Mode and Keyhole Model Melt Pool in Laser Power Bed Fusion Additive Manufacturing
[Jiahao Cheng](#)¹; Patxi Fernandez-Zelaia¹; Xiaohua Hu¹; Yang Huo²; Mei Li²; Xin Sun¹; ¹Oak Ridge National Laboratory (ORNL); ²Ford Motor Company

14:30 PM
INVITED Aluminum Heat Exchangers: A Case Study of Advancing Additive Manufacturing in a Skeptical Environment
[Caleb Martin](#)¹; Roddy Rodriguez¹; ¹Northrop Grumman Mission Systems

15:00 PM **BREAK**

15:30 PM
INVITED Accelerating Materials Design for Additive Manufacturing through Graded Alloy Deposition Techniques
[Wei Xiong](#)¹; ¹University of Pittsburgh

16:00 PM
REGULAR Structural Mechanical Simulation of Additively Manufactured Parts with Internal Defects Based on Computed Tomography Data
[Philipp Sugg](#)¹; ¹Volume Graphics

16:20 PM
REGULAR Assessment of Residual Stresses in Cold Spray Additive Manufacturing: Experiments and Thermo-Mechanical Modeling with Geometry Evolution
[Chaitanya Vundru](#)¹; Chaitanya Vundru¹; Sinan Muftu¹; Sohayb Batwa¹; Samuel Boese¹; Ozan C. Ozdemir¹; Enqiang Lin²; ¹Northeastern University; ²VulcanForms

16:40 PM
REGULAR Topology-Optimized Novel Regular and Functionally Graded Radial Structures: Design, Modeling, & Simulation
[Mohsen Teimouri](#)¹; [Masoud Asgari](#)¹; ¹K. N. Toosi University of Technology

17:00 PM **END OF DAY**

4TH NOVEMBER 2022

13:30 PM
REGULAR Fatigue Crack Initiation Behavior of Laser Beam Powder Bed Fused IN718
[Shuai Shao](#)¹; Nima Shamsaei¹; ¹Auburn University

13:50 PM
REGULAR Fatigue and Fracture Control Plan for AM AISi10Mg Alloy
[Amirhossein Eftekharian](#)¹; Frank Abdi¹; ¹AlphaSTAR

14:10 PM
INVITED Integrating Ceramic AM Piece Parts into Products: Weibull Mechanics
[Kurtis R. Ford](#)¹; Dale Cillessen¹; Daniel Kammler¹; Elizabeth D. Smith¹; ¹Sandia National Laboratories

14:40 PM
REGULAR Model-Based Quantification of Uncertainties in Metal Additive Manufacturing
[Daniel Moser](#)¹; Michael Heiden¹; Scott Jensen¹; Kyle Johnson¹; Mario Martinez¹; Theron M. Rodgers¹; Michael Stender¹; ¹Sandia National Laboratories

15:00 PM **BREAK**

15:30 PM
REGULAR Computational Modeling and Identification of Nanoparticles Dispersion Mechanism in 316L Matrix Additively Manufactured By Hybrid Process of Ink Jetting and Laser Powder Bed Fusion
[Somayeh Pasebani](#)¹; Milad Ghayoor¹; Omid Sadeghi¹; Bryce Cox¹; Joshua Gess¹; ¹Oregon State University

15:50 PM
REGULAR Simplified Modeling of Woven Walls in the Simulation of Wire and Arc Additive Manufacturing
[Xiao Fan Zhao](#)¹; Lukas Dirnberger¹; Michael F. Zäh¹; ¹Technical University of Munich - Institute for Machine Tools and Industrial Management (TUM - iwB)

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ICAM 2022 TENTATIVE PROGRAM AGENDA

Updated as of 16th September 2022



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16:10 PM **Comparison of Methods of
REGULAR Modeling Additive Manufacturing
with ABAQUS and Sierra**
Elton L. Freeman¹; Ivan P. Beckman¹;
Guillermo A. Riveros¹; Matthew
Ireland²; Tomas Mondragon¹; Daniel
Mosser³; Christine M. Lozano¹; James
T. Stinson¹; ¹U.S. Army Engineer
Research and Development Center
(ERDC); ²University of Maine; ³Sandia
National Laboratories

16:30 PM **END OF DAY**

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ICAM 2022 TENTATIVE PROGRAM AGENDA

Updated as of 16th September 2022



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PROCESS CONTROL AND IN-SITU MONITORING TECHNIQUES IN AM

CO-ORGANIZERS:

Darren Beckett **Abdalla Nassar**
Sigma Additive John Deere, USA
Solutions, USA **Tuan Tran**
Ajay Krishnan Nanyang Technological
EWI, USA University (NTU), Singapore

3RD NOV 2022 – 4TH NOV 2022 (THU-FRI)
DOGWOOD (LEVEL 1)
SESSION CHAIR: TBA

3RD NOVEMBER 2022

08:00 AM **The In-Situ Project: Correlating In-Situ Monitoring Data and Non-Destructive Evaluation (NDE) Methods to Characterize Defect Populations in Laser Powder Bed Fusion (L-PBF) Material**
INVITED [Delphine Duquette](#)¹; Erin L. Lanigan¹; James Mavo¹; Isabelle Sadowksi¹; ¹NASA

08:30 AM **A Closed-Loop Feedback Control System for In-Situ Defect Monitoring and Correction in Laser Powder Bed Fusion Process**
REGULAR [Jingfu Liu](#)¹; Ziyi Liu¹; Behrooz Jalalahmadi¹; Michael Sealy²; Michael Presley³; Michael Schwartz³; Tom Houle⁴; Ian Palmer⁵; Jason Fetty⁵; ¹Sentient Science; ²University of Nebraska-Lincoln; ³Johns Hopkins University - Applied Physics Laboratory (JHU - APL); ⁴Matsuura; ⁵U.S. Army Combat Capabilities Development Command - Aviation & Missile Center

08:50 AM **Process Optimization in Metal Additive Manufacturing using In-Situ Diagnostics and Machine Learning**
INVITED [Nicholas P. Calta](#)¹; Manyalibo Matthews¹; Jean-Baptiste Forien¹; Gabriel M. Guss¹; ¹Lawrence Livermore National Laboratory (LLNL)

09:20 AM **In-Situ Process Monitoring of Metal Powder Bed Fusion Process using Intelligent Data Processing**
REGULAR [Pascal Dinglinger](#)¹; [Raffael Kaehn](#)¹; Fabian Kandels¹; Carsten Brandt¹; David Osman Busse¹; Jonas Holtmann²; Björn Milcke¹; Ulf Schnars¹; ¹Airbus; ²Testia

09:40 AM **Process Monitoring for Pore Detection using In Situ X-Ray Imaging and Pyrometry Signal**
REGULAR [Sanam Gorgannejad](#)¹; Nicholas P. Calta¹; Jean-Baptiste Forien¹; Sen Liu²; Aiden Martin¹; Peiyu Quan²; Maria Strantzis¹; Christopher J. Tassone²; Vivek Thampy²; Jenny Wang¹; ¹Lawrence Livermore National Laboratory (LLNL); ²SLAC National Accelerator Laboratory

10:00 AM **BREAK**

10:30 AM **Towards a Quality Continuum of Monitoring and Analytics that Enables AM Part Qualification**
INVITED [Darren P. Beckett](#)¹; ¹Sigma Additive Solutions

11:00 AM **In-Situ Monitoring for AM Qualification and Certification**
INVITED [Jacob Williams](#)¹; Erin L. Lanigan²; Kirstie Snodderly¹; Alberto Bordin¹; Mahdi Jamshidinia¹; Douglas Wells²; Mohsen Seifi¹; ¹ASTM International; ²NASA - Marshall Space Flight Center (MSFC)

11:20 AM **Track-by-Track Shape Evolution of Cold Spray Deposits**
REGULAR [Scott E. Julien](#)¹; Nathaniel Hanson¹; Joseph Lynch¹; Ozan C. Ozdemir¹; Taskin Padir¹; Sinan Muftu¹; ¹Northeastern University

11:40 AM **Monitoring and Prediction of Porosity in Laser Powder Bed Fusion using Physics-Informed Meltpool Signatures and Machine Learning**
REGULAR [James Craig](#)¹; [Prahlada K. Rao](#)²; [Ziyad Smoqi](#)²; [Benjamin Bevans](#)²; Aniruddha Gaikwad²; Alonso Peralta³; Alan Abul-Hajj⁴; ¹Stratronics; ²University of Nebraska-Lincoln; ³Honeywell; ⁴ARA Engineering

12:00 PM **LUNCH**

13:30 PM **Effects of Process Byproducts on In-Situ Thermography and Laser Coupling Measurements of a LPBF Process**
INVITED [David Deisenroth](#)¹; ¹NIST

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ICAM 2022 TENTATIVE PROGRAM AGENDA

Updated as of 16th September 2022



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Research to Standards

		4 TH NOVEMBER 2022
14:00 PM REGULAR	Two Approaches for Multi Measurand In-Situ Monitoring of the L-PBF Process – Bicolor- and RGB-Optical Tomography Tina Becker ¹ ; Simon J. Altenburg ¹ ; Christian Metz ² ; Philipp P. Breese ¹ ; Simon Oster ¹ ; Christiane Maierhofer ¹ ; ¹ Bundesanstalt für Materialforschung und -prüfung (BAM); ² THETASCAN	13:30 PM INVITED Microstructure Homogenization in LPBF Builds via Feed-Forward Process Control of Thermal History Ajay V. Krishnan ¹ ; Alex R. Riensche ² ; Benjamin Bevans ² ; Prahalada K. Rao ² ; ¹ EWI; ² University of Nebraska-Lincoln
14:20 PM REGULAR	In-Situ Defect Prediction in L-PBF through Melt Pool Emissions Monitoring: Training a Model using μCT Measurements as Ground Truth Eckart Uhlmann ¹ ; Gustavo Reis de Ascencao ¹ ; Bernhard Hesse ² ; Jussi-Petteri Suuronen ² ; David Carlos Domingos ¹ ; ¹ Fraunhofer Institute for Production Systems and Design Technology IPK; ² XPLORAYTION	14:00 PM REGULAR Spatter Characterization and Control in Metal LPBF David Maass ¹ ; ¹ Flightware
14:40 PM REGULAR	A New Instrument for In-Situ X-Ray Characterization for Inoculation Treatment of Laser Additive Manufacturing Peiyu Quan ¹ ; Sen Liu ¹ ; Vivek Thampy ¹ ; Christopher J. Tassone ¹ ; ¹ SLAC National Accelerator Laboratory	14:20 PM REGULAR X-Ray Monitoring to Detect Porosity in Directed Energy Deposition Sarah J. Wolff ¹ ; ¹ Texas A&M University
15:00 PM	BREAK	14:40 PM REGULAR Closed-Loop Control of Meltpool Temperature in Directed Energy Deposition Prahalada K. Rao ¹ ; Ziyad Smoqi ¹ ; Benjamin Bevans ¹ ; James Craig ² ; Aniruddha Gaikwad ¹ ; Alan Abul-Haj ³ ; Jeffrey E. Shield ¹ ; ¹ University of Nebraska-Lincoln; ² Stratronics; ³ ARA Engineering
15:30 PM REGULAR	In-Situ Monitoring of Laser Powder Bed Fusion Process and Defect Detection using Machine Learning Andrey Molotnikov ^{1, 2} ; Marten Jurg ³ ; ¹ Royal Melbourne Institute of Technology (RMIT University); ² RMIT Centre for Additive Manufacturing (RCAM); ³ Additive Assurance	15:00 PM REGULAR In-Situ X-Ray Characterization for Printable Aluminum Alloy Design Sen Liu ¹ ; Vivek Thampy ¹ ; Peiyu Quan ¹ ; Christopher J. Tassone ¹ ; ¹ SLAC National Accelerator Laboratory
15:50 PM REGULAR	In Process Monitoring for Holistic Process Control in Laser Powder Bed Fusion Heiko Degen ¹ ; Edson Costa Santos ¹ ; ¹ ZEISS	PENDING TBA
16:10 PM INVITED	Machine Learning Based In-Situ Sensor Evaluation and Defect Detection for Laser Powder Bed Fusion Brian A. Fisher ¹ ; Luke Scime ² ; Zackary Snow ² ; ¹ Raytheon Technologies Research Center; ² Oak Ridge National Laboratory (ORNL)	15:20 PM END OF DAY
PENDING	TBA	
16:40 PM	END OF DAY	

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ICAM 2022 TENTATIVE PROGRAM AGENDA

Updated as of 16th September 2022



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ENVIRONMENTAL EFFECTS ON AM PARTS

CO-ORGANIZERS:

James Burns
University of Virginia, USA
Jiadong Gong
QuesTek, USA

Michael Melia
Sandia National
Laboratories, USA

3RD NOV 2022 (THU)
CARDINAL (LEVEL 2)
SESSION CHAIR: TBA

3RD NOVEMBER 2022

08:00 AM **Environmental Fracture and Fatigue in Additively Manufactured Ti-6Al-4V as a Function of Build Direction**

INVITED

Allison Akman¹; Matthew McMahon¹; Eric Dau¹; Nicholas Pizzolato¹; Elissa Trueman¹; ¹Naval Surface Warfare Center (NSWC) - Carderock Division

08:30 AM **Comparing the Environmental Cracking Behavior of Additively Manufactured and Wrought 316L Stainless Steel through a Matched Yield Strength Approach**

INVITED

James Burns¹; Michael P. Roach¹; ¹University of Virginia

09:00 AM **Hydrogen Trapping and Transport at Grain Boundaries and Dislocation Structures in Additively-Manufactured Stainless Steel 316L Evaluated via SIMS/EBSD**

INVITED

Kaila Bertsch¹; Peter Weber¹; Shohini Sen-Britain¹; Thomas Voisin¹; Chris San Marchi²; Brandon Wood¹; ¹Lawrence Livermore National Laboratory (LLNL); ²Sandia National Laboratories

09:30 AM **A Computational Framework for Probabilistic Quantification of Stress Corrosion Cracking and its Application to Metal Additive Manufacturing**

INVITED

Lei Chen¹; Karnpiwat Tantratian¹; ¹University of Michigan-Dearborn

10:00 AM **BREAK**

10:30 AM
INVITED

Feedstock Modification to Improve Corrosion Performance of 316L Stainless Steel Produced by Laser Powder Bed Fusion

Rajeev K. Gupta¹; Venkata Bhuvaneswari Vukkum¹; Ahmed A. Dariwsh¹; Jijo Christudasjustus¹; Steven Storck²; ¹North Carolina State University; ²Johns Hopkins University - Applied Physics Laboratory (JHU - APL)

11:00 AM
INVITED

Interstitial Oxygen Created via Laser Powder Bed Fusion

Xiaolei Guo¹; Gerald S. Frankel¹; Hsien-Lien Huang¹; Menglin Zhu¹; Karthikeyan Hariharan¹; Szu-Chia Chien¹; Ngan Huynh¹; Jinwoo Hwang¹; Wolfgang Windl¹; Christopher Taylor¹; Eric Schindelholz¹; ¹Ohio State University

11:30 AM
INVITED

High Strength Austenite for Additive Manufacturing

Andreas Mohr¹; Janosch Conrads¹; Horst Hill¹; Karlheinz Hoeren¹; ¹Deutsche Edelstahlwerke Specialty Steel

12:00 PM

LUNCH

13:30 PM
REGULAR

Environmental Effects of DED Trajectories

Germán Barragán¹; Johan Grass²; Daniel Rojas²; Germán Urrea¹; Reginaldo Teixeira Coelho²; ¹Universidad Pontificia Bolivariana; ²Universidade de São Paulo

13:50 PM
REGULAR

Evaluating ElemX 4008 Corrosion Performance with Additive-Compatible Conical Specimen

Mariusz Mika¹; Colin Fletcher¹; ¹Xerox

14:10 PM
INVITED

Mechanisms of Selective Corrosion in Laser Powder Bed Fusion and Direct Energy Deposition 316L

Robert G. Kelly¹; Duane A. Macatangay¹; ¹University of Virginia

14:40 PM
INVITED

Corrosion of Additively Manufactured Alloys for Naval Applications

Jiadong Gong¹; Pin Lu¹; Abhinav Saboo¹; ¹QuesTek

15:10 PM **BREAK**

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ICAM 2022 TENTATIVE PROGRAM AGENDA

Updated as of 16th September 2022



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- 15:30 PM**
INVITED **An Additively Manufactured Magnesium-Aluminium Alloy Withstands Seawater Corrosion**
Zhuoran Zeng¹; Nick Birbilis¹; Marco Esmaily²; Alexander Kopp³;
¹Australian National University;
²Massachusetts Institute of Technology (MIT); ³Meotec
- 16:00 PM**
REGULAR **Corrosion Behavior of 2507 Super Duplex Stainless Steel Produced by Additive Manufacturing Processes such as SLM and DED in Saline Environment**
Matthieu Dhondt¹; Chloé Comas¹; Sébastien Ballésio^{1, 2}; Fabien Szmytka²; Cédric Doudard¹; ¹ENSTA Bretagne; ²ENSTA Paris - Institut Polytechnique de Paris
- 16:20 PM**
INVITED **Corrosion Performance Comparison of Additively Manufactured (AM) and Wrought Alloy 625 in Organic and In-Organic Acids**
Suresh Divi¹; Adam Rowe¹; Matthew Sanders¹; ¹Stress Engineering Services
- 16:50 PM** **END OF DAY**

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ICAM 2022 TENTATIVE PROGRAM AGENDA

Updated as of 16th September 2022



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SINTER-BASED AM TECHNOLOGIES

CO-ORGANIZERS:

Usama Attia
The MTC, UK
Animesh Bose
Desktop Metal, USA

Amy Elliot
ORNL, USA
Benoit Verquin
CETIM, France

3RD NOV 2022 (THU)

IBIS (LEVEL 2)

SESSION CHAIR: TBA

3RD NOVEMBER 2022

08:00 AM
INVITED Digital Additive Production with Metal Binder Jetting
Simon Hoeges¹; ¹GKN Additive

08:30 AM
INVITED Recent Progress in Solvent Jetting on Granules 3D Printing
Efrain Carreño-Morelli¹; Mikel Rodriguez-Arbaizar¹; ¹University of Applied Sciences and Arts Western Switzerland (HES-SO)

09:00 AM
REGULAR Printing and Consolidation Strategies for Niche-Materials in Binder Jet Additive Manufacturing
Amy A. Elliott¹; ¹Oak Ridge National Laboratory (ORNL)

09:20 AM
REGULAR Process-Integrated Production of Functional Graded WC-Co Structures by Binder Jetting
Maja Lehmann¹; Cara Kolb¹; Josef Gschlößl¹; Michael F. Zäh¹; ¹Technical University of Munich - Institute for Machine Tools and Industrial Management (TUM - iwib)

09:40 AM
INVITED Tailored Binder in Binder Jetting for Tooling
Tomonori Saito¹; Dustin Gilmer²; Sungjin Kim¹; Peeyush Nandwana¹; Amy A. Elliott¹; ¹Oak Ridge National Laboratory (ORNL); ²University of Tennessee, Knoxville

10:10 AM **BREAK**

10:30 AM
REGULAR Supersolidus Liquid Phase Sintering of Binder Jet AM H13: Densification and Microstructure Evolution
Peeyush Nandwana¹; Arun Devaraj²; Rangasayee Kannan¹; Jia Liu²; Tingkun Liu²; Dalong Zhang²; ¹Oak Ridge National Laboratory (ORNL); ²Pacific Northwest National Laboratory (PNNL)

10:50 AM
REGULAR Crossing the Manufacturing Chasm in Additive Manufacturing (AM)
Charles Bibas¹; ¹Technica

11:10 AM
REGULAR Metal Binder Jet Printing – Where to Find Success
Eric Johnson¹; ¹Eaton

11:30 AM
INVITED As-Printed and Sintered Microstructure of Binder Jetted Structural and Functional Materials
Markus Chmielus¹; ¹University of Pittsburgh

12:00 PM **LUNCH**

13:30 PM
INVITED Sintering Mechanisms and Microstructural Evolution in Binder Jetting Additive Manufacturing
Iñigo Iturriza¹; Carmen Luno-Bilbao¹; Nerea Ordás¹; Beatriz Pérez¹; Shandra Sainz¹; Angela Veiga¹; ¹Ceit - Technology Center

14:00 PM
INVITED Material Parameter Development for Sintering Models of Binderjet Printed Materials
Paul Prichard¹; Tyler Mealy¹; Zhuqing Wang¹; ¹Kennametal

14:30 PM
INVITED Sintering Simulation and Distortion Compensation of Metal AM Parts
Andrew Roberts¹; Animesh Bose¹; Artyom Djanikian¹; Christian Gomez¹; ¹Desktop Metal

15:00 PM **BREAK**

15:30 PM
REGULAR Methodology to Determine Sintering Simulation Material Properties
Jeff Robertson¹; ¹Hexagon Manufacturing Intelligence - Simufact

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ICAM 2022 TENTATIVE PROGRAM AGENDA

Updated as of 16th September 2022



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15:50 PM **Copper Fabrication via Binder Jet
REGULAR** **Printing**
Sabina Kumar¹; Lucas Stahl¹; Kyle
Myers²; Bryan Richardson¹; ¹Eaton;
²ExOne

16:10 PM **Sinter Based Additive
INVITED** **Manufacturing of Copper via
Material Extrusion Process**
Carrie Barber¹; Kameswara Pavan
Kumar Ajjarapu²; Luke Malone²; Mark
Barr¹; Sundar Atre²; Kunal Kate²;
¹Kymera International; ²University of
Louisville

16:40 PM **END OF DAY**

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ICAM 2022 TENTATIVE PROGRAM AGENDA

Updated as of 16th September 2022



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AM FEEDSTOCK: CHARACTERIZATION, SPECIFICATION AND REUSE

CO-ORGANIZERS:

Ben Ferrar

Carpenter Additive, USA

Edward Garboczi

NIST, USA

Steven Hall

The MTC, UK

Tony Thornton

Micromeritics, USA

Frank Venskytis

Consultant, USA

3RD NOV 2022 – 4TH NOV 2022 (THU-FRI)

OSPREY (LEVEL 2)

SESSION CHAIR: TBA

3RD NOVEMBER 2022

08:00 AM
INVITED

Comparing the Particle Size Distribution, Morphology, and Rheology of Several Metal Additive Manufacturing Powders

Justin Whiting^{1,2}; Vipin Tondare¹; Shawn Moylan¹; Edward Garboczi¹; Alkan Donmez¹; ¹NIST; ²Georgetown University

08:30 AM
REGULAR

Imaging Particle Analysis Advances for Laboratory and Online Applications in Additive Manufacturing

Matthew Spink¹; Ethan Schrod¹; Tod Canty¹; ¹Canty

08:50 AM
INVITED

Cold Spray Additive Manufacturing: The Importance of Powder Feedstock Size and Shape

Edward Garboczi¹; Newell Moser¹; Shawn Moylan¹; Sinan Muftu²; Ozan C. Ozdemir²; ¹NIST; ²Northeastern University

09:20 AM
REGULAR

Evaluation of Triboelectric Charging of Additive Manufacturing Metal Powders

Eileen Ross L. Espiritu¹; Camila Gutiérrez¹; Kamran Azari²; José A. Muñoz Lerma²; Martin Conlon²; Mathieu Brochu¹; ¹McGill University; ²Equispheres

09:40 AM
REGULAR

Thermogravimetric Analysis of Ti-6Al-4V Powders in Different Gaseous Environments

Nicholas A. Derimow¹; Elisabeth Mansfield¹; Nikolas Hrabe¹; ¹NIST

10:00 AM **BREAK**

10:30 AM
INVITED

A Round Robin on μ XCT Inspection of Metal Powders

Roger Pelletier¹; Philippe Émile²; Salah-Eddine Brika³; Mahdi Habibnejad⁴; ¹National Research Council Canada (NRC Canada); ²Airbus; ³École de technologie supérieure (ÉTS); ⁴GE Additive

11:00 AM
REGULAR

Rapid, High-Sensitivity Elemental Characterization of Feedstock Powders

Jonathan C. Putman¹; Ellen S. Williams¹; Peyton Willis¹; ¹Exum Instruments

11:20 AM
REGULAR

Multimaterial Fiber Spinning for Potential 3D Printing Applications

Kenan Song¹; Weiheng Xu¹; ¹Arizona State University

11:40 AM
INVITED

How the Rheology of Powder Affects its Spreadability?

Filip Francqui¹; Aurélien Neveu¹; Geoffroy Lumay²; Salvatore Pillitteri¹; ¹Granutools; ²University of Liège

12:10 PM **LUNCH**

13:30 PM
INVITED

Comparing the Spreadability of Polymer and Metal Powders using Counter-Rotating Roller and Fixed Plate Recoater Geometry at Various Roller and Spreading Speeds

Greg Martiska¹; ¹Mercury Scientific

14:00 PM
REGULAR

An Equipment for Powder Bed Density Measurement

Roger Pelletier¹; Louis-Philippe Lefebvre¹; Nicolas Sauriol²; ¹National Research Council Canada (NRC Canada); ²Sautech

14:20 PM
REGULAR

Improving Material Conveyance of Pellet and Granulated Flake Feedstocks in Material Extrusion Additive Manufacturing

Douglas M. Sassaman¹; Helen Little²; Oliver L. Uitz¹; Carolyn Seepersad¹; Samantha Snabes²; Matthew Fiedler²; ¹University of Texas at Austin; ²re:3D

14:40 PM
INVITED

Novel Tool for Evaluating Powder Feedstock Suitability for AM Spreading Processes

Tony Thornton¹; Jamie Clayton²; Amalia Thomas²; ¹Micromeritics; ²Freeman Technology

15:10 PM **BREAK**

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ICAM 2022 TENTATIVE PROGRAM AGENDA

Updated as of 16th September 2022



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15:30 PM
INVITED **From Requirements to Qualified Parts – Selecting the Right Powder for AM**
Jean-Francois Carrier¹; ¹Tekna

16:00 PM
REGULAR **Contamination Detection in Metal Powder Feedstock used in AM**
Aneta Chrostek-Mroz¹; Steven Hall¹;
¹The Manufacturing Technology Centre (MTC)

16:20 PM
REGULAR **Evaluating the Influence of Storage and Preparation on AM Feedstocks**
Tony Thornton¹; Yun Bai²; Animesh Bose²; Jamie Clayton³; Christopher Craven²; Michael A. Gibson²; Steve Hudelson²; John P. Reidy²; Gavin A. Winter²; ¹Micromeritics; ²Desktop Metal; ³Freeman Technology

16:40 PM
REGULAR **Qualification of Powder Produced by New VIGA Atomization Line for Powder Bed Fusion Application**
Sven Bengtsson¹; Jerome Stanley¹; Deniz Yigit¹; Human Gherekhloo¹; Anna Larsson¹; Denis Oshchepkov¹;
¹Höganäs

17:00 PM
REGULAR **Driving Additive Manufacturing Cost Reduction through Metal Powder Feedstock Reuse**
Joseph Murphy¹; Zach Loftus¹; Jose Hector Sandoval¹; ¹Lockheed Martin

17:20 PM **END OF DAY**

14:50 PM
REGULAR **Comprehensive Evaluation on the Impact of Aluminum Powder Properties on Feedstock Reusability in Laser Powder Bed Fusion Process**
José A. Muñoz-Lerma¹; Mathieu Brochu²; Evan Butler-Jones¹; Martin Conlon¹; Eileen Ross L. Espiritu²; Grant Nixon³; Justin Valenti³;
¹Equispheres; ²McGill University; ³Mohawk College

15:10 PM
REGULAR **Rapid Characterization of Additively Manufactured Aerospace Heat Exchangers**
John B. Yorston¹; ¹Thermo Fisher Scientific

15:30 PM **END OF DAY**

4TH NOVEMBER 2022

13:30 PM
INVITED **Developing Powder Feedstock Re-Use Strategies**
Steven Hall¹; Aneta Chrostek-Mroz¹;
¹The Manufacturing Technology Centre (MTC)

14:00 PM
INVITED **AM Powder from Re-Cycled Feedstocks; Maintaining Quality while Reducing Environmental Impact and Cost**
Xinjiang Hao¹; James L. Ashby¹;
¹LIBERTY Powder Metals

14:30 PM
REGULAR **Powder Recycling in Additive Manufacturing – The Way Towards an Industrial Powder Handling in Aerospace**
Johannes Casper¹; ¹MTU Aero Engines

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ICAM 2022 TENTATIVE PROGRAM AGENDA

Updated as of 16th September 2022



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INDUSTRY 4.0: ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING IN AM

CO-ORGANIZERS:

Kareem Aggour
GE Research, USA
Shaw Feng
NIST, USA

Branden Kappes
Contextualize, USA
Jia (Peter) Liu
Auburn University, USA

4TH NOV 2022 (FRI)
CYPRESS (LEVEL 1)
SESSION CHAIR: TBA

4TH NOVEMBER 2022

08:00 AM
INVITED
Networked Attribute Learning of Manufacturing Defect Ontology with Limited Measurements
[Hui Wang](#)¹; [Tsegai Yhdego](#)¹; An-Tsun Wei¹; ¹Florida A&M University - Florida State University (FAMU-FSU) College of Engineering

08:30 AM
REGULAR
Automated Defect Detection and Validation for Laser Powder Bed Additive Manufacturing
[Wentao Fu](#)¹; Robert Grube¹; Asya Lou¹; ¹Boeing

08:50 AM
INVITED
Uncovering the Truth behind Defect Formations through Feature Reclassification
[Michelle Daya](#)¹; Briana Ugarte²; Matthew Miller¹; Brayant Lopez²; Hunter Taylor²; Ryan Wicker²; Branden Kappes¹; ¹Contextualize; ²University of Texas at El Paso

09:20 AM
REGULAR
Residual Stress and Microstructure Data Alignment for Additive Manufacturing Data Registration for Data Analytics
[Shaw Feng](#)¹; ¹NIST

09:40 AM
INVITED
Improved Process Parameter Optimization using Machine Learning
[Annie Wang](#)¹; ¹Senvol

10:10 AM **BREAK**

10:30 AM
REGULAR
Using Self-Learning System to Automatically Detect Zone of Interests during Printing Based on Process Parameter and Process Monitoring Data
[Maximilian Backenstos](#)¹; Thomas Grünberger²; ¹DatenBerg; ²nLIGHT Plasmio

10:50 AM
INVITED
In-Situ Microstructural Phase Monitoring for Metal Additive Manufacturing via Machine Learning
[Xiaoli Zhang](#)¹; Sen Liu²; Noopur Jamnikar³; Qiaojie (Grant) Zheng¹; Craig Brice¹; ¹Colorado School of Mines; ²Stanford University; ³University of Michigan-Ann Arbor

11:20 AM
INVITED
Digitally Twinned Additive Manufacturing: Real-Time Detection of Flaws in Laser Powder Bed Fusion by Combining Thermal Simulations with In-Situ Meltpool Sensor Data
[Pralhada K. Rao](#)¹; [Alex R. Riensche](#)¹; Reza Yavari¹; Emine Tekerek²; Lars Jacquemetton³; Harold Scott Halliday⁴; Vignesh Perumal²; Ziyad Smoqi¹; Antonios Kontsos²; ¹University of Nebraska-Lincoln; ²Drexel University; ³Sigma Additive Solutions; ⁴Navajo Technical University

11:50 AM **END OF DAY**

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ICAM 2022 TENTATIVE PROGRAM AGENDA

Updated as of 16th September 2022



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INDUSTRY 4.0: CYBER SECURITY ASPECTS OF AM

CO-ORGANIZERS:

Chris Adkins
Identify3D, USA
Nikhil Gupta
New York University
(NYU), USA

Mark Yampolskiy,
Auburn University, USA

4TH NOV 2022 (FRI)
DOGWOOD (LEVEL 1)
SESSION CHAIR: TBA

10:30 AM
INVITED
**On Leveraging Blockchain to
Secure the AM Digital Thread**
Pramita Mitra¹; Ellen Lee¹; ¹Ford
Motor Company

11:00 AM
INVITED
**Data Ownership and Privacy Issues
in the AM Workflow**
Chris Adkins¹; Stephan Thomas¹;
¹Identify3D

11:30 AM
INVITED
**Myths and Misconceptions in AM
Security**
Mark Yampolskiy¹; ¹Auburn University

12:00 PM
END OF DAY

4TH NOVEMBER 2022

08:00 AM
INVITED
Who Would Attack My 3D Printer?
Gary Pike¹; Kristian Dehaan¹; Grant
Parker¹; John D. Sprunger¹; Mark
Yampolskiy¹; Theo Zinner¹; ¹Auburn
University

08:30 AM
INVITED
**Using Non-Intrusive Physical
Emissions to Transmit Metadata
Stored in Additive Manufacturing
Toolpaths for Enhanced Security
and Traceability**
Logan D. Sturm¹; Nathan Raeker-
Jordan²; Christopher B. Williams²;
¹Oak Ridge National Laboratory
(ORNL); ²Virginia Tech - DREAMS
Lab

09:00 AM
REGULAR
**Streaming as Enabler of Secure AM
Supply Chains**
Moritz Kolter¹; Johannes Henrich
Schleifenbaum¹; ¹RWTH Aachen
University - Digital Additive Production
DAP

09:20 AM
REGULAR
**Crime Scripts and Cost/Security
Balance Guide the Choice of Cyber-
Physical Trust Anchor for Linkage
to Blockchain**
Michele Maasberg¹; Ian Taylor²; Leslie
G. Butler³; ¹United States Naval
Academy (USNA); ²SIMBA Chain;
³Louisiana State University

09:40 AM
REGULAR
**Developing Common Criteria Based
3D Printing Equipment Cyber
Security Certification**
Alan Sukert¹; Paul D. Tykodi¹; ¹IEEE-
ISTO - Printer Working Group (IPP
Workgroup)

10:00 AM
BREAK

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ICAM 2022 TENTATIVE PROGRAM AGENDA

Updated as of 16th September 2022



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DIRECTED ENERGY DEPOSITION TECHNIQUES

CO-ORGANIZERS:

Jean-Luc Belon
GKN Aerospace, UK
Paul Gradl
NASA-MSFC, USA

Filomeno Martina
WAAM3D, UK
Badri Narayanan
Lincoln Electric, USA

4TH NOV 2022 (FRI)
CARDINAL (LEVEL 2)
SESSION CHAIR: TBA

4TH NOVEMBER 2022

08:00 AM
INVITED **Qualification of Large Components Produced by Wire Arc Welding**
[Teresa Melfi](#)¹; [J. Ben Schaeffer](#)¹;
¹Lincoln Electric

08:30 AM
INVITED **Making & Breaking the Rules for DED Design**
[Laura L. Ely](#)¹; [Paul R. Gradl](#)²; ¹The Barnes Global Advisors; ²NASA - Marshall Space Flight Center (MSFC)

09:00 AM
INVITED **Fundamentals of Rapid Alloy Development with Laser Powder Directed Energy Deposition (LP-DED)**
[Melanie Lang](#)¹; [Jeff Riemann](#)¹;
¹FormAlloy

09:30 AM
REGULAR **Approach for a Quality Assurance System using Tolerance Bands in Wire and Arc Additive Manufacturing**
[Daniel Baier](#)¹; [Tobias Weckenmann](#)¹; [Siegfried Bähr](#)¹; [Michael F. Zäh](#)¹;
¹Technical University of Munich - Institute for Machine Tools and Industrial Management (TUM - iwmb)

09:50 AM
REGULAR **Availability and Cost Efficiency by Digitalization of Metal Spare Parts Manufacturing – Integration of Qualified WAAM Parts in the Industrial Supply Chain**
[Tobias Krümborg](#)¹; ¹GEFERTEC

10:10 AM **BREAK**

10:30 AM
INVITED **The Case for an End-to-End Software-Hardware Stack in Wire Arc Additive Manufacturing**
[Filomeno Martina](#)¹; [Jialuo Ding](#)¹; [Stewart Williams](#)¹; ¹WAAM3D

11:00 AM
REGULAR **Method for Improving DED Simulation through the Use of Deposition Path Modeling**
[Chris Robinson](#)¹; ¹Ansys

11:20 AM
INVITED **Large Scale Metal Additive Manufacturing for Space Industry using Laser-Powder DED Process**
[Bhaskar Dutta](#)¹; [Farhad Ghadamli](#)¹;
¹DM3D

11:50 AM
REGULAR **Manufacturing Sequence to Obtain a Metallic Component using DED-LB Process**
[Germán Barragán](#)¹; [Johan Grass](#)²; [Daniel Rojas](#)²; [Germán Urrea](#)¹; [Reginaldo Coelho](#)²; ¹Universidad Pontificia Bolivariana; ²Universidade de São Paulo

12:10 PM **LUNCH**

13:30 PM
INVITED **Performance Responses of Wire-Arc Additively Manufactured Fe-Based Structural Materials to Post-Print Heat Treatments**
[Yukinori Yamamoto](#)¹; [Peeyush Nandwana](#)¹; [Wei Tang](#)¹; [Andrzej Nycz](#)¹; [Mark W. Noakes](#)¹; [Ben B. Schaeffer](#)²; [Badri Narayanan](#)²; ¹Oak Ridge National Laboratory (ORNL); ²Lincoln Electric

14:00 PM
INVITED **Exploring High Temperature Functionally Graded Alloys for Site-Specific Property Response**
[Soumya Nag](#)¹; [Brian Jordan](#)¹; [Ke An](#)¹; [Chuan Zhang](#)²; [Fan Zhang](#)²; [Raymond R. Unocic](#)¹; [Jonathan D. Poplawsky](#)¹; [Jaimie Tiley](#)¹; ¹Oak Ridge National Laboratory (ORNL); ²CompuTherm

14:30 PM
REGULAR **Grading Inconel 625 to Copper Alloys via Hybrid Wire-Powder Directed Energy Deposition: Design Methodology and Validation towards Defect Free Graded Alloys**
[Somayeh Pasebani](#)¹; [Jakub Preis](#)¹; [Sriram Manoharan](#)¹; [Ryan Doyle](#)¹; [Zhengming Wang](#)¹; [Brian Paul](#)¹; [Donghua Xu](#)¹; ¹Oregon State University

14:50 PM
REGULAR **Potentials and Challenges of Extreme High-Speed DED-LB Technology: Additive Manufacturing, Coating and Material Development**
[Tobias Stittgen](#)¹; ¹ponticon

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ICAM 2022 TENTATIVE PROGRAM AGENDA

Updated as of 16th September 2022



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Research to Standards

15:10 PM **BREAK**

15:20 PM **INVITED**
**A Multiscale Modelling Framework
for Laser Melt Deposition of Ti-6Al-
4V**

Hector Basoalto¹; Prashant Jadhav¹;
Alphons Antonysamy²; ¹University of
Sheffield; ²GKN Aerospace

15:50 PM **REGULAR**
**Dynamic Tensile Deformation of
Stainless Steel Processed by
Laser-Based Directed Energy
Deposition – Contribution to Crash-
Safe Components**

Niklas Sommer¹; Stefan Böhm¹;
Christian Wolf¹; ¹University of Kassel

16:10 PM **INVITED**
**High Pressure Cold Spray in
Advanced Metal Additive
Manufacturing Applications**

Marius D. Ellingsen¹; Bharat Jasthi²;
¹VRC Metal Systems; ²South Dakota
School of Mines & Technology

16:40 PM **INVITED**
**An Overview: Prediction and
Control of Part Distortion and
Residual Stress for Large-Scale
Metal Additive Manufacturing**

Yousub Lee¹; Andrzej Nycz¹; Srdjan
Simunovic¹; Luke Meyer¹; Chris
Masuo¹; William Carter¹; ¹Oak Ridge
National Laboratory (ORNL)

17:10 PM **END OF DAY**

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ICAM 2022 TENTATIVE PROGRAM AGENDA

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APPLICATION OF AM IN ENERGY, MARITIME AND OIL & GAS

CO-ORGANIZERS:

Ole Geisen
Siemens Energy, Germany
Matt Sanders
Stress Engineering
Services, USA

Valeria Tirelli
AIDRO, Italy
Lakshmi Vendra
Baker Hughes, USA

4TH NOV 2022 (FRI)

IBIS (LEVEL 2)

SESSION CHAIR: TBA

4TH NOVEMBER 2022

08:00 AM
INVITED
Thin-Walled Dual Coolant Heat Exchanger for Fusion Energy Applications
[James W. Paterson](#)¹; [Ole Geisen](#)²; [Timo Heitmann](#)²; [Bernd Koos](#)²; [Frank Schoofs](#)¹; ¹United Kingdom Atomic Energy Authority; ²Siemens Energy

08:30 AM
REGULAR
Utilization of Additive Manufacturing for Pump Impellers in Cryogenic Applications
[Derrick T. Bauer](#)¹; [Jan de Roos](#)²; ¹Elliott Group; ²Shell

08:50 AM
INVITED
API and ASME Qualification of a 3D Printed Pressure Component for Oil & Gas Service
[Robert Rettew](#)¹; [Matthew Sanders](#)²; [Teresa Melfi](#)³; ¹Chevron; ²Stress Engineering Services; ³Lincoln Electric

09:20 AM
REGULAR
Qualification of Additive Manufacturing Technology for Oil and Gas Applications
[Stephen Freitas](#)¹; ¹IMI CCI

09:40 AM
INVITED
Unlocking the Potential of Additive Manufacturing in Energy, Oil & Gas and Maritime Applications through Standardised Qualification & Certification Framework
[Sastry Y. Kandukuri](#)¹; [Serkan Yildiz](#)²; [Stian Gurrik](#)¹; [Onno Ponfoort](#)³; [Gisle Rørvik](#)⁴; ¹DNV; ²BMT Aerospace; ³Berenschot; ⁴Equinor

10:10 AM **BREAK**

10:30 AM
REGULAR
Certification of a 3D Printed Pressure Vessel Against the European Pressure Equipment Directive (PED)
[Jelle Hofstee](#)¹; [Rik van der Meer](#)¹; [Dennis Zaal](#)¹; ¹Shell

10:50 AM
INVITED
Industrialization of 3D Printed Gas Turbine Vanes, an End to End View in Opportunities and Challenges
[Magnus Hallberg](#)¹; [Martin Lindbäck](#)¹; [Ilya Fedorov](#)¹; [Dikran Barhanko](#)¹; ¹Siemens Energy

11:20 AM
REGULAR
New Metal AM Materials for Oil and Gas Industry – High Strength, Corrosion Resistant Steels
[Priyanshu Bajaj](#)¹; [Andreas Pelz](#)¹; [Bastian Kallenbach](#)¹; ¹m4p material solutions

11:40 AM
REGULAR
Industrial Application of Leak Repair Clamp Produced by Wire Arc Additive Manufacturing
[Angeline Goh](#)¹; [Danny Steel](#)²; [Olivier Tartar](#)³; [Heather Gower](#)¹; [Gonghyun Jung](#)¹; [Alfred Kruijer](#)¹; [Sam McFarland](#)¹; [Archana Pathiraj](#)¹; ¹Shell; ²TEAM; ³Vallourec

12:00 PM **LUNCH**

13:30 PM
INVITED
Additively Manufactured Heat Exchanger in Direct Air Capture System
[René Haas](#)¹; [Silvain Toromanoff](#)¹; ¹NeoCarbon

14:00 PM
REGULAR
Additively Manufactured Turbine Vane 1 with In-Wall Cooling Design
[Tad Steinberg](#)¹; [Kevin Sheehan](#)¹; ¹Siemens Energy

14:20 PM
INVITED
Exploring a Novel Approach for Support Optimization Aiming Reduction of Fabrication Costs and Print Job Failure Rates
[Alexandre Hiricoiu](#)¹; [Timo Heitmann](#)²; [Enrique Escobar de Obaldia](#)¹; ¹Ansys; ²Siemens Energy

14:50 PM
REGULAR
Additive Manufacturing & Digitisation in Energy, Maritime and Oil & Gas
[Robby Reneberg](#)¹; [Mustafa A. Abdelkader](#)¹; [Fahmi Al-Shawwa](#)¹; ¹IMMENZA

15:10 PM **BREAK**

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ICAM 2022 TENTATIVE PROGRAM AGENDA

Updated as of 16th September 2022



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15:30 PM **Enabling Distributed Supply Chains
through Additive Manufacturing**
INVITED [Roberto Esposito](#)¹; ¹Velo3D

16:00 PM **Drop Tests of Multiple 3D-Printed
Container Models in Calm Water**
REGULAR [Vincent Xiaochuan Yu](#)¹; ¹University of
New Orleans

16:20 PM **Additively Manufactured Polymeric
Gaskets for Oil & Gas Digital
Inventory Solutions**
INVITED [Luisa Elena Mondora](#)¹; ¹Valland

16:50 PM **END OF DAY**

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ICAM 2022 TENTATIVE PROGRAM AGENDA

Updated as of 16th September 2022



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AM APPLICATIONS FOR AUTOMOTIVE TRANSPORTATION/HEAVY MACHINERY

CO-ORGANIZERS:

Eric Johnson

Eaton, USA

Aaron Lalonde

U.S. Army CCDC-

GVSC, USA

Ante Lausic

General Motors, USA

Simon Pun

Divergent, USA

4TH NOV 2022 (FRI)

OSPREY (LEVEL 2)

SESSION CHAIR: TBA

4TH NOVEMBER 2022

08:00 AM

INVITED

**Enabling Vehicle Scale Metal
Additive Manufacturing**

[Aaron D. LaLonde](#)¹; ¹U.S. Army
Combat Capabilities Development
Command - Ground Vehicles Systems
Center (GVSC)

08:30 AM

REGULAR

**Opportunities & Challenges with
Laser Powder Bed Fusion for
Automotive Applications**

[Whitney Poling](#)¹; [Md Ashabul Anam](#)¹;
[Andrew Bobel](#)¹; [Tyson Brown](#)¹; [Anil
Sachdev](#)¹; [Mark Smith](#)¹; ¹General
Motors

08:50 AM

REGULAR

**Challenges and Strategies for
Implementing Additive
Manufacturing in Heavy Industries -
Lessons Learned from Aerospace
& Defense**

[Abdalla R. Nassar](#)¹; ¹John Deere

09:10 AM

REGULAR

Additive Manufacturing for SNCF

Réseau: An Industrial Ambition
[Pascal De Guio](#)¹; [Philippe Kuchly](#)¹;
[Véronique Vidal](#)¹; ¹SNCF Réseau

09:30 AM

INVITED

**Metal Binder Jetting Additive
Manufacturing of Transmission
Shift Knob Component for
Automotive Application**

[Cody Cochran](#)¹; [Mattia Forgiarini](#)¹;
¹Azoth

10:00 AM

BREAK

10:30 AM

REGULAR

**Enhancement of Heat Exchanger
Performance using Additive
Manufacturing of Gyroid Lattice
Structures**

[Mostafa Yakout](#)¹; [Shekhar Rammohan
Singh Tandel](#)²; [Dalia Mahmoud](#)³;
[Mohamed Abdelaziz Elbestawi](#)²;
[Fabrizio Mattiello](#)⁴; [Stefano Paradiso](#)⁵;
[Chan Ching](#)²; [Mohammed Zaher](#)⁶;
[Mohamed Abdelnabi](#)²; ¹University of
Alberta; ²McMaster University;
³Alexandria University; ⁴Centro
Ricerche Fiat (CRF); ⁵Stellantis;
⁶University of Toronto

10:50 AM

REGULAR

**Lightweight LPBF Combustion
Engines for Future Mobility
Applications**

[Simon Vervoort](#)¹; ¹Fraunhofer
Institute for Laser Technology ILT

11:10 AM

INVITED

**Solving Unique EV & AV
Manufacturing Challenges through
Hybrid AM**

[Justin Swartz](#)¹; ¹GKN Forecast 3D

11:40 AM

REGULAR

**Algorithm-Aided-Design:
Parametric Modeling and
Automated Design Generation of
3D Winding Designs of Hairpin
Stators (E-Machines) for Additive
Manufacturing**

[Carsten Putz](#)¹; [Johannes Henrich
Schleifenbaum](#)¹; ¹RWTH Aachen
University - Digital Additive Production
DAP

12:00 PM

END OF DAY

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