

SETS

Southwest Emerging Technology Symposium

AGENDA

Your Eyes on the Future

April 24-25, 2023

Starlight Event Center

utep.edu/aerospace



AEROSPACE CENTER

W.M. KECK CENTER FOR 3D INNOVATION

Southwest Emerging Technology Symposium 2023

Monday, 24 April

LOCATION Starlight Event Center

7:30 AM - 8:00 AM		
REGISTRATION	Franklin	BREAKFAST
8:00 AM - 8:30 AM		Rio Grande
OPENING CEREMONY		
Ahsan Choudhuri Associate Vice President The University of Texas at El Paso		
Kenith E. Meissner II Dean, College of Engineering The University of Texas at El Paso		
Heather Wilson President The University of Texas at El Paso		
8:30 AM - 9:15 AM	<i>Moderator: Jack Chessa</i>	Rio Grande
DISTINGUISHED SPEAKER		
<i>Human Spaceflight 2023+</i>		
Gerald "Jay" LeBeau Deputy Director of Engineering NASA - Johnson Space Center		
9:15 AM - 10:00 AM	<i>Moderator: Misael Navarrete</i>	Rio Grande
DISTINGUISHED SPEAKER		
<i>Metal Additive Manufacturing for Rocket Engines: Successes and Failures</i>		
Paul Gradl Principal Engineer NASA		
10:00 AM - 10:10 AM		
BREAK		
10:10 AM - 11:50 AM		
PARALLEL TECHNICAL SESSIONS		
ADDITIVE MANUFACTURING I	<i>Moderator: Kurtis Watanabe</i>	Mission
10:10 AM - 10:30 AM	A Comparison Of The Mechanical Behavior Of Alsi7mg Alloy Produced Through Additive Manufacturing And Subjected To Different Heat Treatment And Aging Conditions.	
	<i>Presenter: Kevin Caballero</i>	
10:30 AM - 10:50 AM	Effects Of Process Parameters And Process Defects On The Flexural Fatigue Life Of Ti-6al-4v Fabricated By Laser Powder Bed Fusion	
	<i>Presenter: Brandon Ramirez</i>	
10:50 AM - 11:10 AM	Impact Of Various Post-Processing Techniques On The Fatigue Life Of Additively Manufactured Aerospace-Grade Titanium Alloy (Ti-6al-4v) Parts Subjected To Flexural Bending	
	<i>Presenter: Cristian Banuelos</i>	
11:10 AM - 11:30 AM	Mechanical Testing And Microstructural Characterization Of Laser Powder Bed Fusion (L-Pbf) Additively Manufactured Inconel 718 Angled Walls For Aerospace Application	
	<i>Presenter: Dana Godinez</i>	

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11:30 AM - 11:50 AM Residual Stress And Deformation Analysis Of Inconel 718 Across Varying Overhangs In Laser Powder Blown Directed Energy Deposition
Presenter: Alejandro Hernandez

ADDITIVE MANUFACTURING II

Moderator: Jorge Mireles

Transmountain

10:10 AM - 10:30 AM Comparison Of Laser Powder Bed Fusion As-Built Textures From Three Different Surface Measuring Methodologies
Presenter: Alex De La Cruz

10:30 AM - 10:50 AM Effects Of Different Parameters And Printing Angle On DED Hr-1 Including Microstructure, Tensile Strength, And Fatigue Resistance
Presenter: Javier Lares

10:50 AM - 11:10 AM Inconel-718 Microstructural Analysis Concerning The Differentiation Of Distinct Manufacturing Printing Processes
Presenter: Francisco Gustavo Gomez

11:10 AM - 11:30 AM Microstructural Comparison Of Traditional And Additively Manufactured Ti6-Al-4v
Presenter: Diego Ariza Barba

11:30 AM - 11:50 AM Parameter Development Of Niobium Alloy C103 For Laser-Powder Directed Energy Deposition
Presenter: Brandon Colon

AEROSPACE & DEFENSE I

Moderator: Christian Lozoya

Scenic

10:10 AM - 10:30 AM Cold Gas Proof Of Concept Testing For The Development Of Advanced Avionics System For Lunar Lander
Presenter: Isaac Basurto

10:30 AM - 10:50 AM Development Of Physical And Digital Twin Of A Cost-Effective Satellite Command Bus
Presenter: Victor Herrera

10:50 AM - 11:10 AM Small Satellite Running AI In Space
Presenter: Eduardo Macias Zugasti

11:10 AM - 11:30 AM Thruster Testing Of The Cold Gas Demonstrator And Current Transformation To A Flight Ready Unit
Presenter: Gerardo Olvera & Catherine Carrillo

11:30 AM - 11:50 AM Utilization Of Digital Engineering And Digital Twin For A Space Robot Mission
Presenter: Juan Molinar

AEROSPACE & DEFENSE II (ITAR)

Moderator: Daniel Valtierra

Sunset

10:10 AM - 10:30 AM 1N Ascent Thruster Multiphysics Modeling Development
Presenter: Raul Cuevas & Dawn Blazer

10:30 AM - 10:50 AM Digital Twin Of An Intermittent Blowdown High-Speed Wind Tunnel
Presenter: Omar Dominguez

10:50 AM - 11:10 AM Performance Characterization Of The Embedded Electrospray Thruster (Eet 1)
Presenter: Alberto Meza & Antonio Robali

12:00 PM - 1:00 PM

Rio Grande

LUNCH

Southwest Emerging Technology Symposium 2023

1:00 PM - 1:45 PM

Moderator: MD Mahamudur Rahman

Rio Grande

DISTINGUISHED SPEAKER

Hypersonics and Darkstar from Top Gun: Maverick

Timothy Jorris LM Fellow, Hypersonics

Lockheed Martin Corporation | Aeronautics, Skunk Works

1:45 PM - 2:30 PM

Moderator: Linda Vera

Rio Grande

DISTINGUISHED SPEAKER

Missiles and Fire Control Business Area Overview

Jaclyn Mejia Sr. Propulsion Engineer

Lockheed Martin Corporation | Missile and Fire Control

2:30 PM - 2:40 PM

BREAK

2:40 PM - 3:30 PM

Moderator: Mehrin Chowdhury

Rio Grande

PANEL SESSION

AEROSPACE AND DEFENSE CAREERS

Pablo Rodriguez President & Chief Executive Officer

PROD Design & Analysis

Ave K. Kludze NASA Senior Technical Advisor

NASA - Headquarters

Melvin Redmond Hardware Design and Analysis Director

Lockheed Martin Corporation

3:30 PM - 3:40 PM

BREAK

3:40 PM - 5:20 PM

PARALLEL TECHNICAL SESSIONS

ADDITIVE MANUFACTURING III

Moderator: Dakota Morgan

Mission

3:40 PM - 4:00 PM

3D Printing Of Micron-Sized Channels For Microfluidic Chip Fabrication

Presenter: Sofia Gomez

4:00 PM - 4:20 PM

Comparative Powder Characterization Of Titanium-6al-4v -Plasma Atomization, Hydrogenation-Dehydrogenation (Hdh), And Gas Atomization

Presenter: Laura I Marquez

4:20 PM - 4:40 PM

Exploring The Capabilities Of An Open-Source Eb-Pbf For In718 Production

Presenter: Shadman Tahsin Nabil

4:40 PM - 5:00 PM

Introduction To Directed Energy Deposition Additive Manufacturing

Presenter: Dario Valenzuela

5:00 PM - 5:20 PM

Microstructure Control Modeling –Literature Review

Presenter: Julio Diaz

ADDITIVE MANUFACTURING IV

Moderator: Mahesh Tonde

Transmountain

3:40 PM - 4:00 PM

Comprehensive And Comparative Study Of Complex Geometry Heat Exchangers Manufactured With Additive Manufacturing Technologies

Presenter: Jorge Fernandez

4:00 PM - 4:20 PM

Effects Of Ambient Temperature And Humidity On Structural Integrity And Printability Of Barium Titanate Ceramic Paste

Presenter: Abigail M Ortega

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4:20 PM - 4:40 PM Rheological Characterization Of Barium Titanate With Varying Print Parameters For Formation Of Printability Workflow

Presenter: Nicholas Durand

4:40 PM - 5:00 PM Valuation Of The Oxygen Sensors Of Three Metal Laser Powder Bed Fusion Systems

Presenter: Brenda Valadez

ENERGY I

Moderator: Mahadi Hasan

Scenic

3:40 PM - 4:00 PM A Cost-Effective Method Of Characterizing Ceramic Pastes For 3D Printing

Presenter: Josh Carrillo

4:00 PM - 4:20 PM Analysis Of 3D Printing Of BTO With Templated Grain Growth And BTO Platelets

Presenter: Luis Rodriguez & Aaron Rodriguez

4:20 PM - 4:40 PM Enhancing Robocasting With In Situ Monitoring Via Piezoelectric Pressure Sensor

Presenter: Gustavo Medina

4:40 PM - 5:00 PM Fabrication Of A High Load Barium Titanate Slurry For Additive Manufacturing Of Piezoelectric Ceramics Via Digital Light Processing

Presenter: Diana Leyva

5:00 PM - 5:20 PM Implementation Of Smart Materials For Actuation Of Traditional Valve Technology For Hybrid Energy Systems

Presenter: Saqlain Swapnil & Nicolas E. Herrera

AEROSPACE & DEFENSE III (ITAR)

Moderator: Daniel Valtierra

Sunset

3:40 PM - 4:00 PM Hypersonic Vehicles: Leading Edge Prototype Design And Testing In High Enthalpy Facility

Presenter: Aliyah McDaniel & Nathan Wetherington

4:00 PM - 4:20 PM Micro/Nano-Engineered Hierarchical Arrays For Enhanced Thin Film Evaporation Of Water

Presenter: Esteban Rios

4:20 PM - 4:40 PM Thermo-Structural Analysis Of A Hypersonic Leading Edge Heat Pipe

Presenter: Oswaldo Zepeda

5:30 PM - 6:30 PM

Rio Grande

DINNER

Southwest Emerging Technology Symposium 2023

Tuesday, 25 April

LOCATION Starlight Event Center

7:30 AM - 8:00 AM

REGISTRATION

Franklin

BREAKFAST

Rio Grande

8:00 AM - 8:30 AM

Rio Grande

OPENING CEREMONY

Ahsan Choudhuri Associate Vice President
The University of Texas at El Paso

Oscar Leeser Mayor
El Paso

8:30 AM - 9:15 AM

Moderator: Frank Medina

Rio Grande

DISTINGUISHED SPEAKER

Accelerating Adoption of Additive Manufacturing in Aerospace &

Brian Fisher Senior Principal Engineer
Raytheon

9:15 AM - 10:00 AM

City View

Poster Presentations

Poster: Ionization and Electrostatic Transportation of Sublimated Water Vapor Using Radio-Frequency (RF) Ionization

Presenter: Alexis Lupo

Poster: Melt Blend Extrusion Fabrication of Spherical HDPE Particles for Selective Laser Sintering

Presenter: Anette Baca

Poster: 3D Printing Optimization Of High-Temperature Bismaleimide Thermoset With Improved Mechanical Properties

Presenter: Antonio Delgadillo & Asahel Marinelarena-Diaz

Poster: Design And Fabrication of Ceramic Complex Geometric Structures to Bolster Mechanical, Thermal, And Piezoelectric Properties; Made Possible Through Digital Light Processing

Presenter: Carla Navar

Poster: Direct Ink Writing (DIW) Technique Using Porcelain Clay Ceramics for Clean Energy Applications

Presenter: Diego Gonzalez

Poster: Tailorable Composite Design Concepts towards Lightweight and Stiffer Structures for Extremely Large Telescopes

Presenter: Jacob Aguirre

Poster: Radiative Sublimation Method for Icy Regolith

Presenter: Manuel Valdiviez

Poster: Thermal Simulation in a Digital Twin Coral Development Board

Presenter: Marco Escobedo

Poster: High-temperature Bypass Valve Designed for a Solid Oxide Fuel Cell System

Presenter: Nicolas E Herrera

Poster: Utilization of Digital Engineering and Digital Twin for a Space Robot Mission

Presenter: Roberto Robles & Julio Garcia

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Poster:	Nanoindentation of Syntactic Foams <i>Presenter: Stephanie Gonzalez</i>
Poster:	Development Of Mucoadhesive Carrier for Gastrointestinal Tract Specific Local And sustained Drug Delivery <i>Presenter: Stephanie Vargas Esquivel & Sheikh Shafin Ahmad</i>
Poster:	Analysis of High-Speed Aircraft Performance at Various Flight Conditions <i>Presenter: Aliyah McDaniel & Nathan Wetherington</i>
Poster:	Methanation Reactor Design for CO & CO2 <i>Presenter: Andrea Fabila</i>
Poster:	Heat Exchanger Digital Engineering <i>Presenter: Iram Hernandez</i>

10:10 AM - 11:50 PM

PARALLEL TECHNICAL SESSIONS

ADDITIVE MANUFACTURING V

Moderator: Mireya Flores

Mission

10:10 AM - 10:30 AM	Ceramic Paste 3D Printer For Robocasting And In-Situ Monitoring <i>Presenter: Jason McCleary</i>
10:30 AM - 10:50 AM	Comparison Of Additive And Conventional Sample With Thin Film Evaporation Of Liquid Nitrogen For Lunar Ice Collection <i>Presenter: Mahadi Hasan</i>
10:50 AM - 11:10 AM	Effect Of Machine Variability And Thickness On Microstructure And Micro Hardness Of Laser Powder Bed Fusion (L-Pbf) Additively Manufactured Inconel 718 For Aerospace Application <i>Presenter: Annanya Doris</i>
11:10 AM - 11:30 AM	In-Situ Monitoring Of Laser Soldering On Fine-Pitch Connector In Hybrid Am <i>Presenter: Alexander Pustinger</i>
11:30 AM - 11:50 AM	In-Situ Dimensioning Of Paste Extrusion Printed BTO Beads Using Image Processing With Open CV <i>Presenter: Luis Castillo</i>

ADDITIVE MANUFACTURING VI

Moderator: Jose Coronel

Sunset

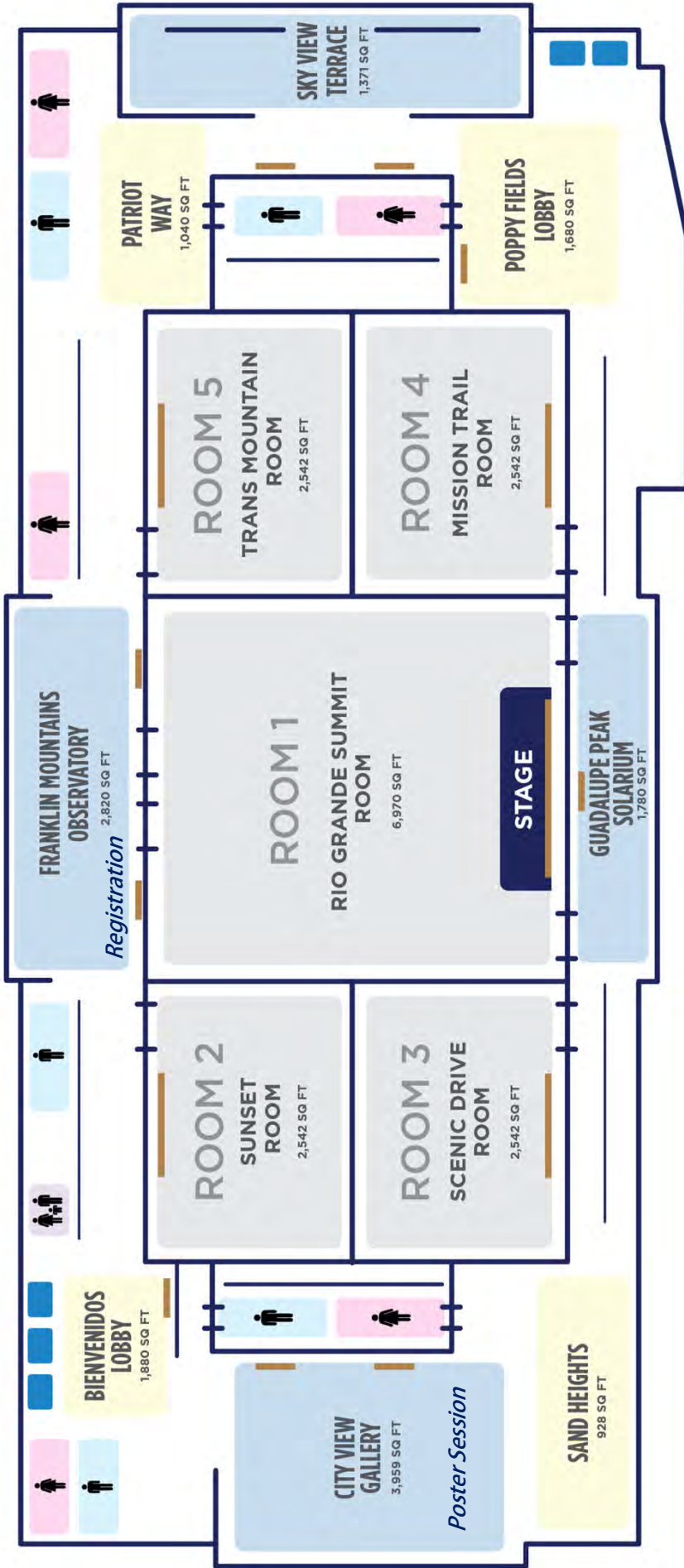
10:10 AM - 10:30 AM	Additive Manufacturing Of Copper Parts Through Metal Fused Filament Fabrication <i>Presenter: Jean Montes</i>
10:30 AM - 10:50 AM	Development Of Laser Cladding Procedure Through Experiment And Analysis Using Powder Blown Direct Energy Deposition <i>Presenter: Dajalma Garcia</i>
10:50 AM - 11:10 AM	Evaluating Microsecond Delays On Mechanical Properties Of Sub-Size Laser Powder Bed Fusion Tensile Samples <i>Presenter: Ernesto Gamboa</i>
11:10 AM - 11:30 AM	Uniaxial And 4-Point Bending Fatigue Testing Of Additive Manufactured Ti-6Al-4V <i>Presenter: Saul Barraza</i>
11:30 AM - 11:50 AM	Validation Of Magnetic Resonance Velocimetry Flow Measurements Within A Commercial Laser Powder Bed Fusion System <i>Presenter: Hector Estrada</i>

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ENERGY II	<i>Moderator: Pilar Gonzalez</i>	Transmountain
10:10 AM - 10:30 AM	Enhancing The Damage Tolerance Of Composite Materials With Aramid Pulp <i>Presenter: Emmanuel Vielma</i>	
10:30 AM - 10:50 AM	Exploratory Study On Coefficient Of Thermal Expansion For Smp-10matrix Media <i>Presenter: Zackery Nieto</i>	
10:50 AM - 11:10 AM	Mode-I Fracture Toughness Of Unidirectional Carbon (Grafil) Fiber Epoxy Composites For Low Cost Applications <i>Presenter: Robert Contreras</i>	
AEROSPACE & DEFENSE IV	<i>Moderator: Alberto Meza</i>	Scenic
10:10 AM - 10:30 AM	Failure And Reliability Analyses For Long-Endurance UAS Architecture <i>Presenter: Edward Martinez Rodriguez</i>	
10:30 AM - 10:50 AM	Realistic UAV Simulations For Synthetic Data Creation: Towards AI Sensor Fault Prediction <i>Presenter: Julio Reyes</i>	
10:50 AM - 11:10 AM	Thermal Simulations Of Embedded Single-Board Computers Within 3D Printed Parts For Satellite Applications <i>Presenter: Arianna I. Villegas</i>	
12:00 PM - 1:00 PM		Rio Grande
LUNCH		
1:00 PM - 1:45 PM	<i>Moderator: Joel Quintana</i>	Rio Grande
DISTINGUISHED SPEAKER		
<i>Axiom Space and the New Low Earth Orbit Economy</i>		
	Jay Estes Senior Technical Advisor Axiom	
1:45 PM - 2:30 PM	<i>Moderator: Alejandro Silva</i>	Rio Grande
DISTINGUISHED SPEAKER		
<i>"It's Snowing, So There Can't Be Climate Change, Right?"; Translating Impactful Science to Broad Audiences in an Era of Purposeful Ambiguity</i>		
	Richard Pineda Chair of the Department of Communication and Director of the Sam Donaldson Center for Communication Studies The University of Texas at El Paso	
2:30 PM - 2:40 PM		
BREAK		
2:40 PM - 5:00 PM		
PARALLEL TECHNICAL SESSIONS		
ADDITIVE MANUFACTURING VII	<i>Moderator: Hazael Anaya</i>	Mission
2:40 PM - 3:00 PM	Partial Encapsulation Of Threaded Inserts Within Hybrid Additive Manufacturing <i>Presenter: Joselin Corral</i>	
3:00 PM - 3:20 PM	Scanning Strategies Of Pixelmelt Software For Freemeltone Eb-Pbf Systems <i>Presenter: Gael Fierro</i>	
3:20 PM - 3:40 PM	A Method for Capturing The Spectral Emissivity of Metal Powders at Different Temperatures And Applications in Laser Powder Bed Fusion <i>Presenter: Emmanuel Levario</i>	

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AEROSPACE & DEFENSE V	<i>Moderator: Antonio Robali</i>	Transmountain
2:40 PM - 3:00 PM	Liquid Oxygen/Liquid Methane 500 lbf Cryogenic Rocket Engine Upgradation and Hot Fire Test Plan <i>Presenter: Perla Martinez</i>	
3:00 PM - 3:20 PM	Thermophysical Properties of Lunar Regolith Simulants LHS-1 and LHS-1D <i>Presenter: Dominic Austen</i>	
3:20 PM - 3:40 PM	Singular Value Decomposition Analysis Of Observability Of A Linear System <i>Presenter: Andres Enriquez Fernandez</i>	
3:40 PM - 4:00 PM	Developing Modular Cubesat Hardware Interfaces For A Rapid Deployment <i>Presenter: Javier Martell & Anamika Siddique</i>	
4:00 PM - 4:20 PM	Digital Twin Oriented Modeling In UAS Applications <i>Presenter: Andres Garcia</i>	
ENERGY III	<i>Moderator: Eduardo Macias</i>	Scenic
2:40 PM - 3:00 PM	Sustainable Energy Resources In Shaping The Us Energy: A Review Of The State-Of-The-Art, Opportunities, Challenges & Ongoing Technological Development <i>Presenter: Sumit Chanda</i>	
3:00 PM - 3:20 PM	Towards A Clean Us Energy: A Systematic Comparison Between Fossil Power And Sustainable Hydrogen Power <i>Presenter: Anika Tasnim</i>	
ADDITIVE MANUFACTURING VIII	<i>Moderator: Jason McCleary</i>	Sunset
2:40 PM - 3:00 PM	Double Cantilever Beam Mode-I Testing Validation In Large-Scale Additive Manufacturing Carbon Composite Prints <i>Presenter: Luis Camacho</i>	
3:00 PM - 3:20 PM	Towards Automating Thermal Monitoring For Large-Scale Additive Manufacturing <i>Presenter: Juan Pablo Garcia Chavira</i>	
3:20 PM - 3:40 PM	Evaluation of Plate Scans for Improved Reproducibility on Multiple LPBF Systems <i>Presenter: Antonio York</i>	



KEY

