1st International Conference on Advanced Manufacturing for Air, Space and Land Transportation

7-10 March 2022
Online Event

Final Programme

Please check the conference website for regular updates

https://atpi.eventsair.com/icam22

On behalf of the International Organising Committee
4 March 2022

Programme Overview

DAY ONE

Monday 7th March 2022

Start Time (CET)	Room A	Room B	Room C	Room D	Room E	Room F
12:15	Welcome Speaches					
12:45	Plenary Presentation: Jose Gavira Izquierdo, ESA, Netherlands					
13:25	Plenary Presentation: Niki Werkheiser, NASA, USA					
14:05	COFFEE BREAK					
14:20	ADDITIVE MANUFACTURING ALLOY DEVELOPMENT	ADDITIVE MANUFACTURING PROPERTIES	ADDITIVE MANUFACTURING MECHANISMS	JOINING	OUT OF EARTH - 1	COMPOSITES - 1
Co-Chair 1	Alison Park	Michael Gorelik	Volker Gass	Norberto Jimenez	Advenit Makaya	Christos Argyrakis
Co-CHair 2	Benoit Bonvoisin	Stefano Beretta	Mallory James	Christophe Leyens		Michael Mallon
14:20	KN Shahani (141)	KN Glaessgen & Gorelic		KN Scudamore (93)	KN Clinton	KN - Seneviratne (212)
14:35			10 Rouvinet			
14:55	43 Gradl	3 Gillham	20 Vainio	91 Marie	146 Palomare	44 Jensen
15:15	11 Nutal	70 Lemarquis	29 Melzer	81 Gandra	126 Flisykowska	75 Dutra
15:35	94 Dröse	77 Moritz	32 Pejchal	64 Magazzeni	143 Marnot	23 González Herrero
15:55	14 Barode		34 Goossens	107 Amancio	92 Ghosh	15 Cosio
16:25	COFFEE BREAK					
16:40	Plenary Presentation: Charlie Kuehmann, SpaceX, USA					
17:35	COFFEE BREAK					
17:45	ADDITIVE MANUFACTURING ALLOY DEVELOPMENT	ADDITIVE MANUFACTURING PROPERTIES	ADDITIVE MANUFACTURING MECHANISMS	JOINING	OUT OF EARTH - 1	COMPOSITES - 1
Co-Chair 1	Alison Park	Michael Gorelik	Volker Gass	Norberto Jimenez	Jim Stott	Christos Argyrakis
Co-CHair 2		Stefano Beretta	Mallory James	Christophe Leyens		Michael Mallon
17:45						KN - Vickers
18:00	13 Martucci	88 Avila Diaz	49 Kiener	149 Riva	127 Pichard	
18:20	39 Klein	89 Avila Diaz	28 Alegre Cubillo	163 Schneider	41 Tiwari	191 Opliger
18:40	144 Wilsnack	153 White			46 Koch	155 Pommatau
19:00		189 Paraschiv			125 Guerrero Gonzalez	114 Mchale
19:20		201 Ye			61 Fischer	166 Poursartip
19:40						84 Pereira

Notes:

1) **Normal presentations are 20 minutes in length. The Q&A will be at the end of each session**
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Programme Overview

DAY TWO

Tuesday 8th March 2022

Start Time (CET)	Room A	Room B	Room C	Room D	Room E	Room F
12:25	ADDITIVE MANUFACTURING PROCESS CHAIN - 1	ADDITIVE MANUFACTURING POST PROCESSING	ADDITIVE MANUFACTURING PROCESS DEVELOPMENT - 1	ELECTRONIC MATERIALS AND PROCESSES	OUT OF EARTH - 2	COMPOSITES - 2
Co-Chair 1	Florence Montredon	Ana Brandão	Donato Girolamo	Jussi Hokka	Lucia Pigliaru	Waruna Seneviratne
Co-CHair 2	Philippe Hendrickx	Nicolas Nutal		Frank Brückner (tbc)		Rick Russell
12:25	KN Gradl (42)		KN - Meisnar (175)	KN Van Den Brand (211)	KN Makaya (194)	KN - Buitenhuis
12:40		18 Vanzetti				
13:00	21 Mulser	9 Schlauf	152 Deckers	113 Voet	85 Šeško	137 Bojarevics
13:20	110 G. Cosio	24 Vanhumbeeck	27 Marinucci	171 Heltzel	142 Santos	87 Oliveira
13:40	99 Mertens		50 Arnold	183 Cauwe	67 Pozo	22 Bauernfeind
14:00	62 Gonzalez Llamazares		25 Lores	151 Ghosh	165 Mani	26 Bernard
14:30	COFFEE BREAK					
14:45	Plenary Presentation: Aurelio Occhinegro, Scuderia Ferrari, Italy					
15:40	Plenary Presentation: Andrea Pontremoli, Dallara, Italy					
16:35	COFFEE BREAK					
16:50	PANEL SESSION - 1 (Out of Earth Manufacturing)					
17:45	COFFEE BREAK					
17:55	ADDITIVE MANUFACTURING PROCESS CHAIN - 1	SURFACE ENGINEERING - 1	ADDITIVE MANUFACTURING PROCESS DEVELOPMENT - 1	DIGITAL MANUFACTURING - 1	OUT OF EARTH - 2	COMPOSITES - 2
Co-Chair 1	Florence Montredon	Christopher Magazzeni	Bianca Colosimo	Dawid Luczyniec	Simon Patane	Waruna Seneviratne
Co-CHair 2	Philippe Hendrickx		Donato Girolamo	Tommaso Ghidini		Rick Russell
17:55	KN (Rohr)		KN Brackett (52)	KN Beretta (213)		KN - Vroon (210)
18:10		6 Godec			131 Müller	
18:30	204 Eyrignoux	139 Mason	95 Koch	4 Seidel	136 Sutherland	190 Andrulonis
18:50	100 Moser	118 Vuchlov	172 Pires	8 Eugeni	138 Józefowicz	130 Grace
19:10	78 Onilon	96 Koß	57 Greifzu	80 Mittag	79 Lowndes	197 Marimuthu
19:30		66 Schmidt	164 Larsen	117 Eissing	98 Shestople	68 Deliane

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Programme Overview

DAY THREE

Wednesday 9th March 2022

Start Time (CET)	Room A	Room B	Room C	Room D	Room E	Room F
12:25	**ADDITIVE MANUFACTURING PROCESS CHAIN - 2**	**SURFACE ENGINEERING - 2**	**ADDITIVE MANUFACTURING PROCESS DEVELOPMENT - 2**	**DIGITAL MANUFACTURING - 2**	**OUT OF EARTH - 3**	**SMART AND EMERGING MATERIALS - 1**
Co-Chair 1	**Florence Montredon**	**Christopher Magazzeni**	**Christian Melzer**	**Dawid Luczyniec**	**Corky Clinton**	**Martina Meisnar**
Co-CHair 2	**Philippe Hendrickx**	**Benoit Bonvoisin**	**Thomas Rohr**	**Tommaso Ghidini**		**Andy Norman**
12:25	**KN (Seifi)**		**KN Brückner**	**KN Colosimo**	**KN Bailet**	
12:40		206 Shukla				37 Neubauer
13:00	219 Park	170 Bialowas	12 Malej	124 Paysan	188 Soorghali	160 Browne
13:20	214 West		38 Ariza Galvan	36 Jalbert	109 Sgambati	83 Williamson
13:40	72 Seibel		2 Beyer	97 Said	123 Kringer	101 Schlick
14:00	51 Giannelli		186 Leitwein		71 Meyer	
14:30	**COFFEE BREAK**					
14:45	**Plenary Presentation: Claudio Dalle Donne, Airbus, Germany**					
15:40	**Plenary Presentation: Melissa Orme, Boeing, USA**					
16:35	**COFFEE BREAK**					
16:50	**Plenary Presentation: Andy Short, Virgin Orbit, USA**					
17:45	**COFFEE BREAK**					
17:55	**ADDITIVE MANUFACTURING APPLICATIONS - 1**	**ADDITIVE MANUFACTURING CT / NDI / RESIDUAL STRESS - 1**	**ADDITIVE MANUFACTURING PROCESS DEVELOPMENT - 2**	**DIGITAL MANUFACTURING - 2**	**OUT OF EARTH - 3**	**SMART AND EMERGING MATERIALS - 1**
Co-Chair 1	**David Wimpenny**	**Elena Lopez**	**Christian Melzer**	**Dawid Luczyniec**	**Anna Daurskikh**	**Martina Meisnar**
Co-CHair 2	**Laurent Pambaguian**	**Ana Brandão**	**Thomas Rohr**	**Tommaso Ghidini**		**Andy Norman**
17:55	**KN Barnes / Schneeberger**	**KN Cabeza**				
18:10			140 Regé	116 Breitbarth	54 Ortega Varela de Seijas	159 Elghalmi
18:30	7 Montredon	58 Zepp	178 Lorusso	122 Strohmann	180 Plakhotnyuk	53 Gheysen
18:50	176 Vintila	104 Sperling	181 Racionero Sanchez-majano	45 Lissner	31 Schneider	108 Milleret
19:10	174 Boulzaguet	106 Zepp	134 Artzt	168 Abdi	76 Le-Duigou	145 Yan

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Programme Overview

DAY FOUR

Thursday 10th March 2022

Start Time (CET)	Room A	Room B	Room C	Room D	Room E	Room F
12:25	ADDITIVE MANUFACTURING APPLICATIONS - 2	ADDITIVE MANUFACTURING CT / NDI / RESIDUAL STRESS - 2	ADDITIVE MANUFACTURING PROCESS DEVELOPMENT - 3	DIGITAL MANUFACTURING - 3	ADDITIVE MANUFACTURING LATTICE STRUCTURES	SMART AND EMERGING MATERIALS - 2
Co-Chair 1	David Wimpenny	Elena Lopez	Christian Melzer	Andreas Kommer	Marco Mulser	Martina Meisnar
Co-CHair 2	Laurent Pambaguian	Ana Brandão	Thomas Rohr	Guillermo Requena	Gilles Pommatau	Andy Norman
12:25	KN Lasagni (147)	KN Du Plessis (208)	KN van der Velden	KN Bernasconi (207)		
12:40					16 Beevers	121 Bell
13:00	35 Aliprandi	205 Dutton	156 Zuin	182 Pagani	17 Nightingale	179 Anyszka
13:20	119 Riede	162 Gugliandolo	195 Klassen	187 Zappino	132 Georges	200 Sun
13:40	86 Moldovanu	90 Sprengel	196 Bača	82 Pinomaa	74 Carollo	
14:00	60 Casonato		209 Lim	133 Mallon	63 Catar	
14:30	COFFEE BREAK					
14:45	Plenary Presentation: Romano Lazurlo, Leonardo, Italy					
15:40	Plenary Presentation: Michael Gorelik, Federal Aviation Administration, USA					
16:35	COFFEE BREAK					
16:50	PANEL SESSION - 2 (Additive Verification and Qualification)					
17:45	COFFEE BREAK					
17:55	ADDITIVE MANUFACTURING APPLICATIONS - 2	ADDITIVE MANUFACTURING CT / NDI / RESIDUAL STRESS - 2	ADDITIVE MANUFACTURING POLYMERS	DIGITAL MANUFACTURING - 3	ADDITIVE MANUFACTURING LATTICE STRUCTURES	ADDITIVE MANUFACTURING HIGH TEMP MATERIALS
Co-Chair 1	David Wimpenny	Elena Lopez	Thomas Rohr	Andreas Kommer	Marco Mulser	Marco Di Clemente
Co-CHair 2	Laurent Pambaguian	Ana Brandão	Brian Jensen	Guillermo Requena	Gilles Pommatau	Brian West
17:55				KN Luczyniec		
18:10	120 Fu	150 Revuelta	19 Hernández Álvarez		129 Meyer	128 James
18:30	177 Quade	198 Revez	65 Kuehn-kauffeldt	157 Gong	184 Munk	102 Wiatrzyk
18:50	55 Gruber	218 Lanigan	158 Lafont	202 Ferran-Marqués	169 Garghetti	69 Jamshidi
19:10	33 Goossens	173 Di Maio		167 Romarowski	203 Foletti	
19:30	115 McEnerney			199 Critchlow		
20:00	CONFERENCE CLOSURE					

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Monday 7 March 2022

Room A: Welcome

12:15 **Tommaso Ghidini (Conference Co-Chair)**
Head of the Structures, Mechanisms and Materials Division, ESA, Netherlands

12:25 **Rick Russell (Conference Co-Chair)**
NASA Technical Fellow for Materials, NASA, USA

12:35 **A message from Alexander Gerst**
ESA Astronaut

Plenary Presentation
12:45 An ESA Perspective on the Future of Manufacturing
Jose Gavira Izquierdo
Head of Mechanical Department, ESA, Netherlands

Plenary Presentation
13:25 Manufacturing Nasa missions on Earth, in space, and beyond
Niki Werkheiser
Director, Technology Maturation, NASA, USA

14:05 Coffee Break

Monday 7 March 2022

Room A: Additive Manufacturing - Alloy Development

Co-Chairs: Alison Park (NASA, USA) and Benoit Bonvoisin (ESA, Netherlands)

Keynote Presentation

14:20 Constellium Aheadd® : aluminium alloys designed specifically for laser powder bed additive manufacturing delivering key advantages for space and transportation applications
Ravi Shahani, Constellum C-TEC, France

14:55 Advancement of Novel Additively Manufactured Alloys for Space Applications
Paul Gradl, NASA Marshall Space Flight Center, USA

15:15 Advanced Aluminium Alloys Tailored for Additive Manufacturing Space Applications, Targeting High End Structural Spacecraft Parts
Nicolas Nutal, CRM Group, Belgium

15:35 Maturation of High-Strength Aluminium Alloy for Additively Manufactured Launcher Parts
André Dröse, ArianeGroup GmbH, Germany

15:55 Laser Powder Bed Fusion of a high strength Al alloy
Jayant Barode, Politecnico Di Torino, Italy

16:15 Questions and Answers for the session speakers

16:25 End of session

16:25 Coffee Break

Plenary Presentation

16:40 Materials and Manufacturing for an Interplanetary Future
Charlie Kuehmann
Vice-President of Materials and NDE, SpaceX, USA

17:35 Coffee Break

Room A: Continuation of Additive Manufacturing - Alloy Development

Co-Chairs: Alison Park (NASA, USA)

18:00 Low-power Laser Powder Bed Fusion processing of Scalmalloy®
Alessandra Martucci, Politecnico Di Torino, Italy

18:20 Wire-arc additive manufacturing with high-quality Al-Zn5.5-Mg-Cu wires (ML7075)
Thomas Klein, Lkr Leichtmetallkompetenzzentrum Ranshofen Gmbh, Austria

18:40 Fabrication of an athermal mirror for a space-born optical instrument from a hyper-eutectic aluminium-silicon alloy via Laser Powder Bed Fusion
Christoph Wilsnack, Technische Universität Dresden, Germany

19:00 Questions and Answers for the session speakers

19:10 End of session

Monday 7 March 2022

Room B: Additive Manufacturing - Properties

Co-Chairs: Michael Gorelik (FAA, USA) and Stefano Beretta (Politecnico Di Milano, Italy)

Keynote Presentation

14:20 Critical Issues and Potential Applications of Computational Materials in Qualification and Certification of Process Intensive Metallic Materials
Ed Glaessgen, NASA, USA and Michael Gorelik (FAA, USA)

14:55 Implementation of the Theory of Critical Distances as a way to predict fatigue performance of AM Ti-6Al-4V material
Bobby Gillham, Trinity College Dublin, Ireland

15:15 Cold-rolling deformation impact on the microstructural and mechanical properties of two different as-built 316L stainless steel parts produced by LPBF (Laser Powder Bed Fusion)
Louis Lemarquis, CEA - Commissariat à l'énergie atomique et aux énergies alternatives, France

15:35 Effect of Hot Isostatic Pressing on Microstructure and Mechanical Properties of a β-solidifying Titanium Aluminide Manufactured via Electron Beam Powder Bed Fusion
Juliane Moritz, Technische Universität Dresden, Germany

15:55 Questions and Answers for the session speakers

16:25 End of session

16:25 Coffee Break

Plenary Presentation

16:40 Materials and Manufacturing for an Interplanetary Future
Charlie Kuehmann
Vice-President of Materials and NDE, SpaceX, USA

17:35 Coffee Break

Room B: Continuation of Additive Manufacturing - Properties

Co-Chairs: Michael Gorelik (FAA, USA) and Stefano Beretta (Politecnico Di Milano, Italy)

18:00 Microstructural and mechanical characterization of the Inconel 625 nickel superalloy parts produced by directed energy deposition
Julian Arnaldo Avila Diaz, Sao Paulo State University, Brazil

18:20 Manufacturing, microstructural and mechanical characterization of the Inconel 625 nickel superalloy by wire arc additive manufacturing – WAAM
Julian Arnaldo Avila Diaz, Sao Paulo State University, Brazil

18:40 Additive Manufacturing – Understanding the influence of Defect Criticality on generating appropriate Materials Data
Martin White, ASTM International, USA

19:00 Assessment of Additive Manufactured IN 625 Tensile Strength on Sub-sized Specimens
Alexandru Paraschiv, COMOTI - Romanian Research And Development Institute For Gas Turbines, Romania

19:20 Fatigue crack behaviour in an Al-Mg-Sc alloy processed by wire + arc additive manufacturing
Jin Ye, Coventry University, United Kingdom

19:40 Questions and Answers for the session speakers

19:50 End of session

Monday 7 March 2022

Room C: Additive Manufacturing - Mechanisms

Co-Chairs: Volker Gass (EPFL, Switzerland) and Mallory James (NASA, USA)

14:35 PULSAR: Mirror positioning tripod mechanism based on flexible joints produced by LPBF Additive Manufacturing
Julien Rouvinet, CSEM, Switzerland

14:55 Additive manufacturing in CubeSat deployable boom mechanism
Kevin Vainio, Huld, Finland

15:15 End-to-end manufacturing process for additive manufactured compliant mechanisms
Christian Melzer, RUAG Space Germany, Germany

15:35 Additive Manufacturing of Shape Memory Compliant Mechanisms for Space Applications
Vaclav Pejchal, CSEM SA, Switzerland

15:55 Conceptual study of an additively manufactured magnetic bearing reaction wheel / LPBF, Functional Optimization, Satellite Pointing
Nils Goossens, University Bremen / Zarm, Germany

16:15 Questions and Answers for the Session Speakers

16:25 End of session

16:25 Coffee Break

Plenary Presentation

16:40 Materials and Manufacturing for an Interplanetary Future
Charlie Kuehmann
Vice-President of Materials and NDE, SpaceX, USA

17:35 Coffee Break

Room C: Continuation of Additive Manufacturing – Mechanisms

Co-Chairs: Volker Gass (EPFL, Switzerland) and Mallory James (NASA, USA)

18:00 Redesign of several Compliant Mechanisms to benefit from Additive Manufacturing
Lionel Kiener, CSEM, Switzerland

18:20 µSLM for the manufacturing of flexure elements and compliant mechanisms
Alba Alegre Cubillo, RUAG Space Germany, Germany

18:40 Questions and Answers for the Session Speakers

18:50 End of session

Monday 7 March 2022

Room D: Joining

Co-Chairs: Christophe Leyens (Fraunhofer IWS, Germany) and Norberto Jimenez (CRM Group, Belgium)

Keynote Presentation

14:20 Welding and Joining Technologies for Transportation Applications
Robert Scudamore, TWI, Ltd, United Kingdom

14:55 Industrialisation of Friction Stir Welding for Ariane 6 LLPM Bare Tanks
Francois Marie, ArianeGroup Sas, France

15:15 Development of Linear Friction Welding to Add External Features to Spacecraft and Launchers Systems
Joao Gandra, TWI Ltd, United Kingdom

15:35 Local Property Assessment of Advanced Manufactured Titanium Alloys
Christopher M Magazzeni, University Of Oxford / European Space Agency, United Kingdom

15:55 Disruptive metal-composite hybrid structures for aerospace and space applications: Combining joining and additive manufacturing
Sergio Amancio, Graz University of Technology (TU Graz), Austria

16:15 Questions and Answers for the Session Speakers

16:25 End of session

16:25 Coffee Break

Plenary Presentation

16:40 Materials and Manufacturing for an Interplanetary Future
Charlie Kuehmann
Vice-President of Materials and NDE, SpaceX, USA

17:35 Coffee Break

Room D: Continuation of Joining

Co-Chairs: Christophe Leyens (Fraunhofer IWS, Germany) and Norberto Jimenez (CRM Group, Belgium)

18:00 Design for Demise breadboarding and containment techniques with advanced joining technologies.
Nicola Riva / Britta Ganzer, OHB System, Germany

18:20 Generation and characterization of new “spike-head” aluminium pins for ultra-lightweight aluminium-CFRP joints
Christian Schneider, Leichtmetallkompetenzzentrum Ranshofen GmbH, Austria

18:40 Questions and Answers for the Session Speakers

18:50 End of session

Monday 7 March 2022

Room E: Out of Earth Manufacturing I

Chair: Advenit Makaya (ESA, Netherlands)

Keynote Presentation

14:20 Overview of NASA's In Space Manufacturing and Lunar Infrastructure Construction Initiatives
Raymond Clinton, NASA, USA

14:55 Fused Layer Deposition of Lunar regolith simulant
Juan Carlos Ginés Palomares, Hochschule Aalen, Germany

15:15 Martian pottery - additive manufacturing experiment in MGS-1 material (Mars Global Simulant)
Marta Flisykowska, Academy Of Fine Arts In Gdansk, Poland

15:35 In-Situ Resource Utilization and 3D Printing of High Solid Suspensions for Construction on Mars
Ms. Alexandra Marnot, Georgia Institute Of Technology, USA

15:55 3D printing of eco-friendly Martian clay (JMSS-1) for In-Situ Resource Utilization
Avishek Ghosh / Jean-Jacques Favier, Loughborough University, United Kingdom

16:15 Questions and Answers for the Session Speakers

16:25 End of session

16:25 Coffee Break

Plenary Presentation

16:40 Materials and Manufacturing for an Interplanetary Future
Charlie Kuehmann
Vice-President of Materials and NDE, SpaceX, USA

17:35 Coffee Break

Room E: Continuation of Out of Earth Manufacturing I

Chair: Jim Stott (NASA, USA)

18:00 "Regolith-based composite manufacturing by Fused Deposition Modelling (FDM)
Pierre-Louis Pichard, ESA, Germany

18:20 TXTHAB-3D: Textile and Habitat Manufacturing using 3D-Printing of In-situ Resources
Siddharth Tiwari / Miranda Fateri, TIWARI Scientific Instruments GmbH, Germany

18:40 Aluminum Casting with sintered Lunar Regolith
Frank Koch / Julian Baasch, Orbit Recycling, Germany

19:00 Vacuum distillation: Obtaining useful metal alloys from reduced lunar regolith
Francisco Javier Guerrero Gonzalez, Technical University of Munich, Germany

19:20 Autonomous construction of reinforced, load-bearing structures on Moon and Mars using local raw materials
Gregor Fischer, Technical University of Denmark, Denmark

19:40 Questions and Answers for the Session Speakers

19:50 End of session

Monday 7 March 2022

Room F: Composites I

Co-Chairs: Christos Argyrakis (Rolls Royce, United Kingdom) and Michael Mallon (ESA, Netherlands)

Keynote Presentation

14:20 In-Process Inspection Systems for Increasing Efficiency and Productivity of Automated Manufacturing
Waruna Seneviratne, Wichita State University/NIAR, USA

14:55 NASA Sponsored High-Rate Composites Manufacturing
Brian Jensen, NASA Langley Research Center, USA

15:15 Micromechanical failure envelopes of 3D-printed fiber reinforced thermoplastic composites
Thiago Assis Dutra, INEGI - Institute of Science and Innovation in Mechanical and Industrial Engineering, Portugal

15:35 Advanced Composite Structures for a New Aviation Era
Juan Miguel González Herrero, Citd Engineering And Technologies, Spain

15:55 Bio-Optimized CFRP Aircraft Pressure Firewall
Marta G. Cosio, Citd Engineering & Technologies, Spain

16:15 Questions and Answers for the Session Speakers

16:25 End of session

16:25 Coffee Break

Plenary Presentation

16:40 Materials and Manufacturing for an Interplanetary Future
Charlie Kuehmann
Vice-President of Materials and NDE, SpaceX, USA

17:35 Coffee Break

Room F: Continuation of Composites I

Co-Chairs: Christos Argyrakis (Rolls Royce, United Kingdom) and Michael Mallon (ESA, Netherlands)

Keynote Presentation

17:45 NASA's Advanced Composites Materials and Manufacturing Research for the Future
John Vickers, NASA, USA

18:20 Ceramic Matrix Composite (CMC) Materials Standardization and Qualification
Matt Opliger, Wichita State University, USA

18:40 Ultralightweight 3D composite structures for space applications
Gilles Pommatau / David Macieira / Henri Perrin, Thales Alenia Space, France

19:00 Thermally Deploying Composite Lattices
Ciarán Mchale, University Of Limerick, Ireland

19:20 Reimagining Composites Manufacturing in a Fully Digital Environment
Anoush Poursartip, The University Of British Columbia, Canada

19:40 Non-Contact NDI for Polymeric Composite Structures
Celeste Pereira, Optimal Structural Solutions, Portugal

20:00 Questions and Answers for the Session Speakers

20:10 End of session

Tuesday 8 March 2022

Room A: Additive Manufacturing – Process Chain I

Co-Chairs: Florence Montredon (Thales Alenia Space, France) and Philippe Hendrickx (Sabca, Belgium)

Keynote Presentation

12:25 Metal Additive Manufacturing Process Selection and Development for Propulsion Components
Paul Gradl, NASA Marshall Space Flight Center, USA

13:00 Verification the AM process chain for Ti-6Al-4V spacecraft parts
Marco Mulser, OHB System AG, Germany

13:20 AM4ALL – Make it Fly. Development and qualification of AM space parts and processes for the Spanish Space Industry
Marta G. Cosio, Citd Engineering & Technologies, Spain

13:40 Qualification of a serial production part made of titanium flying on the Ariane launcher
Loreen Mertens, ArianeGroup Gmbh, Germany

14:00 Accelerating Rocket Engine Manufacturing and Testing with Additive Manufacturing
Laura Gonzalez Llamazares, Satellite Applications Catapult, United Kingdom

14:20 Questions and Answers for the Session Speakers

14:30 End of session

14:30 Coffee Break

Plenary Presentation

14:45 FERRARI F1 – The Challenges for the Future
Aurelio Occhinegro
Head of Manufacturing, Ferrari, Italy

Plenary Presentation

15:40 Why should we explore space ?
Andrea Pontremoli
CEO & General Manager, Dallara, Italy

16:35 Coffee Break

16:50 Panel 1: Out of Earth Manufacturing
Chair: Ugo Lafont, ESA, Netherlands
Panel Members:
Gwenaëlle Aridon (Airbus Defense and Space, France)
Andrew Bacon (Space Forge, UK)
Advenit Makaya (ESA, Netherlands)
Corky Clinton (NASA, USA)
Jason Ballard (Icon, USA)
Simon Patane (Redwire, USA)

17:45 Coffee Break

Room A: Continuation of Additive Manufacturing – Process Chain I
Co-Chairs: Florence Montredon (Thales Alenia Space, France) and Philippe Hendrickx (Sabca, Belgium)

Keynote Presentation

17:55 ESA Advanced Manufacturing Cross Cutting Initiative
Thomas Rohr, European Space Agency, Netherlands

18:30 Opportunities and constraints of aeronautical parts in metal additive manufacturing: illustration by the qualification of steel and aluminum series parts
Sebastien Eyrignoux / Matthieu Pachoutinsky, Lisi Aerospace Additive Manufacturing, France

18:50 Industrial Additive Manufacturing in liquid propulsion
Francois Moser, Arianegroup, Germany

19:10 Manuela metal additive pilot line
Emmanuel Onillon, Centre Suisse D'electronique, Switzerland

19:30 Questions and Answers for the Session Speakers

19:40 End of session

Tuesday 8 March 2022

Room B: Additive Manufacturing – Post Processing

Co-Chairs: Ana Brandão (ESA, Netherlands) and Nicolas Nutal (CRM Group, Belgium)

12:40 A tailored heat treatment for precipitation hardening F357 aluminum alloy processed by Laser Powder Bed Fusion
Matteo Vanzetti, Politecnico Di Torino, Italy

13:00 Automated Electrochemical Post-Processing of AlSi10Mg and Ti6Al4V Parts Made by Laser Beam Melting
Marlies Schlauf, FOTEC Forschungs- und Technologietransfer GmbH, Austria

13:20 Surface finishing of SLM Scalmalloy® parts using innovative electrochemical process.
Jean-François Vanhumbeeck, CRM Group, Belgium

13:40 Questions and Answers for the Session Speakers

13:50 End of session

14:30 Coffee Break

Plenary Presentation

14:45 FERRARI F1 – The Challenges for the Future
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Plenary Presentation

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Panel Members: *Gwenaëlle Aridon (Airbus Defense and Space, France)*
Andrew Bacon (Space Forge, UK)
Advenit Makaya (ESA, Netherlands)
Corky Clinton (NASA, USA)
Jason Ballard (Icon, USA)
Simon Patane (Redwire, USA)

17:45 Coffee Break

Tuesday 8 March 2022

Room B: Surface Engineering I

Co-Chairs: Christopher Magazzeni (ESA, United Kingdom)

18:10 Plasma Nitriding of Selective-Laser-Melted Metallic Materials to Improve the Corrosion and Wear Resistance
Matjaž Godec, Institute of Metals And Technology, Slovenia

18:30 Laser Polishing of Additively Manufactured Aluminium Surfaces
Ben Mason, Cardiff University, United Kingdom

18:50 Potential of self-adaptive low friction magnetron sputtered carbon-alloyed TMD-based coatings for space applications
Todor Vuchkov, Instituto Pedro Nunes, Portugal

19:10 Extreme High-Speed Laser Material Deposition as Additive Manufacturing Technology for Aerospace with possible application for surface functionalization and lightweight constructions on Earth and in Space
Stephan Koß, Rwth Aachen University - Digital Additive Production Dap, Germany

19:30 Nature-Inspired, Multi-Functional Surfaces for Sustainable Life-Support Systems in Space and on Earth
Malica Schmidt, University College London (UCL), United Kingdom

19:50 Questions and Answers for the Session Speakers

20:00 End of session

Tuesday 8 March 2022

Room C: Additive Manufacturing – Process Development I

Co-Chairs: Bianca Colosimo (Politecnico di Milano, Italy) and Donato Girolamo (ESA, Netherlands)

Keynote Presentation

12:25 Recent studies of the European Space Agency into metallic powders as raw material for additively manufactured space parts
Martina Meisnar, European Space Agency, United Kingdom

13:00 Comprehensive Study on Various Ar-He Mixtures and their Positive Effects on the PBF-LB/M Process of a Nickel-Chromium Alloy
Tobias Deckers, Linde GmbH, Germany

13:20 Laser powder bed Fusion processability of a home-made gas atomized AlSi10Mg powder
Fabrizio Marinucci, Politecnico Di Torino, Italy

13:40 High-Quality Additive Manufacturing by Advanced Process Monitoring in Electron Beam Powder Bed Fusion
Christopher Arnold, Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU), Germany

14:00 Development of high dimensional stability components for Space applications by binder jetting additive manufacturing route
Asier Lores, Tecnalia, Spain

14:20 Questions and Answers for the Session Speakers

14:30 End of session

14:30 Coffee Break

Plenary Presentation

14:45 FERRARI F1 – The Challenges for the Future
Aurelio Occhinegro
Head of Manufacturing, Ferrari, Italy

Plenary Presentation

15:40 Why should we explore space ?
Andrea Pontremoli
CEO & General Manager, Dallara, Italy

16:35 Coffee Break

16:50 Panel 1: Out of Earth Manufacturing
Chair: Ugo Lafont, ESA, Netherlands
Panel Members: *Gwenaëlle Aridon (Airbus Defense and Space, France)*
Andrew Bacon (Space Forge, UK)
Advenit Makaya (ESA, Netherlands)
Corky Clinton (NASA, USA)
Jason Ballard (Icon, USA)
Simon Patane (Redwire, USA)

17:45 Coffee Break

Room C: Continuation of Additive Manufacturing – Process Development I

Co-Chairs: Bianca Colosimo (Politecnico di Milano, Italy) and Donato Girolamo (ESA, Netherlands)

Keynote Presentation

17:55 ESA Additive Manufacturing Benchmarking Centre - An update on progress
David Brackett, The Manufacturing Technology Centre (MTC), United Kingdom

18:30 Theoretical and experimental analysis of a disruptive LPBF technology with rotating powered bed
Jan-Hendrik Koch, Fraunhofer Institute for Production Technology IPT, Germany

18:50 Virtual Infinite 3D printing in one axis "without" a conveyor belt - 3D printing in Space functional parts avoiding problems from conveyor belt 3D printers
Rui Pires, Rui Pires - Prototyping and tech Labs., Portugal

19:10 Direct printing of heating elements for thermal control systems of spacecraft
Moritz Greifzu, Fraunhofer-Institut für Werkstoff- und Strahltechnik IWS, Germany

19:30 Additive Manufacturing of parts for Aerospace and Space Applications with RPD© Technology
Hilde Loken Larsen, Norsk Titanium, Norway

19:50 Questions and Answers for the Session Speakers

20:00 End of session

Tuesday 8 March 2022

Room D: Electronic Materials and Processes

Co-Chairs: Jussi Hokka (ESA, Netherlands) and Frank Brückner (Fraunhofer IWS, Germany)

Keynote Presentation

12:25 Printing Electronics: new ways of making electronic devices
Jeroen Van Den Brand, Holst Centre, Netherlands

13:00 Thermal ageing of electronic component solder joints for space applications: a combined finite element and deep learning approach
Vincent Voet, Uclouvain , Belgium

13:20 Microvia manufacturing processes and reliability testing for high density electronics in European space applications
Stan Heltzel, ESA, Netherlands

13:40 High-density PCB technology assessment for space applications
Maarten Cauwe, Imec, Belgium

14:00 Additive Manufacturing of Next generation Dielectrics for Beyond 5G Applications.
Avishek Ghosh, Loughborough University, United Kingdom

14:20 Questions and Answers for the Session Speakers

14:30 End of session

14:30 Coffee Break

Plenary Presentation

14:45 FERRARI F1 – The Challenges for the Future
Aurelio Occhinegro
Head of Manufacturing, Ferrari, Italy

Plenary Presentation

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Advenit Makaya (ESA, Netherlands)
Corky Clinton (NASA, USA)
Jason Ballard (Icon, USA)
Simon Patane (Redwire, USA)

17:45 Coffee Break

Tuesday 8 March 2022

Room D: Digital Manufacturing I

Co-Chairs: Dawid Luczyniec (ESA, Netherlands) and Tommaso Ghidini (ESA, Netherlands)

Keynote Presentation

17:55 Benchmark of a probabilistic fatigue software based on machined and as-built components manufactured in AlSi10Mg by L-PBF
Stefano Beretta, Politecnico Di Milano, Italy

18:30 Cyber-physical manufacture of a metallic optical bench demonstrator as possible option for ATHENA - a cross-competence-collaborative approach embedded in the European future digital ecosystem Gaia-X
André Seidel, Fraunhofer-institute For Machine Tools And Forming Technology Iwu, Germany

18:50 Smart Manufacturing in the space industry. A Cyber-Physical System architecture and its implementation to a MAIT process for mega constellations of satellites.
Marco Eugeni, Sapienza University Of Rome, Italy

19:10 Exploit existing data – how process monitoring data can improve Ariane 6 production
Guido Mittag, ArianeGroup GmbH, Germany

19:30 Machine Learning Based Build Processor for Powder Bed Fusion Processes
Katharina Eissing, 1000 Kelvin GmbH, Germany

19:50 Questions and Answers for the Session Speakers

20:00 End of session

Tuesday 8 March 2022

Room E: Out of Earth Manufacturing II

Chair: Lucia Pigliaru (ESA, Netherlands)

Keynote Presentation

12:25 Manufacturing in Space: Where are we? What needs to be done?
Advenit Makaya, European Space Agency, Netherlands

13:00 A direct solar sintering rover: Proof-of-concept for additive construction in a lunar analogue environment
Rok Šeško, WARR e.V., Germany

13:20 The Lunar Harbor - A Complete Radiation Controlled Environment System Conceptualised for Long Term Human Exploration
Sara Santos / Valerio Scherini / Nasser Mazraani, Technische Universität Berlin, Germany

13:40 Technical challenges and robotic solution for In-lunar structure assembly in a realistic simulated environment
Borja Pozo, Tekniker, Spain

14:00 Biomimetic and origami-inspired design for shock absorption on the lunar surface
Vipul Mani, Technische Universität Berlin, Germany

14:20 Questions and Answers for the Session Speakers

14:30 End of session

14:30 Coffee Break

Plenary Presentation

14:45 FERRARI F1 – The Challenges for the Future
Aurelio Occhinegro
Head of Manufacturing, Ferrari, Italy

Plenary Presentation

15:40 Why should we explore space ?
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16:35 Coffee Break

16:50 Panel 1: Out of Earth Manufacturing
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Panel Members:
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Andrew Bacon (Space Forge, UK)
Advenit Makaya (ESA, Netherlands)
Corky Clinton (NASA, USA)
Jason Ballard (Icon, USA)
Simon Patane (Redwire, USA)

17:45 Coffee Break

Room E: Continuation of Out of Earth Manufacturing II

Chair: Simon Patane (Redwire, USA)

18:10 Risk and mitigation investigations of mechanism, sensors, and products in moon dust environments
Axel Müller, Ohb System AG, Germany

18:30 High temperature characterisation of improved fidelity lunar regolith simulants
Jennifer Sutherland, Institut Laue-Langevin, France

18:50 Prospecting of Lunar pyrite and ilmenite deposits with MIRORES spectrometer
Mateusz Józefowicz, European Space Foundation

19:10 Using NVIDIA Omniverse to model smart manufacturing processes both on and off Earth
Alison B Lowndes, NVIDIA, USA

19:30 OSAM-2: Archinaut Technology Demonstration Mission: Next Generation In-Space Manufacturing
Paul Shestople, Redwire, USA

19:50 Questions and Answers for the Session Speakers

20:00 End of session

Tuesday 8 March 2022

Room F: Composites II

Co-Chairs: Waruna Seneviratne (WSU/NIAR, USA) and Rick Russell (NASA, USA)

Keynote Presentation

12:25 Novel Thermoplastic Structures for Aerospace
Andries Buitenhuis, GKN Fokker, Netherlands

13:00 Reinforced aluminium materials for Additive Manufacturing
Andris Bojarevics, 2AM, Ltd, Latvia

13:20 Hybrid manufacturing systems for fiber reinforced composite materials
Luis Miguel Oliveira, INEGI - Institute of Science and Innovation in Mechanical and Industrial *Engineering, Portugal*

13:40 Load path optimized 3D galvano-formed carbon fibre reinforced MMC sheets using embroidery for tailored carbon fibre placement
Tobias Bauernfeind, TU Wien, Germany

14:00 Laser Powder Bed Fusion of Metal Matrix Composite (MMC) for Space Applications
Gaëtan Bernard, CSEM SA, Switzerland

14:20 Questions and Answers for the Session Speakers

14:30 End of session

14:30 Coffee Break

Plenary Presentation

14:45 FERRARI F1 – The Challenges for the Future
Aurelio Occhinegro
Head of Manufacturing, Ferrari, Italy

Plenary Presentation

15:40 Why should we explore space ?
Andrea Pontremoli
CEO & General Manager, Dallara, Italy

16:35 Coffee Break

16:50 Panel 1: Out of Earth Manufacturing
Chair: Ugo Lafont, ESA, Netherlands
Panel Members:
Gwenaëlle Aridon (Airbus Defense and Space, France)
Andrew Bacon (Space Forge, UK)
Advenit Makaya (ESA, Netherlands)
Corky Clinton (NASA, USA)
Jason Ballard (Icon, USA)
Simon Patane (Redwire, USA)

17:45 Coffee Break

Room F: Continuation of Composites II

Co-Chairs: Waruna Seneviratne (WSU/NIAR, USA) and Rick Russell (NASA, USA)

Keynote Presentation

17:55 Manufacturing and testing of a fibre placed orthogrid fuselage panel with both glass - and carbon fibres
Jos Vroon, NLR, Netherlands

18:30 Composite Materials Handbook 17 (CMH-17) Volume 5—Ceramic Matrix Composites
Rachael Andrulonis, Wichita State University, USA

18:50 Design Space Exploration for WrapToR Truss Stiffened Skin Panels
Chris Grace, University Of Bristol, United Kingdom

19:10 Laser Based Machining of Ceramic Matrix Composites
Sundar Marimuthu, The Manufacturing Technology Centre (MTC), United Kingdom

19:30 Additive Manufacturing of Polymer-Derived silicon oxycarbine parts by stereolithography
Florent Deliane, RESCOLL, France

19:50 Questions and Answers for the Session Speakers

20:00 End of session

Wednesday 9 March 2022

Room A: Additive Manufacturing – Process Chain II

Co-Chairs: Florence Montredon (Thales Alenia Space, France) and Philippe Hendrickx (Sabca, Belgium)

Keynote Presentation

12:25 The Benefit of Standards for Certification – AM Component Classification & Part Family Definition
Mohsen Seifi, ASTM, USA

13:00 Introduction of NASA's Technical Standard 6030 and 6033: Additive Manufacturing Requirements for Spaceflight Systems
Alison Park, NASA, USA

13:20 Comparison of NASA and ECSS Standards for Additive Manufacturing Qualification and Certification for Spaceflight Application
Brian West, NASA, USA

13:40 Automated design optimization of additive manufacturing parts regarding quality, time and cost
Arthur Seibel, Fraunhofer Research Institution for Additive Manufacturing Technologies IAPT, Germany

14:00 Polymer additive manufacturing for Space applications - from tooling to production
Niccolo Giannelli, Stratasys Gmbh, Germany

14:20 Questions and Answers for the Session Speakers

14:30 End of session

14:30 Coffee Break

Plenary Presentation

14:45 Reduction of the environmental impact of materials and processes
Claudio Dalle Donne
Head of Material, Processes and Tests, Airbus Airframe Engineering, Germany

Plenary Presentation

15:40 Additive Manufacturing in Aerospace: Opportunities and Challenges
Melissa Orme
Vice President, Additive Manufacturing, Boeing, USA

16:35 Coffee Break

Plenary Presentation

16:50 Integration of New Manufacturing Methods for Launcher One
Andy Short
Vice-President of Manufacturing, Virgin Orbit,

17:45 Coffee Break

Wednesday 9 March 2022

Room A: Additive Manufacturing – Applications I

Co-Chairs: David Wimpenny (MTC, United Kingdom), Laurent Pambaguian (ESA, Netherlands)

Keynote Presentation

17:55 Non-space defence applications of AM
Alan Barnes / Danny Schneeberger, Thales UK, United Kingdom

18:30 Optimized XXL printed structural panel with embedded thermal control
Florence Montredon, Thales Alenia Space, France

18:50 Assessment of AM rapid prototyping for closed impellers
Ionut Sebastian Vintila, Romanian Research And Development Institute For Gas Turbines Comoti, Romania

19:10 HEWAM: Additive Heat Equipment Modular for Electric Aircraft
Alexandre Boulzaguet, Sogeclair Aerospace, France

19:30 Questions and Answers for the Session Speakers

19:40 End of session

Wednesday 9 March 2022

Room B: Surface Engineering II

Co-Chairs: Christopher Magazzeni (ESA, United Kingdom) and Benoit Bonvoisin (ESA, Netherlands)

12:40 New Frontiers in Laser Shock Peening
Pratik Shukla, The Manufacturing Technology Centre (MTC), United Kingdom

13:00 Cold-rolling as a measure to prevent railway axle failures under corrosion-fatigue: experiments and models
Jakob Bialowas, MCL Leoben, Austria

13:20 Questions and Answers for the Session Speakers

13:30 End of session

14:30 Coffee Break

Plenary Presentation

14:45 Reduction of the environmental impact of materials and processes
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Plenary Presentation

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16:35 Coffee Break

Plenary Presentation

16:50 Integration of New Manufacturing Methods for Launcher One
Andy Short
Vice-President of Manufacturing, Virgin Orbit,

17:45 Coffee Break

Wednesday 9 March 2022

Room B: Additive Manufacturing – CT, NDI and Residual Stress I

Co-Chairs: Elena Lopez (Fraunhofer, Germany) and Ana Brandão (ESA, Netherlands)

Keynote Presentation

17:55 Residual stresses in AM space parts on the example of neutral diffraction
Sandra Cabeza , ILL Grenoble , France

18:30 Development of a non-destructive inspection strategy for CT on additively manufactured rocket engine parts
Christopher Zepp, Yxlon International Gmbh, Germany

18:50 Using real world computed tomography data for inspection of AM parts
Philip Sperling / Philipp Sugg, Volume Graphics Gmbh, Germany

19:10 High-resolution computed tomography application for additively manufactured, dense parts with a long cumulative radiation length using innovative tube technology
Christopher Zepp, Yxlon International Gmbh, Germany

19:30 Questions and Answers for the Session Speakers

19:40 End of session

Wednesday 9 March 2022

Room C: Additive Manufacturing – Process Development II

Co-Chairs: Christian Melzer (RUAG Space, Germany) and Thomas Rohr (ESA, Netherlands)

Keynote Presentation

12:25 Advanced manufacturing technologies for high quality space parts
Frank Brückner , Fraunhofer IWS, Germany

13:00 Hybrid additive manufacturing using powder bed fusion and direct energy deposition for production of specialized parts aimed toward space applications
Simon Malej, Balmar d.o.o., Slovenia

13:20 Development and manufacturing of AZ91 magnesium alloy large-size space components using Plasma Metal Deposition (PMD®)
Enrique Ariza Galván, RHP-Technology Gmbh, Austria

13:40 Disruptive Manufacturing and Process Technologies for the New Low-Cost, Reusable Rocket Engine PROMETHEUS
Steffen Beyer, ArianeGroup, Germany

14:00 Development and Characterisation of an Additive Manufactured Unit Cell with Tailorable Negative Thermal Expansion and Innovative Test Set Ups for Mechanical and Thermal Qualification in Cryogenic Environments
Marco Leitwein, Krp Mechatec Gmbh, Germany

14:20 Questions and Answers for the Session Speakers

14:30 End of session

14:30 Coffee Break

Plenary Presentation

14:45 Reduction of the environmental impact of materials and processes
Claudio Dalle Donne
Head of Material, Processes and Tests, Airbus Airframe Engineering, Germany

Plenary Presentation

15:40 Additive Manufacturing in Aerospace: Opportunities and Challenges
Melissa Orme
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16:35 Coffee Break

Plenary Presentation

16:50 Integration of New Manufacturing Methods for Launcher One
Andy Short
Vice-President of Manufacturing, Virgin Orbit,

17:45 Coffee Break

Room C: Continuation of Additive Manufacturing – Process Development II
Co-Chairs: Christian Melzer (RUAG Space, Germany) and Thomas Rohr (ESA, Netherlands)

18:10 Additive Manufacturing of Continuous Fiber Reinforced techno-Polymers: a cost-effective enabler for high performance parts for space applications
Matteo Regé, German Aerospace Center DLR, Germany

18:30 The future of continuous carbon fiber 3D printing
Alessio Lorusso, Roboze, Italy

18:50 Optimisation of additive-manufactured variable-stiffness composite components
Alberto Racionero Sanchez-majano, Politecnico Di Torino, Italy

19:10 Metal Additive Manufacturing of Space Components at the German Aerospace Center
Katia Artzt, German Aerospace Center, Germany

19:30 Questions and Answers for the Session Speakers

19:40 End of session

Wednesday 9 March 2022

Room D: Digital Manufacturing II

Co-Chairs: Dawid Luczyniec (ESA, Netherlands) and Tommaso Ghidini (ESA, Netherlands)

Keynote Presentation

12:25 Big data and AI for the twin transition in manufacturing 4.0: opportunities, challenges and risks
Bianca Colosimo, Politecnico di Milano, Italy

13:00 A robot supported mechanical test stand for multiscale digital image correlation and large data acquisition
Florian Paysan, German Aerospace Center, Germany

13:20 Material data enrichment and management across the additive manufacturing thread
Nicolas Jalbert, e-Xstream Engineering, part of Hexagon, Luxemburg

13:40 Addressing Pain Points in Digital Manufacturing for Aerospace: From Design to Failure Analysis
Diego Said, Materialise, Belgium

14:00 Questions and Answers for the Session Speakers

14:10 End of session

14:30 Coffee Break

Plenary Presentation

14:45 Reduction of the environmental impact of materials and processes
Claudio Dalle Donne
Head of Material, Processes and Tests, Airbus Airframe Engineering, Germany

Plenary Presentation

15:40 Additive Manufacturing in Aerospace: Opportunities and Challenges
Melissa Orme
Vice President, Additive Manufacturing, Boeing, USA

16:35 Coffee Break

Plenary Presentation

16:50 Integration of New Manufacturing Methods for Launcher One
Andy Short
Vice-President of Manufacturing, Virgin Orbit,

17:45 Coffee Break

Room D: Continuation of Digital Manufacturing II
Co-Chairs: Dawid Luczyniec (ESA, Netherlands) and Tommaso Ghidini (ESA, Netherlands)

18:10 An automated high-fidelity fatigue crack growth testing environment
Eric Breitbarth, German Aerospace Center (DLR), Germany

18:30 Automatic detection of fatigue cracks using neural networks and digital image correlation
Tobias Strohmann, German Aerospace Center, Germany

18:50 Algorithmic Design of an Aerospike Rocket Engine for Advanced Additive Manufacturing
Josefine Lissner, Hyperganic Group, Germany

19:10 ICME Lifing Model of CMC Retained Strength Under Static, Fatigue, and Creep In Service Loading
Frank Abdi, AlphaSTAR Technology Solutions, USA

19:30 Questions and Answers for the Session Speakers

19:40 End of session

Wednesday 9 March 2022

Room E: Out of Earth Manufacturing III

Chair: Corky Clinton (NASA, USA)

Keynote Presentation

12:25 Overview of in-space manufacturing, from proof-of-concept to industrialisation of the orbit: the challenges in the way and collaborative opportunities
Giles Bailet, University of Glasgow, United Kingdom

13:00 A Multinational Market-Stimulation Initiative for Space-Enabled Materials and Processes
Hamid Soorghali / Guillermo Requena, Satellite Applications Catapult, Presenting Orbital Materials for Earth and Space (OMES) consortium, United Kingdom

13:20 Additive layer manufacturing in space using engineering thermoplastics and without any build volume constraint to support off-Earth Manufacturing
Antonella Sgambati, Ohb System Ag, Germany

13:40 Endless Photopolymer Tube Extrusion for On-Orbit Manufactured Satellite Booms
Michael Kringer, Munich University Of Applied Sciences, Germany

14:00 Laser beam melting additive manufacturing in µ-gravity
Lena Meyer, Bundesanstalt für Materialforschung und -prüfung (BAM), Germany

14:20 Questions and Answers for the Session Speakers

14:30 End of session

14:30 Coffee Break

Plenary Presentation

14:45 Reduction of the environmental impact of materials and processes
Claudio Dalle Donne
Head of Material, Processes and Tests, Airbus Airframe Engineering, Germany

Plenary Presentation

15:40 Additive Manufacturing in Aerospace: Opportunities and Challenges
Melissa Orme
Vice President, Additive Manufacturing, Boeing, USA

16:35 Coffee Break

Plenary Presentation

16:50 Integration of New Manufacturing Methods for Launcher One
Andy Short
Vice-President of Manufacturing, Virgin Orbit,

17:45 Coffee Break

Room E: Continuation of Out of Earth Manufacturing III
Chair: Anna Daurskikh (Azimut Space, Germany)

18:10 In situ debinding and sintering of parts produced through filament extrusion additive manufacturing – A novel machine to produce hardware in space
Manuel Ortega Varela de Seijas, TU Berlin, Germany

18:30 In-Space Atomic Layer Direct Patterning
Maksym Plakhotnyuk, ATLANT 3D Nanosystems, Denmark

18:50 The BIOINSPACED demonstrator to present and promote biomimetic concepts for space debris removal scenarios
Vincent Schneider, Fraunhofer CML, Germany

19:10 Biologically inspired 4D printing of high performance smart composite materials for space application
Antoine Le-Duigou. IRDL - UMR CNRS 6027, France

19:30 Questions and Answers for the Session Speakers

19:40 End of session

Wednesday 9 March 2022

Room F: Smart and Emerging Materials I

Co-Chairs: Martina Meisnar (ESA, United Kingdom) and Andy Norman (ESA, Netherlands)

12:40 Assessment of advanced manufacturing methods for the fabrication of Bulk Metallic Glasses (BMGs)
Erich Neubauer / Zuzana Kovacova, Rhp Technology Gmbh, Austria

13:00 Bulk Metallic Glasses for Space Mechanism Applications: an Experimental Investigation
David Browne, University College Dublin, Ireland

13:20 Self-sensing material for structural health monitoring applications
Alain Williamson, Luleå University Of Technology, Sweden

13:40 Smart Manufacturing for Smart Parts - Manufacturing and Integration of Sensors in Metal Powder Bed Fusion
Georg Schlick, Fraunhofer IGCV, Germany

14:00 Questions and Answers for the Session Speakers

14:10 End of session

14:30 Coffee Break

Plenary Presentation

14:45 Reduction of the environmental impact of materials and processes
Claudio Dalle Donne
Head of Material, Processes and Tests, Airbus Airframe Engineering, Germany

Plenary Presentation

15:40 Additive Manufacturing in Aerospace: Opportunities and Challenges
Melissa Orme
Vice President, Additive Manufacturing, Boeing, USA

16:35 Coffee Break

Plenary Presentation

16:50 Integration of New Manufacturing Methods for Launcher One
Andy Short
Vice-President of Manufacturing, Virgin Orbit,

17:45 Coffee Break

Room F: Continuation of Smart and Emerging Materials I
Co-Chairs: Martina Meisnar (ESA, United Kingdom) and Andy Norman (ESA, Netherlands)

18:10 Innovative processes and components using shape memory alloys for space applications
Khaoula Elghalmi, Nimesis Technology, France

18:30 Characterization of a newly developed liquid assisted healable Al alloy produced for Laser Powder Bed Fusion (LPBF)
Julie Gheysen, UCLouvain, Belgium

18:50 Laser-based 4D printing of Ni-Mn-Ga-based magnetic shape memory alloys
Anastassia Milleret, University Of Birmingham, United Kingdom

19:10 Computational materials design framework for refractory complex concentrated alloys advancing space propulsion components
Fuyao Yan, QuesTek Europe AB, Sweden

19:30 Questions and Answers for the Session Speakers

19:40 End of session

Thursday 10 March 2022

Room A: Advanced Manufacturing – Applications II

Co-Chairs: David Wimpenny (MTC, United Kingdom), Laurent Pambaguian (ESA, Netherlands)

Keynote Presentation

12:25 Maturing Additive Manufacturing PBF-LB technology for space applications: a timeline analysis on functional and structural application cases
Fernando Lasagni, CATEC Advanced Center for Aerospace Technologies, Spain

13:00 Sandwich Panel with Integrated Damping Solution
Manuel Aliprandi, Ruag Space, Switzerland

13:20 Advanced Manufacturing Approach for the ATHENA X-ray telescope mirror
Mirko Riede, Fraunhofer Iws, Germany

13:40 Development of a Solid Antenna Mesh Reflector Using Additive Manufacturing Technology
Bianca Moldovanu / Florin Stuparu, High Performance Structures Romania, Romania

14:00 Development and Testing of a CubeSat Panel with an Embedded Pulsating Heat Pipe built by Additive Manufacturing Technology
Luca Casonato, Argotec Srl, Italy

14:20 Questions and Answers for the Session Speakers

14:30 End of session

14:30 Coffee Break

Plenary Presentation

14:45 Additive Manufacturing , an opportunity to meet Aerospace Challenges
Romano Lazurlo
Head of Material & Process Technologies CTO & Engineering Electronics, Leonardo, Italy

Plenary Presentation

15:40 Structural Integrity Considerations for Additive Manufacturing and Importance of "Lessons Learned"
Michael Gorelik
Chief Scientist and Technical Advisor, Fatigue and Damage Tolerance,
Federal Aviation Administration, USA

16:35 Coffee Break

16:50 Panel 2: Additive Manufacturing: Verification and Qualification
Chair: Brandon Ribic (America Makes, USA)
Panel Members: *Amber Andreaco (GE Additive, USA)*
Doug Wells (NASA, USA)
Laurent Pambaguian (ESA, Netherlands)
Florerence Montredon (Thales Alenia Space, France)

17:45 Coffee Break

Room A: Continuation of Advanced Manufacturing – Applications II
Co-Chairs: David Wimpenny (MTC, United Kingdom), Laurent Pambaguian (ESA, Netherlands)

18:10 How Metal AM opens the door for LEO satellite constellations
Eliana Fu, TRUMPF Laser- und Systemtechnik GmbH, Germany

18:30 Relativity Space: Enabling Disruptive Innovation
Elizabeth Quade, Relativity Space, USA

18:50 Additive Manufacturing and Post Processing of a Hydrogen Peroxide / Kerosene 6 kN aerospike breadboard engine
Samira Gruber, Fraunhofer Institute for Material and Beam Technology IWS, Germany

19:10 Preliminary testing of an additive manufactured nickel-iron magnetic shielding
Nils Goossens, University Bremen / Zarm, Germany

19:30 Design of Topologically Optimized Multi-functional SmallSat Structures Enabled by Additive Manufacturing
Bryan McEnerney, NASA Jet Propulsion Laboratory, USA

19:50 Questions and Answers for the Session Speakers

20:00 Conference Closure Presentation

Thursday 10 March 2022

Room B: Additive Manufacturing – CT, NDI and Residual Stress II

Co-Chairs: Elena Lopez (Fraunhofer, Germany) and Ana Brandão (ESA, Netherlands)

Keynote Presentation

12:25 X-ray tomography for characterization of advanced materials
Anton Du Plessis, Object Research Systems, Canada

13:00 Direct In-process Inspection for AM
Ben Dutton, The Manufacturing Technology Centre (MTC), United Kingdom

13:20 In-situ monitoring of defects in extrusion-based bioprinting processes using visible light imaging for enabling long-term/long-distance human space missions
Simone Giovanni Gugliandolo, Politecnico Di Milano, Italy

13:40 The residual stress in simple and complex geometries manufactured by laser powder bed fusion: a neutron diffraction study
Maximilian Sprengel, Bundesanstalt für Materialforschung- und Prüfung (BAM), Germany

14:00 Questions and Answers for the Session Speakers

14:10 End of session

14:30 Coffee Break

Plenary Presentation

14:45 Additive Manufacturing , an opportunity to meet Aerospace Challenges
Romano Lazurlo
Head of Material & Process Technologies CTO & Engineering Electronics, Leonardo, Italy

Plenary Presentation

15:40 Structural Integrity Considerations for Additive Manufacturing and Importance of "Lessons Learned"
Michael Gorelik
Chief Scientist and Technical Advisor, Fatigue and Damage Tolerance,
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16:35 Coffee Break

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Chair: Brandon Ribic (America Makes, USA)
Panel Members: Amber Andreaco (GE Additive, USA)
Doug Wells (NASA, USA)
Laurent Pambaguian (ESA, Netherlands)
Florerence Montredon (Thales Alenia Space, France)

17:45 Coffee Break

Room B: Continuation of Additive Manufacturing – CT, NDI and Residual Stress II
Co-Chairs: Elena Lopez (Fraunhofer, Germany) and Ana Brandão (ESA, Netherlands)

18:10 Acceptance and Verification Criteria of AM Components
Alejandro Revuelta, VTT Technical Research Centre Of Finland Ltd., Finland

18:30 Application of Eddy Currents to the in-situ inspection of metal AM parts
Bernard Revaz, Amiquam, Switzerland

18:50 In Situ NDI Inpection for Additive
Erin Lanigan, NASA, USA

19:10 Study of fatigue damage growth using vibration response phase tracking method: application to both composites and 3D printed aluminium structures.
Dario Di Maio, University Of Twente, Netherlands

19:30 Questions and Answers for the Session Speakers

19:40 End of session

20:00 Conference Closure Presentation

Thursday 10 March 2022

Room C: Additive Manufacturing – Process Development III

Co-Chairs: Christian Melzer (RUAG Space, Germany) and Thomas Rohr (ESA, Netherlands)

Keynote Presentation

12:25 An introduction in the potential for the application of Wire Arc Additive Manufacturing (WAAM) in Space Applications.
Gijs van der Velden, MX3D, Netherlands

13:00 Quality Assurance of Additive Manufacturing Powders for Space Propulsive Applications: An Overview
Davide Zuin / Simone La Luna / Stefano Dossi, Politecnico Di Milano, Italy

13:20 Powder Based Electron Beam Melting at pro-beam
Alexander Klassen, Pro-beam Additive Gmbh, Germany

13:40 Additive manufacturing of ceramic components by fused deposition modelling technology.
Ľuboš Bača, Slovak University Of Technology, Slovakia

14:00 Multi Material Rocket Nozzle Manufacturing Process – From Material Research to Fabrication with Direct Energy Deposition(DED)
Seunghwan Lim, Insstek, South Korea

14:20 Questions and Answers for the Session Speakers

14:30 End of session

14:30 Coffee Break

Plenary Presentation

14:45 Additive Manufacturing , an opportunity to meet Aerospace Challenges
Romano Lazurlo
Head of Material & Process Technologies CTO & Engineering Electronics, Leonardo, Italy

Plenary Presentation

15:40 Structural Integrity Considerations for Additive Manufacturing and Importance of "Lessons Learned"
Michael Gorelik
Chief Scientist and Technical Advisor, Fatigue and Damage Tolerance, Federal Aviation Administration, USA

16:35 Coffee Break

16:50 Panel 2: Additive Manufacturing: Verification and Qualification
Chair: Brandon Ribic (America Makes, USA)
Panel Members: *Amber Andreaco (GE Additive, USA)*
Doug Wells (NASA, USA)
Laurent Pambaguian (ESA, Netherlands)
Florerence Montredon (Thales Alenia Space, France)

17:45 Coffee Break

Thursday 10 March 2022

Room C: Additive Manufacturing – Polymers

Co-Chairs: Thomas Rohr (ESA, Netherlands) and Brian Jensen (NASA, USA)

18:10 The three little Additive Cubesats. The success story of reducing mass and cost through high performance polymers with metallic coating
Lidia Hernández Álvarez, Citd Engineering & Technologies, Spain

18:30 3D Printing in Vacuum - a novel approach for additive manufacturing of high performance polymers
Marina Kühn-Kauffeldt, Universität Der Bundeswehr München, Germany

18:50 3D printed electrically conductive PEEK from ground qualification to flight demonstration
Ugo Lafont, European Space Agency, Netherlands

19:10 Questions and Answers for the Session Speakers

19:20 End of session

20:00 Conference Closure Presentation

Thursday 10 March 2022

Room D: Digital Manufacturing III

Co-Chairs: Andreas Kommer (Airbus Defence and Space, Germany) and Guillermo Requena (DLR, Germany)

Keynote Presentation

12:25 Structural health monitoring of adhesively bonded joint using optical fibres: applications and perspectives.
Andrea Bernasconi, Politecnico Di Milano, Italy

13:00 Advanced finite elements for modelling additive-manufactured composite components
Alfonso Pagani, Politecnico Di Torino, Italy

13:20 Advanced Models for the Virtual Design and Manufacturing of Composite Structures
Enrico Zappino, Politecnico di Torino, Italy

13:40 Integrated computational materials engineering framework for metal AM
Tatu Pinomaa, Vtt Technical Research Centre Of Finland Ltd, Finland

14:00 Virtual testing process model for laser powder bed fusion of Inconel 718
Michael Mallon / Dawid Luczyniec, European Space Agency, Netherlands

14:20 Questions and Answers for the Session Speakers

14:30 End of session

14:30 Coffee Break

Plenary Presentation

14:45 Additive Manufacturing , an opportunity to meet Aerospace Challenges
Romano Lazurlo
Head of Material & Process Technologies CTO & Engineering Electronics, Leonardo, Italy

Plenary Presentation

15:40 Structural Integrity Considerations for Additive Manufacturing and Importance of "Lessons Learned"
Michael Gorelik
Chief Scientist and Technical Advisor, Fatigue and Damage Tolerance,
Federal Aviation Administration, USA

16:35 Coffee Break

16:50 Panel 2: Additive Manufacturing: Verification and Qualification
Chair: Brandon Ribic (America Makes, USA)
Panel Members: *Amber Andreaco (GE Additive, USA)*
Doug Wells (NASA, USA)
Laurent Pambaguian (ESA, Netherlands)
Florerence Montredon (Thales Alenia Space, France)

17:45 Coffee Break

Room D: Continuation of Digital Manufacturing III

Co-Chairs: Andreas Kommer (Airbus Defence and Space, Germany) and Guillermo Requena (DLR, Germany)

Keynote Presentation

17:55 Digital transformation in Advanced Manufacturing and Materials Engineering
Dawid Luczyniec, European Space Agency, Netherlands

18:30 ICME Enabled Optimization and Qualification Tool for Additive Manufacturing
Jiadong Gong, Questek Innovations, USA

18:50 Advanced Temperature Mapping for High Thermal Loads
Marta Ferran-Marqués, Sensor Coating Systems Ltd., United Kingdom

19:10 Structural Health Monitoring of one dimensional slender structures using the Finite Element Method and Deep Learning
Ben Romarowski, Politecnico Di Milano, Italy

19:30 Advanced Nano-based Surface Processes for Joining and Corrosion Protection in Aerospace and Space Structures.
Gary Critchlow, Loughborough University, United Kingdom

19:50 Questions and Answers for the Session Speakers

20:00 Conference Closure Presentation

Thursday 10 March 2022

Room E: Additive Manufacturing - Lattice Structures

Co-Chairs: Marco Mulser (OHB System AG, Germany) and Gilles Pommatau (Thales Alenia Space, France)

12:40 Enabling high strength aluminium lattice structures produced by Laser Powder Bed Fusion for space applications
Emilie Beevers, KU Leuven, Belgium

13:00 Multiscale optimization of resonant frequencies for lattice-based additive manufactured payload interfaces
Morgan Nightingale, Imperial College London, United Kingdom

13:20 Modeling of additively manufactured periodic lattice cores in sandwich panels
Hussam Georges, Institute Of Structural Mechanics, Germany

13:40 Elasto-plastic and fatigue properties characterisation and prediction of additive manufactured lattice structures
Valerio Carollo, TWI Ltd, United Kingdom

14:00 Towards the characterisation of polymer micro-lattices additive manufacturing techniques for versatile aerospace structure design
Louis Catar, Ecole De Technologie Supérieure De Montréal, Canada

14:20 Questions and Answers for the Session Speakers

14:30 End of session

14:30 Coffee Break

Plenary Presentation

14:45 Additive Manufacturing , an opportunity to meet Aerospace Challenges
Romano Lazurlo
Head of Material & Process Technologies CTO & Engineering Electronics, Leonardo, Italy

Plenary Presentation

15:40 Structural Integrity Considerations for Additive Manufacturing and Importance of "Lessons Learned"
Michael Gorelik
Chief Scientist and Technical Advisor, Fatigue and Damage Tolerance,
Federal Aviation Administration, USA

16:35 Coffee Break

16:50 Panel 2: Additive Manufacturing: Verification and Qualification
Chair: Brandon Ribic (America Makes, USA)
Panel Members: *Amber Andreaco (GE Additive, USA)*
Doug Wells (NASA, USA)
Laurent Pambaguian (ESA, Netherlands)
Florerence Montredon (Thales Alenia Space, France)

17:45 Coffee Break

Room E: Continuation of Additive Manufacturing – Lattice Structures

Co-Chairs: Marco Mulser (OHB System AG, Germany) and Gilles Pommatau (Thales Alenia Space, France)

18:10 Towards the reliable implementation of additively manufactured lattice structures into lightweight components
Guillaume Meyer, Technical University Of Darmstadt, Germany

18:30 Additively manufactured actively cooled nozzle design for hybrid propellant sounding rockets
Juri Munk, Fraunhofer Institute for Laser Technology, Germany

18:50 Novel in-situ geometry reconstruction and quality modelling approach for lattice structures
Federica Garghetti, Politecnico di Milano, Italy

19:10 Design and fatigue assessment of an isostatic mounting device for space applications with lattice structures
Stefano Foletti, Politecnico di Milano, Italy

19:30 Questions and Answers for the Session Speakers

19:40 End of session

20:00 Conference Closure Presentation

Thursday 10 March 2022

Room F: Smart and Emerging Materials II

Co-Chairs: Martina Meisnar (ESA, United Kingdom) and Andy Norman (ESA, Netherlands)

12:40 Novel Thermistor Hollow Fibers for Energy Efficient Gas Sorption
Jon Bell, Swiss Federal Laboratories For Materials Science And Technology, Switzerland

13:00 Flexible materials for Martian missions – Facing low temperature and radiation conditions
Rafal Anyszka, University of Twente, Netherlands

13:20 A Passive Spacecraft Thermal Management Solution through W:VO2 Metasurface on Polymer Foils
Kai Sun, University Of Southampton, United Kingdom

13:40 Questions and Answers for the Session Speakers

13:50 End of session

14:30 Coffee Break

Plenary Presentation

14:45 Additive Manufacturing , an opportunity to meet Aerospace Challenges
Romano Lazurlo
Head of Material & Process Technologies CTO & Engineering Electronics, Leonardo, Italy

Plenary Presentation

15:40 Structural Integrity Considerations for Additive Manufacturing and Importance of "Lessons Learned"
Michael Gorelik
Chief Scientist and Technical Advisor, Fatigue and Damage Tolerance,
Federal Aviation Administration, USA

16:35 Coffee Break

16:50 Panel 2: Additive Manufacturing: Verification and Qualification
Chair: Brandon Ribic (America Makes, USA)
Panel Members: *Amber Andreaco (GE Additive, USA)*
Doug Wells (NASA, USA)
Laurent Pambaguian (ESA, Netherlands)
Florerence Montredon (Thales Alenia Space, France)

17:45 Coffee Break

Thursday 10 March 2022

Room F: Additive Manufacturing - High Temperature Materials

Co-Chairs: Marco Di Clemente (ASI, Italy) and Brian West (NASA, USA)

18:10 Selection and Performance of AM Superalloys for High-Speed Flight Environments
William Sean James, Cranfield University, United Kingdom

18:30 Additive Manufacturing of Rocket Engines - additive manufacturing, rocket engines, nickel based superalloys, space travel, manufacturing in outer space
Paweł Wiatrzyk, Wrocław University Of Science And Technology, Poland

18:50 Additive manufacturing of Platinum-based alloys for industrial high temperature structural applications
Parastoo Jamshidi, University of Birmingham, United Kingdom

19:10 Questions and Answers for the Session Speakers

19:20 End of session

20:00 Conference Closure Presentation