

MATADOR



THE ADVANCED MACHINERY
& PRODUCTIVITY INSTITUTE

MANCHESTER
1824

The University of Manchester

**Advanced Machinery:
Shaping the Future of Manufacturing Innovation**

The 41st MATADOR Conference and AMPI Launch

Manchester, 15 – 17 September 2021

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EXHIBITORS



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This programme will be updated regularly. The date of this version is: 15 September 2021.

Day 1 – Wednesday 15th September

Held on The University of Manchester campus ([Barnes Wallis Centre](#)) and marks the launch of the [Advanced Machinery and Productivity Institute](#).

08.30 – 09.00 Coffee & Pastries

Session 1

- 09.00 – 09.20 Opening and welcome from the conference management team
- 09.20 – 09.40 *Why AMPI is vital to the UK economy*
Dr Tony Bannan, OBE, CEng FIMechE
Precision Technologies Group Limited, UK
- 09.40 – 10.10 *The importance of manufacturing innovation for productivity and “levelling up”*
Prof Richard Jones
Chair in Materials Physics and Innovation Policy, University of Manchester
- 10.10 – 10.40 *Are robots our friends?*
Prof Maarten Steinbuch
Distinguished University Professor, Eindhoven University of Technology
- 10.40 – 11.10 *How to Automate Automation*
Dr Blake Kendrick
Renishaw Plc

11.10 – 11.30 Coffee

Session 2

- 11.30 – 12.00 *Manufacturing Technology: Resilient and responsive supply chains delivering a healthier greener society*
Prof Sam Turner
Chief Technology Officer, High Value Manufacturing Catapult
- 12.00 – 12.30 *Precision Engineering in machine tools, some steps towards smart manufacturing*
Harkaitz Urreta
IDEKO
- 12.30 – 13.00 *The technology is advancing, but by the people, for the people*
Steve Brambley
GAMBICA

13.00 – 14.00 Lunch

Session 3

- 14.00 – 14.30 *Weaving a National Cyber-Physical Fabric*
Paul Clarke CBE FREng
Independent Advisor to Government, Industry and Start-ups
- 14.30 – 15.00 *How robotic machining systems designed and built in the UK are fundamentally changing factory concepts*
Philippa Glover
CNC Robotics Ltd
- 15.00 – 15.30 *Manufacturing the Future*
Iain Minton CEng FIMechE FRAeS FIKE
Technology Capability Delivery Director
BAE Systems - Air

15.30 – 16.00 Coffee

16.00 – 17.15 Industrial Forum - Product launch/presentations by partners and exhibitors

Presentations from:

16.00 Headline Sponsor - Renishaw Plc

16.10 Sponsor - National Physical Laboratory

Exhibitors:

16.15 Loxham Precision

16.20 CPI

16.25 M-Solv

16.30 Aerotech

16.35 Insphere

16.40 Precision Technologies Group

16.45 LK Metrology Ltd

16.50 Rainford Precision

16.55 Fives Landis Ltd

17.00 Physik Instrumente

17.05 Addisol

17.10 Productive Machines

17.15 IndustriGen

17.30 – 19.00 AMPI Strength in Places Fund Innovation Programme – Drinks Reception

Join us in celebrating the award of the UK Research & Innovation's [Strength in Places Fund](#) to deliver the Advanced Machinery & Productivity Initiative, a 5-year programme of innovation within the UK's advanced machinery sector. Guest speakers will provide an insight into what the funding means for the local area as well as its role in supporting industry and academia in innovating the next generation of machines and tomorrow's technologies.

Speakers include:

- Welcome from Prof Luke Georghiou, Deputy President and Deputy Vice-Chancellor, The University of Manchester
- Peter Thompson FEng FInstP FRSC, Chief Executive Officer, National Physical Laboratory
- Dr Tony Bannan, OBE, CEng FIMechE, Chief Executive Officer of Precision Technologies Group, President of AMPI

Closing of Day 1

Important Notice:

The abstracts of the parallel session presentations can be downloaded from the following link:

<https://documents.manchester.ac.uk/display.aspx?DocID=56905>

Day 2 – Thursday 16th September

Held virtually. All times are in British Summer Time. Parallel session presentation times might change in the run-up to the conference – please check this programme regularly.

08.50 Opening of Day 2**Plenary Session**

09.00 - 09.50 *Smart and Appropriate Manufacturing Technologies*

Prof Sung-Hoon Ahn

Seoul National University

09.50 – 10.40 *Towards Factories of the Future through Smart Manufacturing*

Prof Lihui Wang

KTH Royal Institute of Technology

10.40 - 11.00 Break

11.00 – 12.20 Parallel Sessions 1. Please see Appendix for full list of presentations. Abstracts can be downloaded [here](#).

	Session 1-A: Product Design	Session 1-B: Intelligent Robotics & Automation Systems	Session 1-C: Measurements and Digital Technologies
11.00 – 11.20	MAT21-148 4D printing applications in the cardiovascular system Ebrahim Vahabli University of Western Australia	MAT21-108 Digital twins for CNC machining – a review Charlie Walker University of Strathclyde	MAT21-116 A method for down-selecting temperature sensor locations for machine thermal error modelling Nemwel Ariaga University of Huddersfield
11.20 – 11.40	MAT21-113 3D/4D Printing a bioinspired leaf biosensor Mohamed Hassan The University of Manchester	MAT21-110 New online position correction approach of an industrial robot by using a new photogrammetric measurement system Luis Garcia Hochschule Aalen	MAT21-134 A Voronoi diagram based framework for fast and accurate inspection of closed 2D free-form profiles Samuel GL Indian Institute of Technology, Madras (IIT Madras)
11.40 – 12.00	MAT21-133 Investigating the in vitro degradation properties of polyethylene terephthalate glycol Yanhao Hou The University of Manchester	MAT21-111 New photogrammetric approach for measuring the position of a Tool-Center-Point Uwe Bielke Glasgow Caledonian University	
12.00 – 12.20	MAT21-115 Design and evaluation of a novel core-shell bio-additive extrusion system for tissue engineering Jiong Yang The University of Manchester	MAT21-112 Model based view planning for the robot-guided automation of optical 3D digitization based on a variable mesh resolution processing approach Kilian Geiger Laboratory for Machine Tools and Production Engineering	MAT21-135 Mobile Measuring Machine for Large Round Parts Drew Devitt American Offshore Energy

12.20 - 13.10 Break

13.10 - 14.30 Parallel Sessions 2. Please see Appendix for full list of presentations. Abstracts can be downloaded [here](#).

	Session 2-A: Manufacturing Processes	Session 2-B: Manufacturing Systems	Session 2-C: Intelligent Robotics & Automation Systems
13.10 – 13.30	MAT21-102 Application of machine learning to optimize process parameters in fused deposition modeling of PEEK material Feng Qi Institute for Machine Tools, University Stuttgart	MAT21-123 A fog computing based framework for context-aware and real-time energy usage analysis in discrete manufacturing systems Huajun Cao Chongqing University	MAT21-120 Cobot assisted “intelligent sorting” of additively manufactured parts James McEwan Lancaster University
13.30 – 13.50	MAT21-103 Selectively weakened material for post-processing of additively manufactured components Clemens Maucher Institut for Machine Tools - University of Stuttgart	MAT21-146 New approach for the extension of virtual commissioning models by considering structural dynamics and drive control behaviour Andreas Otto Fraunhofer Insitute of Machine Tools and Forming Technology IWU	MAT21-126 Low latency object detection with neural networks for mobile resources using 5G and edge computing in production environments Mohammad Hossein Jafari Laboratory for Machine Tools and Production Engineering WZL of RWTH Aachen
13.50 – 14.10	MAT21-106 Multi-step electrochemical polishing of additively manufactured 316L stainless steel components Haitao Zhu Lancaster University	MAT21-118 Rectilinear strain sensing framework for real time compensation of structural distortions in precision machinery Simon Fletcher University of Huddersfield	MAT21-128 Review of the Key Challenges, Guidelines and Cost-effective Digital Solutions for SMEs Idil Tartici The University of Manchester
14.10 – 14.30	MAT21-109 Low carbon emission laser cleaning processes Nazanin Mirhosseini University of Manchester	MAT21-136 Milling stability prediction using non-iterative multi-frequency solution Z. Murat Kilic The University of Manchester	

Plenary Session

14.40 - 15.30 *Additive Manufacturing of Elastomer, Ceramic and Metal Multi-functional Structures*
Prof Eric MacDonald
University of Texas at El Paso

15.30 **Closing of Day 2**

Day 3 – Friday 17th September

Held virtually. All times are in British Summer Time. Parallel session presentation times might change in the run-up to the conference – please check this programme regularly.

09.25 Opening of Day 3

09.30 – 10.30 Parallel Sessions 3. Please see Appendix for full list of presentations. Abstracts can be downloaded [here](#).

	Session 3-A: Manufacturing Processes	Session 3-B: New Machine Concept Technologies	Session 3-C: Measurements and Digital Technologies
09.30 – 09.50	MAT21-107 Effect of Fixturing on surface quality of Ti-6Al-4V in Vibratory Manufacturing Processes Yuvaraj Hemanth Kumar Nanyang Technological University	MAT21-105 Observation of local heat dissipation in NiCr microcircuit Jiaxuan Liu University of Tokyo	MAT21-131 Dimensional nanometrology to support UK science and industry Andrew Yacoot National Physical Laboratory (NPL)
09.50 – 10.10	MAT21-140 High-speed abrasive machining of Al-SiC composite using uni-layer brazed diamond tool with patterned grit distribution Trilochan Prasad Nanda Indian Institute of Technology Madras	MAT21-138 Real-time machining and adaptative closed-loop control with 5G Rodrigo Siqueira de Souza Advanced Manufacturing Research Centre (AMRC) North West, University of Sheffield	MAT21-137 Personalized Design and Fabrication: Intelligent Solution for Fashion Industry Charlie C.L. Wang The University of Manchester
10.10 – 10.30	MAT21-125 Processing of Fe-Cr-Co hard magnetic alloy by two stage thermomagnetic treatment technique Ali Haider National university of science and technology, Islamabad, Pakistan	MAT21-104 Electrical discharge machining of dental implants in ultrasonic stimulated dielectric Lisa Marie Rickerts Hochschule Wismar	MAT21-124 Machined Surface Texture Investigation and Modelling of End Milling Process Wencheng Pan University of Huddersfield

Plenary Session

10.35 – 11.25 *Implications of Carbon Neutral Economy on Manufacturing*

Prof Seeram Ramakrishna
National University of Singapore

11.25 - 11.40 Break

11.40 - 12.40 Parallel Sessions 4. Please see Appendix for full list of presentations. Abstracts can be downloaded [here](#).

	Session 4-A: Manufacturing Processes	Session 4-B: Manufacturing Systems	Session 4-C: Measurements and Digital Technologies
11.40 – 12.00	MAT21-144 Innovative and new development in broaching machining process: Mechanistic force modelling Peace Onawumi University of Sheffield. AMRC with Boeing	MAT21-149 Laser precision cutting CFRP and the relative mechanical performance analysis Haonan Li Jiangsu University	MAT21-122 Digital technologies for the prevention and management of occupational chronic obstructive pulmonary disease Zhihao Jiang The University of Manchester
12.00 – 12.20	MAT21-132 Feasibility of improving productivity through the usage of higher axial depth of cut per pass during MQL based sustainable micro-milling Suman Saha IIT Kharagpur	MAT21-127 Analysing Tool Strength of an SPTT with Grooved Micro-channel on Tool Rake for Enhanced Heat Transfer. Arindam Santra Jadavpur University, Kolkata, India	MAT21-121 On-CMM core temperature measurement using ultrasonic phase-shift method Olaide Olabode University of Huddersfield
12.20 – 12.40	MAT21-139 Multi-Axis Additive Manufacturing with Controlled Anisotropic Strength Guoxin Fang The University of Manchester	MAT21-141 Ultrashort Pulsed Laser induced micro/nano scale surface structures on Inconel 718 Samuel GL Indian Institute of Technology, Madras (IIT Madras)	MAT21-147 Interoperable Systems: Adaptive B2MML bus layer for discrete manufacturing Mathew Gonzalez-Green Advanced Manufacturing Research Centre (AMRC) North West, University of Sheffield

12.40 - 13.40 Break

Plenary Session

13.45 - 14.35 *An Overview of Smart Manufacturing and its Implications for Innovation and Growth*

Prof Amaresh Chakrabarti

Indian Institute of Science (IISc), Bangalore

14.40 - 15.30 *Digital Machining*

Prof Yusuf Altintas

The University of British Columbia

15.35 - 16.25 *How Smart is Smart Manufacturing?*

Prof Ajay Malshe

Purdue University

16.25 – 16.40 **Closing of Conference**

APPENDIX: Abstracts to be presented during MATADOR Days 2 & 3

ID	Abstract Title	Organization	Full Name
MAT21102	Application of machine learning to optimize process parameters in fused deposition modeling of PEEK material	Institute for Machine Tools, University Stuttgart	Feng Qi
MAT21103	Selectively weakened material for post-processing of additively manufactured components	Institut for Machine Tools - University of Stuttgart	Clemens Maucher
MAT21104	Electrical discharge machining of dental implants in ultrasonic stimulated dielectric	Hochschule Wismar	Lisa Marie Rickerts
MAT21105	Observation of local heat dissipation in NiCr microcircuit	University of Tokyo	JIAXUAN LIU
MAT21106	Multi-step electrochemical polishing of additively manufactured 316L stainless steel components	Lancaster University	Haitao Zhu
MAT21107	Effect of Fixturing on surface quality of Ti-6Al-4V in Vibratory Manufacturing Processes	Nanyang Technological University	Swee Hock Yeo
MAT21108	Digital twins for CNC machining – a review	University of Strathclyde	Charlie Walker
MAT21109	Low carbon emission laser cleaning processes	University of Manchester	Nazanin Mirhosseini
MAT21110	New online position correction approach of an industrial robot by using a new photogrammetric measurement system	HOCHSCHULE AALEN	Luis Garcia
MAT21111	New photogrammetric approach for measuring the position of a Tool-Center-Point	Glasgow Caledonian University	Uwe Bielke
MAT21112	Model based view planning for the robot-guided automation of optical 3D digitization based on a variable mesh resolution processing approach	Laboratory for Machine Tools and Production Engineering	Kilian Geiger
MAT21113	3D/4D Printing a bioinspired leaf biosensor	The University of Manchester	Mohamed Hassan
MAT21115	Design and evaluation of a novel core-shell bio-additive extrusion system for tissue engineering	The University of Manchester	Jiong Yang
MAT21116	A method for down-selecting temperature sensor locations for machine thermal error modelling	University of Huddersfield	Nemwel Ariaga
MAT21118	Rectilinear strain sensing framework for real time compensation of structural distortions in precision machinery	University of Huddersfield	Simon Fletcher
MAT21120	Cobot assisted “intelligent sorting” of additively manufactured parts	Lancaster University	James McEwan
MAT21121	On-CMM core temperature measurement using ultrasonic phase-shift method	University of Huddersfield	Olaide Olabode
MAT21122	Digital technologies for the prevention and management of occupational chronic obstructive pulmonary disease	University of Manchester	Zhihao Jiang
MAT21123	A fog computing based framework for context-aware and real-time energy usage analysis in discrete manufacturing systems	Chongqing University	Huajun Cao
MAT21124	Machined Surface Texture Investigation and Modelling of End Milling Process	University of Huddersfield	Wencheng Pan
MAT21125	Processing of Fe-Cr-Co hard magnetic alloy by two stage thermomagnetic treatment technique	NUST University	Ali Haider
MAT21126	Low latency object detection with neural networks for mobile resources using 5G and edge computing in production environments	Laboratory for Machine Tools and Production Engineering WZL of RWTH Aachen	Mohammad Hossein Jafari
MAT21127	Analysing Tool Strength of an SPTT with Grooved Micro-channel on Tool Rake for Enhanced Heat Transfer	Jadavpur University, Kolkata, India	ARINDAM SANTRA
MAT21128	Review of the Key Challenges, Guidelines and Cost-effective Digital Solutions for SMEs	The University of Manchester	IDIL TARTICI

ID	Abstract Title	Organization	Full Name
MAT21131	Dimensional nanometrology to support UK science and industry	National Physical Laboratory (NPL)	Andrew Yacoot
MAT21132	Feasibility of improving productivity through the usage of higher axial depth of cut per pass during MQL based sustainable micro-milling	IIT Kharagpur	Suman Saha
MAT21133	Investigating the in vitro degradation properties of polyethylene terephthalate glycol	The University of Manchester	Yanhao Hou
MAT21134	A Voronoi diagram based framework for fast and accurate inspection of closed 2D free-form profiles	Indian Institute of Technology, Madras (IIT Madras)	Samuel GL
MAT21135	Mobile Measuring Machine for Large Round Parts	American Offshore Energy	Drew Devitt
MAT21136	Milling stability prediction using non-iterative multi-frequency solution	The University of Manchester	Z. Murat Kilic
MAT21137	Personalized Design and Fabrication: Intelligent Solution for Fashion Industry	The University of Manchester	Charlie C.L. Wang
MAT21138	Real-time machining and adaptative closed-loop control with 5G	Advanced Manufacturing Research Centre (AMRC) North West, University of Sheffield	Rodrigo Siqueira de Souza
MAT21139	Multi-Axis Additive Manufacturing with Controlled Anisotropic Strength	The University of Manchester	Charlie C.L. Wang
MAT21140	High-speed abrasive machining of Al-SiC composite using uni-layer brazed diamond tool with patterned grit distribution	Indian Institute of Technology Madras	Trilochan Prasad Nanda
MAT21141	Ultrashort Pulsed Laser induced micro/nano scale surface structures on Inconel 718	Indian Institute Of Technology, Madras (IIT Madras)	Samuel GL
MAT21144	Innovative and new development in broaching machining process: Mechanistic force modelling	University of Sheffield. AMRC with Boeing	Peace Onawumi
MAT21146	New approach for the extension of virtual commissioning models by considering structural dynamics and drive control behaviour	Fraunhofer Insitute of Machine Tools and Forming Technology IWU	Andreas Otto
MAT21147	Interoperable Systems: Adaptive B2MML bus layer for discrete manufacturing	Advanced Manufacturing Research Centre (AMRC) North West, University of Sheffield	Mathew Gonzalez-Green
MAT21148	4D printing applications in the cardiovascular system	University of Western Australia	Ebrahim Vahabli
MAT21149	Laser precision cutting CFRP and the relative mechanical performance analysis	Jiangsu University	Haonan Li