

ACM5 Overview & Preliminary Programme

Venue: National Composites Centre, Bristol & Bath Science Park, Emersons Green, Bristol BS16 7FS

Day 0 – Tuesday 5 April 2022.

Time	
16.00-17.00	Tour of National Composites Centre (NCC) Bristol & Bath Science Park, Emersons Green, Bristol BS16 7FS
17.00-18.30	Registration & Welcome reception NCC, Bristol Poster session
	BUS TRANSPORT from Bristol city centre (hotels) to the NCC and Bus return to Bristol city centre after welcome reception Collection point in city centre: Collection at College Green, BS1 5UY 15:20 (leaving College Green by 15:30). Arrival at National Composites Centre (NCC) by 16:00. Return to College Green, BS1 5UY Leaving NCC at 18:45-19:00. Arrival at College Green around 19:15 – 19:30

ACM5 Preliminary Oral Presentations Schedule

Day 1 – Wednesday 6 April 2022.

Time	Speaker	Title
9.00	Kevin Potter, BCI/University of Bristol & Enrique Garcia, NCC, UK	Opening remarks and welcome
Session 1. Automated Fibre Placement 1. Session chair: Sayata Ghose, Boeing		
9.15	Suong Van Hoa, Concordia University, CA	Keynote 1. Recent Advances and Challenges in Automated Composites Manufacturing
9.45	Yi Wang, University of Bristol, UK	A simulation platform for the influence of process conditions on steering-induced defects in automated fibre placement (AFP)
10.05	Xiaochuan Sun, University of Bristol, UK	On-the-fly Process Control in Automated Fibre Placement
10.25	Lars Brandt, TU DLR, D	Introduction of 3-dimensional process simulation for thermoplastic AFP for enhanced process parameter identification
10.45	Iryna Tretiak, University of Bristol, UK	Cyclic Compressive loading of Carbon/Epoxy Prepregs: Novel Challenges and Model Requirements
11.05	Tea and Coffee break	
Session 2. Automated Fibre Placement 2. Session chair: Anoush Poursartip, University of British Columbia, CA		
11.20	Ralf Schledjewski, Montanuniversität Leoben, A	Improved layup quality during automated thermoplastic tape layup – Inline detection of consolidation force and tape geometry
11.40	Yi Wang, University of Bristol, UK	A modelling framework for the evolution of prepreg tack under processing conditions
12.00	Daniël MJ Peeters, TU Delft, NL	Predicting the formation of gaps and overlaps due to width variations of dry-fiber tapes during automated fiber placement
12.20	Anthony Evans, University of Nottingham, UK	Developing a Testbed for Automated Fibre Placement Technologies
12.40	Evangelos Zypeloudis, iCOMAT, UK	Fibre Steering for the manufacture of next generation advanced composites
13.00	Lunch and Poster Session	
Session 3. Forming Technologies 1. Session Chair: Sean Cooper, NCC, UK		
14.30	Malin Åkermo, Royal Institute of Technology, S	Keynote 2 Composites Manufacturing in Future Light Weight Design
15.00	Byung Chul Kim, University of Bristol, UK	Fibre-Steered Forming Technology for High-Volume Production of Complex Composite Components

15.20	Chrysoula Aza, University of Bath, UK	Fibre length effect on the design of formable laminates for complex geometries
15.40	Long Bin Tan, A-star, SG	Development of Machine Learning Model for Composites Thermoforming Process
16:00	Tea and coffee break	
Session 4. Forming Technologies 2. Session Chair: Eric Kim, BCI/University of Bristol, UK		
16.15	Anoush Poursartip, University of British Columbia, CA	Forming Process Simulation and Experimental Validation
16.35	Carl Scarth, University of Bath, UK	Stacking sequence selection for defect reduction in forming of long composite spars
16.55	Steven Roy, NRC, CA	AFP Inspection: From OCT A-Scans to the Digital Twin
17.15	End of session remarks	

Time	Conference Banquet, Bristol
19.30-	<p>Avon Gorge by Hotel du Vin, Sion Hill, Clifton, Bristol BS8 4LD (by Clifton Suspension Bridge) Pre-dinner drinks from 19:30. Dinner 20:00.</p> <p>BUS TRANSPORT:</p> <p>Collection at National Composites Centre at the end of conference at 17:15pm. Collection point outside South Gate Reception.</p> <p>Brief drop off at College Green, BS1 5UY to allow you to return to hotels to change if required</p> <p>Collection from College Green, BS1 5UY to travel to The Avon Gorge Hotel, Clifton. 19:00 (Leaving by 19:10) to arrive at hotel at 19:20</p> <p>Return to National Composites Centre, BS16 7FS including a drop off at College Green, BS1 5UY for people staying centrally at approx. 11:15pm.</p>

Day 2 – Thursday 7 April 2022.

Time	Speaker	Title
Session 5. Developing Technologies Session Chair: John Summerscales, University of Plymouth, UK		
9.00	Ed Findon, LM Wind Power, DK	Keynote 3. Challenges in the manufacture of large wind turbine blades
9.30	Nicholas Warrior, University of Nottingham, UK	Keynote 4. Automation projects within the EPSRC Future Composites Manufacturing Research Hub
10.00	Tea and Coffee	
10:15	Andrea Codolini, University of Cambridge, UK	Influence of tool orientation on the drapeability of unidirectional non-crimp fabrics.
10.35	Marco Bogenschütz, University of Hannover, DE	Determination and impact of fiber angle deviations in automated processing of carbon fiber non-crimp fabrics
10.55	Narongkorn Krajangsawadi, University of Bristol, UK	Highly Aligned Discontinuous Fibre Composite Filaments for Fused Deposition Modelling: Printability investigation
11.15	Lourens Blok, Lineat, UK	Exploring commercial use cases for aligned short fibre composites
11.35	Laura Rhian Pickard, University of Bristol, UK	Manufacturing of novel hierarchical hybridised composites
11.55	Tim Searle, Composite Integration, UK	From Resin Confusion to Resin Infusion – Understanding, Process Control & Automation
12.15	Sponsor & Exhibitor Presentations	
12.35	Lunch and Poster Session	
Session 6. Robotics and Moulding Technologies 1 Session Chair: Stephen Hallett, BCI/University of Bristol, UK		
14.15	Philippa Glover, CNC Robotics, UK	Keynote 5. Applications of robots across composites manufacture
14.45	Goran Fernlund, Convergent, CA	Data mining and science-based analytics for automation of composites processing
15.05	James Streatfield, Loop Technology, UK	High rate composite deposition for large scale aerostructures

15.25	Rachael Weare, WMG, UK & Andy Bools, Expert Technologies Group, UK	Automated Stamp Forming of CF-Prepreg Materials
15:45	Tea and Coffee	
Session 7. Robotics and Moulding Technologies 2		
Session Chair: James Kratz, BCI/University of Bristol, UK		
16.05	Andrew J Parsons, University of Nottingham, UK	Enhanced Characterisation and Simulation Methods for Thermoplastic Overmoulding – ENACT
16.25	Julien van Campen, TU Delft, NL	The Effect of Multi-Patch Laminate Design on the Manufacturing Efficiency of Composite Plates
16.45	Joe Summers, Airborne, UK	Design For Automation: Lessons from a High Rate Development Project
17.05	Per Saunders, NCC, UK	Low-cost photogrammetric control for automated trimming of composite preforms
17.25	Closing remarks & end of conference	

ACM5 Poster Presentation listing

Author	Title
Yannick Willemin, 9T Labs, DE	Seamless solution for industrial-grade continuous carbon fibre 3D-printed composites
Andre Mendes Florindo , TU Delft, NL	Robotic sequential ultrasonic spot welding for a full-scale thermoplastic fuselage demonstrator
Francesca Stramandinoli, Raytheon Technologies, USA	Collaborative Composite Sheet Layups for Complex Geometry of Small Plies
Christoph Frommel, DLR, DE	Automated Inspection in Thermoplastic Automated Fibre Placement
Peter A Arrabiyeh, TU Kaiserslautern, DE	Wet Fiber Placement – Additive Manufacturing with Fiber Bundles Impregnated with Thermoset Resin
Ngoc Anh Vu, University of Twente, NL	Yarn interaction in an enhanced kinematic model of the triaxial overbraiding process
Daniël MJ Peeters, TU Delft, NL	How smart is smart manufacturing?
John Summerscales, University of Plymouth, UK	In situ polymerisation during monomer infusion under flexible tooling
Peter Lascelles, Heraeus, UK	AFP Layup of CF-LM PAEK Fuselage Skin using a Pulsed Xenon Flashlamp System with an Optical-Thermal Simulation Tool
Francesco G. Morabito, University of Bristol, UK	Wraptor composite truss structures: Continuously Wrapped Tow Reinforced Truss Beams
Mehrshad Moghadamzad, Concordia University, CA	Temperature gradients in thermoplastic composites made by automated fiber placement
Jia Ge, Queen's University Belfast, UK	Multi-objective optimization for drilling of cf/pekk composite
Machar Devine, University of Edinburgh, UK	Recyclable acrylic-glass composites for marine and tidal energy applications
Matthew Thompson, University of Nottingham, UK	Effect of winding twist on multilayer braided composites
Charles P. Macleod, University of Bristol, UK	Fibre-waviness characteristics of fibre-steered laminates produced by Continuous Tow Shearing process

Michelle Rautmann, University of Bristol, UK	Advanced continuous tow shearing
Guy D Lawrence, University of Nottingham, UK	The effects of Inter-Ply Friction for a Dry Bi-Axial Non-Crimp Fabric during Automated Preforming
Gert Schouterden, KU Leuven, B	Testing setup for sensitivity analysis-based component optimisation of membrane-shaped MR-based draping tools
Matt Hardman, NCC, UK	Achieving ultra high rate automated composite deposition
Philip Druiff, NCC, UK	Machine Learning for Data Driven AFP
Matt Hardman, NCC, UK	Whitepaper: The need for material and process standards for Automated Fibre Placement