

The Fourth International Symposium on Automated Composites Manufacturing
Final Program

Day 1: April 25 Thursday, 2019

Location: Plaza Centre-Ville

777 Blvd Robert Bourassa
Montreal, Quebec
Canada H3C 3Z7

8:00	Opening ceremony Welcoming remarks by Dr. Amir Asif, Dean, Gina Cody school of Engineering and Computer Science, Concordia University				
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Keynote	Presentation Title	Author(s)	Affiliation	Country	Paper Code
8:20	AFP and the Next 10 Year Shift	Blaise Bergmann	Spirit AeroSystems, Inc.,	U.S.A	

Session 1	Applications. Chair: Sayata Ghose				
9:00	A Techno-Economic Model to Analyze Automation Options for Composite Wind Blade Manufacturing	Stephen B. Johnson, Matteo J. Polcari and James A. Sherwood	University of Massachusetts Lowell	U.S.A	SHE8035
9:20	Automated Manufacture of Adaptive Composite Hydrofoil	Phyo Thu Maung ¹ , Ebrahim Oromehiel ^{1*} , Marco Sotelo Zorrilla ¹ , Matthew David L. Ginu Rajan ² , Andrew W. Phillips ³ , Nigel A. St John ³ and Gangadhara Prusty ¹	1.UNSW Australia, 2. University of Wollongong, 3.Defence Science and Technology Group (DSTG)	Australia	ORO8022
9:40	Aerospace Quality In-situ Consolidation of Thermoplastic Composites using Automated Fiber Placement	Graham Ostrander and David Hauber	Automated Dynamics	U.S.A	DYN8020
10:00	Design, Manufacturing and Testing of an In-situ Consolidated Variable Stiffness Thermoplastic Composite Wingbox	Vincenzo Oliveri, Giovanni Zucco, Daniel Peeters, Gearoid Clancy, Robert Telford, Mohammad Rouhi, Ciarán McHale, Ronan M. O'Higgins, Trevor M. Young, Paul M. Weaver	University of Limerick	Ireland	ROU8016
10:20	Smart Lay-up: Advanced Robotic AFPM for Hybrid Composites Manufacturing	A. Sportelli ¹ , A. Ramirez ² , A. Lagrana ³ , G. Iagulli ⁴ and M. Raffone ⁵	1. Leonardo S.p.A., 2. M.Torres Diseños Industriales SAI, 3. Fundacio Eurecat, 4. Leonardo S.p.A., 5. Leonardo S.p.A.	Italy	SPO8013

10:40	Coffee break & Posters				
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Session 2	General considerations. Chair: Jelle Bloemhof				
11:00	Artificial Intelligence in Advanced Composite Manufacturing: A Path Forward	Scott Blake	Aligned Vision	U.S.A	BLA8018
11:20	Enabling the exploitation of automated composite manufacturing through data-driven process definition	Philippe Monnot, Laura Velden, Mattia Di Francesco, Peter Giddings	National Composites Centre	U.K	VEL8006
11:40	Predictive modelling of the automated fibre placement (AFP) processes: perspectives and challenges	Jonathan P.-H. Belnoue, Yi Wang, James Kratz, Dmitry S. Ivanov and Stephen R. Hallett	University of Bristol	U.K	BEL8003
12:00	Expanding the envelope of Automated Tape Laying	Anders Brødsgjæ, Jens de Kanter and Mattia Di Francesco	Airborne Composites Automation	The Netherlands	BRO8040
12:20	On the search for In situ consolidation when processing thermoplastic materials using Automated Fiber Placement	Denis Cartie	Coriolis Composites	France	COR8012

12:40	Lunch & Posters				
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Session 3	Heat sources and ultrasonic welding. Chair: Ali Yousefpour				
14:00	Developments in Xenon Flashlamp Heating for Thermoplastic Automated Fibre Placement	David Williams, Philippe Monnot, Martin Brown	Heraeus Noblelight Ltd	U.K	BRO8007
14:20	Selective comparison of heating sources for thermoplastic Automated Tape Placement	Neha Yadav, Ralf Schledjewski	Montanuniversität Leoben	Austria	YAD8005
14:40	Heat Transfer by A Moving Heat Source in AFP Thermoplastic Composites Manufacturing	Omid Aghababaei Tafreshi, Suong Van Hoa, Duc Minh Hoang, Daniel Rosca, Farjad Shadmehri	Concordia University	Canada	AGH8049
15:00	Towards automated ultrasonic welding of thermoplastic composite structures	Irene Fernandez Villegas ¹ , Rik Tonnaer ^{1,2} , Tian Zhao ¹ , Bram Jongbloed ¹ , Filipp Koehler ^{1,3} , Tiago Felipe ¹	1. Delft University of Technology, The Netherlands. 2. SAMIXL: Smart Advanced Manufacturing, The Netherlands. 3. Airbus, Germany	The Netherlands	VIL8017
15:20	Improvement of the lap shear strength of resistance-welded thermoplastic composite joints using a silane sol-gel coating on the stainless-steel heating element	Vincent Rohart ¹ , Louis Laberge Lebel ² , Martine Dubé ¹	1. Ecole de Technologie Supérieure, 2. Polytechnique de Montreal	Canada	ROH8008

15:40	Coffee Break				
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Session 4	Variable stiffness laminates. Chair: Farjad Shadmehri				
16:00	Characterizing the prepreg-compaction roller tack in application to defects appearing in automated fiber placement	Nima Bakhshi, Mehdi Hojjati	Concordia University	Canada	BAK8043
16:20	Effect of Manufacturing Flaws on the Behavior of Composite Beams Manufactured by Automated Fibre Placement (AFP) Process	Mohammadhossein Ghayour, Mehdi Hojjati, Rajamohan Ganesan	Concordia University	Canada	GHA8032
16:40	EXPERIMENTAL INVESTIGATION ON THE PERFORMANCE OF CARBON-EPOXY LAMINATES CONTAINING GAPS FABRICATED BY AUTOMATED FIBER PLACEMENT	V. Cadran, D. Del Rossi, and L. Lessard	McGill University	Canada	CAD8030
17:00	The final step towards manufacturing an optimised variable stiffness panel	Daniël Peeters, Kayin Worpel, Max Hijne, Julien van Campen, Mostafa Abdalla	Delft University of Technology	The Netherlands	PEE8027
17:20	MANUFACTURING AND TESTING OF VARIABLE-AXIAL COMPOSITE CYLINDERS OPTIMIZED FOR AXIAL COMPRESSION	José Humberto S. Almeida Jr., Lars Bittrich, Axel Spickenheuer	Leibniz-Institut für Polymerforschung	Germany	HUM8050

18:00	Presentation and vote for biddings to host 5th International Symposium on Automated Composites Manufacturing (ACM5)				
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19:30	Banquet Banquet speaker: Giuseppe Dell'Anno, from National Composites Center, U.K. Presentation title: Accelerating the implementation of automated composites manufacturing capabilities through concurrent engineering principles				
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Session Poster	Posters				
1	Fatigue characterization and modeling of polylactic acid as feedstock for 3D printing	Larkin Lee, Kazem Fayazbakhsh, Zouheir Fawaz	Ryerson University	Canada	FAY8044
2	Interface Anisotropy Effects in Fabric Composite Sandwich with 3D Printed Core	Kishore Babu K, Dakshayini B S, Benjamin Raju, Rushal Patil, D Roy Mahapatra	Indian Institute of Science	India	MAH8041
3	3D Printed Architected Lightweight Sandwich Structures	A.H.Akbarzadeh ^{1,2*} , H. Yazdani Sarvestani ¹ , A. Mirabolghasemi ¹ , H. Niknam ¹ , K. Hermenean ³	1, 2. McGill University, 3. MACHINA Corp.	Canada	AKB8039
4	Influence of support structure on physical properties of non-crimp fabrics	Dimitris Karanatsis ^{1,2} , Thomas James ¹ , Andreas Endrueit ² , Andrew C. Long ²	1. Hexcel Reinforcements UK Ltd, 2. University of Nottingham	U.K	KAR8004
5	Fastening Composite Structures Using Carbon Fiber/PEEK Rivets	C. Absi, P. Assi, A. Bureau, E. Cameron, E. Dimas, S. Dupont, L. Laberge Lebel	Polytechnique Montreal	Canada	LEB8023
6	Recent developments in injection molding technology for light-weight application	Stanislav Ivanov, Gleb Meiron, Andrew Hrymak and Frank Henning	Western University	Canada	IVA8051

The Fourth International Symposium on Automated Composites Manufacturing
Preliminary Program

Day 2: April 26 Friday, 2019

Location: Plaza Centre-Ville

777 Blvd Robert Bourassa
 Montreal, Quebec
 Canada H3C 3Z7

Keynote	Presentation Title	Author(s)	Affiliation	Country	Paper Code
8:00	Automated industrial system evolution in composite manufacturing technologies and the need for tomorrow	Jelle Bloemhof	AIRBUS Operations GmbH	Germany	

Session 5	3D printing and quality. Chair: Giuseppe Dell'Anno				
8:40	Experimental investigation of continuous carbon prepreg filaments for 3D printing high performance parts	Sadben Khan, Kazem Fayazbakhsh, Zouheir Fawaz	Ryerson University	Canada	FAY8045
9:00	Effect of Process Parameters on Mechanical Properties of 3D Printed Carbon-Fibre PEEK	Richard G. Cole , Abraham Avalos, Andrew Walker	National Research Council	Canada	COL8014
9:20	Manufacturing issues of structures based on double-double composite concepts	Klemens Rother, Stephen W. Tsai, Waruna Seneviratne	Munich University of Applied Sciences	Germany	ROT8002
9:40	Next Generation Inspection Solution for Automated Fibre Placement	Marc Palardy-Sim1, Maxime Rivard1, Steven Roy1, Guy Lamouche1, Christian Padiou1, André Beauchesne1, Louis-Guy Dicaire1, Daniel Lévesque1, Jonathan Boisvert1, Marc-André Oceau1, Jihua Chen1, Gil Lund2, and Ali Yousefpour1	1. National Research Council Canada, 2. Fives Lund, Seattle, Washington, USA	Canada	PAL8037
10:00	Layup end effectors with tactile sensing capabilities	M. Elkington, E. Almas, B. Ward-Cherrier, N. Pestell, C. Ward, N. Lepora	Bristol University	U.K	ELK8031

10:20	Coffee break				
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Session 6	Process development. Chair: Dave Hauber				
10:40	Development of a manufacturing process for multi-matrix composites based on the Tailored Fiber Placement (TFP) technology	Konze, S.1; Spickenheuer, A.1*; Bittrich, L.1; Richter, E.1; Heinrich, G.1, 2	1. Leibniz-Institut für Polymerforschung Dresden e.V., 2 Technische Universität Dresden	Germany	KON8021
11:00	Wet Fibre Placement Process Optimisation	Philip Druiff1, Mattia Di Francesco1, Giuseppe Dell'Anno1, Carwyn Ward2	1. National Composites Centre; 2. University of Bristol	U.K	DRU8034
11:20	Automated, Quality Assured and High Volume Oriented Production of Fibre Metal Laminates (FML) for the Next Generation of Passenger Aircraft Fuselage Shells	Hakan Ucan1, Joachim Scheller2, Chinh Nguyen1, Dorothea Nieberl1, Anja Haschenburger1, Sara Abshagen2, Sebastian Meister1, Erik Kappell1, Robert Prussak1, Monika Mayer1, Philipp Zapp1, Niko Panteleis3, Thomas Beumler4	1. German Aerospace Centre (DLR), 2. Fraunhofer Gesellschaft (IFAM), 3. Synthesites SA, Uccle, Belgium, 4. Airbus Germany GmbH	Germany	UCA8028
11:40	Automated Fiber Placement of Thin-Ply Composite Materials for Large Aerospace Structures	Jessica Fergusson1, Konstantine Fetfatsidis2, Christopher J. Hansen1	1. University of Massachusetts Lowell 2. NextGen Materials & Processing, LLC	U.S.A	FER8024

12:00	Lunch				
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Session 7	Thermoforming and effect of process parameters. Chair: Blaise Bergmann				
13:20	Effect of Applied Pressures on the Resulting Quality of Stamp Formed Laminates	Xiao Cai, Suong Van Hoa	Concordia University	Canada	CAI8046
13:40	Integral Manufacturing of Fibre Reinforced Thermoplastics with Metallic Inserts	Arne Kunze	Leibniz-Institute for Materials Engineering - IWT	Germany	KUN8011
14:00	Experimental study of the compaction and preforming of unidirectional flax reinforcements	Rodrigue Stéphane MBAKOP, Gilbert Lebrun, François Brouillette	Université du Québec à Trois-Rivières	Canada	MBA8038
14:20	Comparing Test Methods for the Deformation Behavior of Uncured Prepreg Tapes	Klaus Heller, Moritz Hallmannseder, David Colin, Kalle Kind, Klaus Drechsler	Technical University of Munich	Germany	HEL8026
14:40	Investigation of the Influence of Lay-Up Speeds up to 3 m/s on the Quality of CFRP Laminates Processed by Automated Fiber Placement	BEREND DENKENA, CARSTEN SCHMIDT, PATRICC WEBER	Leibniz Universität Hannover	Germany	WEB8009
15:00	Effects of Process Parameters on Intimate Contact Development in Laser Assisted Fiber Placement	Ozan Çelik, Julie Teuwen	Delft University of Technology	The Netherlands	CEL8010

15:20	Coffee Break				
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Session 8	New materials, laminates and pultrusion. Chair: Mehdi Hojjati				
15:40	Peridynamic modeling of the impact-induced damage in composite materials with AP-PLY configuration	M. Nishikawa1,*, E. Oterkus2, M. Nishi3, N. Matsuda1 and M. Hojo1	1. Kyoto University; 2. University of Strathclyde; 3. JSOL Corpation	Japan	NIS8001
16:00	Fatigue of composite springs made by 4D printing	Hoa S.V., Rosca I.D., and M.S. Gill	Concordia University	Canada	HOA8033
16:20	The effect of braid angle on the void content and fiber misorientation of thermoplastic Diamond, Regular and Hercules braided rod manufacturing using braid-trusion	Mohammad Ghaedsharaf, and Louis Laberge Lebel	Polytechnique Montreal	Canada	GHA8048
16:40	PULTRUSION AND COMPRESSION MOULDING OF THERMOPLASTIC PRE-IMPREGNATED MATERIALS REINFORCED BY CONTINUOUS GLASS FIBRES	F. J. Novo1, P. Esfandiari2, 4, J F. Silva3, J. P. Nunes3 and A. T. Marques4	1. Olytechnic Institute of Leiria, 2. Dep. of Mechanical Engineering ISEP, 3 Minho University, 4 INEGI/DEMec/FEUP	Portugal	MAR8036

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Preliminary Program

Day 3: April 27 Saturday 2019

Location: Concordia University
1515 Rue Sainte-Catherine
OMontréal, QC H3G 2W1

10:00 - 11:00	Visit to Composite Materials and Structures Labs of the Concordia Centre for Composites
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