

SAMPE Europe Conference & Exhibition 2023 Madrid

Madrid, Spain
3-5 October 2023

Volume 1 of 2

ISBN: 979-8-3313-2173-4

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2023) by SAMPE Europe
All rights reserved.

Printed with permission by Curran Associates, Inc. (2025)

For permission requests, please contact SAMPE Europe
at the address below.

SAMPE Europe
c/o Mr. Rudolf de Ruijter
de Ruijter Consultancy
PO Box 557
NL-8440 AN Heerenveen
Netherlands

Phone: +31 6 51381263

conference@sampe-europe.org

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2633
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

VOLUME 1

TUTORIALS

Towards More Sustainable Composites using Vitrimers Based on Aromatic Disulfide Exchange	1
<i>Nerea Markaide</i>	
Towards Circular Economy in Composites: Smart Multifunctional Composites Based on Recycled Short Carbon Fiber and Reversible Bio Based Epoxy Resins	23
<i>Silvia G. Prolongo</i>	
Blade Circularity Solution.....	56
<i>Irene R. Álvarez</i>	
Recycling of Fibre Reinforced Plastic – CSIC Spin-Off Example: B-Circular	62
<i>Olga R. Largo</i>	

PLENARY OPENING SESSION

Advanced and Sustainable Composites	85
<i>Llorenç Llopart</i>	

COMPOSITES RECYCLING I

Upcycling: Bring Waste Materials Back into Structural Parts	94
<i>Yannick Willemin</i>	
A Study on the Mechanical Recycling of Continuous Glass Fibre Reinforced Nylon 6 Profiles Produced by In-Situ Pultrusion.....	105
<i>Michael Wilhelm, Henrik Kummert, Aaditya Suratkar, Philipp Rosenberg, Frank Henning</i>	
eXtraLife of Structural thermoPLastic CFRC Parts XLSPLast.....	120
<i>P. Lefebure, E. Soccarr, A. Vinet</i>	
Processing of Recycled Carbon Fibre into Unidirectional Tapes – Approach to a Circular Economy for Composites	129
<i>Felix Teichmann, Georg Stegenschuster, Matthias Abbt, Michael Sauer, Violetta Schumm, Mesut Cetin</i>	
Recycled Carbon Fibres for Circularity in the Manufacturing of Helicopter Parts	141
<i>Aranda Gallardo, Ulrich Eberth, F. Manis, T. Bjarsch, M. Sauer, V. Schumm</i>	
Continuous Manufacturing and Reinforcement of CF-PP Flakes to Create High Performance Parts with Recycled Base Material.....	153
<i>Christian Brecher, Philipp Wigger, Kai Fischer, Michael Emonts</i>	

AEROSPACE MANUFACTURING

Design and Manufacturing of a Full Composite Integral Wingbox.....	164
<i>Peio Olaskoaga</i>	
Industrial Demonstrator of an Advanced Rear End in Composites	172
<i>Luis Aliaga</i>	
High-Rate, High-Quality and Low Cost Production Solution for Large Composite Aerostructure using Resin Transfer Moulding (RTM): Wing Spar Demonstrator.....	195
<i>Álvaro Calero, Betty Fantina, Jaime Sistach, Fernando Romero, Alice Salmon, Antoine Vierset, André Bertin, Ricardo Pinillos</i>	
Tail Boom-Outcome Project: Rear Fuselage Manufacturing Process for Fast Rotorcraft Platform (Racer-Rapid and Cost-Effective Rotorcraft)	208
<i>Maria Mora-Mendias</i>	
Combining Automated Processes and Materials for Function Integrated Zero Emission Fuselages.....	217
<i>Christoph Frommel, Alfons Schuster, Dorothea Nieberl, Jan Faber, Stefan Jarka, Lars- Christian Larsen, Roland Glück</i>	
Full-Scale Application of In-Situ Automated Fiber Placement for the Production of a Fuselage Segment.....	225
<i>Dominik Deden, Lars Brandt, Monika Mayer, Dietfried Henning, Olivia Hellbach, Frederic Fischer</i>	

LIQUID MOULDING & OOA MANUFACTURING

Improving the Impact Behaviour of Carbon Composites and the Resin Transfer Moulding Process by the Integration of Bi-Component Non-Woven Veils.....	234
<i>David Droste, Adli Dimassi, Felix Teichmann, Axel Herrmann</i>	
Resin Transfer Molding of Hollow Parts with in Situ Generation of Polyurethane Cores	246
<i>Alexander Faas, David May</i>	
Recent Advances in Epoxy Resin Technology: For the Manufacture of High Performance Composite Parts by Resin Transfer Moulding.....	257
<i>Krzysztof Gugula, Isabella Mazurczyk, Tareq Hasson</i>	
A New Path for Airbus Helicopters Rotor Blade Manufacturing	267
<i>Bernd Demel, Julie Sola</i>	
Solid Epoxy Prepregs with Patterned Resin Distribution for Out-of-Autoclave Processing	273
<i>Jan P. Janzen, David May</i>	
Tailored Non-Crimp Fabrics in Urban Air Mobility (UAM) – Evaluation of a Suitable Polymer- Based Binder Material for Processing Dry UD-Tape-Based Tailored Non-Crimp Fabrics in eVTOL Propeller Blades in Terms of Permeability and Drapability Properties	282
<i>Rico Hubert, Lars Linnemann, Shahzaib Khan, Tobias Weber, Brian G. Falzon</i>	

TESTING & CHARACTERIZATION I

Technique for Reconstructing Local Fibre Orientation in Sheet Moulding Compound Employing Surface Strain Measurements	298
<i>Hao Wang, Kai Fischera, Michael Emonts</i>	
Measuring Techniques for Prepreg Tackiness: A Comparative Study	311
<i>Dennis Budelmann, Carsten Schmidt, Dieter Meiners</i>	
Integrated Process Monitoring for Robotic Draping of Carbon Fibre	324
<i>Dominik Zielinski, Lukas Hartung, Dieter Christ</i>	
Intelligent Process Monitoring for CFRP RTM Production in Aerospace	335
<i>Nikos Pantelelis, Efthymios Bistekos, Marc Waris, Adrien Touze</i>	
Friction Measurement on Towpregs for the Filament Winding	344
<i>Benedikt Bergmann, Jens Schlimbach</i>	
Spectroscopic Analysis of Prepregs	354
<i>Ralf Schledjewski, Moritz Salzmann, Sebastian Dalibor-Schmidt, Michael Teuchtmann, Moritz Prilinger, Wolfgang Märzinger, Jose Garcia, Irmgard Bergmann</i>	

ADDITIVE MANUFACTURING

Experimental Determination of Mechanical Properties of Additively Manufactured Continuous Carbon Fibre Reinforced Polymer Parts Produced by a Novel Laser Sintering Process	363
<i>Michael Baranowski, Victor Rabenseifner, Florian Kößler, Jürgen Fleischer</i>	
Advance Fabrication of a Drone using 3d Printing with Embedded Sensors and Wiring	375
<i>Rakel Herrero, E. Tellechea, G. Argandoña, M. Lasheras, E. Soria, A. Abrego, L. Jofré</i>	
Improving Mechanical Performance of Composite Additive Manufacturing Products	384
<i>Willem R. M. Seuren, Fidel O. V. Mackenzie, Didier Maassen, Suzanne M. J. Cremers, A. Tessa Cate</i>	
Tubular Honeycomb for Crashworthiness Applications via ABS-R Additive Manufacturing	394
<i>Colleen Murray, Norman M. Wereley</i>	

THERMOPLASTIC WELDING

Development of Induction Welded Horizontal Tail Plane Based on UD Carbon Thermoplastic Composite	406
<i>Maarten Bach, Alexandre Lambert</i>	
Conduction Welding for a Fuselage Application – From Thermal Simulations to Weld Assembly	413
<i>Guillaume Vincent, Simon Morville, Damien Lecointe, Baptiste Pillain</i>	
Experimental Joint Strength Assessment of Overmoulded Carbon Fibre-Reinforced PEEK/LMPAEK™ Composites Under Quasi-Static and Fatigue Loading	423
<i>Robert R. Enderle, Leon Lesemann, Ole Kuck, Axel S. Herrmann</i>	
Optimizing Continuous Ultrasonic Welding Parameters for Enhanced Bonding in Carbon Fiber Thermoplastic Materials	435
<i>Saber Maamri, M. E. Hernández, J. Bautista, L. Aguado, Beatriz G. Vasallo, R. G. de Villoria</i>	

INDUSTRIAL INNOVATION I

Seamless Integration of Electrical Components in Lightweight Composite Structures for UAVs	442
<i>Jascha Schmied</i>	
Mechanical GFRP-Fastening Systems for Demanding Industrial Applications	450
<i>Rudi Velthuis, Etienne Rosson, Guido Meier</i>	
Performance Targets and Routes to Achieve Industrial Adoption of Structural Power Composites for Fully Electric Transportation	458
<i>E. S. Greenhalgh, L. E. Asp, D. Zenkert, S. Nguyen</i>	

TESTING & CHARACTERIZATION II

Damage Detection: Structural Health Monitoring of Pressure Vessels with Fibre-Optic Sensors.....	468
<i>Jannick Fuchs, Max Seeberg, Dominik Foerges, Kai Fischer, Christian Hopmann</i>	
Sensor for Quality Control of Semi-Finished Materials from Recycled Carbon Fibre	478
<i>Alexander Walch, Lukas Hartung, Marcel Hofmann</i>	
Sensor-Based and Data-Driven Composites Manufacturing Optimization	487
<i>John Puentes, Phil Gralla, Nicholas Ecke</i>	
Elastic Sensor Fibers for Strain Sensing Applications.....	499
<i>Jeanette Ortega, Thomas Gries</i>	

COMPOSITES RECYCLING II

Recycling Aramid Composites	511
<i>Walter Nijhuis, Ben Rolink</i>	
Diverted from Landfill: Manufacture and Characterisation of Composites from Waste Plastic Packaging and Waste Glass Fibres for Value-Added Products	519
<i>Kit O'Rourke, Adrian Doyle, Keith Doyle, Chris Griffin, Bernd Christensen, Mark Hartmann, Conchúr M. Ó Brádaigh, Dipa Ray</i>	
Thermoformable Multilayer Composite Based on PCR PP and RCF Nonwoven as a Contribution to the Circular Economy.....	532
<i>Richard Vocke, Felix Teichmann, Alexander Marx, Axel S. Herrmann</i>	
Recyclable Epoxy Resins for Sustainable Composite Production Aimed for Printed Circuit Boards.....	545
<i>Martin Demleitner, Anna L. Seibel, Holger Ruckdäschel</i>	
Recycling Strategies for CFRP Aerospace Components using the Example of a Drive Shaft for a Next Generation Geared Jet Engine	552
<i>Sebastian Spitzer, Michael Schiffner, Alrik Dargel, Johann Günther, Robert Kupfer, Jakob Violet, Maik Gude</i>	
New Life for Vacuum Bags and Carbon Fibers	563
<i>Almudena Canas, David Rodriguez, Ricardo Pinillos, Alberto Mazarro, Victor Sanchez, Beatriz Pareja, Teresa Latorre</i>	

THERMOPLASTICS I

Optimizing Processing Parameters for Glass Fiber Reinforced Polycarbonate LFT-D Composites	569
<i>Christoph Schelleis, Andrew Hrymak, Frank Henning</i>	
Inside Hybridization of CF/PAEK Hollow Profiles by Means of Injection Molding	582
<i>Veit Würfel, Johannes A. Becke, Lars Dutzke, Eric Mischorr, Philipp Heinze, Johannes Keil, Alexander Liebsch, Maik Gude, Christian Garthaus, Fabian Assmann</i>	
Process Development and Characterization of a Locally Reinforced Thermoplastic Sheet Molding Compound	594
<i>Sergej Ilinzeer, Michael Wilhelm, Benedikt Scheuring, Frank Henning</i>	
Effect of Fiber Orientation and Surface Condition on Nip-Point Temperature and Interlaminar Toughness in LAFP	609
<i>Tom J. Asijee, Luis F. G. Camacho, Erik T. M. Krämer, Wouter J. B. Grouve, Mohammed I. A. Rasheed</i>	
Lider Project – BUS Techno Brick: Sustainable Bumper for a Helicopter by Fibre Reinforced Thermoplastic Composite (FRTC)	619
<i>E. J. M. Paradas, B. Galindo-Galiana, P. Gálvez Hernández, J. M. Jiménez, A. González Jiménez</i>	
Innovative Thermoplastic Welding and Manufacturing	629
<i>Pedro Martín</i>	

BONDING & REPAIR

CFRP Mini-Hard Patch Bonded Repairs	638
<i>Inés N. León, Roman Starikov, Alexander Zastrow, Thomas Kruse-Strack, José M. C. Uribe</i>	
Self-Healable Epoxy Coatings Reinforced with Recycled Carbon Fibers.....	644
<i>Pablo V. Sánchez, Zulima M. Moreno, Juan B. Dorado, Alberto J. Suárez, Emma Espeute, David M. Díaz, Xoan X. F. Sánchez-Romate, Silvia G. Prolongo</i>	
Production and Torsion Testing of Rotationally Molded Hybrid Compositated Drive Shafts.....	650
<i>Patrick Schaible, Holger Kuster, Daniel Rombach, Heiko Beha, Dominik Mayer, Jürgen Fleischer</i>	
Investigation of the Adhesion Strength of Prepreg Tapes to Honeycomb Cores for AFP-Manufactured Sandwich Structures.....	659
<i>N. Siemen, K. Heller, L. A. Gray</i>	

MODELING & SIMULATION I

Virtual Optimization of a Sensorbased Filling Strategy for RTM Processes.....	670
<i>D. Faron, D. Bublit, K. Drechsler</i>	
Development of a Digital Twin for Automated Fiber Placement	680
<i>K. Scheiterlein, O. Etljani, H. Kammerer, C. Röger, E. Gieger, M. Regnet, S. Canbolat, F. Engel, C. Braun</i>	

Automated Fiber Placement: Modeling the Influence of Compaction Roller Properties on Manufacturable Geometries	692
<i>Berend Denkena, Sebastian Heimbs, Carsten Schmidt, Lisa Reichert, Tim Tiemann</i>	

COMPOSITE PROCESSING

Study on Sports Application of CFRP Powder-Epoxy Towpreg: Bike Frame Manufacturing via Filament Winding	706
<i>Louis Moore, Arun K. Alapati, Gabrielis Cerniauskas, Conchúr Ó. Brádaigh, Enrique R. Pineda, Colin Robert</i>	
Powder Epoxy Towpreg Consolidation using Compaction Roller System.....	722
<i>Hanisa Hasrin, Thomas Noble, Ayu Kamarudin, Conchúr M. Ó. Brádaigh, Colin Robert</i>	
Experimental Study on Mechanical Properties of Composites Manufactured by Hand-Layup and Automated Fiber Placement (AFP) with Different Gap and Staggering Configurations.....	734
<i>Eylem Özen, Berk Dođu</i>	

COMPOSITES LIFE CYCLE ANALYSIS

LCA of Carbon Fibres: Exploring the Reasons Behind the Hugely Diverging Published Data	758
<i>Ignas Verpoest, Véronique Michaud, Jun Takahashi</i>	

VOLUME 2

Life Cycle Assessment of New TALGO Lightweight Prototypes	773
<i>M. Cerdeira, E. de la Guerra, F. J. García, J. Fernández, V. Meroño</i>	
Composite Enabled Sustainable Aviation	783
<i>Uwe Beier, Tamara Blanco, Christian Weimer, Rafael Á. Domínguez</i>	
Life Cycle Assessment: A Mass and Function-Based Mechanical Analysis of Thermoset and Thermoplastic Composite Production Routes	793
<i>Vincent Backmann, Kerstin Angerer, Reinhard Zeiser, Andrea Hohmann, Thomas Wettemann, Klaus Drechsler</i>	

THERMOPLASTICS II

Thermoplastic Composites SAMPE Technical Committee State of Technology Assessment.....	804
<i>David Leach, Cédric Dupas, Alberto L. Cabello</i>	
Optimization of Laminate Quality in Thermoplastic Automated Fiber Placement by Repassing	815
<i>Kilian Seefried, Klaus Drechsler</i>	
Effect of Surface Preparation on Paint Adhesion to Thermoplastic Composites.....	827
<i>M. van der Werff, V. M. Marinosci, S. Wijskamp</i>	
Development of a Thermoplastic Prepreg Based on a Partially Polymerized Reactive Resin System.....	834
<i>Andreas Krämer, Peter Mitschang</i>	

TESTING & CHARACTERIZATION III

Application of More Efficient Materials Testing Techniques for Improved Component Design	844
<i>Jens Bold, Jan Seidel, Aaron Arendt</i>	
Out-of-Plane Strain Measurements of CFRP with the Use of Triplane DIC Setup	853
<i>Nikolas Korte, Philipp Höfer</i>	
Characterization of Mechanical Properties of Composite Materials at Cryogenic Temperatures by Means of Destructive Testing	861
<i>J. M. C. Uribe, N. S. Perez, E. G. Miguel</i>	
High-Speed Thermal Surveys of Composite Materials During Different Mechanical Tests of Ultimate Strength	866
<i>Oscar R. Garcia, Nazanin Pournoori, Jarno Jokinen, Mikko Kanerva</i>	

INDUSTRIAL INNOVATION II

Circularity from Design to Production in Aircraft Industry.....	877
<i>Christian-André Keun, Tassilo Witte</i>	
Industry 4.0 Implementation Framework for Composite Manufacturing: From Business Requirements to System Architecture	893
<i>Miroslav Stojkovic, Lu Sun, Martin Weill, Michael Harvey, Simone Del Broccolo</i>	
New Core Material ROHACRYL™ in Wind Blades – A Model-Based Approach to Weight Reduction	924
<i>Henning Hintz, Alexander Krimmer</i>	
Long Term Performance and Analysis Through 500+ Autoclave Cure Cycles with Dahltram I-350CF Additively Manufactured Tooling.....	931
<i>Tomas Hadrava</i>	

BIO SOURCES AND RECYCLABLE CHEMISTRIES

Optimized Process Design for the Production of Bio-Based rPLA-Organo Sheets with Bast Fiber Reinforcement	941
<i>Maximilian Salmins, Peter Mitschang</i>	
Processability and Reprocessability of an Aromatic Disulfide Containing Epoxy Vitrimer.....	953
<i>Daniel Sánchez, Jordi Farjas, Sihem Zaidi, Pere Maimi, Josep Costa, Alaitz R. de Luzuriaga, Alaitz Rekondo</i>	
New Generation Carbon Fiber Prepregs with Unlimited Shelf-Life Based on Vitrimetric Matrices.....	969
<i>Xoan F. Sánchez-Romate, Javier Gómez-Sánchez, Paula López-González, Alejandro Cortés, Alberto Jiménez-Suárez, Silvia G. Prolongo</i>	
Lignin Derived Carbon Fibres - A Sustainable Alternative to Their Petroleum-Based Counterparts.....	977
<i>Mark Vaughan, Anne Beaucamp, Maurice N. Collins</i>	
Looking for Improving Sustainability in Composite Materials and Manufacturing Processes	985
<i>S. García, I. Harysmendi, R. Mezzacasa, A. de la Calle, X. Irastorza, O. Echeverría, C. Elizetxea</i>	

Development of a Monitorable and Recyclable CNT-Epoxy/Glass Fiber Composite.....	994
<i>Isaac Lorero, Marta M. Sánchez, Mónica Campo, Alberto Jiménez, Silvia G. Prolongo</i>	

HYDROGEN STORAGE COMPOSITE TANKS

New Conformable Hydrogen Storage System for Mobile Applications.....	1001
<i>Nicole Motsch-Eichmann, Thomas Pfaff, Jannis Hüppauff, Joachim Hausmann</i>	
Lightweight and High-Pressure: Manufacturing Type 5 All-Composite Pressure Vessels for Gaseous Hydrogen Storage in Aerospace and Aviation.....	1010
<i>Shamim Mondal, Efren Luevano, Jared Cuneo, Robert M. Villarreal, Michael Tate</i>	
New Design Approach for Multi-Cell Pressure Vessels - Tension Test of Co-Consolidated Shortfiber Reinforced Threads on Hollow Thermoplastic Profiles	1022
<i>Jan Condé-Wolter, Anton Gelencsér, Dirk Holländer, Alexander Liebsch, Maik Gude</i>	
Permeability Assessment of Biobased Thermoplastic Matrix Laminated Composite Tubular Sample Under Cryogenic Thermomechanical Loading.....	1034
<i>Timothée Klein, Christophe Bois, Jean-Christophe Wahl, Caroline Petiot</i>	
Crack Analysis in CFRP by Means of Fiber Optical Sensors.....	1044
<i>Josef Koord, Robert Prussak, Daniel Stefaniak, Christian Hühne</i>	
Development and Optimization of Graphene Oxide Filled Epoxy Composition for High Toughness and Gas Barrier in Liner-Less Type V Hydrogen Pressure Vessels	1058
<i>Florian Wanghofer, Farzin Javanshour, Essi Sarlin, Markus Wolfahrt, Sandra Schlögl</i>	

MODELING & SIMULATION II

Artificial Intelligence Methods for Preliminary Sizing of Composite Aircraft Structures	1067
<i>Raul Llamas-Sandin, Daniel Gomez-Ordoño</i>	
Automation of the Composite Manufacturing Process Simulation Cycle	1073
<i>Juan-Manuel González-Cantero, Sjoerd Van-der-Veen, Domenico Furfari</i>	
Finite Element Simulation of Process Temperatures During Laser Based Cutting of Unidirectional CFRP and Evaluation of Heat Affected Zone.....	1079
<i>Jan Keuntje, Selim Mrzljak, Lars Gerdes, Verena Wippo, Stefan Kaierle, Frank Walther, Peter Jaeschke</i>	
Model-Driven Approach for Integrated Design and Process Planning of Fiber Composite Aerostructures	1091
<i>Maximilian Holland, Nathalie Paul, Christian Linder, Hossam Elsafty, Gunar Ernis, Steffen Geinitz</i>	
Technology-Driven Modelling Approach for the Failure Analysis of Spatially Curved Laminates with Discontinuous Fibers.....	1109
<i>Neven Majic, Matthias Kornmann, André Baeten, Nico Richter</i>	
Enabling Discontinuous Fibre Composites in High Performance Aerospace Applications Through Robust Simulation Technology.....	1120
<i>Connie Qian, Matt Kedgley, Martin Hohberg, Tim Hall, Stephen Hewitt</i>	

GRAPHENE AND NANOREINFORCED COMPOSITES

Evaluation of Fatigue Damage in Carbon Fiber Epoxy Composites with Graphene Nano-Platelets	1132
<i>Alok Srivastava</i>	
Analysis of the Compression Strength After Impact of Woven Carbon/Epoxy Laminates Loaded with Graphene Particles.....	1138
<i>J. López-Puente, J. A. Artero-Guerrero, J. Pernas-Sánchez, R. del Cuavillo, T. Blanco, R. Gallego, S. Blanco, J. Sánchez, L. Moreno, R. Junco, V. García-Martínez, M. Rodríguez-Gude, J. Balthasar</i>	
Dual Curing Epoxy-Based System Reinforced with CNT to Allow Thermal Activation by Joule Effect	1150
<i>Ignacio C. Ropero, Alberto J. Suárez, César F. Díez, Silvia G. Prolongo</i>	
Strain Sensors Based on Carbon Nanoparticles-Doped Silicone Rubber for Biomedical Purposes	1157
<i>Antonio del Bosque, Xoan F. Sánchez-Romate, María Sánchez, Alejandro Ureña</i>	

POSTER PRESENTATIONS

Adapting Intumescent/Low-Melting Glass Flame-Retardant Formulations for Transfer to Glass-Fiber-Reinforced Composites and Post-Fire Mechanical Analysis	1169
<i>Sruthi Sunder, Maria J. Rozob, Bernhard Schartelb, Holger Ruckdäschel</i>	
Energy-Efficient Heating and Drying with Microwave Radiation	1176
<i>Andreas Bündgens, Thomas Gries</i>	
3D Surface Rectification with Abrasive Waterjet Machining: Application to a Carbon/Epoxy Master.....	1185
<i>Agathe Jaillon, François Cénac</i>	
Sustainability with Aramid and Carbon Fibers from TEIJIN	1192
<i>Markus Schneider</i>	
Enhancing Fibrarforce Technology – Development of a Highly Productive and Efficient Joining Process for Continuously Manufactured Thermoplastic Cross-Ply Materials Based on Ultrasonic Welding	1193
<i>Lina Snudat, Lars Linnemann, Lukas Schulz</i>	
Non-Destructive 3D Damage Distribution Analysis of Composite Materials using X-Ray Computed Tomography.....	1194
<i>A.Pascual, A. Vicente, J. Espinoza, J. García Molleja, F. Sket, C. Miguel Giraldo, D. Torres Macarrilla, S. Rebollo Dabo, S. Bermejo González</i>	
Prediction of Porosity in CFRP from Ultrasonic Signals using Deep Learning	1195
<i>A. Vicente, J. I. Caballero, A. Pascual, J. Espinoza, J. García-Molleja, F. Sket, C. de Miguel Giraldo, D. Torres Macarrilla, S. Rebollo Dabo, S. Bermejo González</i>	
Recycling of Fibre Reinforced Plastic Waste by Pyrolysis: The Experience of More than 10 Years in the Valorisation of the By-Products.....	1196
<i>A. Lopez-Uriónabarrenechea, E. Acha, A. Serras-Malillos, B. B. Perez-Martinez. B. M. Caballero</i>	
Variable Shape Tooling for Composite Manufacturing: A Systematic Review	1197
<i>Fabian Neumann</i>	

Energy Optimized Process Design and Scheduling in the Field of Large Scale CFRP Parts	1209
<i>Jannis Eckhoff, Vincent Adomat, Marc Fette, Jens P. Wulfsberg</i>	
Digital Process Chain for Thermoplastic Structural Components with Local Unidirectional Reinforcements for Aerospace Applications	1221
<i>N. S. N. Rao, D. Schommer, T. Rief, M. Duhovic, N. Motsch-Eichmann, J. Hausmann</i>	
Mechanical Performance of Unidirectional RCFRP for Load-Bearing Applications	1233
<i>Christian Becker, Nicole Motsch-Eichmann, Joachim Hausmann</i>	
Development of an Innovative Thermoplastic Door-Surround-Structure for a Single Aisle-Aircraft	1245
<i>Jannis P. Hüppauff, Vinay Nagaraj, Nicole Motsch-Eichmann</i>	
Advancements in Thermoplastic Composites for Next-Generation Aircrafts: A Study on Topology Optimization and Simulation Methodologies for the Design of Door Surrounding Structures	1254
<i>Vinay Nagaraj, Nicole Motsch-Eichmann, Jannis P. Hüppauff</i>	
Pultrudates for Loadpath Reinforced Injection Molded Parts – Analysis of Thermoplastic Melt Pultruded Rods	1262
<i>Maximilian Rieger, Tian Du, Andreas Senz, Michael Sauer</i>	
A Review of the Manufacture of Tidal Turbine Blades and the Applicability to Thermoplastic Composite Materials.....	1270
<i>Ione Smith, Dilum Fernando, Conchúr Ó. Brádaigh, Selda Oterkus, Philipp Thies, Edward McCarthy, Winifred Obande</i>	
Development of Tailored Fiber Placement Technology using the Hybrid Fiber Consisted of Poly (Xylylene Sebacamide) PA-XD10 and Carbon Fiber	1282
<i>Keisuke Ito, Sascha Bruk, Paul Schlieben, Nobuhiko Matsumoto, Peter Laabs, Axel Spickenheuer</i>	
Effect of Functionalizing Grid-Like Tape Reinforcement Structures for Injection Moulded Components by Means of 3d Printing on Shift Fixation During Mould Filling and Component Properties.....	1291
<i>Jan Petersen, Hao Wang, Kai Fischer, Michael Emonts</i>	
Investigation of Necessary Consolidation Degree and Persisting of Energy Input During Automated Fibre Placement.....	1302
<i>Christian Brecher, Alexander Peitz, Kai Fischer, Michael Emonts</i>	
Investigation of the Mechanical Performance of Hydrophobised Hemp Fibres in Combination with Polypropylene using Pull-Out Tests	1314
<i>Leonie Wesener, Leah I. Salzwedel, Lais Weber</i>	
Aeronautical Vitrimers Resin for Prepreg Application	1323
<i>E. Del Puerto, T. Blanco, N. Markaide, A. Ruiz de Luzuriaga, A. M. Salaberria</i>	
Propagation of Microcracks in Thermoplastic Composites using Symmetrical and Asymmetrical Cryogenic Loading	1334
<i>Ashley R. Chadwick, Yannick T. Schäfer</i>	
High Temperature Processing of Carbon Fibre Reinforced Polyetherketoneketone (CF-PEKK) Laminates in an Energy-Efficient Inductive Double Belt Press	1342
<i>Christian Brecher, Simon Greive, Timo Huber, Kai Fischer, Michael Emonts</i>	
Leveraging the Behavior of Interfaces in Composites and Coatings for Material Design	1353
<i>Elaheh Sedghamiz, Andrea Browning, Caroline Krauter</i>	

Parasitic Effects of Load Introduction Points in Full-Scale Composite Tidal Turbine Blade Tests.....	1363
<i>Miguel A. V. Camacho, Marek J. Munko, Fergus Cuthill, Conchúr M. Ó. Bradaigh, Edward D. McCarthy, Sergio L. Dubon</i>	
A More Sustainable Cricket Bat: From English Willow to Composite Materials	1375
<i>Fred Zikry, Arun Alapati, Gabrielis Cerniauskas, Thomas Noble, C. Ó. Bradaigh, Colin Robert</i>	
Investigation of the Interactions in the Consolidation Process of Thermoplastic Natural Fibre Composites Based on Hybrid Yarn Wovens	1391
<i>Lars Wollert, Leah Salzwedel, Julia Lenz, Thomas Gries</i>	
Through-Thickness Fire-Retardant Distribution Influence on Fire Retardancy Properties of Glass Fibre Powder Epoxy Composites	1403
<i>Arun K. Alapati, Zalia Zainol, David Morrisset, Rory Hadden, C. M. O. Bradaigh, Colin Robert</i>	
Characterization and Study of Damage Mechanisms of Infusible Thermoplastic and Bio-Epoxy Based Composites Under Compression.....	1404
<i>Gursahib S. Bhatia, Akshay Hejjaji, Jayaram R. Pothnis, Anthony Comer</i>	
Reuse of Carbon Fiber Reinforced Thermoplastic Parts by Reversal-Resistance Welding in Aeronautical Industry.....	1410
<i>Alejandro Marqués</i>	
Potential Nanocomposite Systems for a Piezoresistive Sensor with Application in Exoskeletons.....	1416
<i>I. Collado Ropero, César F. Díez, Alberto J. Suárez, Silvia G. Prolongo</i>	
‘Cold Welding’: A Novel Technique for Joining Acrylic-Matrix Composite Parts	1421
<i>Machar Devine, Ankur Bajpai, Conchúr Ó. Brádaigh, Dipa Roy</i>	
Manufacturing of Closed CFRP Cylindrical Shells Made by Tailored Fiber Placement.....	1429
<i>C. Welker, L. Bittrich, M. Stommel, A. Spickenheuer</i>	
Development of Insert Injection Molding Technology with Composite AM	1436
<i>Makoto Inomoto, Ryoji Okabe, Sae Obata</i>	
Paving the Way Towards Composite Sustainable Aerostructures Inside Clean Aviation FASTER H2 Project.....	1447
<i>Noelia S. Pérez, Tamara B. Varela, Enrique G. Fernández, Bernardo A. Castro, Nathalie Reich</i>	
Full-Scale Mechanical Test of a Composite Tidal Turbine Blade using Three Actuators.....	1453
<i>Sergio L. Dubon, Christopher Vogel, David G. Cava, Fergus Cuthill, Eddie McCarthy</i>	
Healable Composites Benefits for Industrial Semi-Finished Products and Applications	1465
<i>C. Scazzoli, R. Trigueira, A. Cohades</i>	
In-Space Manufacturing of Composite Tanks	1466
<i>Clinton Switzer, Siddhesh Chaudhari, Jared Cuneo, Matt Villarreal, Ranji Vaidyanathan</i>	

38TH STUDENTS SEMINAR 2023

Microstructural Variability and Its Effect on Mechanical Properties of Filament Wound Composites	1467
<i>Shailee Upadhyay, Mahoor Mehdikhani, Stepan Lomov, Dirk Vandepitte, Yentl Swolfs</i>	

Hot Gas Welding of Thermoplastic Composite T-Joints.....	1471
<i>Maury de Graaf, Laurent Warnet</i>	
Identification of CFRP Surface Condition Prior to Bonding – Focusing on Device-Specific Contact Angle Discrepancies.....	1478
<i>Franziska Mews</i>	
Durability of Sandwich Structure Cores with a Natural Raw Material Basis	1485
<i>Pauli Hakala, O. Orell, E. Sarlin, E. Pääkkönen, M. Kanerva</i>	
Prediction of the Toxicity of Substances Application to Composite Materials.....	1497
<i>Mailys Fournier, Brigitte Defoort, Michèle Herbeaux, Raphaël Terreux</i>	
Design of Composite Forming Tool with High Thermal Dynamic Thro Ugh the Use of Lattice Structures.....	1505
<i>Matthis Balthazar, Nicolas Baudin, Jérôme Soto, Denis Edelin, Sébastien Guérout, Vincent Sobotka</i>	
Development of a Representative Volume Element for the Observation of Damage Processes in FRPs	1511
<i>Martin G. Sola, Jonas Müller, Hakan Çelik, Christian Hopmann</i>	
Machine Learning Algorithms for Efficient Process Optimisation of Variable Geometries at the Example of Fabric Forming.....	1516
<i>Clemens Zimmerling, Luise Kärger</i>	
Mechanical Characterization of Short Fibres Reinforced Polymers with Recycled Matrices	1523
<i>Arianna Dinosio, Luca M. Martulli, Riccardo Galeazzi, Carlo Grassini, Erico Spini, Roberto Corradi, Andrea Bernasconi</i>	
Multifunctional Composites with 3R (Recyclable, Repairable and Reshapable) Properties Based on a Vitrimeric Matrix	1533
<i>Javier G. Sánchez, Alejandro C. Fernández, Xoan X. F. Sánchez-Romate, Alberto J. Suárez, Silvia G. Prolongo</i>	
Fatigue Life Prediction of a Composite Liquid Hydrogen Tank.....	1541
<i>Narcís S. Arnau</i>	
Development of Epoxy-Based Self-Healable Adhesives for Wind Turbine Blades	1542
<i>A. Aracama, J. Fan, V. Michaud</i>	
Load Introduction Elements for FRP Sandwich Structures with Thermoplastic Matrix Systems	1552
<i>Gabriel Pulver, Florian Langenegger, Lukas Spirig, Markus Zogg, Paolo Ermanni</i>	
Resistance-Welded Thermoset Joints: A Bayesian Approach to Process Optimisation	1558
<i>Thomas Maierhofer, Evripides G. Loukaides, Craig Carr, Chiara Bisagni, Richard Butler</i>	
Unlocking the Additional Potential of Composites via Damage Mitigation Concepts.....	1559
<i>Adam D. Whitehouse, Victor Médeau, Lorenzo Mencattelli, Silvestre T. Pinho</i>	
Dynamic Polymer Networks: Enabling Reprocessable and Recyclable Composites	1567
<i>Levi J. Hamernik, Jeffrey S. Wiggins</i>	

Author Index