

CONFERENCE PROGRAM

correct as at 8.8.19 and is subject to change

Time	Plenary 2	Meeting room 205	Meeting room 206	Meeting room 208	Meeting room 209	Meeting room 210	Meeting room 211	Meeting room 212	Meeting room 213	Meeting room 214	Meeting room 215	Meeting room 216	Meeting room 217	Meeting room 218	Meeting room 219
0830-0900	Opening ceremony														
0900-0945	SCALA Lecture: ADVANCED COMPOSITES RESEARCH AND INNOVATION - AN AUSTRALIAN PERSPECTIVE Murray Scott, Advanced Composite Structures Australia, Australia Plenary 2														
0945-1030	PLENARY LECTURE: NEW STRATEGIES FOR MANUFACTURING MULTIFUNCTIONAL COMPOSITES Nancy Sottos, University of Illinois, USA Plenary 2														
1030-1100	Coffee break Exhibition hall														
1100-1300	1101 Nano-composites	1102 Green & natural fibre composites	1103 - Analysis of composite properties	1104 Automated fibre placement	1105 Hybrid composites	1106 Composite structures	1107 Computational and finite element methods	1108 Polymer matrix materials	1109 Interfaces and interphases	1110 Sensing 1: Embedded Sensing	1111 Structural power 1: Multifunctional Design and Modelling	1112 Non-destructive evaluation	1113 Composite materials: route to impact	1114 Durability, creep and aggressive environment	1115 Joints
1100-1130	STRONTIUM TITANIUM OXIDE-GRAPHENE NANOCOMPOSITE THERMOELECTRICS Ian Kinloch, University Of Manchester														
1100-1130	MULTIFUNCTIONAL ENERGY STORAGE COMPOSITE (MESC) STRUCTURES Fu-Kuo Chang, Stanford University														
1100-1130	FATIGUE LIFE OF POST-BUCKLED COMPOSITE STRUCTURES Chiara Bisagni, TU Delft														
1100-1130	ENHANCING LIGHTWEIGHTING: JOINING COMPOSITES WITH 3D PRINTED STRUCTURES Stefanie Feih, A-Star														
1100-1130	FILLING THE PROPERTY GAP OF MULTI-PHASE COMPOSITES THROUGH ARCHITECTURAL DESIGN Hua-Xin Peng, Zhejiang University														
1100-1130	3D PRINTABLE SHAPE MEMORY POLYMER COMPOSITES Zhang Zhong, National Center for Nanoscience and Technology														
1130-1140	Move to concurrent sessions														
1101-1	1101-1 GRAPHENE: NOVEL BARRIER MATERIAL FOR CORROSION PROTECTION; IMPROVING SERVICE LIFE OF OFFSHORE PAINT Norfarah Aba, Petronas Research Sdn Bhd	1102-1 MULTISCALE ANALYSIS TO INVESTIGATE THE MECHANICAL AND FORMING BEHAVIOUR OF HEMP FIBRE WOVEN FABRICS / POLYPROPYLENE COMPOSITE Sheedev Antony, University of Technology of Troyes	1103-1 EFFECTIVE PROPERTIES OF HYBRID NANO COMPOSITES SS Godara, Rajasthan Technical University Kota, Rajasthan, India	1104-1 TOOLPATH STRATEGY & GENERATION FOR ROBOTIC FIBRE PLACEMENT ON CURVED SURFACES Felix Raspall, Singapore	1105-1 GRAPHENE-BASED MATERIALS AS STRAIN SENSORS IN FIBRE/EPOXY MODEL COMPOSITES Jingwen Chu, The University Of Manchester	1106-1 NOVEL AUXETIC THERMOSET AND THERMOPLASTIC COMPOSITES FOR ENERGY ABSORPTION Rauli Figueiredo, Universidade do Minho	1107-1 MINIMIZATION OF SINK MARKS FOR INJECTION MOULDED KENAF/PP COMPOSITES IN INJECTION MOLDING PROCESS BY NUMERICAL SIMULATION Abu Bakar Sulong, Universiti Kebangsaan Malaysia	1108-1 MECHANICAL PROPERTIES OF A STEEL-REINFORCED RESIN UNDER STATIC AND CYCLIC LOADING Martin Nijdt, Delft University of Technology	1109-1 NEW INTERFACIAL AGENT FOR ENHANCED INTERFACIAL SHEAR STRENGTH IN PPS/CARBON COMPOSITES Baptiste Gaumond, IMP Lab - INSA de Lyon - Lyon University	1110-1 MULTIFUNCTIONAL COMPOSITE WITH PRINTED SENSORS PengHeng Xie, University of Chester	1111-1 CARBON FIBRE COMPOSITES AS BATTERIES, SENSORS, ACTUATORS AND ENERGY HARVESTING Dan Zenkert, Kth Royal Institute Of Technology	1112-1 EVALUATION OF LARGE AEROSPACE COMPONENT BASED ON 3D THERMO-TOMOGRAPHY MODEL Christoph Frommel, German Aerospace Center (DLR)	1113-1 EFFECT OF VARIABLE CORE STIFFNESS ON IMPACT RESPONSE OF CURVED SANDWICH PLATES Hessam Ghasemnejad, Cranfield University	1114-1 THE INFLUENCE OF WATER ABSORPTION ON THE DAMAGE MECHANISM OF UNIDIRECTIONAL AND 2D WOVEN CFRP Faisal Almudaiheh, Cardiff University	1115-1 ON THE INTERFACIAL CRACK PROPAGATION IN ADHESIVE BONDING Johnatan Leblat, IRDL, CNRS UMR 6027, ENSTA Bretagne
1140-1200	1101-2 MAGNETIC CONTROL OF MICROSTRUCTURE IN GRAPHENE EPOXY NANOCOMPOSITES Mark Eaton, Cardiff University	1102-2 DELIGNIFIED WOOD REINFORCED COMPOSITES (DWRC) Manion Frey, Eth Zürich	1103-2 INVERSE ANALYSIS FOR COMPOSITE SINGLE-LAP ADHESIVELY BONDED JOINT Xiao Wei, Shanghai Jiao Tong University	1104-2 MANUFACTURE OF CO-CURED INTEGRAL HAT-TIFFENED PANEL WITH AUTOMATED FIBRE PLACEMENT Cong Zhao, Nanjing University Of Aeronautics And Astronautics	1105-2 THE COMBINED EFFECT OF MOISTURE AND TEST TEMPERATURE ON THE PSEUDO-DUCTILITY OF THIN-PLY HYBRID COMPOSITES Gergely Czél, Budapest University of Technology and Economics	1106-2 ELIMINATING CURE-DRIVEN DEFORMATION OF OUT-OF-AUTOCLAVE COMPOSITES VIA OUT-OF-OVEN ZONAL CURING Tomasz Garsika, Lean Manufacturing & Assembly Technologies (LMAT) Limited	1107-2 DESIGN OF PHOTOTHERMAL TRIGGERED BILAYER MORPHING COMPOSITES Julio Aguilar-Tadeo, The University Of Manchester	1108-2 CRITICAL VOID CONTENT OF CF/PEEK THERMOPLASTIC COMPOSITES: IMPACT ON NDT AND MECHANICAL PROPERTIES Diego Saenz-Castillo, FIDAMC	1109-2 COLOURED CARBON FIBERS WITH ENHANCED PHYSICAL AND ADHESION PROPERTIES Luke Henderson, Deakin University	1110-2 STRAIN MEASUREMENT OF 3D PRINTED SHORT CARBON FIBER REINFORCED PLASTICS USING ELECTRIC PROPERTY Keisuke Iizuka, Tokyo Institute Of Technology	1111-2 FUTURE CHALLENGES AND INDUSTRIAL ADOPTION STRATEGIES FOR STRUCTURAL SUPERCAPACITORS Emile Greenhalgh, Imperial College London	1112-2 NON-DESTRUCTIVE QUALITY ASSESSMENT FOR SEMI-FINISHED TEXTILES Tino Herrmann, The University Of Auckland	1113-2 TEMPERATURE RESISTANCE OF EPOXY-BASED POLYMER COATING WITH FLY ASH AND FIRE RETARDANT FILLERS FOR COMPOSITE MATERIALS Mojdeh Mehrinejad, Kholdehsara, University Of Southern Queensland	1114-2 EFFECT OF ACCELERATED AGEING AND MOISTURE ABSORPTION ON MECHANICAL AND CHEMICAL PROPERTIES OF POLYMER COMPOSITES Jasmine Bone, National Physical Laboratory / Element Materials / University Of Surrey	1115-2 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, Ecole de technologie supérieure
1200-1220	1101-3 GRAPHENE-ENHANCED COMPOSITE PAINTS FOR CORROSION PROTECTION OF OFFSHORE RISERS Mohd Shamsul Farid Samsudin, Petronas Research	1102-3 ENHANCEMENT OF NOISE MITIGATION OF NATURAL FIBRE COMPOSITES WITH PERFORATION Heng Pugh Lee, National University of Singapore	1103-3 CONTINUUM DAMAGE MECHANICS MODELLING OF A 3D PRINTED CURVILINEAR CFRTP Masahito Ueda, Nihon University	1104-3 INVESTIGATION ON THE CRUSH PERFORMANCE OF AUTOMATED FIBRE PLACEMENT MANUFACTURED COMPOSITE TUBES Matthew David, UNSW Sydney	1105-3 INFLUENCE OF ALUMINIUM SURFACE TREATMENT ON BOND QUALITY IN ALUMINIUM/GLASS/EPOXY FIBRE METAL LAMINATES Mitch Dunn, The University Of Queensland	1106-3 FRACTURE MECHANICS-INFORMED MULTISCALE THERMO-MECHANICAL DAMAGE MODEL FOR CERAMIC MATRIX COMPOSITES Travis Skinner, Arizona State University	1107-3 UNDERSTANDING FAILURE INITIATION LOCATIONS IN STOCHASTIC VIRTUAL COMPOSITE SPECIMENS USING A MACHINE LEARNING FRAMEWORK Nimal Kumar Balasubramani, University of New South Wales	1108-3 INFLUENCE OF MOISTURE GRADIENTS ON THE BENDING PROPERTIES OF SHORT GLASS FIBER REINFORCED POLYAMIDE 6 Anna Katharina Sambale, TU Dortmund University	1109-3 DIRECT MEASUREMENT OF INTERFACIAL SHEAR STRENGTH OF MWCNT/NBR NANOCOMPOSITE Chun-yen Hsu, Super C Inc	1110-3 MULTIFUNCTIONAL FIBRE REINFORCED COMPOSITES: FROM SMART OUT-OF-OVEN MANUFACTURING TO INTEGRATED SENSING AND DE-ICING CAPABILITIES Han Zhang, Queen Mary University Of London	1111-3 MODELLING AND DESIGN OF STRUCTURAL BATTERIES WITH LIFE CYCLE ASSESSMENT Wilhelm Johannisson, KTH Royal Institute Of Technology	1112-3 ULTRASONIC INSPECTION OF HYBRID COMPOSITES AND BONDED COMPOSITE JOINTS Matthew Ibrahim, Defence Science And Technology	1113-3 IMPACT BEHAVIOR OF SANDWICH STRUCTURES BASED ON CORRUGATED COMPOSITE CORES FILLED WITH PVC FOAM Jin Zhou, University Of Liverpool	1114-3 MICROBIAL EFFECT ON THE DURABILITY OF WOVEN CARBON/VINYL ESTER COMPOSITES Alejandra Castellanos, University Of Wisconsin-madison	1115-3 LASER BASED PRETREATMENT OF ALUMINIUM CASTINGS FOR HYBRID INJECTION MOLDING Julian Steinberg, Technische Universität Braunschweig - Institute of Joining and Welding
1220-1240	Natural fiber based composites are finding increasing use in products like the interior parts of automobiles, electronics casings, as reinforcements in the building and construction industry. Micro-perforated plates (MPPs) are new-generation sound absorbers and they are commonly used as noise absorption panels.														
1220-1240	A hat-stiffened panel was manufactured based on automated fibre placement and co-curing process. Factors influencing geometric and fibre distribution of hat-stiffened panel were discussed, including material properties and process parameters.														
1220-1240	Interlayer hybrid configurations with continuous and discontinuous carbon between continuous glass layers were investigated. Both temperature and moisture reduced the damage initiation strain and especially the interfacial properties of the hybrids.														
1220-1240	The generation of colour on carbon fibers has long been desired. This talk will summarise our recent efforts in surface modification and how this has led to coloured carbon fibres and the improvement of their physical properties and adhesion in epoxy matrices.														
1220-1240	The strain of short carbon fiber reinforced plastics was measured by the electric property change. The temperature and frequency dependence of the electric property were clarified.														
1220-1240	The impact response of sandwich base on corrugation core filling with PVC foam have been investigated experimentally and numerically. The configuration optimization of the hybrid sandwiches was studied base on thickness of corrugation cores and density of filled foam.														
1220-1240	Resistance welding of thermoplastic composites is performed with a stainless-steel heating element which have low affinity with the PPS matrix. Mechanical performances of welded joints were improved by a silane coating on the stainless-steel.														
1220-1240	For reducing vehicles weight, this paper presents a promising approach using the hybrid injection molding process to join laser pretreated cast aluminum parts with polyamid 6.														

Monday
12 August

CONFERENCE PROGRAM

correct as at 8.8.19 and is subject to change

	1101-4 JANUS GRAPHENE NON-WOVEN FABRICS FOR ULTRALIGHT ELECTROMAGNETIC INTERFERENCE SHIELDING Yang Wu, University Of Science And Technology Beijing				1105-4 INFLUENCE OF THE COOLING RATE ON THE ADHESIVE PROPERTIES OF POLYAMID-6-GALVANIZED-STEEL HYBRIDS IN THE ONE-STEP FORMING PROCESS Tobias Fischer, Clausthal University of Technology The focus of this work is the production in a one-step variothermal pressing process and in this context the influence of the cooling rate on the bonding quality of the mono-materials.	1106-4 CRACK CONTROL FOR BIO-INSPIRED TOUGHENING OF COMPOSITE MATERIALS AND STRUCTURES Adrian Orlici, RMIT University	1107-4 FINITE ELEMENT ANALYSIS OF CFRP-TO-CFRP JOINT STRUCTURE CONTAINING FIBER-METAL LAMINATES Dong-woo Lee, Changwon National University In this study, it was developed that the analytical model of CFRP-to-CFRP structure by using cohesive zone modeling (CZM) method, which containing fiber-metal laminates.	1108-4 MANUFACTURING PROCESS AND PROPERTIES OF CARBON FIBER REINFORCED PEEK COMPOSITES MODIFIED WITH MWNTS Jiapeng Song, Beihang University In this study, carbon fiber/poly(ether ether ketone) (CF/PEEK) composites were prepared by the wet powder impregnation. PEEK powders were mixed with different content of multi-walled carbon nanotubes (MWCNTs) in water homogeneously.	1110-4 GRAPHENE OXIDE/GRAPHITE NANOSHEETS COMPOSITE THIN FILMS FOR WEARABLE STRAIN SENSORS Qingbin Zheng, The Hong Kong University Of Science And Technology We utilize the graphene oxide and graphite nanosheets composite thin films as sensing materials to fabricate high-performance strain sensors via a simple, cost-effective and solution processable strategy.	1111-4 STRUCTURAL POWER PERFORMANCE REQUIREMENTS FOR FUTURE AIRCRAFT INTEGRATION Sang Nguyen, Imperial College London This paper investigates the application of structural power in aircraft cabins by integrating floor panels with face sheets made of structural power composites to power the in-flight entertainment system.	1112-4 PAGOSA / MATCH MODELING OF HIGH EXPLOSIVE RESPONSES TO LOW SPEDD INSULTS Xia Ma, LANL	1113-4 INTERLAMINAR SHEAR PROPERTIES OF TOUGHENED CARBON FIBRE REINFORCED COMPOSITES Andreas Klingler, Institute for Composite Materials (IVW GmbH) Toughening of thermoset based CFRP by core-shell rubber and block-copolymer hybrids leads to a drastically improved mode II, shear performance. Hence, increasing damage threshold properties are to be expected.	1114-4 ASSESSMENT OF A LOW TEMPERATURE CURE RESIN FOR HIGH TEMPERATURE COMPOSITE OVERWRAP REPAIRS Yas Chech Tan, PETRONAS Research	1115-4 EFFECTS OF RESISTANCE HEATING ELEMENT ON JOINING STRENGTH OF CF/PPS COMPOSITES Kota Tamura, Kindai University This study focuses on resistance heating elements and aims to reveal the bonding behavior of the CFRTP by resistance welding method using carbon fiber heating element.	
1240-1300															
1300-1400	Lunch Exhibition hall	MSC Software Industry roundtables - 10x Material Solution from e-Xstream Engineering, What is the future of material modeling ? *invitation only event* 1310-1355 Soumik Chakrabarty Emilie Storms Meeting Room 218										Boeing lunch symposium - University and industry collaboration, focus on composite material development *invitation only event* Plenary 2			
1400-1445	PLENARY LECTURE: LIGHTWEIGHT CARBON FIBRE COMPOSITE AUTOMOTIVE WHEELS - FROM CONCEPT TO INDUSTRIALISATION Jake Dingle, Carbon Revolution, Australia Plenary 2														
1445-1500	Move to concurrent sessions														
1500-1600	1201 Aerospace	1202 Processing & properties of composites	1203 Green & natural fibre composites		1205 Automated fibre placement	1206 Composite structures	1207 - Langzauner GmbH industry session	1208 Hybrid composites	1209 Interfaces and interphases	1210 Structural Health Monitoring	1211 Structural power 2: Multifunctional Constituents	1212 Non-destructive evaluation	1213 Recycling and sustainability	1214 Tsai award presentations	1215 Joints
1500-1520	1201-1 LIFE MANAGEMENT OF ADHESIVELY BONDED COMPOSITE STRUCTURES Lucy Li, National Research Council Canada A numerical model is presented to analyze the thermal behavior of the tapes at microscale during automated tape placement (ATP) process. A 3D geometrical model is developed considering the real microstructure.	1202-1 THERMAL BEHAVIOR OF TAPES IN AUTOMATED TAPE PLACEMENT (ATP) PROCESS-MICRO ANALYSIS Katak Mishra, Universite De Nantes In order to enhance the mechanical and surface properties of jute fibers, the surface of jute fibers were deposited size-controlled nano-SiO2 particles via sol-gel technique.	1203-1 INFLUENCE OF IN SITU DEPOSITING SIZE-CONTROLLED NANO-SiO2 PARTICLES ON THE MECHANICAL AND SURFACE PROPERTIES OF JUTE FIBERS Xuan Liu, Institute Of Materials Science And Technology, Nanjing University Of Aeronautics And Astronautics In order to enhance the mechanical and surface properties of jute fibers, the surface of jute fibers were deposited size-controlled nano-SiO2 particles via sol-gel technique.		1205-1 XENON FLASH-LAMP BASED IN-SITU AUTOMATED FIBER PLACEMENT OF THERMOPLASTIC COMPOSITES Lars Brandt, German Aerospace Center (dlr) An opportunity for flexible, cost-effective production of aerospace components is found in the usage of new heating systems such as the pulsed xenon flashlamp, since it renders the use of complete safety housing unnecessary.	1206-1 THE INFLUENCE OF GEOMETRIC IMPERFECTIONS OF DIFFERENT TOLERANCE LEVELS ON THE BUCKLING LOAD OF UNSTIFFENED CFRP CYLINDRICAL SHELLS Tobias Hartwich, Hamburg University Of Technology Unstiffened CFRP cylindrical shells under axial compression prone to buckle. One of the most influencing factor on the buckling load are geometric imperfections which are analysed in this contribution.	Langzauner GmbH industry session *invitation only event* CHALLENGES IN INDIVIDUAL AUTOMATION SOLUTIONS FOR INCREASING PRODUCTION EFFICIENCY IN AVIATION Bernhard Hauer	1208-1 COMPRESSIVE FAILURE OF HYBRID CFRP-CFRP LAMINATED COMPOSITES Mark Battley, University Of Auckland The effect of hybridisation of HM and UHM carbon fibre laminates on strength and stiffness under compression was investigated through physical testing and analysis.	1209-1 COMPARISON OF DIFFERENT INTERFACIAL ENGINEERING METHODS TO ACHIEVE PSEUDO-DUCTILE BEHAVIOUR OF CARBON FIBER REINFORCED POLYMER COMPOSITES Balázs Magyar, Budapest University of Technology and Economics	1210-1 A NANOCOMPOSITES-BASED, ALL-INKJET-PRINTED, FLEXIBLE, ULTRA-BROADBAND FILM SENSOR FOR IN-SITU ACQUISITION OF DYNAMIC STRAIN Pengyu Zhou, The Hong Kong Polytechnic University All inkjet-printed nanocomposite sensors for structural health monitoring are developed and the printed sensors are of the advantages of high sensitivity and fidelity, as well as broadband sensing frequency up to 500 kHz.	1211-1 FEASIBLE MANUFACTURING TECHNIQUE AND MECHANICAL PROPERTIES OF STRUCTURAL BATTERY ELECTRODES Lynn Maria Schneider, Kth Royal Institute Of Technology A feasible manufacturing process for multifunctional structural batteries is presented. The technique is evaluated with respect to the multifunctional performance of the matrix material and of a negative structural electrode.	1212-1 ON THE INTERACTION BETWEEN NONLINEAR SOLITARY WAVES AND LAMINATED COMPOSITE BEAMS Andreas Schiffer, Khalifa University Experiments and numerical calculations are performed to study the interaction between nonlinear solitary waves in granular chains and laminated composite beams.	1213-1 INVESTIGATION OF THE PROCESS RESISTANCE OF FIBRE SURFACE TREATMENTS FOR THERMOPLASTIC COMPOSITES USING RECYCLED CARBON FIBRE Christina Froemder, ELG Carbon Fibre The international research and collaboration between universities and industry shows a novel step forward and offers a tentative view in combining gentle and quick electrochemical treatments on recycled carbon fibres.	1214-1 INVESTIGATION OF THE HYBRID EFFECT IN HIGH PERFORMANCE QUASI-ISOTROPIC THIN-PLY CARBON/GLASS COMPOSITES UNDER TENSION Guillermo Idarraga, National University Of Colombia Stiffness of the adjacent layers and the stacking sequence play an important role in the failure strain of the carbon plies and therefore in the hybrid effect.	1215-1 ULTRASONIC SPOT WELDING BEHAVIOR OF WOVEN-CF/PPS LAMINATES USING CF/PPS ENERGY DIRECTOR Hotiuchi Tokiyuki, National Institute Of Technology, Wakayama College This study aims to develop the ultrasonic spot welding process of CFRTP using flat energy director and carbon fiber reinforced energy director.
1520-1540	1201-2 EXPERIMENTAL STUDY OF ICE IMPACT ON ALUMINUM/CARBON FIBER REINFORCED COMPOSITE DUAL PLATE Gang LUO, Nanjing University Of Aeronautics And Astronautics, Nuaa An experiment of ice ball impact on Aluminum/Carbon Fiber Reinforced Composite dual plate was carried out to study the dynamic responses and damage of the target. The external and internal damage of Aluminum/ Composite dual plate were described in this presentation.	1202-2 MANUFACTURING OF CARBON- AND GLASS-FIBER COMPOSITES USING FRONTAL POLYMERIZATION Philippe Geubelle, University Of Illinois At Urbana-champaign	1203-2 RESEARCH ON SYNTHESIS OF CHITOSAN BASED METAL FLAME RETARDANT FOR FLAMMABLE COMPOSITES Prabhakar M.N., Changwon National University		1205-2 EXPERIMENTAL INVESTIGATION ON THE PERFORMANCE OF CARBON-EPOXY LAMINATES CONTAINING GAPS FABRICATED BY AUTOMATED FIBER PLACEMENT Vincent Cadran, McGill University	1206-2 STUDIES ON PROPERTY ENHANCEMENT BY GRAPHENE OXIDE IN POLYMER-BASED COMPOSITES SERVICED AT LOW TEMPERATURE ENVIRONMENT Pui Yan Hung, Swinburne University Of Technology	Langzauner GmbH industry session *invitation only event* CHALLENGES IN INDIVIDUAL AUTOMATION SOLUTIONS FOR INCREASING PRODUCTION EFFICIENCY IN AVIATION Bernhard Hauer CONTINUED	1208-2 EXAMINATION OF THE INTERFACE STRENGTH OF HYBRID, OVERMOULDED THERMOPLASTIC COMPOSITE PARTS Yves Becker, Institut für Verbundwerkstoffe GmbH We focused on the adhesion interphase of polyamide 66 laminates. For the interphase analysis with confocal Raman scattering spectroscopy, the protonated and deuterated polyamide 66 were employed.	1209-2 INTERPHASE ANALYSIS OF POLYAMIDE66 LAMINATES WITH PROTONATED AND DEUTERATED POLYMERS Takuya Matsumoto, Kobe University This paper presents an original approach based mainly on acoustic emission monitoring to determine fatigue life thresholds to damage initiation concerned in composites with embedded artificial flaws. This study combines two health monitoring techniques to determine fatigue life curves and to estimate stiffness degradation for plain weave composites containing flaws.	1210-2 MONITORING APPROACH FOR FATIGUE DAMAGE ONSET THRESHOLD DETERMINATION IN COMPOSITES CONTAINING FLAWS Ahmed Maslouhi, Université de Sherbrooke A laminate consolidation finite element model for prediction of meso-architecture and fibre packing in structural power composites employing a hybrid woven fabric-reinforced construction.	1211-2 PREDICTING THE CONSOLIDATION OF FABRIC-REINFORCED STRUCTURAL POWER COMPOSITES Maria Valkova, Imperial College The aim of this study has been to develop pattern recognition as an approach to identify kissing bonds in adhesive joints by means of ultrasonics. For this purpose, kissing bonds have been attempted to be manufactured in by varying ratios of a two-part adhesive.	1212-2 ASSESSMENT OF ADHESIVE BOND QUALITY BY USING ULTRASONIC TESTING COMBINED WITH PATTERN RECOGNITION Jens Schuster, University Of Applied Sciences Kaiserslautern The aim of this study has been to develop pattern recognition as an approach to identify kissing bonds in adhesive joints by means of ultrasonics. For this purpose, kissing bonds have been attempted to be manufactured in by varying ratios of a two-part adhesive.	1213-2 ON THE RESIZING OF RECYCLED FIBRES Essi Sarlin, Tampere University	1214-2 PROCESS-INDUCED FAILURE OF DELTROID IN COMPOSITE T-JOINT: FIBER-OPTIC BASED MONITORING AND NUMERICAL SIMULATION Shinsaku Hisada, The University of Tokyo Thermally induced damages in mechanically joined CFRP metal joints occur during heat treatment according to automotive dip coating. Those damages are being investigated and minimized by suitable countermeasures in this presentation.	

CONFERENCE PROGRAM

correct as at 8.8.19 and is subject to change

	1201-3 LIGHTNING DAMAGE ASSESSMENT INTO COMPOSITE BASED ON SURFACE EXPLOSION AND FIBER BREAKAGE <u>Audrey Bigand</u> , Institut Clément Ader Study of the damage generated in the CFRP due to lightning strike thanks to an Abaqus VDLOAD for shock explosion pressure and a VUMAT for damage law.	1202-3 A NOVEL WHOLE SELF-LOCKED COMPOSITE THIN-WALLED TUBE SYSTEM <u>Yang Zhao</u> , Chongqing University The present study aims to design high performance functionalized lignin-epoxy composites. In this work, the triethylammonium hydrogen sulphate ionic liquid (IL) was introduced onto the surface of lignin micro/nanoparticles while it was extracted from biomass, to prepare a highly functional and reinforcing IL-Lignin filler in an epoxy matrix.	1203-3 EXTRACTED LIGNIN FROM NATIVE AUSTRALIAN LIGNOCELLULOSIC BIOMASS AS A POWERFUL AGENT FOR HIGH-PERFORMANCE COMPOSITES <u>Shammi Sultana Nisha</u> , Swinburne University Of Technology		1205-3 EFFECT OF TEMPERATURE ON IMPACT BEHAVIOUR OF POLYAMIDE 6/WOVEN BASALT FIBRES LAMINATES <u>Russo Pietro</u> , National Council of Research	1206-3 MANUFACTURING AND TESTING OF CLOSED-LOOP GLASS FIBER CYLINDRICAL EPOXY COMPOSITES USING VARTM <u>Monis Kazmi</u> , University Of Auckland This research focuses on finding the potential to manufacture hollow cylindrical epoxy composite structures with both flat and curved profiles using VARTM. The flat and curved composites were tested under tension and shear.	Langzauner GmbH industry session *invitation only event* CHALLENGES IN INDIVIDUAL AUTOMATION SOLUTIONS FOR INCREASING PRODUCTION EFFICIENCY IN AVIATION <u>Bernhard Hauer</u> CONTINUED		1209-3 TAILORING INTERFACIAL ADHESION IN BASALT FIBRE REINFORCED POLYMER COMPOSITES <u>Maria Carolina Seghini</u> , Sapienza-Università di Roma	1210-3 IN-SITU SENSING OF RANDOM FAILURE IN COMPOSITE STRUCTURES <u>Suong Hoa</u> , Concordia University Development of random failure in composite structures due to cyclic loading can be detected using the method presented in the paper.	1211-3 UNIT CELLS FOR MULTIPHYSICS MODELLING OF STRUCTURAL BATTERY COMPOSITES <u>David Carlstedt</u> , Chalmers University of Technology Multiphysics modelling of structural battery composites is discussed. FE-models are setup to study if modelling techniques for conventional batteries can be used to describe the electrochemical behaviour of this material.	1213-3 RESIN TRANSFER PRESSING – A NOVEL PROCESS FOR LARGE SCALE COMPOSITE MANUFACTURING <u>Christian Goergen</u> , Institut für Verbundwerkstoffe GmbH A new process is introduced, called „Resin Transfer Pressing“ (RTP). RTP exploits specific advantages of recycled nonwoven fabrics in a thermoset press process and provides short cycle times.	1214-3 MULTISCALE COMPUTATIONAL MODEL FOR POLYMER MATRIX COMPOSITES UNDER IMPACT LOADING, INCLUDING ADIABATIC HEATING EFFECTS <u>Christopher Sorini</u> , Arizona State University, Nasa A multiscale computational approach is taken to investigate the effects of local matrix adiabatic heating on the ballistic impact response of a T700/Epon 862 [0°/60°/-60°] triaxially braided composite.	1215-3 INTERLAMINAR FRACTURE TOUGHNESS OF CO-CONSOLIDATED CF/PEEK LAMINATES MANUFACTURED IN STMAP JOINING PROCESS <u>Julian Weber</u> , Institut Für Verbundwerkstoffe GmbH	
1540-1600	Coffee break														
1600-1630	Exhibition hall														
1630-1830	1301 Nano-composites	1302 Bio-inspired composites	1303 Green & natural fibre composites	1304 Design and manufacture for multifunctionality	1305 Automated fibre placement	1306 Composite structures	1307 Computational and finite element methods	1308 Polymer matrix materials	1309 Interfaces and interphases	1310 Sensing 2: Composites as Stain Sensors	1311 Structural power 3: Device Assembly	1312 Non-destructive evaluation	1313 Recycling and sustainability	1314 Tsai award presentations	1315 Joints
1630-1650	1301-1 ADVANCED POLYMERIC NANOCOMPOSITES WITH FUNCTIONALIZED GRAPHENE ANALOGUES OF MOS2 <u>Molataba Ahmadi</u> , Deakin University The mechanical behaviors of nacre-like composites are evaluated by a combination of analytical solution and numerical simulation through the modification of the classic tension-shear chain(TSC) model.	1302-1 THEORETICAL PREDICTION OF BRITTLE-TO-DUCTILE TRANSITION OF BIO-INSPIRED NACREOUS COMPOSITES <u>Shaokang Cui</u> , Beihang University The mechanical behaviors of nacre-like composites are evaluated by a combination of analytical solution and numerical simulation through the modification of the classic tension-shear chain(TSC) model.	1303-1 HIERARCHICAL MODIFICATION OF FLAX FIBRES BY ZINC OXIDE NANOSTRUCTURES <u>Francesca Sbardella</u> , University Of Rome "sapienza" Surface modification of the flax fibres with zinc oxides nanorods via hydrothermal synthesis.	1304-1 DESIGN, FABRICATION AND PRELIMINARY EXPERIMENTATION OF A MULTISTABLE KIRIGAMI STRUCTURE <u>Oliver Myers</u> , Clemson University	1305-1 USE OF IN-PROCESS MONITORING AND NDT TO DETECT DEFECTS IN THERMOPLASTIC AFP PARTS <u>Ashley Chadwick</u> , German Aerospace Center (DLR) A combination of in-process monitoring and ultrasound scanning is used to identify defects in a thermoplastic composite laminate produced using automated fibre placement.	1306-1 TEST VALIDATION OF EXTENSION-TWISTING COUPLED LAMINATES WITH MATCHED ORTHOTROPIC STIFFNESS <u>Kim Kheng Lee</u> , Singapore Polytechnic An experimental validation study is presented for three classes of coupled laminate with matching Extension-Twisting coupling. The designs also have matching orthotropic stiffness in extension and bending, which have been chosen specifically to investigate the influence of mechanical Extension-Shearing and/or Bending-Twisting on the performance of Extension-Twisting coupled designs under axial tension loads.	1307-1 A NOVEL APPROACH FOR MODELLING OF ROS AND ROS-HYBRID COMPOSITES <u>Rizwan Saeed Choudhry</u> , University Of Derby A new approach for parametric model generation of discontinuous fibre composites (DFC) that achieves a realistic non-overlapping architecture of Random, Aligned, Tailored and Hybrid DFC for given volume fraction.	1308-1 TENSILE BEHAVIOUR OF THIN-PLY COMPOSITES <u>Haihong Wu</u> , Henan University Of Technology The flexural strength of the carbon fiber epoxy based laminates has been found to improve significantly with GNP addition using the spray coating method.	1309-1 MECHANICAL PROPERTIES OF GRAPHENE NANO-PLATELETS COATED CARBON FIBER EPOXY COMPOSITES <u>Alok Kumar Srivastava</u> , Indian Institute Of Technology Bombay The flexural strength of the carbon fiber epoxy based laminates has been found to improve significantly with GNP addition using the spray coating method.	1310-1 STUDY ON THE CORE-SHELL STRUCTURED FIBER TYPE STRAIN SENSOR WITH LOAD BEARING CHARACTERISTICS IN COMPOSITE STRUCTURES <u>Saung Yong Oh</u> , Korea Advanced Institute Of Science And Technology Manganese dioxide electrochemically deposited onto carbon aerogel/carbon fibres (CAG/CF) provides a large enhancement in capacitive performance of the carbon electrodes and show a great potential for multifunctional structural supercapacitors.	1311-1 MANGANESE DIOXIDE DECORATED CARBON AEROGEL/CARBON FIBRE COMPOSITE AS A PROMISING ELECTRODE FOR STRUCTURAL SUPERCAPACITORS <u>Evgeny Senokos</u> , Imperial College London State-of-art 3D X-ray micro computed tomography, combined with tomographic volume analysis and visualization tools, has been utilized to study a suite of highly different carbon fibre reinforced polymers.	1312-1 3D CHARACTERISATION OF CARBON FIBRE REINFORCED COMPOSITE MICROSTRUCTURE VIA X-RAY COMPUTED TOMOGRAPHY <u>Silvano Sommacal</u> , The Australian National University State-of-art 3D X-ray micro computed tomography, combined with tomographic volume analysis and visualization tools, has been utilized to study a suite of highly different carbon fibre reinforced polymers.	1313-1 IMPORTANCE OF CHEMICAL PRETREATMENT FOR CARBON FIBRE RECYCLED FROM COMPOSITE BY PYROLYSIS <u>Siji Hao</u> , University of Nottingham Ningbo China This paper introduces a recycling framework for compression moulding of uncured prepreg offcuts. The processing aspect of the framework is discussed in detail, where thermochemical resin characterization and 1-D flow-compaction trials are used to understand the impact that a resin's processing viscosity has on the nature and magnitude of prepreg flow.	1314-1 TOUGHENING EPOXY SYNTACTIC FOAMS WITH MILLED CARBON FIBRES: MECHANICAL PROPERTIES AND TOUGHENING MECHANISMS <u>Sammy He</u> , Imperial College London An experimental procedure is devised based on a re-designed Modified Arcan Fixture (MAF) to investigate composite laminates subjected to combined tension/compression-shear loading.	1315-1 STUDY OF ENVIRONMENTAL EFFECTS ON THE COMPOSITE-TO-METAL DOUBLE LAP SHEAR JOINTS <u>Qian Zhang</u> , Hefei University Of Technology This paper introduces a recycling framework for compression moulding of uncured prepreg offcuts. The processing aspect of the framework is discussed in detail, where thermochemical resin characterization and 1-D flow-compaction trials are used to understand the impact that a resin's processing viscosity has on the nature and magnitude of prepreg flow.
1650-1710	1301-2 USE OF GRAPHENE TO REDUCE RESIN CURE SHRINKAGE <u>Wei Siang Sum</u> , PETRONAS Research We designed new CFRP and hybrid composites with bio-inspired crossed-lamellar microstructures. We demonstrated that these composites preserve their structural integrity up to extremely large deformations and exhibit extensive damage diffusion.	1302-2 HYBRID COMPOSITES WITH A CROSSED-LAMELLAR MICROSTRUCTURE FOR STRUCTURAL INTEGRITY <u>Rikka Hase</u> , Imperial College London We designed new CFRP and hybrid composites with bio-inspired crossed-lamellar microstructures. We demonstrated that these composites preserve their structural integrity up to extremely large deformations and exhibit extensive damage diffusion.	1303-2 BIOCOMPOSITES MANUFACTURED USING WATERASSISTED COMPOUNDING OF COFFEE GROUNDS WITH POLYSTYRENE FOR THERMOFORMING CUPS <u>Daniel Schwendemann</u> , University of Applied Sciences Eastern Switzerland IWK Water-assisted compounding allows a new way of using spend coffee grounds in compounding a polymer/biobased composite material. With the new, more circular compound vending cups are thermofomed.	1304-2 MULTIFUNCTIONAL COMPOSITE HOLOGRAPHIC ANTENNA STRUCTURES <u>Thomas Baum</u> , DST Group This paper presents preliminary work towards developing multi-functional conformal antennas based on new electromagnetic metamaterial approaches, specifically holographic antennas based on artificial impedance surfaces (AIS).	1305-2 COMPARISON OF HEAT SOURCES FOR AUTOMATED DRY FIBRE PLACEMENT: XENON FLASHLAMP- VS. INFRARED-HEATING <u>Dominik Deden</u> , German Aerospace Centre Augsburg In this study, a xenon-flashlamp heating system is benchmarked to infrared radiators in terms of peel strength and heat distribution at various lay-down Speeds for dry fibre placement.	1306-2 LAMINATE DESIGN FOR IMPROVED POSTCRITICALLY STABLE PERFORMANCE <u>Christopher York</u> , Singapore Institute Of Technology This article discusses laminate performance, relating to preand post-critically stable inplane response, for double angle-ply laminates, which are stiffness matched to equivalent standard symmetric laminate configurations; all with fully uncoupled stiffness properties or with Extension-Shearing coupling.	1307-2 FUTURE MICROBOND TESTING - FINITE ELEMENT SIMULATION OF OPTICAL FIBERS FOR STRAINS <u>Royson Dsouza</u> , Tampere University Finland The paper presents a 3D Finite Element (FE) modeling and simulation of the microbond test with FBG sensors for local strain sensing and improved understanding of the fiber droplet interface.	1308-2 INVESTIGATION ON IMPROVING THE COMPRESSIVE STRENGTH OF THE UNIDIRECTIONAL CARBON FIBER REINFORCED POLYMER COMPOSITE <u>Long Li</u> , Aerospace Research Institute of Materials and Processing Technology Effect of key factors on the compressive properties of unidirectional carbon fiber reinforced polymer is investigated, including the diameter of fibers, Young's modulus of resin and interfacial bonding strength.	1309-2 FIBER/MATRIX INTERFACE: A KEY COMPONENT IN A SELF-REINFORCED POLYPROPYLENE COMPOSITE <u>Amel Terras</u> , IMP INSA Lyon The object of this study is to understand to what extend phenomenons involved in the interface building of a self-reinforced polypropylene composite can be related to its overall mechanical properties.	1310-2 TAILORED ZINC OXIDE INTERPHASE IN CARBON FIBER REINFORCED COMPOSITES ACROSS STRAIN RATES <u>Jalal Nasser</u> , University Of Michigan Zinc oxide interphases are used to tailor the interfacial properties of carbon fiber reinforced polymer matrix composites for simultaneously optimal performance in structural and ballistic applications.	1311-2 STRUCTURAL POSITIVE ELECTRODES FOR MULTIFUNCTIONAL COMPOSITE MATERIALS <u>Karl Bouton</u> , KTH Royal Institute Of Technology The study aims at developing a coating technique for the making of structural positive electrodes, i.e. Lithium oxide coated-carbon fibres. The subsequent technique consists in a Layer-by-Layer assembly of the lithium oxide particles on the carbon fibres. The deposition process is followed by low-temperature carbonisation.	1312-2 FATIGUE LIFE PROGNOSIS FOR COMPOSITE LAMINATES USING LAMB WAVE VELOCITY <u>Chongcong Tao</u> , Nanjing University Of Aeronautics And Astronautics Fatigue life prognosis of composite laminates is realized using Bayesian inference to obtain the distribution of parameters of a velocity degradation model, and laser ultrasonic method for wave velocity extraction.	1313-2 DEVELOPMENT OF A VERSATILE RECYCLED COMPRESSION MOULDING COMPOUND MADE FROM UNCURED AEROSPACE PREPREG OFFCUTS <u>Pascal Hubert</u> , McGill University This paper introduces a recycling framework for compression moulding of uncured prepreg offcuts. The processing aspect of the framework is discussed in detail, where thermochemical resin characterization and 1-D flow-compaction trials are used to understand the impact that a resin's processing viscosity has on the nature and magnitude of prepreg flow.	1314-2 CHARACTERISING MULTI-DIRECTIONAL LAMINATES SUBJECTED TO TENSION/COMPRESSION-SHEAR LOADING USING A MODIFIED ARCAN FIXTURE <u>Tobias Laux</u> , University Of Southampton An experimental procedure is devised based on a re-designed Modified Arcan Fixture (MAF) to investigate composite laminates subjected to combined tension/compression-shear loading.	1315-2 SIMULATION OF INDUCTION WELDING PROCESS FOR GLASS FIBER THERMOPLASTIC COMPOSITES IN AEROSPACE APPLICATIONS <u>Martine Dube</u>

Monday 12 August

CONFERENCE PROGRAM

correct as at 8.8.19 and is subject to change

Monday 12 August	1710-1730	<p>1301-3 TENSILE PROPERTIES OF CRYSTALLINE POLYMER COMPOSITE SYSTEMS FILLED WITH SPHERICAL SILICA NANOPARTICLES HAVING HYDROPHILIC SURFACES Mitsuru Tanahashi, Toyama Prefectural University</p> <p>Tensile properties of the PFA and the PP nano-composites filled with silica nanospheres having untreated hydrophilic surfaces were investigated with a focus on the effects of silica/polymer matrix interfacial debonding.</p>	<p>1302-3 ANALYTIC METHODS TO PREDICT RESIN POCKET GEOMETRY AROUND THE MICROVASCULE IN SELF-HEALING COMPOSITES Yihao Ma, School Of Aeronautic Science And Engineering, Beihang University</p> <p>Two analytic methods are developed to predict the resin pocket geometry around the microvasculature in self-healing composites. The bending strain energy is calculated on the fiber scale and layer scale respectively.</p>	<p>1303-3 CORK CORE SANDWICH STRUCTURES: STATIC AND DYNAMIC RESPONSE Claudia Sergi, Sapienza University Of Rome</p> <p>Comparison of agglomerated cork and PVC foams mechanical properties and their application in bio-based sandwich structures subjected to impact loading.</p>	<p>1304-3 CHARACTERIZATIONS AND APPLICATIONS OF NONPOSITIVE PARAMETRIC MECHANICAL METAMATERIALS Hang Yang, Harbin Institute of Technology</p> <p>This work expands the multi-functional applications of non-positive parametric mechanical metamaterials (negative/zero Poisson's ratio, negative/zero stiffness) based on the characterizations of their unprecedented mechanical properties</p>	<p>1305-3 EVOLUTION OF CRYSTALLINITY WITH MULTIPLE LAMINATION STEPS IN HIGH PERFORMANCE THERMOPLASTIC COMPOSITES BY IN-SITU CONSOLIDATION PROCESS Ingrid Esquerre, FIDAMC</p>	<p>1306-3 ENERGY ABSORPTION OF EXPANDED METAL TUBES UNDER EXPANDING LOAD Guoxing Lu, Swinburne University of Technology</p>	<p>1307-3 CROSS-SECTION ANALYSIS OF TAPERED BEAMS Paola Bertolini, DTU</p> <p>A numerical comparison of the stresses evaluated with both 3D FEA and cross-section analysis highlights how the latter currently lack the capability to correctly recover the stresses in tapered beams.</p>	<p>1308-3 HIGH HEAT RESISTANCE EPOXY-BASED COMPOSITES Swezin Than Tun, Toray Composite Materials America Inc.</p> <p>It is known that epoxy-based composite materials have been limited to service temperatures of below 140°C, forcing the use of high temperature materials like bismaleimide (BMI), PEEK, or polyimide composites. Toray research group has recently developed an epoxy-based resin system which has a glass transition temperature (T_g) of 235°C which will serve to widen the use of epoxy to a higher temperature range.</p>	<p>1309-3 IMPROVING THE INTERFACIAL BONDING STRENGTH OF T/CFRP FIBER METAL LAMINATES BY USING MULTI-WALLED CARBON NANOTUBES Hao Wang, NUAU</p> <p>Since the interface is the relatively weak area of fiber metal laminates (FMLs), the reinforcement of metal/resin interface is desired urgently. In this study, a metallic-inorganic-organic system and related equations were developed to describe the interfacial behaviors.</p>	<p>1310-3 HUMAN SKIN-MIMICKING INTEGRATED SENSOR WITH ULTRAHIGH SENSITIVITY FOR MULTIDIRECTIONAL SENSING Haomin Chen, Hong Kong University of Science And Technology</p> <p>Mimicking human skin, a novel multidirectional strain sensor consisting of a PUGA composite and a spinosum-like conductive microstructure is developed for sensing deformation from different directions.</p>	<p>1311-3 MORPHOLOGICAL CONTROL OF STRUCTURAL ELECTROLYTES FOR MULTIFUNCTIONAL COMPOSITES Wen Dong Quan, Durham University, UK</p>	<p>1312-3 PENETRATION DEPTH LIMITS OF ACTIVE THERMOGRAPHY FOR DETECTION OF IMPACT DAMAGE IN CARBON FIBRE COMPOSITES Kelly Tsol, Defence Science Technology Group</p> <p>An investigation of the penetration depth limits of two active thermographic inspection techniques, flash and sonic thermography, for quantitative sizing of barely visible impact damage in carbon fibre composite subjects.</p>	<p>1313-3 3D PRINTING OF RECYCLED PET POLYMER COMPOSITE INFUSED WITH SUSTAINABLE CARBON Vijaya Rangan, Tuskegee</p>	<p>1314-3 MODELLING THE FRACTURE ENERGY OF POLYMER NANOCOMPOSITES Mukesh Bhasin, RMIT University</p> <p>Mechanistic-based analytical models to predict the mode I interlaminar fracture toughness of carbon nanoparticle reinforced polymer composites are described, and compared to experimental data.</p>	<p>1315-3 INTEGRATED ASSESSMENT OF COMPOSITE TO STEEL JOINTS IN MARINE APPLICATIONS Geir Olafsson, University Of Southampton</p>
	1730-1750	<p>1301-4 COMPETITION BETWEEN DIFFERENT TOUGHENING MECHANISMS IN COMPOSITES WITH CARBON NANOTUBE GRAFTED FIBERS Qiang Liu, Department Of Materials Engineering, KU Leuven</p>	<p>1302-4 THE ROLE OF DEFECTS IN 3D PRINTING OF BIO-INSPIRED CELLULAR COMPOSITES Sardar Malek, University Of Technology Sydney</p>	<p>1303-4 BLAST RESPONSE OF PANELS CONTAINING SUSTAINABLE MATERIALS Chris von Klemperer, University Of Cape Town, Mechanical Engineering</p> <p>Sustainable fibre reinforced epoxy composites containing Jute or Flax reinforcement were exposed to explosive airblast loading and the results compared to glass fibre epoxy panels also exposed to airblast.</p>	<p>1304-4 LOCALISED INKJET PRINTING OF RESIN ADDITIVES FOR SELECTIVE PROPERTY ENHANCEMENT Ian Gent, University Of Bristol</p> <p>A customised inkjet printer was designed to deposit resin additives. Open hole test specimens containing thermoplastic particles exhibited a 3.8% increase in failure strength compared to unmodified specimens.</p>	<p>1305-4 DEVELOPMENT OF AUTOMATED DRY FIBRE PLACEMENT FOR HIGH RATE DEPOSITION Anthony Evans, University Of Nottingham</p> <p>Investigation and explanation into the development and design of a high-speed automated dry fibre placement machine (ADFP). Presentation focuses on the data acquisition and transfer, Joule heating and temperature control for high heating rates</p>	<p>1306-4 STRUCTURAL RESPONSE OF BALLISTICALLY DAMAGED COMPOSITE HONEYCOMB SANDWICH STRUCTURES Binod Aryal, The University Of New South Wales</p>	<p>1307-4 INVESTIGATION OF CORRUGATED LAMINATES SUBJECTED TO TRANSVERSE SHEAR LOADING Daniel Thomas Filipovic, ETH Zurich</p> <p>The presentation will give insight on the results and the derivation of an efficient finite element model derived for calculating the response of corrugated laminates subjected to transverse shear loading.</p>	<p>1308-4 FILLING MICROTUBULES WITH TRIPHENYL PHOSPHATE FOR FLAME-RETARDING EPOXY COMPOSITES Jun Ma, University Of South Australia</p>	<p>1309-4 ENHANCING THE INTERFACIAL ADHESION VIA CHEMICAL GRAFTING MULTILAYER POLYDOPAMINE/GO ON CARBON FIBER SURFACE Qina Yu, Shaanxi University Of Science & Technology</p> <p>Nano-structured polyether amine/GO multilayers were attached onto carbon fiber surface by chemical grafting approach, and its effects on interfacial adhesion of composites were investigated.</p>	<p>1310-4 LASER INDUCED FREESTANDING GRAPHENE PAPERS FOR MULTIFUNCTIONAL COMPOSITES Sida Luo, Beihang University</p>	<p>1311-4 DESIGN OF OPTIMISED MULTI-SCALE STRUCTURES FOR MULTIFUNCTIONAL COMPOSITES Chanhui Lee, Imperial College London</p>	<p>1312-4 STACKING SEQUENCE DETERMINATION AND ELASTIC PROPERTIES IDENTIFICATION FOR CFRP LAMINATES USING ULTRASONIC TECHNIQUES Jinling Zhao, School Of Mechanical And Power Engineering, Nanjing Tech University</p> <p>Ultrasonic bulk wave technique was used to identify stacking sequences of CFRP, on which basis guided wave approach was further investigated towards stiffness coefficients determination of a single lamina in the structure.</p>	<p>1313-4 VALIDATION AND APPLICATION OF MICRO-CT ANALYSIS FOR RECYCLED CARBON FIBER CARD WEB REINFORCED THERMOPLASTICS Siyi Shao, The University Of Tokyo</p> <p>The study proposed a method to evaluate the fiber orientation distribution (FOD) of Carbon Fiber Reinforced Plastics (CFRP) from Micro Computed Tomography (Micro-CT) data.</p>	<p>1314-4 DEFECT CHARACTERIZATION AND MECHANICAL PROPERTIES OF MULTI-LAYER LATTICE STRUCTURE Chuanlei Li, Beijing Institute Of Technology</p> <p>A novel modeling has been proposed based on the μ-CT scan reconstruction data to investigate the influence of geometrical defects on the mechanical performance of lattice structure.</p>	
	1750-1810	<p>1301-5 CARBON NANOTUBE/POLYAMIDE 6 NANOCOMPOSITES VIA IN-SITU ANIONIC POLYMERISATION Byron Villacorta, University Of Queensland</p>	<p>1302-5 TIGR-NACRE: A NEW DAMAGE-TOLERANT CFRP COMPOSITE John-Alan Pascoe, Imperial College London</p> <p>Ductility and damage diffusion in a CFRP-based composite are possible. We achieve these features by combining a nacre-inspired micro-structure with titanium interlayers.</p>	<p>1303-5 EXPERIMENTAL AND MOLECULAR DYNAMICS STUDIES OF ANTIMICROBIAL ADDITIVE MIGRATION FROM BIOCOMPOSITE PACKAGING Venkata Chevelli, University Of Southern Queensland</p>	<p>1304-5 MODE I AND MODE II FRACTURE PROPERTIES OF MENDABLE HYBRID 3D WOVEN COMPOSITES Raj Ladani, RMIT University</p> <p>The key material, slitting and spooling, and AFP processing parameters for thin-ply materials are identified and tested to produce consistent and repeatable feed of material through the AFP head.</p>	<p>1305-5 MANUFACTURING STUDY WITH THIN-PLY COMPOSITE PREPREGS IN AUTOMATED FIBER PLACEMENT (AFP) Christopher Hansen, University Of Massachusetts Lowell</p>	<p>1306-5 AN INTEGRATED METHODOLOGY FOR FULL-FIELD IMAGING AND NUMERICAL ANALYSIS OF COMPLEX COMPOSITE SUBSTRUCTURES Jack Callaghan, University of Southampton</p>	<p>1307-5 AN ADAPTIVE METHODOLOGY FOR EFFICIENT MODELLING OF ARBITRARY DELAMINATIONS DURING CRASH SIMULATIONS Johannes Främby, Chalmers University Of Technology</p>	<p>1308-5 EFFECT OF CNTS CONTENT AS TERTIARY FILLER ON CNTS/XGNP/SG/EPOXY NANOCOMPOSITES ON THE THROUGH-PLANE CONDUCTIVITY Hendra Suherman, Universitas Bung Hatta</p> <p>Carbon nanotubes (CNTs) have the potential to be used as the third conductive filler due to nano-sized and tube-shaped, so as to fill the gap between the second conductive filler which is larger in size.</p>	<p>1309-5 EFFECT OF CARBOXYL CONTENT ON CRABON FIBER SURFACE ON INTERFACIAL ADHESION OF FIBER/NYLON 6 Tao Zhang, Beihang University</p> <p>This report investigates the effect of surface chemical characteristics of carbon fibers on the interfacial properties of carbon fibers/nylon 6 composites.</p>	<p>1310-5 OPTICAL SENSORY NETWORKS IN SOFT MECHANICAL COMPOSITES Patricia Xu, Cornell University</p> <p>Stretchable optical lightguide networks embedded within 3D printed, soft scaffolds for deformation state sensing of the body using machine learning.</p>	<p>1311-5 POLYMERISED MEDIUM INTERNAL PHASE EMULSIONS AS STRUCTURAL SEPARATORS Natasha Shirshova, Durham University</p>	<p>1312-5 INSEGT FIBRE: A USER-FRIENDLY SOFTWARE FOR INDIVIDUAL FIBRE SEGMENTATION Monica Jane Emerson, Technical University Of Denmark</p> <p>Insegt Fibre is a software toolbox for volumetric fibre segmentation. By measuring individual fibres from X-ray tomograms, it enables the characterisation of real composite microstructure and its changes under load.</p>	<p>1313-5 INVESTIGATING THE CONSISTENCY IN PHYSICAL PROPERTIES OF 3D PRINTED RECYCLED CARBON FIBER Peng Hao Wang, Purdue University</p> <p>In this study, a team of Purdue University School of Aviation and Transportation Technology (SATT) faculty and students have teamed up to investigate the consistency in physical properties of 3D printed recycled carbon fiber.</p>		
	1810-1830	<p>1302-6 AUTOMATICALLY PROCESSED BIOINSPIRED HIERARCHICAL CARBON FIBER COMPOSITES Verónica Rodríguez, FIDAMC</p> <p>One of the main drawbacks of carbon fibre reinforced polymers (CFRPs) is the delamination and catastrophic failure mechanism they present when reaching their mechanical limits. A way of limiting this kind of failure is investigated in this project.</p>	<p>1303-6 MANUFACTURING WOOD PLASTIC COMPOSITE FROM RPET/HDPE/LDPE/UHMWPE REINFORCED RICE HUSK FIBRE Utai Meekum, School Of Design Technology Institute Of Engineering, Suranaree University Of Technology</p> <p>In order to prevent the thermal degradation of the natural fiber on the manufacturing of wood plastic composite based on rPET/UHMWPE/HDPE reinforced with rice husk fiber, processing temperature below 230°C was the prime objective.</p>	<p>1304-6 STRUCTURAL HEALTH MONITORING FOR FIBRE REINFORCED COMPOSITES PRODUCED BY THE WINDING PROCESS Mario Naumann, Technical University Of Chemnitz</p>	<p>1306-6 THERMAL DEGRADATION STUDY OF BISMALIMIDE COMPOSITE Dongbing Geng, Aerospace Research Institute of Materials and Processing Technology</p>	<p>1308-6 HYBRID THERMOSET COMPOSITES FOR IMPROVING FRACTURE TOUGHNESS Kanokporn Tangthana-umrung, The University Of Manchester</p> <p>Combining the advantages of the engineering thermoplastic and graphene nanoplatelets to improve fracture toughness of epoxy while maintaining all mechanical and thermal properties of material.</p>	<p>1309-6 DEVELOPMENT OF HIGH-PERFORMANCE TRILAYERED LAAL03/SRTIO3/LAAL03 HETEROSTRUCTURES FOR ELECTRONIC DEVICES Hailong Hu, The University Of New South Wales</p>	<p>1310-6 STRAIN SENSING CAPABILITY OF POLYANILINE-BASED CONDUCTIVE GLASS FIBER REINFORCED COMPOSITE Sukanta Das, The University Of Tokyo</p> <p>Polyaniline-based conductive polymer, reinforced with glass fiber, has been studied for self-sensing. A four probes electrical resistance measurement technique was adopted to measure the resistance change of composite under loading.</p>	<p>1313-6 THE EFFECT OF FIBRE SURFACE TREATMENTS DURING CFRP PRODUCTION ON THE TENSILE STRENGTH OF RECYCLED CARBON FIBRES Di He, The Australian National University</p> <p>A recycling study on carbon fibre reinforced polymers (CFRPs) found minor impacts of electrochemical oxidation and sizing treatment during CFRP production on the tensile strength of recycled carbon fibres.</p>							
	1845-2100	Welcome reception Exhibition hall														

CONFERENCE PROGRAM

correct as at 8.8.19 and is subject to change

Time	Plenary 2	Meeting room 205	Meeting room 206	Meeting room 208	Meeting room 209	Meeting room 210	Meeting room 211	Meeting room 212	Meeting room 213	Meeting room 214	Meeting room 215	Meeting room 216	Meeting room 217	Meeting room 218	Meeting room 219
0800-0805	Day 2 Welcome & Announcements														
0805-0850	PLENARY LECTURE: THE STORY OF BIOBASED NANOMATERIALS AND THEIR USE IN COMPOSITE MATERIALS Kristiina Oksman, Lulea University of Technology														
0850-0900	Plenary 2 Move to concurrent sessions														
0900-1040	2101 Nano-composites	2102 Renewable carbon	2103 Meta-Composite	2104 Design and manufacture for multifunctionality	2105 Advanced manufacturing and automation	2106 Scott White symposium	2107 Computational and finite element methods	2108 Resin and polymers	2109 Green & natural fibre composites	2110 Actuation 1: Morphing Multifunctional Composites	2111 Materials by Design	2112 Structural health monitoring	2113 Renewable energy	2114 Durability, creep and aggressive environment	2115 Repair
0900-0930	<p>NANOCOMPOSITES AND HIERARCHICAL NANOEINGEERED ADVANCED COMPOSITES FOR ENHANCED MECHANICAL AND MULTIFUNCTIONAL PERFORMANCE Brian Wardle, MIT</p> <p>SELF-HEALING FIBRE REINFORCED POLYMER COMPOSITES – A BRISTOL PERSPECTIVE Jan Bond, University of Bristol</p> <p>VIRTUAL DESIGN OF HIGH-PERFORMANCE DISCONTINUOUS-COMPOSITE STRUCTURES Soraia Pimenta, Imperial College</p> <p>POLYMER NANOCOMPOSITES UNDERFILL MATERIALS FOR ELECTRONIC PACKAGING Yiu-Wing Mai, University of Sydney</p> <p>OPPORTUNITIES AND CHALLENGES FOR COMPOSITES IN NEXT GENERATION MULTI-MATERIAL VEHICLES Patrick Blanchard, Ford</p> <p>ACCELERATED TESTING METHOD FOR DURABILITY OF CFRP Yasushi Miyano, Kansazawa Institute of Technology</p>														
0930-0940	Move to concurrent sessions														
0940-1000	<p>2101-1 SYNERGISTIC EFFECT OF DUAL-SCALE CARBON FILLERS ON SENSITIVITY AND STABILITY OF FLEXIBLE STRAIN SENSORS Fan Zhang, School of Mechanical And Manufacturing Engineering, University Of New South Wales</p>	<p>2102-1 FROM NANO TO MICRO: HARDNESS PREDICTION IN BIOCARBON BASED COMPOSITES Qisik Das, Department of Fibre and Polymer Technology, KTH Royal Institute of Technology</p> <p>Using the nanoindentation properties of the constituents, the comprehensive or bulk mechanical properties of the composites were accurately predicted.</p>	<p>2103-1 PORO-ELASTIC ACOUSTIC META MATERIALS WITH IMPROVED SOUND ABSORPTION Chris Fuller, Virginia Tech</p>	<p>2104-1 A STUDY ON THE PREFORM DEFORMATION IN THERMOPLASTIC COMPOSITE OVERMOULDING Mario Adrian Valverde, Bristol Composite Institute (ACCIS)</p> <p>Two experimental setups are used to investigate the compaction behaviour of continuous carbon fibre - Polyphenylene Sulphide (CF-PPS) composites processed via injection overmoulding.</p>	<p>2105-1 ADDITIVE MANUFACTURED ELECTROACTIVE SHAPE MEMORY POLYMER COMPOSITES Irina Garces, University Of Alberta</p> <p>Shape Memory Polymer Composites can be used as sensors and actuators. This study explores the manufacturing and development of an electroactive self-sensing SMP for field applications.</p>	<p>2106-1 MODELING OF A NEW COMPOSITE MANUFACTURING PROCESS BASED ON FRONTAL POLYMERIZATION Philippe Gaubelle, University of Illinois at Urbana-Champaign</p>	<p>2107-1 DEVELOPMENT OF A 3D FINITE ELEMENT MODEL OF A QUASI-STATIC INDENTATION TEST IN A TYPE III PRESSURE VESSEL Erick Montes De Oca Valle, University Of Southampton</p> <p>A 3D FE model is developed to predict the de-cohesion and the resultant deformation of the aluminium liner of a Type III pressure vessel subjected to a quasi-static indentation test.</p>	<p>2108-1 EXPERIMENTAL STUDY OF THE MECHANICAL AND FLAMMABILITY BEHAVIOUR OF SILICA AND RUBBER NANOCOMPOSITES Alexander Fergusson, Fac Technology</p>	<p>2109-1 MICROSTRUCTURE AND MECHANICAL PROPERTIES OF HEMP ELEMENTARY FIBRES FOR COMPOSITE APPLICATIONS BY MICRO-COMPUTED TOMOGRAPHY AND DIGITAL IMAGE CORRELATION Carlos Fuentes Rojas, KULeuven</p> <p>The non-linear behavior of elementary and technical hemp fibres samples were characterized, by combining standard tensile tests with a detailed full-field strain map at the micro scale during tensile loading.</p>	<p>2110-1 ENABLING BIOMIMETIC MORPHING UAVS Geoffrey Speedding, University of Southern California</p> <p>A practical telescoping wing is combined with bio-inspired body-tail configuration to produce a novel design where tail deployment and configuration come from clutched electroactinuate materials.</p>	<p>2111-1 COUPLED PIEZORESISTIVE AND THERMORESISTIVE BEHAVIOR OF CARBON NANOTUBE YARNS AND THEIR THERMOSETTING MONOFILAMENT COMPOSITES Jandro Abot, The Catholic University of America</p> <p>Carbon nanotube yarns are lightweight, strong and electrically conductive fiber-like materials that exhibit outstanding physical properties and can be synthesized continuously. Their coupled piezoresistive response is being investigated for smart materials that could detect damage and measure strain inside polymers and polymeric composites.</p>	<p>2112-1 MEASURED LAMB WAVE RADIATION PATTERNS FROM (011) MN-PMN-PZT RELAXOR FERROELECTRIC DISKS ON A COMPOSITE PLATE Benjamin Vien, Monash University</p> <p>This paper describes early results from the Realtide H2020 European project which aims to improve the reliability of tidal turbines to generate renewable marine energy. The composite blades are a critical component and a testing campaign has been performed to investigate their long term durability. Results are shown for seawater aging and its influence on fatigue performance. These results will be integrated into models of long term behaviour.</p>	<p>2113-1 RELIABILITY OF COMPOSITE TIDAL TURBINE BLADES Mael Arhant, Ifremer</p> <p>The paper investigates how the thin-ply effect can play a role for high temperature composites. Mechanical performance in tension as well as long-term thermal stability are considered.</p>	<p>2114-1 THIN-PLY EFFECTS ON LONG-TERM THERMAL STABILITY OF HIGH TEMPERATURE POLYIMIDE COMPOSITES Patrik Fernberg, Rise Sicom</p> <p>The paper investigates how the thin-ply effect can play a role for high temperature composites. Mechanical performance in tension as well as long-term thermal stability are considered.</p>	<p>2115-1 ADVANCES IN THE BONDLINE CONTROL TECHNOLOGY FOR THE CERTIFICATION OF ADHESIVELY BONDED COMPOSITE REPAIRS Lennert Hellmann, German Aerospace Center (DLR)</p>
1000-1020	<p>2101-2 DESIGN, STRUCTURATION AND RHEOLOGICAL PROPERTIES OF LAPONITE BASED POLYMERIC NANOCOMPOSITES Omar Abakar Adam, UNABA</p> <p>The best Laponite dispersion was obtained from solution prepared samples regardless of the way of protecting the particles</p> <p>PMMA/PEO blends nanocomposites behave as simple polymer nanocomposites at high concentration of PEO</p>	<p>2102-2 ELECTRICAL AND NANOSTRUCTURAL STUDIES OF RENEWABLE CARBON Maria Semeniuk, University Of Toronto</p>	<p>2103-2 AN ELECTRICALLY PROGRAMED ELASTIC METASURFACE FOR TOTAL WAVE MODE CONVERSIONS Guoliang Huang, University of Missouri</p>	<p>2104-2 LAYUP OPTIMIZATION AND WAYS TO IMPROVE THE MANUFACTURABILITY OF COUPLED COMPOSITES Bruno Vermes, Budapest University of Technology and Economics</p> <p>We introduce and validate a layup optimization process for coupled composites by presenting a case study. Also, we propose methods to mitigate the thermal warping of composites with non-symmetric layups.</p>	<p>2105-2 INFLUENCE OF CONTACTING, MATERIAL AND SHAPE ON THE RESISTANCE HEATING OF CONTINUOUS FIBER REINFORCED THERMOPLASTICS Jochen Wellekötter, Institut Für Kunststofftechnik, Universität Stuttgart</p> <p>The effect of Joule heating is used to heat carbon fiber reinforced thermoplastics. High heating rates with low energy consumption are achieved.</p> <p>Correlations between influencing parameters are investigated and specified. Heating experiments are compared using a thermographic image system.</p>	<p>2106-2 MICRO-MECHANICAL MODELING OF FLOW THROUGH RANDOMLY PACKED BEDS OF CYLINDERS & SPHERES: DISPERSION, DEFORMATION AND HEAT TRANSFER (PARTLY AS PRESENTED AT A BECKMAN SEMINAR APRIL 2014) Staffan Lundström, Luleå university of technology</p>	<p>2107-2 PREDICTING TRENDS IN STRUCTURAL AND PHYSICAL PROPERTIES OF HYBRID POLYMER MOLECULAR DYNAMICS Krishnamurthy Prasad, Swinburne University</p> <p>Using Molecular Dynamics (MD), LLDPE and pine flour molecules are constructed. Benefits of the combined MD-semi empirical modelling approach for bottom up design is discussed by comparing predicted composite properties with experiment.</p>	<p>2108-2 CURE KINETICS AND SHRINKAGE MEASUREMENTS IN A FAST CURING EPOXY AMINE RESIN SYSTEM Masihullah Jabarulla Khan, Deakin University</p> <p>Cure kinetics, chemical shrinkage along with CTE measurements for a commercially available fast curing epoxy amine resin system have been reported. This work will provide valuable information for calculation of residual stresses occurring in carbon fibre reinforced composites used in dynamic applications.</p>	<p>2109-2 SUSTAINABLE MYCELIUM-DERIVED CHITINOUS THIN FILMS Mitchell Jones, RMT University</p>	<p>2110-2 MORPHING CARBON FIBRE COMPOSITE USING ELECTROCHEMICAL ACTUATION Ross Hamden, KTH Royal Institute Of Technology, Sweden</p> <p>A concept for a structural actuation device is presented and modelled. A carbon fibre laminate is shown to be capable of producing significant geometry changes by exploiting lithium-ion intercalation expansions.</p>	<p>2111-2 THE ORGANIC AND INORGANIC HYBRID NANOCOMPOSITE FOR FLEXIBLE UV SENSOR Teahoon Park, Korea Institute Of Materials Science</p> <p>In this paper, a novel acoustic sensing system suitable for aircraft implementation is presented and used to demonstrate localisation of acoustic emission generated from non-damaging impacts in a composite panel.</p>	<p>2112-2 A NOVEL HIGH DENSITY PIEZOELECTRIC SENSING DETECTION OF IMPACTS IN COMPOSITES Cedric Rosalie, Defence Science & Technology Group</p> <p>Reactive thermoplastic resin as a matrix for laminates containing microencapsulated phase change materials</p>	<p>2113-2 REACTIVE THERMOPLASTIC RESIN AS A MATRIX FOR LAMINATES CONTAINING MICROENCAPSULATED PHASE CHANGE MATERIALS Giulia Fredi, University Of Trento</p>	<p>2114-2 ENVIRONMENTAL EFFECTS ON BOLTED COMPOSITE JOINTS SUBJECTED TO PRELOAD Ivanna Pivdiabiyk, Ecole Centrale De Nantes</p>	<p>2115-2 RESIN-INJECTION REPAIR OF BARELY VISIBLE IMPACT DAMAGE ON CARBON FIBRE COMPOSITE LAMINATES Wei Liang Lai, Newcastle University in Singapore</p> <p>A systematic approach employed to investigate how vacuum-assisted resin-injection repair method could restore the mechanical integrity of the barely visible impact damage on carbon fibre composite laminates.</p>

Tuesday
13 August

CONFERENCE PROGRAM

correct as at 8.8.19 and is subject to change

	2101-3 EFFECT OF SURFACE FUNCTIONALIZATION OF GRAPHENE PARTICLES ON THE PROPERTIES OF NANOCOMPOSITES <u>Annika Catherine Ackermann</u> , University Of Stuttgart, Institute Of Aircraft Design The effect of plasma treatment of graphene particles was evaluated with respect to the characteristics of the used powder material as well as the processability of the produced nanocomposites.	2102-3 LIGNIN SPINNING AND CARBONIZATION TO NANO-LAYERED GRAPHITIC STRUCTURE <u>Mohini Sain</u> , University of Toronto	2103-3 ASYMMETRIC ELASTIC-WAVE TRANSMISSION IN METACOMPOSITE STRUCTURES <u>Bing Li</u> , School Of Aeronautics, Northwestern Polytechnical University	2104-3 THERMALLY ASSISTED PIERCING: MANUFACTURE AND PROPERTIES OF MULTIPLY-PIERCED COMPOSITE <u>Faranak Eghtesadi Bahrami</u> , TWI The comparison of the strength for drilled and thermally assisted pierced (TAP) thermoplastic composite, Carbon Fibre/Polyamide-12. The TAP technique has shown improved strength when compared to the conventional drilling technique.	2105-3 INFLUENCE OF POWER ULTRASONIC ON THE IMPREGNATION OF UNIDIRECTIONAL CARBON FIBRES IN CLOSED INJECTION PULTRUSION <u>Frederik Wilhelm</u> , Fraunhofer Research Institution For Casting, Composite And Processing Technology Igcw Implementation of power ultrasonic in the pultrusion process with the aim of improving the impregnation and mechanical properties of the parts.	2106-3 PERSISTENT DESIGN CHALLENGES: COMPATIBLE, SUSTAINABLE AND AFFORDABLE COMPOSITES <u>Ozden Ochoa</u> , Texas A&M University Life cycle prediction of multifunctional systems introduces new opportunities to address performance, cost and sustainability with minimum environmental impact. Characterization and modeling consequences will be discussed for hybrid composites.	2107-3 THE 3D PRESSURE-DEPENDENT ELASTO-PLASTIC CONSTITUTIVE MODEL WITHIN TENSION AND COMPRESSION ASYMMETRY AND ITS APPLICATION TO PREDICT LAMINATES' OFF-AXIS LOADING RESPONSES <u>Rui Ren</u> , Nanjing University Of Science And Technology A novel elasto-plastic constitutive model incorporating the tension-compression asymmetry and hydrostatic pressure dependence of laminates' yielding behaviors, was developed for fiber-reinforced composite laminates and validated by available test results.		2109-3 INVESTIGATING THE MECHANICAL PROPERTIES OF CELLULOSE AND AMORPHOUS CELLULOSE BY MOLECULAR DYNAMICS SIMULATION <u>Ali Khodajati</u> , Ku Leuven	2110-3 MULTI-FUNCTIONAL SHAPE ADAPTABLE COMPOSITE METAMATERIAL FOR AEROSPACE APPLICATIONS <u>Maria Sakovsky</u> , ETH Zürich A novel single-cure procedure for fabrication of complex assemblies of fiber reinforced polymer shells is proposed. It is applied to mechanical metamaterial capable of achieving 60% global deformation showing the potential for use of such assemblies for stiff yet deformable aerospace structures.	2111-3 CONDUCTIVE NANOCOMPOSITES MANUFACTURED VIA FRONTAL POLYMERIZATION <u>Leon Dean</u> , University of Illinois at Urbana-Champaign	2112-3 MONITORING OF CEMENT HYDRATION USING TERAHERTZ RADIATION <u>Haonsu Kim</u> , Hanyang University	2113-3 CONTROLLED DESIGN OF ROBUST HIERARCHICALLY POROUS AND HOLLOW CARBON FIBRE TEXTILE FOR HIGH-PERFORMANCE FREESTANDING ELECTRODES <u>Quanxiang Li</u> , Deakin University	2114-3 EFFECT OF MOISTURE SATURATION ON THE THERMAL EXPANSION COEFFICIENT OF COMPOSITES <u>Nigel St John</u> , Defence Science And Technology Group Effect of Moisture Saturation on the Thermal Expansion Coefficient of Composites	2115-4 NUMERICAL AND EXPERIMENTAL STUDY OF STRUCTURAL FILM ADHESIVES AND SCARF REPAIR <u>Sridhar Narayanaswamy</u> , Institute Of High Performance Computing We present an experimentally validated numerical framework to predict the structural response of repaired scarf joints for varying lay-up and loading conditions.
1020-1040	Coffee break														
1040-1110	Exhibition hall														
1110-1250	2201 Nano-composites	2202 Biocomposites	2203 Meta-Composite	2204 Liquid composites moulding	2205 Advanced manufacturing and automation	2206 Scott White symposium	2207 Computational and finite element methods	2208 Self-healing	2209 Fracture and damage and Fatigue	2210 Actuation 2: Active Composites	2211 Bio-Inspiration	2212 Structural health monitoring	2213 Ceramic matrix composites	2214 Durability, creep and aggressive environment	2215 Tribology and wear
1110-1130	2201-1 MECHANICAL PROPERTIES OF PEEK/HALLOYSITE NANOTUBE COMPOSITES AT ELEVATED TEMPERATURES <u>Christoph Callen</u> , University Of Bayreuth, Department Of Polymer Engineering Tensile and fatigue crack propagation properties of PEEK/HNT-nanocomposites have been investigated at different temperatures. A change of the reinforcing mechanisms has been detected when temperatures are near the glass transition.	2202-1 PERCOLATED NETWORK OF BIOCARBON IN A BLEND OF NYLON 6 AND POLYPROPYLENE <u>Amar Mohanty</u> , Bioproducts Discovery & Development Centre, Department Of Plant Agriculture, Crop Science Building, University Of Guelph Biocarbon was found to be selectively distributed in the nylon-6 phase, in nylon-6/polypropylene blends due to the similarities in polarity. The effects of dispersion and interaction of the biocarbon on thermal-mechanical properties were systematically studied.	2203-1 METACOMPOSITES ENABLED BY FERROMAGNETIC MICROWIRES <u>Yang Luo</u> , Zhejiang University	2204-1 CURING BEHAVIOR OF ENDODICYCLOPENTADIENE AND DECELERATOR SOLUTION EFFECTS <u>Sung Woong Choi</u> , Gyeongsang National University	2205-1 INVESTIGATION ON THE MELTING OF THE WELD INTERFACE IN CONTINUOUS ULTRASONIC WELDING OF THERMOPLASTIC COMPOSITES <u>Bram Jongbloed</u> , Delft University Of Technology Continuous ultrasonic welding is a new promising high-speed joining technique for thermoplastic composites. This study aims at relating the optimum welding time in static welding to the continuous welding speed.	2206-1 EVOLUTION OF MULTIFUNCTIONAL MICROVASCULAR COMPOSITES <u>Jason Patrick</u> , North Carolina State University	2207-1 NUMERICAL SIMULATION OF CFRP TRANSVERSE FAILURE CONSIDERING NON-LINEAR VISCOELASTIC/PLASTIC CONSTITUTIVE EQUATION WITH ENTROPY DAMAGE <u>Mio Sato</u> , Tokyo University Of Science The proposed model can express the strain behavior of creep and recovery process. In numerical analysis, A FORTRAN program is created to introduce a proposed nonlinear viscoelastic model into matrix resin.	2208-1 INTRALAMINAR TOUGHENED CARBON/EPOXY COMPOSITES EXHIBITING SELF-HEALING CAPABILITIES <u>Everson Kandare</u> , Rmit University	2209-1 NEAR-REAL-TIME OBSERVATION OF DAMAGE EVOLUTION IN BIAXIALLY STRESSED COMPOSITES USING HIGH-RESOLUTION IN SITU X-RAY COMPUTED TOMOGRAPHY <u>Jordan French</u> , University Of Utah Novel biaxial test method was developed to enable high-resolution in situ X-ray CT imaging of tape-laminate composites under complex loading scenarios.	2210-1 PROGRAMMABLE COMPOSITE STRUCTURES FROM LOCAL BISTABILITY <u>Andres Arrieta</u> , Purdue University Conventional vascularization methods for making multifunctional composites are limited by time and energy-intensive processes. Exothermic curing of the host matrix with simultaneous degradation of the sacrificial polymer enables rapid manufacturing of vascular polymers and composites.	2211-1 SACRIFICIAL POLYMERS FOR RAPID MANUFACTURING OF VASCULAR MATERIALS <u>Mavanik Garg</u> , University Of Illinois Urbana Champaign We present novel tools to perform neural network predictions in a composite material with embedded sensors, actuators and computers. We also demonstrate the possibility of making estimations in complex systems where sensor locations are unknown or where dynamic modeling for system identification may be very complex.	2212-1 IN-SITU DEEP LEARNING FOR PREDICTION AND CONTROLS IN SMART COMPOSITES <u>Sarah Aguasvivas Manzano</u> , University Of Colorado Boulder FINITE ELEMENT SIMULATION ON PREDICTING NONLINEAR MECHANICAL BEHAVIOR OF 3D BRAIDED CERAMIC MATRIX COMPOSITES <u>Xin Jing</u> , Northwestern Polytechnical University	2213-1 HYBRID ENHANCEMENTS INTERFACE AND MATRIX ON FIBRE REINFORCED POLYMER LAMINATES <u>Youhong Tang</u> , Flinders University	2214-1 HYBRID ENHANCEMENTS INTERFACE AND MATRIX ON FIBRE REINFORCED POLYMER LAMINATES <u>Youngho Lee</u> , Flinders University	2215-1 EXPERIMENTAL AND SIMULATION STUDY ON WEAR PERFORMANCE OF ECO-HYBRID EPOXY COMPOSITE <u>Khaled Eayal Awwad</u> , University Of Southern Queensland
1130-1150	2201-2 EFFECT OF CARBON TYPES ON CURE BEHAVIOR, MORPHOLOGY AND MECHANICAL PROPERTY OF NATURAL RUBBER NANOCOMPOSITE FOAM <u>Pollawat Charoethornkajhohmchai</u> , Burapha University, Thailand Natural rubber nanocomposite foam with carbon particles such as carbon black, graphite and multi-walled carbon nanotubes was studied to investigate the relationship between foam formation during decomposition of chemical blowing agent and crosslink reaction of rubber molecules by sulphur.	2202-2 BIOMASS-DERIVED ELECTROSPUN CARBON NANOFIBER NETWORKS FOR HIGH-PERFORMANCE SUPERCAPACITORS <u>Jiayuan Wei</u> , Luleå University Of Technology High-performance carbon electrode for supercapacitors derived from renewable lignin were developed. The electrode materials were tested in both conventional two-electrode supercapacitors using liquid electrolyte as well as a solid-state supercapacitor.	2203-2 BROADBAND WAVE POLARIZATION ENGINEERING WITH ANISOTROPIC ELASTIC METAMATERIAL <u>Rui Zhu</u> , Beijing Institute Of Technology This presentation presents a design and experimental realization of broadband elastic metamaterial which can achieve complete wave mode separation and conversion as well as unique negative reflection.	2204-2 EFFECT OF WETTABILITY ON MACROVOID FORMATION IN VISCOS-FLUID IMPREGNATION TO WOVEN FIBER BUNDLES <u>Kota Yoshihara</u> , Tokyo University Of Science We investigate Effect of wettability on macrovoid formation in viscous-fluid impregnation to woven fiber bundles in VARTM method by experimental research.	2205-2 PLY CURVING TERMINATION: SUPPRESSING DELAMINATION IN TAPERED COMPOSITES <u>Shu Minakuchi</u> , The University Of Tokyo Fiber orientation is locally changed at terminal end of plies to suppress stress concentration at the ply edges. Suppression of delamination in composite ply drop-off and free edge delamination is successfully demonstrated.	2206-2 MODELING VOID FORMATION AND GROWTH MECHANISMS IN COMPOSITE PROCESSING <u>Suresh Advani</u> , University Of Delaware The focus will be on prediction of voids during the co-cure of honeycomb sandwich structures in an autoclave. Process models that describe the face sheet consolidation, adhesive bond line fillet formation and bond line porosity during the co-cure process will be presented.	2207-2 SIMULATION OF PROGRESSIVE DAMAGE IN OPEN-HOLE COMPOSITE SPECIMENS: NUMERICAL INVESTIGATION <u>Qili Shao</u> , Rafael Advanced Defense Systems Ltd The tensile response of [0/45/90/-45]2s and [30/60/90/60/-30]2s IM7/977-3 carbon/epoxy open-hole coupons is simulated using two numerical approaches.	2208-2 A FACILE STRATEGY TO FABRICATE SMART COATING WITH SELF-HEALING AND SELF-REPORTING DUAL FUNCTIONS <u>Shusheng Chen</u> , The Hong Kong University Of Science Base on hexamethylene diisocyanate and aggregation-induced emission luminogens, we developed a facile strategy, one-part microcapsules embedded approach, to fabricate a smart coating with autonomous self-healing and self-reporting dual functions.	2209-2 EFFECT OF RGO COATING ON NANOSCRATCH BEHAVIOR OF SILVER NANOWIRE NETWORKS <u>Byungil Hwang</u> , Chung-ang University	2210-2 DIELECTRIC ELASTOMER SOFT ROBOTICS <u>Liu Liu</u> , Harbin Institute Of Technology	2211-2 BIO-INSPIRED SYNTHESIS OF MULTIFUNCTIONAL COMPOSITES WITH SELF-ADAPTABLE MECHANICAL PROPERTIES AND SELF-REGENERATION <u>Sung Kang</u> , Johns Hopkins University We report a multifunctional composite inspired bone and coral reef that can adapt its mechanical properties depending on the loading condition and repair damages.	2212-2 A VIBRATION-BASED STRUCTURAL HEALTH MONITORING SYSTEM FOR FRP LAMINATE STRUCTURES <u>Ahmed Shihab Ahmed Al-Ssadi</u> , The University Of Chester Properties of porous yttria stabilized zirconia impregnating with silica aerogels were studied. It is found that the thermal conductivity was lowered and the compressive strength was increased after impregnating of silica aerogels.	2213-2 PROPERTIES OF POROUS YTTRIA STABILIZED ZIRCONIA IMPREGRATING WITH SILICA AEROGELS <u>Xiaoyan Wang</u> , Aerospace Research Institute Of Material & Processing Technology Properties of porous yttria stabilized zirconia impregnating with silica aerogels were studied. It is found that the thermal conductivity was lowered and the compressive strength was increased after impregnating of silica aerogels.	2214-2 LARGE DEFORMATION BENDING RELAXATION OF THIN-PLY COMPOSITE LAMINATES <u>Juan Fernandez</u> , NASA Langley Research Center A two-step homogenization process was employed to study the ABD stiffness relaxation of thin laminates of interest to NASA for deployable space structure applications and compared to the uniaxial test data produced.	2215-2 TRIBOLOGY PROPERTY AND ELECTRICAL RESISTIVITY OF C/C COMPOSITES WITH BACTERIAL CELLULOSE <u>Yoshihito Ozawa</u> , Fukushima University

CONFERENCE PROGRAM

correct as at 8.8.19 and is subject to change

Tuesday 13 August	1150-1210	2201-3 RE-FREE EXCHANGE COUPLED NANOCOMPOSITE MAGNETS <u>Ovidiu Crisan</u> , National Institute For Materials Physics	2202-3 THE INFLUENCES OF PARTICLE SIZES ON PERFORMANCE OF BIODEGRADABLE WOOD PLASTIC COMPOSITES MANUFACTURED FROM LINGO-CELLULOSIC AGRICULTURAL WASTE <u>Tung Nguyen</u> , The University Of Queensland	2203-3 FABRICATION AND MECHANICAL PROPERTIES OF CARBON FIBER REINFORCED 3D AUXETIC CELLULAR STRUCTURES <u>Li Ma</u> , Harbin Institute Of Technology	2204-3 A NEW SCALABLE METHODOLOGY TO PREDICT PERMEABILITY OF DEFORMED TEXTILES UNDER COMPRESSION <u>Simone Bancora</u> , Ecole Centrale Nantes - Gem	2205-3 EFFECTS OF ENVIRONMENTAL CONDITIONS ON DEFECT FORMATION DURING AUTOCLAVE PROCESSING <u>Christian Netzel</u> , Center for Advanced Composite Materials	2206-3 LCM PROCESSING OF SELF-HEALING FIBER REINFORCED COMPOSITES <u>Veronique Michaud</u> , Epfl	2207-3 FINITE ELEMENT MODELLING OF UNIT CELLS APPLIED TO PROBLEMS OF FINITE DEFORMATION <u>Elena Sitnikova</u> , University of Nottingham	2208-3 FRACTURE PROPERTIES OF MENDABLE Z-PINNED COMPOSITES <u>Thomas Loh</u> , RMIT University	2209-3 DAMAGE CHARACTERISATION IN TEXTILE COMPOSITES: A COMPARISON BETWEEN NEUTRON AND X-RAY TOMOGRAPHY <u>Garth Pearce</u> , UNSW Sydney	2210-3 3D PRINTING OF LIQUID CRYSTAL ELASTOMERS AS SOFT ACTUATORS FOR MULTIFUNCTIONAL DEVICES <u>H. Jerry Qi</u> , Georgia Tech	2211-3 SELF-HEALING CFRP COMPOSITES WITH HIGH THERMAL STABILITY <u>Henry Sodano</u> , University of Michigan	2212-3 IN-SITU MONITORING OF BRAIDED COMPOSITE TUBES WITH OPTICAL FIBRES AND PIEZOELECTRIC SENSORS <u>Neha Chandarana</u> , The University Of Manchester	2213-3 BRITTLE FAILURE ANALYSIS OF UNI-DIRECTIONAL CERAMIC MATRIX COMPOSITE PILES UNDER TRANSVERSE TENSILE LOAD: A COMPUTATIONAL MICROMECHANICS APPROACH <u>PYDI YESWANTH SAI</u> , Indian Institute Of Technology, Indore	2214-3 EVALUATION OF CREEP-LESS COMPOSITES USING TG-LESS EPOXY RESIN AS THE MATRIX <u>Hirofumi Nishida</u> , Kanazawa Institute of Tehnology	2215-3 TRIBOLOGICAL PROPERTIES AND CORROSION RESISTANCE OF NANODIAMOND REINFORCED COMPOSITE COATINGS ON NITI ALLOYS <u>Huimin Zhou</u> , Harbin Engineering University
	1210-1230	2201-4 STRENGTHEND AND TOUGHENED EPOXY NANOCOMPOSITES <u>Hongbo Gu</u> , Tongji University	2203-4 MECHANICAL PROPERTIES OF 3D CROSS CHIRAL STRUCTURES VIA SELECTED LASER SINTERING <u>Qingsong Wang</u> , Beihang University	2204-4 EXPERIMENTAL DESCRIPTION OF DRAPING EFFECTS AND THEIR INFLUENCE ON STRUCTURAL BEHAVIOR OF FIBER REINFORCED COMPOSITES <u>Eckart Kunze</u> , Technische Universität Dresden - Institute Of Lightweight Engineering And Polymer Technology	2205-4 DAMAGE TO CARBON FIBRES DURING RADIAL BRAIDING <u>Jacquelynn Xue Ting Tian</u> , RMIT University	2206-4 SIMULTANEOUS IMPROVEMENTS OF STRENGTH AND TOUGHNESS IN TOPOLOGICALLY INTERLOCKED CERAMICS <u>Mohammad Mir Khalaf</u> , The University of Sydney	2207-4 A FINITE ELEMENT MODEL FOR DISCONTINUOUS AND RANDOMLY-ORIENTED STRAND THERMOPLASTIC CFRP <u>Takuya Sumiyama</u> , Research Center, TOYOBO CO., LTD.	2208-4 SOL-GEL VAPOR MODIFICATION TO DEVELOP DURABLE SUPERHYDROPHOBIC MICROCAPSULES FOR SELF-CLEANING APPLICATION <u>Wenjun Luo</u> , The Hong Kong University Of Science And Technology	2209-4 AN ENERGY-RATE-APPROACH FOR OPTIMIZED FREQUENCY SELECTION FOR REPRODUCIBLE FATIGUE ASSESSMENT OF COMPOSITES <u>Daniel Hülsbusch</u> , TU Dortmund University, Department of Materials Test Engineering (WPT)	2210-4 4D PRINTING OF MULTIFUNCTIONAL MATERIALS <u>Sampada Bodkhe</u> , ETH Zurich	2211-4 TOWARDS SELF-HEALING AND SELF-SENSING USING OPTICAL WAVEGUIDES IN MICROVASCULAR COMPOSITES <u>William Martin</u> , North Carolina State University	2212-4 A LOW-COST FLOW FRONT MONITORING SYSTEM <u>Andreas Damm</u> , Robert Bosch GmbH	2213-4 MULTISCALE 3D INVESTIGATION OF DAMAGE IN ANGLE-INTERLOCKED CERAMIC MATRIX COMPOSITE UNDER IN SITU LOADING <u>Hrishikesh Bale</u> , Carl Zeiss Microscopy Inc.	2214-4 LONG FIBER SPRAY-UP MOLDING OPTIMIZATION OF CHOPPED GLASS FIBER REINFORCED POLY(DICYCLOPENTADIENE COMPOSITES <u>Ji Ho Jeon</u> , Seoul National University		
	1230-1250	2201-5 EFFECT OF CARBON NANOTUBE BULK MORPHOLOGY ON THE INTERLAMINAR FRACTURE TOUGHNESS OF CFRP LAMINATES <u>Stephen C. Hawkins</u> , Queen's University Belfast	2203-5 CRYOGENIC IMPACT PROPERTIES OF GLASS REINFORCED POLY-DICYCLOPENTADIENE COMPOSITES <u>Jongmin Choi</u> , Pusan National University	2204-5 COMPARISON OF EXPERIMENTALLY DETERMINED DRAPING EFFECTS (FIBER WAVINESS AND TRANSVERSE COMPRESSION) SHOWS GOOD AGREEMENT WITH DRAPING SIMULATION. STRUCTURAL SIMULATION RESULTS OF SPECIMEN WITH WAVINESS CONFIRMED OBSERVED FAILURE DURING MECHANICAL TESTING.	2205-5 HIGH QUALITY AUTOMATED HONEYCOMB POTTING WITH ACTIVE PRESSURE CONTROL <u>Martin Hamisch</u> , Hamburg University of Technology	2206-5 A DYNAMIC SPRING ELEMENT MODEL FOR THE PREDICTION OF LONGITUDINAL FAILURE OF POLYMER COMPOSITES <u>Rodrigo Tavares</u> , Faculty of Engineering of University of Porto	2207-5 NOVEL CYCLIC OLEFIN COPOLYMER/EPOXY BLEND FOR THERMAL MENDING OF EPOXY IN CARBON FIBER REINFORCED COMPOSITES <u>Haron Mahmood</u> , University Of Trento	2208-5 AN ADAPTIVE DISCRETE-SMEARED CRACK (A-DISC) MODEL <u>Tong-Eam Tay</u> , National University Of Singapore	2209-5 GRADIENT MATERIALS INTERFACE FOR HIGH-TEMP SENSOR MODULES <u>Ajit Roy</u> , U. S. Air Force Research Laboratory	2210-5 CHARACTERISATION OF FIBRE REINFORCED COMPOSITES USING HIGH RESOLUTION DISTRIBUTED FIBRE OPTIC SENSORS <u>Claire Davis</u> , Defence Science And Technology Group	2211-5 ACCOUNTING FOR FRICTION IN CRACKS UNDER COMPRESSION AND SHEAR IN AN ANISOTROPIC DAMAGE MODEL AND APPLICATION TO CMCS <u>Emmanuel Baranger</u> , LMT, ENS Paris-saclay, CNRS, Université Paris-saclay	2212-5 FIRE AND POST FIRE PROPERTIES OF GLASS FIBER REINFORCED EPOXY AND POLYCARBONATE COMPOSITE: A COMPARATIVE STUDY <u>Yousuf Ghazzawi</u> , University of Queensland				
	1250-1350	Lunch Exhibition hall	DMTC lunch symposium - The potential for composite materials to achieve technology breakthroughs across the Australian defence sector and its industrial supply chains. <u>Martin Veidt</u> , DMTC Program Leader and Associate Professor from the School of Mechanical and Mining Engineering at the University of Queensland 1300-1345 Plenary 2													
	1350-1435 1435-1445	PLENARY LECTURE: SHAPE MEMORY POLYMER COMPOSITES AND 4D PRINTING TECHNOLOGIES: FROM THE AEROSPACE TO BIOMEDICAL APPLICATIONS, <u>Jinsong Leng</u> , Harbin Institute of Technology Plenary 2 Move to concurrent sessions														

CONFERENCE PROGRAM

correct as at 8.8.19 and is subject to change

	1445-1535															
	P2301 Ceramic and Polymer matrix composites	P2302 Damage Tolerance Durability, creep and aggressive environment	P2303 Sandwich structures and materials	P2304 Design and manufacture for multifunctionality Machining of composites	P2305 Energy Harvesting and storage	P2306 Fracture and damage	P2307 Joints	P2308 Composite structures	Altair industry session	P2310 Civil engineering Composite materials: route to impact	P2311 Non-destructive evaluation	P2312 Textile-based composites	P2313 Smart composite structures	P2314 Dynamic properties & fracture	Fill Gesellschaft industry session	
	P2301-1 RESEARCH ON WAVES DEFECTS OF TAPE WINDING RESIN MATRIX COMPOSITES Xiaoling Wang, Aerospace Research Institute Of Materials & Processing Technology Decreasing the rate of heating, increasing the temperature of pressured point, and the bandage method without longitudinal fold can reduce waves.	P2302-1 MULTI-MODE VIBRATION DETECTION FOR DELAMINATION OF CARBON FIBRE COMPOSITE PLATE Jie Pu, University of Chester	P2303-1 LOW VELOCITY IMPACT RESPONSE OF CORRUGATED CORE SANDWICH PANELS - EFFECT OF IMPACTOR GEOMETRY Jayantha Epaarachchi, University Of Southern Queensland	P2304-1 SUPERHYDROPHOBIC COATINGS FOR ENHANCED FIBRE COMPOSITE MATERIALS Puneet Garg, Australian National University	P2305-1 MULTIFUNCTIONAL COMPOSITES FOR ENERGY HARVESTING Xiaoyu Guan, Shinshu University We prepare a multifunctional flexible nanofiber composite which both has piezoelectric and shape memory effect. This is an advantage for applications of energy harvesting in complex structures.	P2306-1 DUCTILE-BRITTLE FRACTURE SIMULATION OF IN-SITU TIB2/AL COMPOSITE Ma Yifan, Northwestern Polytechnical University The microstructural characteristics and fracture mechanisms of in-situ TIB2/2024 composite were studied. The plastic properties of the matrix were obtained by reverse analysis. The damage and fracture behaviors was simulated.	P2307-1 INVESTIGATION OF GEOMETRICAL AND COMPOSITE MATERIAL PARAMETERS FOR TENSION-ABSORBING BOLTED JOINTS Jazib Hassan, University Of Limerick Development of a novel composite bolted joint namely, tension-absorbing joint, that enhances the crashworthiness of lightweight transportation structure by avoiding the bolt fracture and allow the extensive crushing of the composite material.	P2308-1 STIFFENED COMPOSITE PARTS BY RESIN INFUSION PROCESS FOR AIRCRAFT APPLICATION Oyoung Choi, Kolon Dacc Composite		P2310-1 BEHAVIOR OF GFRP BARS SUBJECTED TO DYNAMIC LOADING Farid Abed, American University Of Sharjah The paper studies the behavior of GFRP bars under impact loading using the drop hammer test. The tests were conducted on GFRP specimens with different diameters at various loading rates.	P2311-1 THERMOELASTIC ASSESSMENT OF COMPOSITE DELAMINATION BUCKLING Cedric Antolis, Rmit University A laminate coupon containing an artificial delamination is subjected to uniaxial compressive loads to induce localised delamination buckling and examined with thermoelastic stress analysis (TSA) using low-cost microbolometer imaging technology.	P2312-1 FATIGUE BEHAVIOR OF UNNOTCHED AND NOTCHED 3D BRAIDED COMPOSITES Shuangqiang Liang, University of British Columbia	P2313-1 HARMONIC AND TRANSIENT DYNAMIC RESPONSE OF A SMART LAMINATED STEPPED COMPOSITE BEAM Saeed Fazeli, Australian National University	P2314-1 RATE DEPENDENT TENSILE RESPONSE OF A PLAIN WEAVE TEXTILE COMPOSITE Jaeseong Choi, Unist The rate dependent behavior of the polymer and the textile composite has been experimentally studied. From experiment, it is concluded that the rate dependent behavior of the composite material is mainly determined by the matrix material.		
	1445-1450															
	P2301-2 PHTHALONITRILE MODIFIED MULTI-HYDROXYL PHENOLIC: SYNTHESIS, CURING AND PROPERTIES Shuangshuang Xu, Institute of Aerospace Materials and Processing Multi-hydroxyl phenolic with different phthalonitrile substitution degree was prepared. The chemical structure, curing behaviour, processability and thermal stability were studied.	P2302-2 COMPARATIVE STUDY ON THE DAMAGE TOLERANCE OF THERMOSET AND THERMOPLASTIC GLASS FIBER-REINFORCED COMPOSITES Florian Schimmer, Institute for Composite Materials This study experimentally compares the damage tolerance of quasi-isotropic GFRP plates with an epoxy and a polyamide 66 matrix under LVI loading respecting different conditioning states before and during impact testing.	P2303-2 NONLINEAR LOW-VELOCITY IMPACT RESPONSE OF SANDWICH BEAMS WITH FUNCTIONALLY GRADED NEGATIVE POISSON'S RATIO HONEYCOMB CORE Chong Li, Shanghai Jiao Tong University Results revealed that the NPR core can remarkably reduce the thickness decrease of sandwich beams subjected to out-of-plane impact, and the FG configurations will distinctly influence the impact response.	P2304-2 ELECTRONIC CIRCUITS EMBEDDED INTO COMPOSITE AEROSPACE MATERIALS Greg Beziuk, RMIT University	P2305-2 A REVIEW OF MULTIFUNCTIONAL COMPOSITE STRUCTURES WITH EMBEDDED LITHIUM-ION BATTERIES Korarat Pattarakunnan, RMIT University	P2306-2 EVOLUTION OF FRACTURE PARAMETERS OF A CRACK IN A MICROPOLAR ELASTIC SOLID Hongjun Yu, Harbin Institute Of Technology	P2307-2 MECHANICAL ANALYSIS FOR WELDING TECHNOLOGY OF THERMOSET FRP Masato Horma, Toray Industries, Inc. Performed experimental and numerical analysis for a new material and processing concept by the use of Thermoset and Thermoplastic CFRP multi-material for bonded structure.	P2308-2 THE ENERGY-ABSORBING CHARACTERISTICS OF COMPOSITE TUBE-REINFORCED ALUMINUM FOAMS UNDER COMPRESSION Zheng Liu, Nanjing University Of Science And Technology This paper investigates the energy-absorbing characteristics of aluminum foams containing embedded carbon fibre reinforced epoxy tubes by quasi-static compression tests.	Altair industry session		P2311-2 AUTOMATED IMAGE ANALYSIS OF ULTRAFAST SYNCHROTRON CT SCANS TO EXPERIMENTALLY CHARACTERISE THE FIBRE BREAK DEVELOPMENT DURING IN-SITU TENSILE TESTS Christian Brette, Department of Materials Engineering, KU Leuven By using synchrotron radiation to perform in-situ μ CT experiments combined with the InSegt fibre segmentation algorithm novel insight in the 3D micro structure of composites under tensile load has been gained.	P2312-2 IMPACT PROPERTIES OF HELICOIDAL STRUCTURE OF CARBON/EPOXY COMPOSITES Mazhar Peerzada, Swinburne University Of Technology	P2313-2 PREPARATION AND CHARACTERIZATION OF THE RADIATION CROSSLINKED SHAPE MEMORY EVA/HDPE Wei Liang, Harbin Institute Of Technology In this paper, HDPE (high density polyethylene) and EVA (ethylene-vinyl acetate) are used as the raw materials to prepare a shape memory polymer and it has great characteristics of shape memory and space gassing performance.	P2314-2 EFFECT OF INTERMEDIATE STRAIN RATES ON SHEAR PLUGGING STRENGTH OF COMPOSITES Santanu Choudhury, Indian Institute Of Technology Bombay E glass/epoxy and Carbon/epoxy composite laminates were prepared using the VARTM technique and tested in a UTM, at different intermediate strain rates, for their shear plugging strengths.	Fill Gesellschaft industry session "Invitation only event" "4 X 4 STRATEGY" - BASE FOR AUTOMATION IN COMPOSITE MANUFACTURING Wilhelm Rupertsberger	
	1450-1455															
	P2301-3 MACROSCOPIC AND MICROSCOPIC PROPERTIES OF FABRIC RUBBER COMPOSITE Xuefeng Yao, Applied Mechanics Laboratory, Department Of Engineering Mechanics, Tsinghua University Complex fabric rubber composites with high-performance and special material are widely used in aerospace due to their excellent mechanical and sealing properties, which consist of the matrix material with rubber and the reinforcement material with the fabric.	P2302-3 INFLUENCE OF DENT DEFECTS ON THE COMPRESSIVE STRENGTH OF COMPOSITE LAMINATES Yuequan Wang, Nanjing University of Aeronautics and Astronautics	P2303-3 DAMAGE PREDICTION IN QUASI-STATICALLY INDENTED SANDWICH COMPOSITE STRUCTURES USING A TWO-REGION PLATE MODEL Abhendra Singh, Baylor University A model is developed for predicting indentation depth, diameter and planar delamination area for thin face sheet, honeycomb core sandwich composites subject to quasi-static indentation loading.	P2304-3 MECHANICAL PROPERTY OF A CORE-FILLED CUBIC MODEL CREATED BY 3D PRINTING TECHNIQUE Jeongho Choi, Kyungnam University This paper is focus on finding mechanical properties for hyper cubic model made by 3D printing direct metal laser sintering (DMLS) technique. Applied material is AISi10Mg powder type with the DMLS.	P2305-3 ORGANIC FRAMEWORK DERIVED ULTRA-THIN COBALT IRON SULFIDE NANOSHEET ARRAYS FOR HIGH-PERFORMANCE SUPERCAPACITORS Jae Won Lee, Chonbuk National University A novel strategy to establish simple and cost-effective ternary metal sulfide-based electrodes for hybrid and portable electronics.	P2306-3 A PRELIMINARY ASSESSMENT OF A NEW XFEM FRAMEWORK FOR PREDICTING COMPLEX FRACTURE Keith Ballard, Atrl	P2307-3 SILICA DEPOSITION TREATMENT FOR IMPROVING ADHESION PROPERTIES OF ADHESIVE BONDING OR COATING OF AIRCRAFTS Tetsuo Yasuoka, Japan Aerospace Exploration Agency The silica deposition treatment realized high adhesion strength for single lap adhesively-bonded joints and coating test pieces comparable to that with conventional treatment.	P2308-3 STUDY ON THE PROPERTY OF LIGHTWEIGHT BUILDING STRUCTURE Cornelion Mensah, Harbin Engineering University		P2310-3 IMPROVEMENT OF PENETRATION RESISTANCE OF AMINE CURED EPOXY RESIN FOR CONCRETE LINING BY ION EXCHANGE ZEOLITE UNDER SULFURIC ACID Tetsuya Sakai, Nihon University In this study, improvement of corrosion resistance of amine cured epoxy resin by zeolite additives under sulfuric acid environment was investigated.	P2311-3 SIMULTANEOUS MULTI-FREQUENCY DIELECTRIC ANALYSIS OF THE POLYMERIZATION PROCESS OF ANIONIC POLYAMIDE 6 Maximilian Eberhardt, Fraunhofer Igc By the use of a new dielectric measurement system it was possible to monitor the curing process of anionic polyamide-6 to so far unprecedented extend.	P2312-3 RECONSTRUCTION OF MESOSCALE TEXTILE COMPOSITES USING MICRO-CT IMAGE & COMPUTER VISION ALGORITHM Congyuan Tao, UNSW Sydney	P2313-3 A MORPHING WINGTIP STRUCTURE Jian Sun, Harbin Institute Of Technology We describe a morphing winglet concept which based on active inflatable honeycombs and Shape Memory Polymer Composite (SMPC) skins in this work.	P2314-3 MODE II INTERLAMINAR FRACTURE BEHAVIOR OF ZANCHOR REINFORCED COMPOSITE LAMINATES UNDER LOW-VELOCITY IMPACT LOADING Wataru SUGIMOTO, Ritsumeikan University In this study, the mode II impact fracture behavior of the Zanchor composites was experimentally studied to determine the effectiveness of the Zanchor reinforcement at high loading rates.		
	1455-1500															

Tuesday
13 August

CONFERENCE PROGRAM

correct as at 8.8.19 and is subject to change

Tuesday 13 August	1630-1650	2401-2 FABRICATION OF HIERARCHICAL POLYMER NANOCOMPOSITES WITH CAPILLARY-DENSIFIED ALIGNED CARBON NANOTUBE REINFORCEMENT Ashley Kaiser, Massachusetts Institute of Technology This process-structure study of hierarchical polymer nanocomposites (here millimeter-tall patterned, capillary-densified aligned carbon nanotubes in aerospace-grade epoxy) presents multi-scale structural characterization to investigate high-density nanotube confinement effects on nanotube-polymer interactions.	2402-2 THERMO-HYGRIC MECHANICAL BEHAVIOUR OF NONWOVEN BIOCOPOLYMERS UNDER VARIOUS ENVIRONMENTAL CONDITIONS Victor Gager, Univ. Bretagne Sud, UMR CNRS 6027, IRDL	2403-2 VIBRATION AND ACOUSTIC PROPERTIES OF MULTIFUNCTIONAL SANDWICH COMPOSITES WITH EMBEDDED LITHIUM-ION POLYMER BATTERIES Joel Galos, RMIT University This paper presents an experimental and numerical study into the effect of embedding (LiPo) batteries into sandwich panels on the vibration and acoustic properties.	2404-2 FROM THE MICROFABRICATION OF MICROVASCULAR NETWORKS TO THE ADDITIVE MANUFACTURING OF MULTIFUNCTIONAL COMPOSITES Daniel Theriault, Polytechnique Montréal This presentation covers select scientific achievements of Prof. Theriault's team mainly on additive manufacturing of multifunctional composites while providing insight into the contributions from and interactions with Prof. White's team.	2405-2 HIGHLY STRETCHABLE 3D-PRINTED COMPOSITE STRUCTURES Hamidreza Yazdani, Sarvestani, McGill University & National Research Council Canada We developed parallel finite element analysis (FEA) software, that can simulate failure of large-scale CFRP models including interfaces. We validated the software by simulating double cantilever beam (DCB) experiments.	2406-2 THE INFLUENCE OF NONWOVEN INTERLEAF ARCHITECTURES ON THE IMPACT PERFORMANCE OF COMPOSITES Rhys Archer, University Of Manchester Presented is an investigation of the influence of the structural properties of non woven interleafs on the damage resistance and damage toughness of CFRP composites, evaluated through impact and compression tests. Results show that damage resistance increases with the increase of the areal density of the interleaf.	2407-2 DEVELOPMENT OF PARALLEL FINITE ELEMENT METHOD FOR ANALYZING PROGRESSIVE INTERFACE FAILURE OF LARGE-SCALE CFRP MODELS Taichi Yamaguchi, The University of Tokyo	2408-2 NUMERICAL MODELLING OF BIAXIAL CARBON FIBER BRAIDS CONSIDERING PROCESS VARIABILITIES Ruben Czichos, Institute Of Aircraft Design, University Of Stuttgart	2409-2 STRUCTURAL ELECTRONIC COMPONENTS BASED ON POLYMER NANOCOMPOSITES Brian Wardle, MIT Electronic components including resistors, inductors, capacitors are created using structural polymer nano composites and evaluated.	2410-2 TUNING MECHANICAL INSTABILITIES IN MAGNETO-ACTIVE ELASTOMER COMPOSITES Abigail Luh, Air Force Research Laboratory	2411-2 ULTRASENSITIVE STRAIN SENSORS FOR STRUCTURAL HEALTH MONITORING USING A HIGHLY ALIGNED CARBON NANOTUBE WEB Sandeep Kumar, Queen University Belfast	2412-2 LASER-INDUCED GRAPHENE FIBER SENSORS FOR STRUCTURAL HEALTH MONITORING OF POLYMERIC COMPOSITES Meihong He, Beihang University A new fabrication of freestanding graphene fiber sensors by laser-induced graphene technology was demonstrated. Based on the resistance variation, the embedded graphene fiber sensor demonstrates highly valuable in life-long SHM of composite laminates.	2413-2 IMAGING THE LIFE-CYCLE OF CMCS USING HIGH-RESOLUTION X-RAY MICRO-COMPUTED TOMOGRAPHY Peter Creveling, University Of Utah This study utilizes X-ray μ CT imaging to capture the entire life-cycle of a CMC specimen, from manufacturing to ultimate failure. Results will be presented on the methods to image and quantify the evolution of the microstructure throughout the manufacturing process.	2414-2 USING ULTRA-HIGH SPEED IMAGING TO IDENTIFY THE MATERIAL PROPERTIES OF COMPOSITES AT HIGH STRAIN RATES Lloyd Fletcher, University of Southampton Full-field displacement measurements are spatially differentiated to obtain strain fields. Temporal differentiation gives the acceleration fields which are related to the applied load. Combining these measurements gives the material response of the composite.	2415-2 WASTE TO WEALTH: SUPER HARD CARBON MICROTUBE DERIVED FROM COTTON WASTE FOR COMPOSITE APPLICATIONS Kamyar Shrivani Moghaddam, Deakin University
	1650-1710	2401-3 CAPILLARY-ENHANCED NON-AUTOCURE COMPOSITE MANUFACTURING BASED ON NANOPOROUS NETWORK Jeonyoon Lee, Mit The capillary-driven manufacturing technique presented here enables traditional autoclave-required prepreg to be processed under vacuum-only conditions without an autoclave or any modifications to the prepreg system.	2402-3 ALIGNED POLY(LACTIC ACID)-BASED NANOCOMPOSITES REINFORCED WITH IN-SITU DISPERSED CELLULOSE NANOCRYSTALS Shiyu Gang, Lulea University of Technology The present work reports strong and tough aligned poly(lactic acid)-based nanocomposites with well-dispersed cellulose nanocrystals achieved by the combination of three novel processing methods, i.e. in-situ emulsion polymerization, liquid-assisted extrusion and solid-state drawing.	2403-3 SMART GRAPHENE-ENABLED COMPOSITE Mojdeh Rezaghi, Swinburne University Of Technology Composite structures in high-performance applications are often exposed to damaging external impacts, deformations and changes in environmental conditions during service. Smart structural composites are multifunctional structural materials which are capable of strain, stress, damage or temperature sensing.	2404-3 DESIGN, MANUFACTURE AND TESTING OF 3D PRINTED CONTINUOUS FIBRE REINFORCED COMPOSITE LUG STRUCTURES Peng Zhuo, University Of Nottingham A novel electrophoretic deposition process for creating multifunctional textiles and fibers is introduced. Applications in structural health monitoring and flexible sensors for human motion detection will be discussed.	2405-3 DESIGN, MANUFACTURE AND TESTING OF 3D PRINTED CONTINUOUS FIBRE REINFORCED COMPOSITE LUG STRUCTURES Peng Zhuo, University Of Nottingham A novel electrophoretic deposition process for creating multifunctional textiles and fibers is introduced. Applications in structural health monitoring and flexible sensors for human motion detection will be discussed.	2406-3 NANO- MULTIFUNCTIONAL FIBERS AND COMPOSITES FROM (ALMOST) NOTHING Erik Thostenson, University Of Delaware A novel electrophoretic deposition process for creating multifunctional textiles and fibers is introduced. Applications in structural health monitoring and flexible sensors for human motion detection will be discussed.	2407-3 MULTISCALE DAMAGE SIMULATION OF CFRP UNDER LOW VELOCITY IMPACT Akinori Yoshimura, Nagoya University	2408-3 HYSTERETIC BEHAVIOUR MODELLING OF WOVEN FABRIC UNDER LARGE STRAIN Yvan Denis, INSA de Lyon PhD student at LaMCoS laboratory in France completing the final year of his studies. Currently working on material behaviour to modelise new composite forming strategy such as incremental processes.	2409-3 FAILURE ANALYSIS OF FIBRE METAL LAMINATE JOINTS Yong Du, Northwestern Polytechnical University This paper aims to study the failure strength and failure mode of Fiber Metal Laminates in single-bolted single-lapped joint.	2410-3 ELASTOMER-GRANULAR FLUID COMPOSITES FOR VARIABLE COMPLIANCE IN ROBOTIC APPLICATIONS Shannon Bakarich, Cornell University Variable stiffness has been successfully demonstrated in elastomer – granular fluid composites. In this research we want to investigate the fluidic nature of these granular materials and consider them as a new medium for transferring force in pneumatic actuators.	2411-3 COMPUTATIONAL MECHANICAL METAMATERIALS Jonathan Hopkins, University Of California, Los Angeles (UCLA)	2412-3 ULTRASENSITIVE STRAIN SENSORS FOR STRUCTURAL HEALTH MONITORING USING A HIGHLY ALIGNED CARBON NANOTUBE WEB Sandeep Kumar, Queen University Belfast	2413-3 MECHANICAL PERFORMANCE, RESIDUAL STRESS AND MICROSTRUCTURAL ANALYSIS OF MULTIPLE CERAMIC MATRIX COMPOSITE SYSTEMS Joachim-Paul Forna-Kreutzer, University Of Bristol The mechanical performance, the microstructure of multiple ceramic matrix composites were investigated under different conditions relevant to service. Up to the present it was observed that a high degree of variability is found in the microstructure of these systems resulting in high variability of the mechanical properties.	2414-3 HIGH STRAIN RATE TESTING OF FIBROUS COMPOSITE USING THE SPLIT HOPKINSON BAR TECHNIQUE WITH DIC Amos Gilat, The Ohio State University The split Hopkinson bar technique is used for high strain rate testing of T800/F3900 composite in compression and tension. Digital image correlation is used for measuring the strain on the surface of the specimen.	2415-3 MANUFACTURING PROCESS OF GRAPHENE REINFORCED AL COMPOSITES AND THEIR PROPERTIES Yongbum Choi, Graduate School of Engineering, Hiroshima University
	1710-1730	2401-4 INTERLAMINAR SHEAR REINFORCEMENT OF UNIDIRECTIONAL AEROSPACE LAMINATES WITH RADIALLY ALIGNED CARBON NANOTUBES Richard Li, Massachusetts Institute Of Technology	2402-4 THE EFFECT OF SEAWEED ON MECHANICAL PROPERTIES OF JUTE FIBER/VINYL ESTER COMPOSITES Jaechoul Kim, Changwon National University Additives are manufactured using environmentally friendly materials, and the mechanical properties of natural fiber composites are improved by using additives and analyzed by SEM image.	2403-4 DESIGN AND MANUFACTURE OF MULTISCALE CARBON FIBRE REINFORCED POLYMER (CFRP) COMPOSITES FOR MULTIFUNCTIONALITY Raquel Santos, Inegi - Institute Of Science And Innovation In Mechanical And Industrial Engineering Composite regulations – challenges and opportunities Mr. Rodney Thomson, Engineering Manager, Advanced Composite Structures Australia Pty Ltd	2404-4 TOWARDS SELF-REGULATING DENTAL COMPOSITES Mostafa Yourdkhani, Colorado State University A novel method for enhancing the longevity of dental restorations is developed via sustained delivery of bioactive compounds to the dentin-resin interface using sustained-release polymer microcapsules.	2405-4 ENHANCING MECHANICAL PROPERTIES OF 3D PRINTED PARTS BY SPRAYING CELLULOSE NANOCRYSTALS Amir Asadi, Texas A&M University	2406-4 NUMERICAL ASSESSMENT OF CAPILLARY PRESSURE BY FLOW SIMULATION IN A FIBROUS MEDIUM Hong Nhan Vo, Ecole Des Mines	2407-4 STUDY ON BIAXIAL AND CYCLIC TENSILE PROPERTIES OF FEVE REINFORCED MEMBRANES Jinhua Jiang, Donghua University	2408-4 BIAXIAL STRESS TESTS FOR UNIDIRECTIONAL CFRP LAMINATES Keita Goto, Department Of Aerospace Engineering, Nagoya University Biaxial stress tests of unidirectional CFRP laminates were performed to investigate failure criteria under fiber longitudinal tensile-fiber transverse compressive biaxial stress state.	2409-4 DEVELOPMENT OF ADAPTIVE FIBER REINFORCED PLASTICS BY OPEN REED WEAVING TECHNOLOGY Mehmetoza Ashir, Technische Universität Dresden An adaptive FRP was developed with shape memory alloy being structurally integrated into reinforcing fabrics using open reed weaving technology. In a subsequent step, the thermomechanical characterization of adaptive FRP was executed.	2410-4 DETECTION OF DIFFERENT MECHANICAL FORCES BY MULTIDIRECTIONAL SENSORS Shuhua Peng, University Of New South Wales	2411-4 CAPTURING ARRAYS OF MAGNETIC BEADS USING COMPOSITE HETEROSTRUCTURES WITH PERPENDICULAR MAGNETIC ANISOTROPY (PMA) Christopher Lynch, University Of California, Riverside	2412-4 REACTION ASSISTED FLASH SINTERING OF AL2O3-YAG EUTECTIC COMPONENT CERAMIC Jinling Liu, Southwest Jiaotong University The mixed Al2O3-Y2O3 powders can be flash sintered at 800 °C under the applied electrical field of 900 V/cm. It demonstrate the feasibility of employing the flash sintering technique to fabricate oxide eutectic ceramic.	2413-4 MICROSTRUCTURE, MECHANICAL PROPERTIES AND OXIDATION RESISTANCE OF C/C-SiC-ZrB2 COMPOSITES Wenbo Han, Harbin Institute of Technology	2414-4 PRESSURE INFLUENCE DURING CURING ON THE MECHANICAL PROPERTIES OF EPOXY RESIN COMPOSITES AT HIGH STRAIN RATES Moritz Kurkowski, Chair of Plastics Technology, TU Dortmund University This study shows a significant pressure influence during curing on the impact strength of epoxy resin and on the mechanical properties of carbon fibre reinforced plastics at high strain rates.	2415-4 EFFECTS OF ULTRASONIC TREATMENT ON MICROSTRUCTURE AND MECHANICAL PROPERTIES OF HYBRID PARTICULATES REINFORCED AL-ALLOY MATRIX COMPOSITES Jianyu Li, State Key Lab Of Materials Processing And Die & Mould Technology, Huazhong University Of Science And Technology, China
	1730-1750	2401-5 BATTERY PROTOTYPE WITH A CELL BASED ON CARBON NANOSTRUCTURES Wojciech Ciesielski, Jan Dlugosz University In Czestochowa	2402-5 FIRE PERFORMANCE OF BIOPOLYMERS RECOVERED FROM WASTE AEROBIC GRANULAR SLUDGES Yuemai Lin, Delft University Of Technology Both activated sludge and aerobic granular biopolymers showed effective char formation due to their protein and phosphate components. The self-extinguishment of the biopolymer coated flax fabric indicated the fire-resistant behaviour of the biopolymer substance.	2403-5 THE PHYSICAL FIELDS TO MICROHOLES PROBLEM IN FLEXOELECTRIC SOLIDS Xinpeng Tian, Xi'an Jiaotong University In this paper, the complete explicit solution of physical fields to a micro-hole is solved for flexoelectric solids which are more accurate since accounting for the strain gradient, the polarization gradient, the flexoelectric and the reverse flexoelectric effects simultaneously.	2404-5 THERMOGRAPHIC ASSESSMENT OF FIBRE REINFORCED 3D PRINTING FILAMENT Rachael Tighe, University Of Waikato Thermography is proposed for the assessment of short fibre reinforced 3D printer filaments to provide quality assurance and reduce the variation of properties and failed prints caused by fibre bunching during manufacturing.	2405-5 RECYCLING OF WIND TURBINE BLADES FOR FUSED FILAMENT FABRICATION FEEDSTOCK Lary Lessard, McGill University	2406-5 PREDICTING MULTISCALE FAILURE IN TEXTILE COMPOSITES USING REALISTIC REPRESENTATIVE VOLUME ELEMENTS Naveem Chowdhury, Boeing R&T - Australia In-Situ testing using non-destructive inspection techniques such as micro-CT and neutron tomography (NT) have assisted in understanding composite failure. However, access to these bits of test equipment have acted as a barrier to furthering research. A means to bridge this gap is presented.	2407-5 EXPERIMENTAL AND NUMERICAL STUDY OF TRIAXIALLY BRAIDED COMPOSITE UNDER QUASI-STATIC AND HIGH SPEED IMPACT LOADINGS Chao Zhang, Northwestern Polytechnical University The multi-scaled mechanical failure behavior of triaxially braided composite under quasi-static and high-speed impact loadings are investigated experimentally and numerically.	2408-5 NUMERICAL STUDY OF THE FORMATION OF LEAKAGE PATHS THROUGH CFRP LAMINATES FOR CRYOGENIC PROPELLANT TANKS Hitoshi Hamori, University Of Tokyo In this study, finite element models using experimental material properties are constructed, and the influence of the difference of ambient temperature and the usefulness of thin-ply layers are numerically verified.	2409-5 MWCNT REINFORCED BIO-BASED BENZOXAZINE/EPOXY COPOLYMERS WITH NIR ACTUATION CAPABILITY Sarawut Rimdusit, Chulalongkorn University Due to high NIR absorption efficiency, multi-walled carbon nanotubes (MWCNTs) were incorporated in biobased benzoxazine/epoxy shape memory polymers as reinforcement, endowing the copolymers with NIR actuation capability under ambient atmosphere.	2410-5 RAPID DESIGN AND PROTOTYPING OF ADAPTIVE COMPOSITE ARTICULATING CYLINDERS Jeffery Baur, Air Force Research Laboratory	2411-5 REACTION ASSISTED FLASH SINTERING OF AL2O3-YAG EUTECTIC COMPONENT CERAMIC Jinling Liu, Southwest Jiaotong University The mixed Al2O3-Y2O3 powders can be flash sintered at 800 °C under the applied electrical field of 900 V/cm. It demonstrate the feasibility of employing the flash sintering technique to fabricate oxide eutectic ceramic.	2412-5 ULTRASENSITIVE STRAIN SENSORS FOR STRUCTURAL HEALTH MONITORING USING A HIGHLY ALIGNED CARBON NANOTUBE WEB Sandeep Kumar, Queen University Belfast	2413-5 MICROSTRUCTURE, MECHANICAL PROPERTIES AND OXIDATION RESISTANCE OF C/C-SiC-ZrB2 COMPOSITES Wenbo Han, Harbin Institute of Technology	2414-5 FLEXURAL IMPACT PROPERTIES AND FRACTURE BEHAVIORS OF CONTINUOUS AND DISCONTINUOUS RANDOM REINFORCED THERMOPLASTIC CFRP Fumiki Yano, Shimadzu Corporation	2415-5 CHARACTERIZATION OF SIC REINFORCED A291 MAGNESIUM ALLOY COMPOSITES PRODUCED USING IN-SITU MICROWAVE CASTING Aurubha Kumar Sharma, Indian Institute of Technology Roorkee

CONFERENCE PROGRAM

correct as at 8.8.19 and is subject to change

Tuesday 13 August	1750-1810	2401-6 HYDROTHERMAL SYNTHESIS OF CO3O4@CF-RGO COMPOSITES AND THE EXCELLENT MICROWAVE ELECTROMAGNETIC PROPERTIES <u>Shuang Li</u> , Beihang University	2402-6 SUSTAINABLE BIOCOMPOSITES FROM A SUPER TOUGHENED NANO-BLEND MATRIX FOR INDUSTRIAL APPLICATIONS <u>Manjuri Misra</u> , University Of Guelph	2403-6 EXPERIMENTAL STUDY ON TORSIONAL STIFFNESS OF A WIND TURBINE BLADE THROUGH COMBINED LOADING <u>Marleen Tiedemann</u> , Technical University of Denmark - DTU Wind Energy	2405-6 TOUGHENING OF POLYLACTIC ACID/BAMBOO BIOCOMPOSITE FOR FUSED DEPOSITION MODELING <u>Xianglian Xiao</u> , USQ	2407-6 A REPRESENTATIVE VOLUME ELEMENT MODEL FOR ULTRA HIGH MOLECULAR WEIGHT POLYETHYLENE COMPOSITE <u>Dimitrios Karpasidis</u> , Imperial College London	2408-6 IMPACT TOLERANCE OF THERMOPLASTIC AND THERMOSET EPOXY CARBON TEXTILE COMPOSITES <u>Valter Carvelli</u> , Politecnico Di Milano	2409-6 DELAMINATION FAILURE IN MMB TEST WITH PERIDYNAMICS <u>Yile Hu</u> , Shanghai Jiao Tong University	2410-6 ORGANIZED HYBRID NANOCOMPOSITES FOR ROBUST STRETCHABLE SENSORS AND FLEXIBLE MICROLASERS <u>Vladimir Tsukruk</u> , Georgia Institute Of Technology	2412-6 ELECTRICAL RESISTIVITY OF THIN-PLY COMPOSITES <u>Liyong Tong</u> , The University Of Sydney	2413-6 SiC/SiC STIFFNESS PREDICTION, THERMAL RESIDUAL STRESS AND PROGRESSIVE DAMAGE SIMULATIONS BY MICRO-MECHANICS MODEL <u>Bin Liu</u> , Northwestern Polytechnical University	2414-6 CHARACTERIZATION AND MODELING OF WOVEN SILICON CARBIDE TUBULAR COMPOSITES <u>Ghantu Subhash</u> , University Of Florida
	1810-1830					2407-7 CARBON FIBRE PROSTHETIC FOOT: DESIGN AND MANUFACTURING PROCESS <u>Chao Liu</u> , Deakin University	2409-7 FRACTURE TOUGHNESS OF GRAPHENE SHEET ESTIMATED BY COUPLING OF BOUNDARY ELEMENT AND FINITE ELEMENT <u>Chyanbin Hwu</u> , National Cheng Kung University	2412-7 STRUCTURAL HEALTH MONITORING DEMONSTRATION OF PRESET-DAMAGE MICROWIRE ARRAYS ENABLED COMPOSITES BASED ON MICROWAVE PROPERTIES <u>Xuelai Zheng</u> , Zhejiang University	2413-7 MICRO-SCALE ANALYSIS OF PROGRESSIVE DAMAGE IN CERAMIC MATRIX COMPOSITES <u>Riccardo Manno</u> , University Of Bristol	2414-7 IN SITU OBSERVATION OF CRACK FORMATION IN A ALUMINA-ALUMINA COMPOSITE AT 1200°C <u>Dong Liu</u> , University Of Bristol		
	1900-2300 1915-2230	Student Party Wunderbar - Munich South Wharf ICCM VIP Dinner (invitation only)			Partnership between academia and industry on improving composite regulations and certification processes <u>Dr. Enrique Garcia</u> , National Composites Centre, UK	Composite regulations – challenges and opportunities <u>Mr. Rodney Thomson</u> , Engineering Manager, Advanced Composite Structures Australia Pty Ltd	This workshop will run for 2.5 hours between 1600 and 1830 CONTINUED					

Time	Plenary 2	Meeting room 205	Meeting room 206	Meeting room 208	Meeting room 209	Meeting room 210	Meeting room 211	Meeting room 212	Meeting room 213	Meeting room 214	Meeting room 215	Meeting room 216	Meeting room 217	Meeting room 218	Meeting room 219
0800-0805	Day 3 Welcome & Announcements														
0805-0850	PLENARY LECTURE: FUTURE CHALLENGES FOR CARBON FIBRE COMPOSITES: A JOURNEY THROUGH THE VALUE CHAIN <u>Bronwyn Fox</u> , Swinburne University of Technology, Australia														
0850-0900	Move to concurrent sessions														
0900-1040	3101 Nano-composites	3102	3103 Resin and polymers	3104 Liquid composites moulding	3105 Additive Manufacturing	3106 Composite structures	3107 Multiscale modelling	3108 Textile-based composites	3109 Fracture and damage	3110 Defence	3111 Biomedical	3112 Testing methods	3113 Hybrid composites	3114 Fatigue	3115 Metal matrix Composites
0900-0930	MECHANICAL PROPERTIES AND FRACTURE RESISTANCE OF THREE-DIMENSIONAL GRAPHENE/POLYMER COMPOSITES <u>Jang-Kyo Kim</u> , University Science & Technology														
0930-0940	MODELING OF IMPACT DAMAGE AND COMPRESSION AFTER IMPACT OF LAMINATED COMPOSITE AEROSPACE STRUCTURES <u>Paul Davidson</u> , Michigan University														
0930-0940	INTERFACIAL DAMAGE IN FIBRE REINFORCED COMPOSITES MODELLED IN THE FRAMEWORK OF FINITE ELEMENTS WITH EMBEDDED REGIONS <u>Stepan Lomov</u> , KU Leuven														
0930-0940	CHARACTERISATION AND MODELLING OF STRUCTURAL BATTERY COMPOSITES <u>Leif Asp</u> , Chalmers University														
0940-1000	3101-1 THERMAL PROPERTIES OF UNSATURATED POLYESTER COMPOSITES FILLED WITH MODIFIED SILICA AEROGEL <u>Muhamad Azizi Mat Yajid</u> , Universiti Teknologi Malaysia	3103-1 ORGANIC RADICAL EPOXY THERMOSET <u>Jaworski Capricho</u> , Swinburne University of Technology	3104-1 UNDESIRE FIBER DEFORMATION OF A MULTI-LAYERED FIBER PREFORM IN LIQUID COMPOSITE MOLDING PROCESS <u>Dong Gi Seong</u> , Pusan National University	3105-1 ADDITIVE MANUFACTURING OF COMPOSITE SANDWICH PANELS FOR BROADBAND SOUND ABSORPTION <u>Filippo Jovollo</u> , Polytechnique Montréal	3106-1 TORSIONAL PROPERTIES OF A STIFFENED COMPOSITE TUBE <u>Sung Joon Kim</u> , Korea Aerospace Research Institute	3107-1 MODIFIED MORI-TANAKA METHODS FOR DAMAGE MODELLING OF SHORT FIBRE REINFORCED COMPOSITES <u>Atul Jain</u> , Indian Institute of Technology Kharagpur	3108-1 A NUMERICAL STUDY OF THE EFFECT OF DRAPING ON THE MECHANICAL PROPERTIES OF 3D WOVEN COMPOSITES <u>Ioannis Topalidis</u> , University Of Bristol (ACCIS)	3109-1 EXCEPTIONS TO THE ASSUMPTION UNDERLYING THE SO-CALLED PHYSICALLY BASED FAILURE THEORIES <u>Shuang Li</u> , The University of Nottingham	3110-1 EXPERIMENTAL INVESTIGATION AND MESOSCALE MODELING OF TEXTILE COMPOSITES UNDER HIGH-VELOCITY IMPACT <u>Hongxu Wang</u> , The University of New South Wales (Canberra)	3111-1 IN VITRO EVALUATION OF SURFACE ROUGHNESS ON INITIAL RESPONSES OF OSTEOBLASTS CELLS ON A NEW AL2O3/CE-TZP NANOCOMPOSITE <u>Luis Antonio Diaz Rodriguez</u> , Centro de Investigación en Nanomateriales Y Nanotecnología (CINN-CSIC-UNIOVI-PA)	3112-1 EXPERIMENTAL INVESTIGATION ABOUT FLEXURAL PLASTIC AND FRACTURE BEHAVIOR OF CF MAT-TYPE THERMOPLASTIC COMPOSITES <u>Yuki Kametani</u> , Shimadzu Corporation	3113-1 IONIC CONDUCTIVITY AND YOUNG'S MODULUS OF SOLID POLYMER ELECTROLYTES FOR SUPERCAPACITOR <u>Suk Jin Kwon</u> , Korea Institute of Materials Science	3114-1 FATIGUE LIFE ESTIMATION OF A SHORT GLASS FIBERS REINFORCED THERMOPLASTIC: OPTIMIZATION OF AN ENERGETIC CRITERION AND CORRESPONDING VOLUME INTEGRATION FOR MULTIAXIAL APPLICATIONS <u>Caroline Goutal</u> , Pprime Institute / Solvay	3115-1 DEFORMATION BEHAVIOR OF ALUMINUM ALLOY MATRIX COMPOSITES REINFORCED WITH FEW-LAYER GRAPHENE <u>Seesun Shin</u> , Suncheon National University	

CONFERENCE PROGRAM

correct as at 8.8.19 and is subject to change

Wednesday 14 August	1000-1020	3101-2 ALIGNMENT AND REINFORCING POTENTIAL OF MULTIFILAMENT CNT FABRICS <u>Anastasia Mikhailchan</u> , IMDEA Materials Institute The presentation is focused on CNT fibres and multifilament fabrics and the relationship between CNT alignment and mechanical and reinforcing potential for structural composites.	3103-2 TOUGHNESS OF EPOXY POLYMERS CURED AT HIGH RATES <u>Declan Carolan</u> , Fac Technology	3104-2 SELF-SEALING TOOL CONCEPT FOR RTM-PROCESSES <u>Tim Stallmeister</u> , Universität Paderborn	3105-2 3D PRINTED CONTINUOUS FIBRE COMPOSITES: VALIDATION OF DESIGN & ANALYSIS METHODS <u>Mathew Joosten</u> , Deakin University The success of the present study demonstrates the first step in establishing validated design tools to facilitate forward facing simulations to optimise the topology of 3D printed composites to fully exploit the design flexibility of this emerging technology.	3106-2 DYNAMIC RESPONSE OF HYBRID CARBON FIBRE LAMINATE BEAMS UNDER BALLISTIC IMPACT <u>Tao Liu</u> , University Of Nottingham	3107-2 COMPUTATIONAL CONTINUA MODELS OF COMPOSITE CURVED BEAMS <u>Dinghe Li</u> , Civil Aviation University Of China	3108-2 CHARACTERISATION OF THE WRINKLING BEHAVIOUR OF A BIAxIAL NON-CRIMP FABRIC DURING FORMING <u>Verner Viisainen</u> , University Of Cambridge The wrinkling behaviour of a biaxial NCF over four benchmark geometries is characterised through forming experiments with 3D-DIC and it is shown that shear angle alone cannot predict NCF wrinkling.	3109-2 STRENGTH AND FAILURE MODES IN RESISTANCE WELDED THERMOPLASTIC COMPOSITE JOINTS: EFFECT OF FIBER-MATRIX ADHESION <u>Xuekuan Li</u> , Beihang University This work focus on the influence of stainless steel mesh size on the failure modes of resistance welded thermoplastic composite joints.	3110-2 EXPERIMENTAL OPTIMISATION FOR MILITARY AEROSCARF OUT-OF-AUTOCALVE SCARF REPAIRS <u>Riley Mitchell</u> , University of Southern Queensland	3111-2 MECHANICAL, SHAPE MEMORY AND ANTIBACTERIAL PROPERTIES OF GRAPHENE OXIDE/PLCL NANOCOMPOSITES <u>Xili Lu</u> , Harbin Engineering University The g-GO/PLLA nanocomposites show good shape memory effect and antibacterial properties, which suggest that these nanocomposites may potentially be useful for a variety of biomedical applications.	3112-2 COMPARISON OF PICTURE FRAME DEVICES AND ANALYSIS OF LOCKING ANGLE FOR FABRICS WITH DIFFERENT CROSS-PLY ANGLES <u>Benedikt Lux</u> , Swinburne University of Technology This study includes a comparison of established and novel shear testing devices and an investigation of non-crimp fabrics with different fiber orientations for automating the performing of stiffening elements.	3113-2 INVESTIGATION FOR CONTINUOUS HYBRID MOLDING PROCESS FOR LONG MEMBER <u>Akio Ohtani</u> , Kyoto Institute of Technology	3114-2 EXPERIMENTAL AND NUMERICAL DETERMINATION OF THE MODE II FRACTURE TOUGHNESS OF WOVEN COMPOSITES <u>Rogan Healey</u> , Monash University A three-dimensional finite element model was developed to determine the mode II fracture toughness of a woven composite, validated by an experimental and numerical comparison using a unidirectional specimen.	3115-2 COMPOSITE CASTINGS REINFORCED BY TIC PARTICLES <u>Lukasz Szymanski</u> , University of Science and Technology in Cracow, Innerco sp. z o.o. The authors presented three different methods of the in situ fabrication of metal matrix composite via casting process: composite layer, local composite reinforcement and cast composite reinforced by TIC.	
	1020-1040	3101-3 SYNERGETIC ENHANCEMENT OF THERMAL CONDUCTIVITY BY ALUMINA NANOWIRES IN EPOXY COMPOSITES CONTAINING MICRO FILLERS <u>Kazuaki Sanada</u> , Toyama Prefectural University	3104-3 INFLUENCE OF DISSOLVED GASSES IN EPOXY RESIN ON RESIN INFUSION PART QUALITY <u>Sam van Oosterom</u> , Center For Advanced Composite Materials - University Of Auckland	3105-3 ADDITIVE MANUFACTURED METALLIC FORCE TRANSMISSIONS IN FIBRE REINFORCED THERMOPLASTICS <u>Ame Kunze</u> , Leibniz Institute For Materials Engineering	3106-3 HIERARCHICAL THERMOPLASTIC COMPOSITE LATTICE STRUCTURE: AXIAL COMPRESSIVE PROPERTY <u>Houchang Liu</u> , Chongqing University	3107-3 PROCESS-INDUCED MICROSTRUCTURE DURING COMPRESSION MOLDING OF HIGH FIBER VOLUME FRACTION SHEET MOLDING COMPOUND <u>Francois Mahe</u> , University of Delaware A new formulation is proposed to describe the evolving multi-scale microstructure and the viscous flow behavior during SMC compression molding.	3108-3 MULTI-SCALE MODELING FOR PREDICTING THE VISCOELASTIC BEHAVIORS OF 3D BRAIDED COMPOSITES <u>Tao Zeng</u> , Harbin University Of Science And Technology A new alternative calculation procedure was presented to characterize the time-dependent viscoelastic behaviors of resin-based 3D braided composites from the perspective of macroscopic, mesoscopic and microscopic scale.	3109-3 FAST EVALUATION OF THE LONGITUDINAL TENSILE FAILURE STATISTICS IN UNIDIRECTIONAL COMPOSITES ACCOUNTING FOR MATERIAL VARIABILITY <u>Fabio Malgoujlo</u> , Siemens Industry Software NV The longitudinal tensile properties of unidirectional composites and their scatter are predicted with a multi-scale model, including the material variability. A simple Machine Learning inspired strategy enables very fast computations.	3111-3 EFFECT OF CROSS-LINKING CONDITION ON MECHANICAL PROPERTIES OF OSTEOECTIN-COATED HAP/COLLAGEN <u>Mototsugu Tanaka</u> , Kanazawa Institute of Technology	3112-3 RELATIONSHIP BETWEEN FLEXURAL AND COMPRESSIVE STRENGTHS OF UNIDIRECTIONAL THERMOPLASTIC CFRP <u>Tsuyoshi Matsuo</u> , The University Of Tokyo The authors proposed a new flexural test method for unidirectional thermoplastic CFRP. The flexural strength has a strong correlation with the compressive strength.	3113-3 MECHANICAL PROPERTIES AND MICRO FRACTURE PROCESS OF HYBRID COMPOSITE MATERIAL WITH CF SHEETS WITH MICRO GLASS BALLOON <u>Takuto Omura</u> , Graduate School of Fukushima university	3114-3 CONTROLLED STRAIN RESONANCE FREQUENCY FATIGUE TEST BENCH FOR CFRP <u>Eduard Relea</u> , Inspire AG - ETH Zurich The cast iron ram of a BRUDERER BSTA-200 was redesigned in CFRP and the fatigue behavior of CFRP had to be tested in a very high cycle fatigue test bench.	3115-3 INVESTIGATION ON Ni-Mn-GA PARTICLES/CU COMPOSITES PREPARED BY POWDER METALLURGY METHOD <u>Bing Tian</u> , Harbin Engineering University Microstructure, phase transformation and mechanical property of Ni-Mn-Ga particles/Cu composites prepared by pressureless sintering method are investigated in the present work.			
	1040-1110	Coffee break Exhibition hall														
	1110-1240	P3201 Polymer matrix materials	P3202 Composite structures and SHM	MSC Software industry workshop	P3204 Additive manufacturing and automation	P3205 Liquid composites moulding Automated fibre placement	P3206 Nano-Composites	P3207 Repair Tribology & fatigue	P3208 Structural analysis and optimisation	P3209 Hybrid composites	P3210 Aerospace Automotive	P3211 Defence and biocomposites	P3212 Bio-inspired composites Green & natural fibre composites	Altair industry workshop	P3214 Metal matrix composites & Meta-composite	Industry-Academia Discussion Platform
	1110-1115	P3201-1 PREPARATION AND CHARACTERIZATION OF HIGH STRENGTH AND HIGH OIL RESISTANT FLAME RETARDANT EVA COMPOSITES FOR CABLE <u>Yiyang Zhou</u> , Hefei University Of Technology Macromolecular compatibilizer POE-g-GMA is used to modify EVA composites. The related results showed obvious improvements in the interfacial interactions, which was attributed to the improved filler dispersion and strengthened interfacial bonding induced by POE-g-GMA. A modified interphase structure was accordingly proposed and related to the mechanical performance.		MSC Software industry workshop "invitation only"		P3205-1 NUMERICAL SIMULATION OF RESIN FLOW THROUGH 3D FIBROUS REINFORCEMENT AT MULTISCALE <u>Chaozhong Chen</u> , CRRC Academy We presented the fabrication of GO/polymer composite hydrogel with flexibility, soft, antimicrobial, enhanced mechanical property. Its hydrogel expected that have enhanced mechanical properties by GO playing role the physical cross-linker.	P3206-1 GRAPHENE OXIDE/POLYMER-BASED NANOCOMPOSITE HYDROGEL FOR BIOMEDICAL APPLICATIONS WITH ANTIMICROBIAL PROPERTY <u>Lee Won Chang</u> , Hannam University More efficient and durable nonmetallic tools for removal of a variety of materials, including sealants, elastomeric coatings, adhesives, caulks and tapes, were developed, evaluated for use on composites and commercialized.	P3207-1 NEW MATERIAL REMOVAL TOOLS AND PROCESSES TO SAFELY EXPEDITE MAINTENANCE ON COMPOSITE STRUCTURES <u>James Mazza</u> , US Air Force Research Laboratory	P3208-1 AN ASYMPTOTIC SOLUTION TO DENSITY DISTRIBUTION OF GRADED CELLULAR MATERIALS WITH A CONSTANT IMPACT LOAD <u>Baixue Chang</u> , University of Science and Technology of China	P3209-1 INVESTIGATION OF LOW-VELOCITY IMPACT AND CAI BEHAVIOR OF HYBRID SANDWICH COMPOSITES <u>Alex Osei Bonsu</u> , Harbin Engineering University	P3210-1 WARPAGE BEHAVIOUR OF DISCONTINUOUS CF/PEEK THIN PLATES <u>Natassia Batista</u> , McGill University Two different strand sizes were compared through warpage measurements. For the small strands, an alignment grid was also proposed to better control their orientation.	P3211-1 DIC ANALYSIS OF SHRINKAGE BEHAVIORS OF DENTAL COMPOSITES DURING DENTAL RESTORATION <u>Nak-Sam Choi</u> , Hanyang University The changes of polymerization shrinkage distribution in the composite resin part were examined by the DIC method during dental restoration for two types of composite resins. The maximum shrinkage strain happened at the center to be -0.56% for Clearfil AP-X and -0.44% for Filtek P90.	P3212-1 DESIGN AND CONSTRUCTION OF BIO-INSPIRED SMART MATERIALS WITH REVERSIBLE ADHESION <u>Ying Chu</u> , Harbin Institute of Technology	Altair industry workshop RESEARCH MEETS PRACTICE - APPLYING MULTISCALE MODELING AND OPTIMIZATION IN COMPOSITES ENGINEERING Markku Palanterä, Director of Global Composites Business Development This workshop will run for 90 minutes	P3214-1 ENHANCING THE MECHANICAL PROPERTIES OF TIBZ REINFORCED MAGNESIUM COMPOSITES USING STIR CASTING METHOD <u>Arbuchezhayan Ganasesambandam</u> , Srm Valliammal Engineering College	Mobility between Academia and Industry <u>Isabelle Paris</u> , Bombardier Bridging the gap between education and employment <u>Tony Belcher</u> , Boeing Modernising Composites Regulations <u>Ole Thomsen</u> , Bristol University Increasing access for SMEs to international research <u>Matt Jevons</u> , MT Aerospace

CONFERENCE PROGRAM

correct as at 8.8.19 and is subject to change

<p>Wednesday 14 August</p>	<p>1115-1120</p>	<p>P3201-2 EFFECT OF GRAPHENE AND MWCNTS AND ITS DOSAGE ON MODE I INTERLAMINAR FRACTURE TOUGHNESS OF CFRP <u>Shuanghui Cao</u>, School Of Aeronautics Northwestern Polytechnical University</p> <p>The paper is to enhance the interlaminar toughness of unidirectional composite laminate by supplying graphene or MWCNTs into the middle interlaminar at a inexpensive way!</p>	<p>P3202-2 A TRISTABLE CROSS-SHAPED UNSYMMETRIC FIBER-REINFORCED CROSS PLY LAMINATES: EXPERIMENTAL AND SIMULATION METHODS <u>Yang Li</u>, Key Laboratory Of E&M (Zhejiang University Of Technology)</p> <p>This paper presents a novel cross-shaped unsymmetric fiber-reinforced cross-ply laminates, which is different from square-shaped unsymmetric fiber-reinforced cross-ply laminates and has three stable configurations.</p>	<p>P3203-2 OPTIMIZATION OF PROCESS PARAMETERS FOR FUSED FILAMENT FABRICATION USING TOOL PATH REVERSING <u>Vishal Havagrivan</u>, Rise Sicomp</p> <p>A novel method to optimize the process parameters for fused filament fabrication (FFF) (an additive manufacturing technique) is developed in this paper. GCode instructions used by the FFF machine is analysed and a FE model of the manufactured part is built. The FE model is used to optimize the process parameters governing the FFF manufacturing process.</p>	<p>P3204-2 A TWO PHASES COUPLING FREE AND POROUS FLOW METHOD AT MULTI-SCALES OF LCM PROCESS <u>Arthur Cantarel</u>, Clément Ader Institute (ICA)</p> <p>P3206-2 HIGH-EMISSIVITY NANO-COMPOSITE FILM FOR EUV PELLICLE APPLICATIONS IN SEMICONDUCTOR FABRICATION PROCESS <u>Jinho Ahn</u>, Hanyang University</p>	<p>P3207-2 FAILURE AND RELIABILITY ANALYSIS OF IN-SERVICE REPAIRED COMPOSITES <u>Wei Feng</u>, School of Aeronautics, Northwestern Polytechnical University</p> <p>This paper performed experimental and numerical works on the behavior of in-service repaired composites via scarf method. And reliability analysis was conducted to predicted safe failure strengths at different reliability and confidence levels.</p>	<p>P3209-2 ROBUST AND CONDUCTIVE HYDROGEL BASED ON CARBON NANOTUBE/ARAMID NANOFIBER FOR STRUCTURAL ENERGY STORAGE <u>Wenxin Cao</u>, Harbin Institute of Technology</p>	<p>P3210-2 EXPERIMENTAL STUDY ON INTER-YARN FRICTION CHARACTERISTICS OF STF-KEVLAR FABRICS WITH DIFFERENT MASS CONCENTRATIONS <u>Wei Chen</u>, Nanjing University of Aeronautics and Astronautics</p> <p>In the current paper, Three types of STF suspension was prepared using spherical SiO₂ particles of 650 nm diameter in different weight concentration to impregnate the Kevlar49 fabrics. The rheological properties of different STF were investigated.</p>	<p>P3211-2 EXPERIMENTAL STUDY ON ANTI-PENETRATION PERFORMANCE OF SANDWICH TARGET MADE OF THIN STEEL PLATES AND WOOD AGAINST 7.62MM BULLET <u>Liling He</u>, China Academy of Engineering Physics</p> <ol style="list-style-type: none"> Ballistic limit velocities of the thin steel plates are fitted according to Recht-Ipson Model. Dynamic compressive strengths of transverse and longitudinal wood are fitted according to the dynamic cavity expansion model. The transverse wood has better anti-penetration performance than that of the longitudinal wood. 	<p>P3212-2 PREPARATION AND ELECTRICAL CHARACTERIZATIONS OF MAN-MADE NACRE-LIKE COMPOSITES <u>Yingbang Yao</u>, Guangdong University of Technology</p>	<p>P3214-2 WEAR AND MECHANICAL CHARACTERISTICS OF AL-SITIBZ COMPOSITES <u>Jimmy Karloppia</u>, Indian Institute of Technology Roorkee</p>	<p>Mobility between Academia and Industry <u>Isabelle Paris</u>, Bombardier</p>		
	<p>1120-1125</p>	<p>P3201-3 TAILORED POLYMER NETWORKS BY SEQUENTIAL THIOL-ENE PHOTOPOLYMERIZATION <u>Sergio Cespedes</u>, WMG</p> <p>PEG-co-TEG polymer networks were photosynthesized in a two-step process to obtain alternating network structure. Their mechanical properties were compared against their uncontrolled counterparts.</p>	<p>P3202-3 A NUMERICAL MODEL FOR COUPLING HYGRO-MECHANICAL PHENOMENA IN COMPOSITE MATERIALS <u>Mamadou Abdou Mbacke</u>, IRT Jules Verne</p>	<p>P3203-3 FLEXURAL FATIGUE STRENGTH OF 3D-PRINTED CONTINUOUS CARBON FIBER REINFORCED THERMOPLASTIC LAMINATES <u>Morihumi Inaba</u>, Chiba Institute Technology</p>	<p>P3205-3 PERMEABILITY EVALUATION IN VACUUM-ASSISTED RESIN TRANSFER MOLDING OF CARBON FIBER REINFORCED PLASTICS <u>Fumiyu Isono</u>, Tokyo Metropolitan University</p> <p>Permeability measurements were conducted for one-dimensional unsaturated flow on carbon woven fabric using epoxy resin. To reduce experimental scatter, fabric preparation and materials arrangement methods were examined.</p>	<p>P3206-3 CONDUCTIVE NANOPARTICLE ENHANCEMENTS FOR STRUCTURAL DIELECTRIC CAPACITORS <u>KY Chan</u>, Swinburne University of Technology</p>	<p>P3207-3 BONDED COMPOSITE REPAIRS UNDER DRY/COLD AND HOT/WET ENVIRONMENTAL CONDITIONS <u>Florian Röper</u>, Polymer Competence Center Leoben GmbH</p> <p>This work focuses on the influence of testing at -30 °C and testing after 100 cycles between -30 °C and 70 °C / 85 % r. h. on repair specimens.</p>	<p>P3208-3 DESIGN OF SEMI-COMPLEX PARTS USING ANISOTROPIC CARBON FIBER CARD WEB REINFORCED THERMOPLASTICS <u>Yasuyuki Furuta</u>, The University of Tokyo</p> <p>In this study, it was first verified that the mechanical properties of CWT can be calculated from the fiber orientation distribution (FOD) by Netting Theory.</p>	<p>P3209-3 EFFECT OF FIBER DISTRIBUTION ON COMBINED COMPRESSION-TORSIONAL RESPONSE OF HYBRID COMPOSITES <u>Sneha Bhushan Chervala</u>, Indian Institute of Technology Bombay</p> <p>The objective of the current work is to study the role of fiber distribution in the combined loading response of hybrid glass/carbon composites using finite element analysis. The change in response with varying fiber distribution is presented taking into account of the different fiber location in the representative volume element (RVE).</p>	<p>P3210-3 CF/MODIFIED-PEEK COMPOSITES FOR AIRCRAFT <u>Takahiro Hayashi</u>, Mitsubishi Chemical Corporation</p> <p>We developed modified-PEEK resins, which resulted 20°C higher Tg than conventional PEEKs. In this study, we showed some properties of modified-PEEK matrix carbon fiber composites, such as mechanical property at high temperature, fluid resistance and flammability.</p>	<p>P3211-3 COMPUTATIONAL MULTISCALE MODELLING OF CERAMIC MATERIALS FOR DEFENCE NEEDS <u>Meredith Mahoney</u>, Department of Defence</p> <p>Historically, new protective materials and composite systems were developed mainly through laborious trial and error. However, in this work a multiscale computational approach, using the application of ab initio methods through to validated continuum models, will provide a framework through which to understand and predict the performance of protective materials. It will also allow materials to be tailored to counter new and evolving threats.</p>	<p>P3212-3 BONE TISSUE SCAFFOLD BASED ON SHAPE MEMORY POLYMER <u>Wei Zhao</u>, Harbin Institute of Technology</p> <p>This paper details an application of SMP on porous bone tissue scaffold. Compared with traditional bone tissue scaffold, the scaffold based on SMP possesses advantages of low cost, easy assembly and easy adjustment. And most importantly, the adaptable bone tissue scaffold will adapt to keep the best fixed state.</p>	<p>Altair industry workshop</p> <p>RESEARCH MEETS PRACTICE - APPLYING MULTISCALE MODELING AND OPTIMIZATION IN COMPOSITES ENGINEERING <u>Markku Palanterä</u>, Director of Global Composites Business Development</p> <p>This workshop will run for 90 minutes</p> <p>CONTINUED</p>	<p>P3214-3 THE MAGNETIC AND ELECTROMAGNETIC PROPERTIES OF FECONISXAL0.4 HIGH ENTROPY ALLOY POWDERS <u>Yuping Duan</u>, Dalian University of Technology</p> <p>This session aims to debate topics that cross between academia and industry in a close and less formal environment. Come and join our animators as we discuss key topics and identify ways forward. Each animator will represent a topic and visitors can move between individual topics or stay with one that particularly interests them.</p> <p>CONTINUED</p>
	<p>1125-1130</p>	<p>P3201-4 PREPARATION AND CHARACTERIZATION OF MODIFIED POLYVINYL ALCOHOL/SODIUM ALGinate HYDROGEL <u>Jianle Gong</u>, Institute of Materials Processing and Intelligent Manufacturing, Harbin Engineering University</p>	<p>P3202-4 NONLINEAR FINITE ELEMENT ANALYSIS OF COMPOSITE BOLTED LAP-JOINTS: EXPERIMENTAL VS. NUMERICAL TESTS <u>Benoit Montagne</u>, Institut Clément Ader</p>	<p>P3204-4 3D PRINTING OF CONTINUOUS SIZED CARBON FIBER REINFORCED PA6 COMPOSITES <u>Tandefei Liu</u>, Xi'an Jiaotong University</p> <p>A sizing treatment process is successfully applied to improve the interfacial performance and mechanical properties of 3D printed continuous carbon fiber reinforced nylon composites.</p>	<p>P3205-4 LINKAGE ANALYSIS OF PERMEABILITY AND MECHANICAL EXPERIMENTS FOR CFRP <u>Seonghun Kwak</u>, Gyeongbuk Hybrid Technology Institute</p> <p>This study saved time and money because it was able to carry out the permeability coefficient experiment and the mechanical property experiment in a lump sum. We hope that if future experimental data accumulates, we will be able to minimize the cost of failure by sharing data with many people.</p>	<p>P3206-4 NANO-ENABLED MANUFACTURING OF AEROSPACE-GRADE THERMOPLASTIC COMPOSITES <u>Frederick Dasg</u>, Massachusetts Institute of Technology</p> <p>This work presents the first application of Out-of-oven (OoO) heating to producing carbon fiber reinforced thermoplastic specimens, which are comparable or better than their conventionally hot-press produced laminates.</p>	<p>P3207-4 NON-ASBESTOS POLYBENZOXAZINE AND MECHANICAL PROPERTY <u>Chanchira Jubsilp</u>, Srinakharinwirot University</p> <p>The addition of short carbon fiber at 25 wt% in the polybenzoxazine composite showed the optimal friction coefficient which is suitable for personal car and significant improvement of flexural properties.</p>	<p>P3208-4 REDESIGN AND OPTIMIZATION OF THERMAL PROTECTION SYSTEM FOR ATMOSPHERIC REENTRY <u>Guokai Han</u>, Harbin Institute of Technology</p> <p>In this work, thermal behavior of a lightweight carbon phenolic ablator and a hybrid thermal protection structure has been analyzed based on the established mathematical model.</p>	<p>P3209-4 PROPERTIES AND FAILURE PREDICTION OF INTERPLY HYBRID COMPOSITES OF GLASS AND SELFREINFORCED POLYPROPYLENE <u>Farzaneh Hassani</u>, Queen's University Belfast</p>	<p>P3210-4 EFFECTS OF PROCESS CONDITIONS ON AEROSPACE GRADE EPOXY/CARBON FIBRE COMPOSITE PROPERTIES <u>Matt Jennings</u>, School of Engineering, Deakin University</p> <p>It was found that when using isostatic pressure when curing aerospace composites, the interlaminar shear strength and the internal and surface porosity was comparable to Autoclave cured samples.</p>	<p>P3211-4 THE DEFORMATION AND FAILURE RESPONSE OF ULTRA-HIGH MOLECULAR WEIGHT POLYETHYLENE COMPOSITE TO LOCALIZED BLAST LOADING <u>Long Nguyen</u>, Defence Science and Technology Group</p> <p>Experiments were conducted to study the response of UHMW-PE composite to localised blast loading. The rupture threshold, deformation and failure mechanisms of the material was investigated in this work.</p>	<p>P3212-4 NATURAL FIBRE BASED HYBRID POLYPROPYLENE COMPOSITES: AN INSIGHT INTO THERMAL PROPERTIES <u>Rupam Gogoi</u>, Indian Institute of Technology Roorkee, India (IIT Roorkee)</p> <p>Polypropylene (PP) composites were prepared by incorporating short bamboo fiber (SBF) and treated hollow glass microspheres (HGM) and their thermal, thermo-mechanical and water absorption behaviour were analysed.</p>	<p>P3214-4 OPTIMIZING THE MICROSTRUCTURE AND MECHANICAL BEHAVIORS OF IN-SITU TIC-<i>f</i>/NI COMPOSITES BY SUBSEQUENT THERMAL TREATMENT <u>Wenqiang Hu</u>, Beijing Jiaotong University</p>	

CONFERENCE PROGRAM

correct as at 8.8.19 and is subject to change

Wednesday 14 August	1130-1135	<p>P3201-5 THE EFFECTS OF MOISTURE AND TEMPERATURE ON THE FLEXURAL PROPERTIES OF CARBON FIBER PAPER REINFORCED THERMOPLASTICS/POLYAMIDE 6 <u>Xiangdong He</u>, The University of Tokyo</p> <p>The effects of moisture and temperature on the flexural properties of carbon fiber reinforced polyamide 6 materials were researched in this study.</p>	<p>P3202-5 MICRO-MECHANICAL FAILURE ANALYSIS OF A UNI-DIRECTIONAL COMPOSITE PLY – COHESIVE ELEMENTS & A DUCTILE FRACTURE APPROACH <u>Akash Sharma</u>, IIT Indore</p> <p>The failure behavior of a uni-directional (UD) carbon fiber reinforced epoxy composite ply subjected to transverse tension, compression and shear loads was studied using computational micro-mechanics. In order to capture the epoxy matrix plastic deformations and the subsequent damage, a ductile fracture criterion was used in combination with the linear extended Drucker-Prager plasticity model.</p>	<p>P3204-5 INTERLAYER BONDING BEHAVIORS OF 3D PRINTED CONTINUOUS CARBON FIBER REINFORCED PEEK COMPOSITES <u>Meng Luo</u>, Xi'an Jiaotong University</p> <p>The interlayer bonding behavior by implementing the process of pre-impregnation and laser preheating was studied for CCF/PEEK composites extrusion AM fabrication to avoid obvious delamination.</p>	<p>P3205-5 EFFECT OF WETTABILITY ON IMPREGNATION PROCESS OF VISCOUS FLUID TO WOVEN FIBER BUNDLES <u>Atsuki Mizuno</u>, Tokyo University of Science</p> <p>We investigated the effect of wettability on impregnation process of viscous fluid to woven fiber bundles on resin transfer molding method.</p>	<p>P3206-5 MULTIFUNCTIONAL COMPOSITES WITH MODIFIED CARBON FIBERS FOR LIGHTNING STRIKE PROTECTION <u>Anchalee Duongthipthewa</u>, The Hong Kong Polytechnic University</p> <p>New lightning strike protection (LSP) system was fabricated by integrating GNPs-coated on fuzzy fiber composites. The lightning damages in composites with/without LSP system were also predicted using the numerical model offering an alternative material for LSP applications.</p>	<p>P3207-5 WEAR PROPERTIES OF PAN- AND PITCH-BASED CARBON FIBER REINFORCED PLASTICS WITH SiC-NANOPARTICLES <u>Shigenori Inoue</u>, Doshisha University</p> <p>Friction tests and SEM observations were conducted to investigate the wear characteristics of PAN- and pitch-based carbon fiber reinforced plastics with SiC-nanoparticles.</p>	<p>P3208-5 EXPERIMENTAL AND SIMULATION STUDY OF GFRP WITH LOCAL FIBRE DEFLECTION UNDER BEARING LOADS <u>Lars Thorsten Heftt</u>, Clausthal University of Technology</p>	<p>P3209-5 IMPACT OF CELLULOSE FILAMENTS ON INTERLAMINAR PROPERTIES, FLAMMABILITY AND THERMAL DEGRADATION BEHAVIOUR OF POLYMER MATRIX COMPOSITES <u>Félix Lessard</u>, Polytechnique Montréal</p> <p>A fibre reinforced thermoplastic composite material composed of polyamide 6 with fire-retardant additive (PA6-FR), glass fibre, and cellulose fibre was tested for application in aircraft cabin interior.</p>	<p>P3210-5 OBTENTION OF A CARBON-CARBON COMPOSITE MATERIAL FOR ITS USE IN EXPANDING NOZZLES FOR AEROSPACE VEHICLES <u>Liliana Maricarmen Lopez</u>, Universidad Aeronautica en Queretaro</p>	<p>P3211-5 ANALYTICAL AND EXPERIMENTAL STUDY ON HIGH-TEMPERATURE HIGH-VELOCITY IMPACT LIMIT FOR C/C COMPOSITE <u>Fan Yang</u>, Harbin Institute of Technology</p> <p>The debris cloud distributions of c/c composites subjected to high-temperature high-velocity oblique impacts has been investigated analytically and experimentally and the test data might provide general design guidelines for thermal protection shields.</p>	<p>P3212-5 THE EFFECT OF CORE-SHELL NANOPARTICLES ON STRENGTHENING AND TOUGHENING OF POLYLACTIDE AND JUTE FIBER REINFORCED POLYLACTIDE COMPOSITE <u>Hailing He</u>, Harbin Engineering University</p>	<p>P3214-5 EFFECT OF TA ADDITION ON MICROSTRUCTURES AND ROOM TEMPERATURE FRACTURE TOUGHNESS OF THE NB-16SI-20TI-5AL ULTRAHIGH TEMPERATURE ALLOY <u>Wenyuan Long</u>, Nanchang Hangkong University</p>	<p>Mobility between Academia and Industry <u>Isabelle Paris</u>, Bombardier</p>
	1135-1140	<p>P3201-6 THE INFLUENCE OF DIFFERENT POWDER IMPREGNATION PROCESSES OF L-SHAPED WOVEN FABRIC REINFORCED PEEK COMPOSITES BY HOT STAMP FORMING <u>Hansong Liu</u>, Beihang University</p>	<p>P3202-6 EFFECT OF LAYING METHOD ON MECHANICAL PROPERTIES OF CONTINUOUS GLASS FIBER REINFORCED POLYPROPYLENE SANDWICH PANELS <u>Yiliang Sun</u>, Beihang University</p> <p>Continuous glass fiber reinforced polypropylene corrugated composite sandwich panels with different laminates were prepared in this paper. The effects of different panels and core materials on the mechanical properties of corrugated sandwich panels were studied.</p>	<p>P3204-6 DEVELOPMENT OF A TEST BENCH FOR FUSED FILAMENT FABRICATION <u>Alexander Matschinski</u>, Technische Universität München</p>	<p>P3205-6 A PARAMETRIC FLOW VISUALISATION STUDY OF THE WET COMPRESSION MOULDING PROCESS <u>Balaji Muthuvei</u>, University of Auckland</p>	<p>P3206-6 PHOSPHATE FUNCTIONALIZED GRAPHENE OXIDE AS ADSORBENT FOR THE REMOVAL OF Pb(II) FROM AQUEOUS SOLUTION <u>Daniel Gang</u>, University of Louisiana At Lafayette</p>	<p>P3207-6 FATIGUE LIFE PREDICTION OF EPOXY COATING ON COMPOSITES SUBJECTED TO WATERDROP IMPACT <u>Ameva Kaore</u>, Sardar Vallabhbhai National Institute of Technology, Surat</p> <p>This paper presents a finite element model to predict the fatigue life of the epoxy coating on S-glass/epoxy composite against raindrop impact. The rainfall data for Mumbai region in India is used to simulate the fatigue loading. This model can be used to predict the fatigue life of wind turbine coatings subjected to rain erosion.</p>	<p>P3208-6 DAMPING OPTIMIZATION OF LAMINATED PLATES BASED ON COMPLEX MODULUS APPROACH <u>Masaki Kameyama</u>, Shinshu University</p> <p>This paper deals with the damping characteristics of symmetrically laminated plates. The concept of complex modulus and that of lamination parameters are introduced, where the complex stiffness invariants are newly proposed in this paper.</p>	<p>P3209-6 HYBRID NANOCOMPOSITE OF ZIF-67 AND COBALT-NICKEL LAYERED DOUBLE HYDROXIDE AS ELECTROCATALYST FOR HIGHLY EFFICIENT OXYGEN EVOLUTION REACTION <u>Feng Li</u>, Beijing University of Chemical Technology</p> <p>A three-dimensional CoNi-LDH/ZIF-67 nanocomposite exhibited excellent oxygen evolution reaction activity, due to unique hierarchical architecture with largely increased electrochemical active surface area, multi-porous framework, and intimate interfacial coupling effect.</p>	<p>P3210-6 MINIMIZATION OF THE OUT-OF-PLANE THERMAL DEFORMATION OF CFRP REFLECTORS BY STACKING SEQUENCE OPTIMIZATION <u>Shun Tanaka</u>, Nagoya University</p> <p>The effects of altering and optimizing the stacking sequence of CFRP laminates as a method to mitigate the out-of-plane thermal deformation due to fiber orientation of space-based CFRP reflectors was investigated.</p>	<p>P3211-6 BIOCHAR: A POTENTIAL COMPOSITE CONSTITUENT <u>Osik Das</u>, Department of Fibre and Polymer Technology, KTH Royal Institute of Technology</p> <p>This workshop will run for 90 minutes</p>	<p>P3212-6 THE FABRICATION OF POLYLACTIC ACID (PLA) / CELLULOSE NANOFIBER (CNF) NANOCOMPOSITES WITH PLASTICIZER AS DISPERSING AGENT <u>Bich Nam Jung</u>, Korea University / Korea Institute of Industrial Technology</p> <p>In this study, Polylactic acid (PLA) / CNF nanocomposites were prepared by melt mixing method with triethyl citrate (TEC) as plasticizer.</p>	<p>P3214-6 SIMULATION OF THERMAL CONDUCTIVITY FOR TITANIUM BORIDE PARTICLE DISPERSED ALUMINUM COMPOSITES <u>Gen Sasaki</u>, Hiroshima University</p> <p>This session aims to debate topics that cross between academia and industry in a close and less formal environment. Come an join our animators as we discuss key topics and identify ways forward. Each animator will represent a topic and visitors can move between individual topics or stay with one that particularly interests them.</p>	
	1140-1145	<p>P3201-7 DEFORMATION MECHANISM INVESTIGATION FOR EPOXY BY IN-SITU MECHANICAL COUPLING MEASUREMENT <u>Yinggang Miao</u>, Xi'an Jiaotong University</p> <p>Epoxy is modified with CNT which reinforces the conductivity of composites. Then mechanical measurement of the composites are performed for analysing the potential deformation mechanism at the peak stress of epoxy materials.</p>	<p>P3202-7 KINKING MECHANICS IN COMPOSITES UNDER COMBINED LOADING <u>Sachin Vankar</u>, Indian Institute Of Technology Bombay</p> <p>An analytical approach has been developed for kinking mechanics under combined compression-torsion loading for unidirectional carbon fiber composite. A single fiber-matrix unit is considered by using a fiber deformation representation with fiber amplitude and fiber rotation.</p>	<p>P3204-7 IMPROVING THE STIFFNESS OF HIGH RESOLUTION DLP STEREO LITHOGRAPHIC MATERIAL <u>Chow-Shing Shio</u>, Department Of Mechanical Engineering, National Taiwan University.</p> <p>The Young's modulus of DLP stereolithographic material can be increased markedly by decreasing the curing layer thickness and adding suitable concentration of CNT or alumina particles.</p>	<p>P3205-7 EFFECT OF FLAME RETARDANT FILTRATION ON THE FIRE PERFORMANCE OF POLYPROPYLENE CARBON FIBRE REINFORCED EPOXY COMPOSITES MADE BY RESIN TRANSFER MOLDING <u>Ákos Pomázi</u>, Budapest University Of Technology And Economics</p> <p>The effect of flame retardant filtration on the fire performance was investigated in case of carbon fibre reinforced low-viscosity epoxy composites made by liquid composite moulding techniques, such as resin transfer moulding.</p>	<p>P3206-7 LOW PERCOLATION THRESHOLD OF POLYPROPYLENE SPECIALLY DESIGNED GRAPHENE NANOCOMPOSITES <u>Karolina Gaska</u>, Chalmers University of Technology</p> <p>This work presents industrially relevant melt-mixed system of polypropylene and hierarchically specially designed reduced graphene oxide. Exceptionally low electrical percolation threshold has been presented in this study.</p>	<p>P3207-7 TRIBOLOGICAL CHARACTERISTICS OF MICROWAVE PROCESSED KENAF/HDPE COMPOSITES UNDER DRY SLIDING WEAR <u>Manoj Kumar Singh</u>, Indian Institute of Technology Mandi</p> <p>Tribological behaviour of microwave processed kenaf/HDPE composites were assessed using a pin-on-disc tribometer. The effect of the sliding speed was observed on the coefficient of friction and specific wear rate.</p>	<p>P3208-7 CLASSIFICATION AND PROPERTIES OF THREE-DIMENSIONAL TEXTILE PREFORMS <u>Zhenyu Ma</u>, Nanjing University of Aeronautics and Astronautics</p> <p>In this paper, the 3D textile preforms were classified, and three representative geometric units (RGUs) were proposed, namely orthogonal geometric unit, skew geometric unit and curved geometric unit. Other units were combinations and derivations of these three RGUs.</p>	<p>P3209-7 GAMMA-RAY SHIELDING PROPERTY OF TUNGSTEN/BASALT FIBER REINFORCED EPOXY MATRIX COMPOSITES FABRICATED BY TWO TUNGSTEN HYBRID WAYS <u>Ran Li</u>, Institute of Aerospace Material and Technology</p>	<p>P3210-7 VIBRATION FREQUENCY DESIGN AND STUDY OF COMPOSITE FUSELAGE STRUCTURE <u>Kaijian Wang</u>, Beihang University</p>	<p>P3211-7 ADVANCED QUALIFICATION OF COMBOO - A BAMBOO BASED CORE MATERIAL <u>Andreas Loth</u>, Beuth University of Applied Science</p> <p>Effects of abaca short fibers, milled fiber and woven fabric, NaOH treatment, maleic anhydride and nanoprecipitated calcium carbonate on the tensile properties and water absorption of the composites was studied.</p>	<p>P3214-7 EVALUATION OF INTERFACIAL THERMAL RESISTANCE OF AL-ALN PARTICLE DISPERSED COMPOSITES BY USING IMAGE-BASED CALCULATION <u>Kenjiro Sugita</u>, Hiroshima University</p> <p>Interfacial thermal resistance in Al-AlN composites was evaluated by comparing the measured thermal conductivity and the calculated thermal conductivity.</p>	<p>Altair industry workshop</p> <p>RESEARCH MEETS PRACTICE - APPLYING MULTISCALE MODELING AND OPTIMIZATION IN COMPOSITES ENGINEERING <u>Markku Palanterä</u>, Director of Global Composites Business Development</p> <p>Continued</p>	

CONFERENCE PROGRAM

correct as at 8.8.19 and is subject to change

Wednesday 14 August	1145-1150	<p>P3201-8 COMPARISON OF SHORT CARBON AND POLY(P-PHENYLENE-2,6-BENZOBISOXAZOLE) FIBERS ON THE PROPERTIES OF POLYESTER THERMOPLASTIC ELASTOMERS Adam Pearson, University of Toronto</p> <p>Thermoplastic elastomers have been reinforced with short carbon and PBO fibers. While the fibers have similar base mechanical properties the strength of the PBO composites is superior to carbon reinforcement.</p>	<p>P3202-8 INVESTIGATION INTO 3D PRINTING OF CFRP USING COVERING COMPOSITE YARN Takato Yoshizawa, Doshisha University</p> <p>In this study, we aimed to understand the influence of molding conditions when using CFRP with covering composite yarn in 3D printer on resin impregnation and mechanical properties.</p>	<p>P3204-8 EFFECT OF LASER RE-MELTING PROCESS ON THE MICROSTRUCTURE AND MECHANICAL PROPERTIES OF ADDITIVELY MANUFACTURED METAL MATRIX COMPOSITES Jianshen Wang, University of New South Wales</p> <p>Apply laser re-melting process to the additive manufacturing of Ti-Ni₂C Metal Matrix Composites and investigate the improvement of microstructure, hardness and mechanical properties.</p>	<p>P3205-8 EVALUATION OF MECHANICAL PROPERTIES OF PPEPDM/MWCNT BLENDED-NANOCOMPOSITES UNDER DYNAMIC AND QUASI-STATIC LOADING Mehrdad Khodabandehou, Sahand University of Technology</p> <p>The newly developed in situ-polymerizing thermoplastic urethane resin has excellent moldability like thermosetting resin, and CFRTP using it has excellent mechanical properties.</p>	<p>P3206-8 EFFECT OF CARBON NANOTUBES CONTENT ON THE FRACTURE BEHAVIOR OF PPEPDM/MWCNT BLENDED-NANOCOMPOSITES UNDER DYNAMIC AND QUASI-STATIC LOADING Mehrdad Khodabandehou, Sahand University of Technology</p> <p>The increase of MWCNT content has a contradictory effect of the fracture toughness under dynamic loading and quasi-static loading. It was demonstrated that this contradiction originates from different dominant toughening mechanisms in the PP matrix under both test conditions.</p>	<p>P3207-8 THE INFLUENCE OF FABRIC ON THE WEAR-RESISTING PROPERTY OF SELF-LUBRICATING COMPOSITES Mingming Yu, Shanghai University</p>	<p>P3208-8 LIGHTWEIGHT DESIGN OF COMPOSITE BODY FOR ELECTRIC MICROBUS Pongpat Sirisobhana, King Mongkut's University of Technology Thonburi (KMUTT)</p> <p>This paper presents the design and optimization of sandwich structure consisting of glass and carbon fiber/epoxy face and foam core for electric microbus.</p>	<p>P3209-8 EFFECT OF ARAMID FIBER CLOTH ON CARBON/ARAMID FIBER REINFORCED THERMOPLASTICS Hisaki Matsuda, Department of Systems Innovation, The University of Tokyo</p> <p>Carbon/aramid interlayer hybrids with continuous aramid cloths were manufactured and static and dynamic tests were carried out. The aramid cloths improved the toughness of CFRTP in flexural and dynamic tests.</p>	<p>P3210-8 DESIGN AND ANALYSIS OF FILAMENT-WOUND COMPOSITE PRESSURE VESSELS BASED ON MESH WINDING THEORY Hui Xu, Hefei University of Technology</p>	<p>P3211-8 FACTORIAL STUDY OF MATERIAL AND PROCESS PARAMETERS ON FIRE AND MECHANICAL PROPERTIES OF WOOL AND WHEAT GLUTEN COMPOSITES Nam Kyeun Kim, Centre for Advanced Composite Materials, Mechanical Engineering Department, The University of Auckland</p> <p>The research has investigated the desirable conditions of material and manufacturing parameters to enhance fire resistant and mechanical properties of wool and gluten based composites.</p>	<p>P3212-8 ELABORATION AND MECHANICAL CHARACTERISTICS OF FLAX-PCL COMPOSITES AND SANDWICHES Laurent Bizet, Université Le Havre Normandie</p> <p>Flax composites have been manufactured with polycaprolactone (PCL) matrix in order to obtain biodegradable composites. Flax fibers assembled in unidirectional fabrics and flax shives have been used as different reinforcements.</p>	<p>P3214-8 PREPARATION OF SiCNp AND IN-SITU Mg2Si HYBRID PARTICULATES REINFORCED AL-Cu MATRIX COMPOSITES Shusen Wu, State Key Lab of Materials Processing and Die & Mould Technology, Huazhong University of Science and Technology</p>	<p>Mobility between Academia and Industry Isabelle Paris, Bombardier</p>	
	1150-1155	<p>P3201-9 LINEAR AND NONLINEAR ELASTIC PROPERTIES OF POLYSTYRENE-BASED NANOCOMPOSITES Inna Semenova, Ioffe Institute</p> <p>Polystyrene-based composites filled with particles of different type and shape were fabricated by melt technology. Their linear and nonlinear elastic properties were estimated.</p>	<p>P3202-9 QUASI STATIC COMPRESSIVE RESPONSE OF CFRP HONEYCOMB CORE WITH FOAM FILLERS Hao Zhou, Nanjing University Of Science And Technology</p> <p>CFRP honeycomb with PMI foam fillers was proposed as a hybrid sandwich core. The quasi static compressive response of the core was analyzed numerically.</p>	<p>MSC Software industry workshop "invitation only"</p> <p>MULTI-SCALE MATERIAL MODELING WITH DIGIMAT TO SPEED-UP INNOVATION IN COMPOSITE MATERIAL AND PART DESIGN</p> <p>Soumik Chakrabarty Emilie Storms</p> <p>This workshop will run for 90 minutes</p> <p><i>CONTINUED</i></p>	<p>P3204-9 EFFECTS OF CURE CYCLE PRESSURE PROFILE AND HEATING RATE ON PROPERTIES OF OUT-OF-AUTOCURE RAPIDLY CURED CARBON FIBRE COMPOSITES Sima Kashi, Deakin University</p> <p>Compressive loading in conjunction with torsion of hollow composite tube is critical due to plastic micro buckling formed helically around the tube. This study aims to investigate behaviour of hollow composite tubes with torsion and compression loads, and compared with finite element analysis.</p>	<p>P3205-9 PERFORMANCE MONITOR AND PREDICTION OF A BIAXIALLY LOADED THIN COMPOSITE TUBE Md Shamsuddoha, University of New South Wales</p> <p>In this work, a hybrid containing cobalt-copper alloys encapsulated 2D-molybdenum disulfide/nitrogen-doped graphene (CuCo@2D-MoS₂/N-G) is synthesized by a simple thermal treatment and investigated as a catalyst for oxygen reduction reaction (ORR) in alkaline solution.</p>	<p>P3206-9 COBALT COPPER ALLOYS ENCAPSULATED BY MOS₂/N-DOPED GRAPHENE NANO-HETEROSTRUCTURES FOR ORR APPLICATION Nam Hoon Kim, Chonbuk National University</p> <p>This work researches the fatigue behavior of bistable laminate, gives the critical load changes with the number of cycles and presents a creep model to explain the attenuation range of the critical load.</p>	<p>P3207-9 A CREEP MODEL FOR THE FATIGUE BEHAVIOR OF HYBRID BI-STABLE LAMINATE Yang Li, Harbin Institute of Technology</p>	<p>P3208-9 BUCKLING ANALYSIS OF MULTILAYERED BEAMS WITH SOFT AND RIGID INTERFACES An Le, University Of Technology Sydney</p>	<p>P3209-9 HOW THE SPRAYING OF GRAPHENE NANOPATELETS CHANGES MECHANICAL PROPERTIES OF CARBON FIBRE REINFORCED POLYMER? Marzena Pawlik, University of Derby</p> <p>This study investigates the effects of graphene nanoplatelets, sprayed on the carbon fibre fabric, on flexural and interlaminar properties of CFRP composites.</p>	<p>P3210-9 A COMPUTATIONALLY EFFICIENT APPROACH FOR ANALYSING THE ONSET OF FAILURE IN AEROSPACE COMPOSITE STRUCTURES Shibo Yan, The University of Nottingham</p>	<p>P3211-9 BAMBOO BASED BIO-COMPOSITES UNDER DAMAGED AND UNDAMAGED FRACTURE Wen Liu, Beijing Forestry University</p> <p>In this work, the potential of graphene oxide treatment to improve flax-epoxy adhesion, increase in the thermal stability of flax fibres and their mechanical properties over 200 °C processing temperatures are studied.</p>	<p>Altair industry workshop</p> <p>RESEARCH MEETS PRACTICE - APPLYING MULTISCALE MODELING AND OPTIMIZATION IN COMPOSITES ENGINEERING</p> <p>Markku Palanterä, Director of Global Composites Business Development</p> <p>This workshop will run for 90 minutes</p> <p><i>CONTINUED</i></p>	<p>P3214-9 A NOVEL W/TIN/TA COMPOUND SHAPED CHARGE LINER Zizhi Yan, Huazhong University of Science & Technology</p> <p>Mr. Yan and his team have devoted themselves to the study of toughening technology of tungsten composites for many years, hoping to promote the application of tungsten in industry.</p>	<p>Bridging the gap between education and employment Tony Belcher, Boeing</p> <p>Modernising Composites Regulations Ole Thomsen, Bristol University</p> <p>Increasing access for SMEs to international research Matt Jevons, MT Aerospace</p> <p>This session aims to debate topics that cross between academia and industry in a close and less formal environment. Come and join our animators as we discuss key topics and identify ways forward. Each animator will represent a topic and visitors can move between individual topics or stay with one that particularly interests them.</p>
	1155-1200	<p>P3201-10 HIGH TEMPERATURE COMPRESSION PROPERTIES OF CFF/PPS COMPOSITE LAMINATES FABRICATED BY FILM STACKING TECHNIQUE Shixun Wang, Beijing Institute Of Astronautical Systems Engineering</p>	<p>P3202-10 ELECTROMECHANICAL RESPONSE OF MULTIFUNCTIONAL PIEZOELECTRIC COMPOSITES Krishna Challaqulla, Laurentian University</p> <p>The present work extends the previous study by the authors on piezoelectric foam structures to multifunctional composite structures by enclosing the foam structures with symmetric interconnect made of PZT-7A (acts as first phase) within piezoelectric materials (acts as second phase); (i) barium titanate (BaTiO₃), and relaxor ferroelectrics (PMN-33%PT) (ceramic-ceramic piezoelectric composites), and (ii) polyvinylidene fluoride (PVDF) (ceramic-polymer piezoelectric composites).</p>	<p>P3204-10 HIGLY AUTOMATED MANUFACTURING PROCESS OF LARGE AIRPLANE CFRP STRUCTURES Marcin Malecha, German Aerospace Center</p> <p>We present automated approach for manufacturing of large aircraft structures made of dry non-crimped carbon fabrics from material logistics to vacuum bagged preform in a single smart process.</p>	<p>P3205-10 INTRA-LAMINAR AND INTER-LAMINAR PROGRESSIVE FAILURE ANALYSIS OF AFP COMPOSITE ON A TOW LEVEL Xie Li, University of New South Wales</p> <p>A tow level numerical modelling technique has been introduced to more precisely capture the progressive failures of AFP composite with the inclusion of process-induced defects.</p>	<p>P3206-10 COBALT PHOSPHIDES COATED COPPER OXIDE NANOROD ARRAYS FOR ENHANCED OVERALL WATER SPLITTING Jong Hee Lee, Chonbuk National University</p> <p>Herein, we report the cost-effective fabrication of cobalt phosphides coated copper oxide nanorod arrays (Co₂P@CuO NR/CF) as an efficient electrocatalyst for overall water splitting in alkaline condition.</p>	<p>P3207-10 SHORT-TIME APPROACH FOR FATIGUE LIFE ESTIMATION OF MULTIFUNCTIONAL COMPOSITES Sebastian Backe, TU Kaiserslautern</p> <p>A newly developed short-time approach for fatigue life estimation of multifunctional composite laminates based on single load increase tests is introduced.</p>	<p>P3209-10 CFRP-STEEL HYBRIDS WITH IMPROVED AGEING RESISTANCE THROUGH ZINC OXIDE NANORODS - INVESTIGATION OF BASIC MECHANISMS Jan Striewe, Paderborn University</p> <p>Investigations on the mode of action and influence of an innovative wet-chemical surface pre-treatment of steel substrates on the ageing resistance of hybrids made of steel and carbon fibre-reinforced plastic.</p>	<p>P3210-10 SIMULATION AND EXPERIMENTS FOR MECHANICAL PROPERTIES DOMINATING THE PRESS MOLDING USING CFRTP PREFORMS Yuji Abo, Kyoto University</p> <p>The press molding using CFRTP attracts attention to reduce production times. The pull-out and shear property of CFRTP preforms were examined, and models for preforming simulation were made.</p>	<p>P3211-10 CHARACTERIZATION AND THERMAL EFFECT ON MECHANICAL PROPERTIES OF BIOMATERIAL-REINFORCED-POLYPROPYLENE Anh Dung Ngo, École De Technologie Supérieure</p>	<p>P3212-10 GREEN AND NATURAL FIBRE PANEL COMPOSITES FROM BAMBOO-A MATERIAL OF THE FUTURE Uday Nagammanavar, IPIRTI</p> <p>IPIRTI has developed number of bamboo based structural products like Bamboo Mat Board (BMB), as alternative to plywood, Bamboo Mat Corrugated Sheet (BMCs) as alternative to corrugated roofing sheets, Bamboo Flooring Tiles, Bamboo Particle/Fibre Boards.</p>	<p>P3214-10 STRENGTHENING OF PURE AL MATRIX COMPOSITES BY IN-SITU SYNTHESIZED NANO AL-O NEEDLE PHASE Xinxin Zhu, Southwest Jiaotong University</p> <p>The in-situ Al matrix composites were synthesized by mechanical milling followed by oscillatory press sintering, producing an excellent mechanical properties both at ambient and elevated temperatures.</p>	<p><i>CONTINUED</i></p>		

Wednesday 14 August	1200-1205	P3201-11 COMPRESSION PROPERTIES OF MULTIFUNCTIONAL CFRP LAMINATES WITH EMBEDDED LITHIUM-ION POLYMER BATTERIES <u>Pooneh H.M Altar</u> , RMIT University	P3202-11 DAMAGE VISUAL INDICATION SYSTEM FOR POLYMER COMPOSITE STRUCTURES <u>Oiga Bulderberga</u> , University of Latvia The new concept of structural health monitoring for polymer composites is presented by damage visual indication system. The concept is based on the colour change in the place of the applied over thresholding load.	P3204-11 CONTINUOUS TAPE LAYUP MOLDING BEHAVIOR OF CFRTP USING NEAR-INFRARED HEATING AND INDUCTION HEATING <u>Naoki Nakata</u> , Kindai University In this study, layup process of CF/PA6 prepreg tape to predict the optimum processing condition for carbon fiber continuous tape layup molding equipment developed in.	P3205-11 SIMULATION AND TEST VERIFICATION OF PREPREG PEEL FOR PLACEMENT PROCESS <u>Xianzhao Xia</u> , Hefei University of Technology	P3206-11 ELECTROMAGNETIC PROPERTIES OF KH560/RGO@Fe3O4/TiO2/P ARAFFIN WAX COMPOSITE IN 0.5-18 GHZ FREQUENCY <u>Yuexuan Li</u> , Xi'an Jiaotong University Si-modified KH560/RGO@Fe3O4/TiO2 composite is successful synthesized by a facile hydrothermal reaction. Its maximum RL value is optimized to -20.9 dB at 8.6 GHz with a thickness of 6 mm.	P3207-11 FATIGUE LIFE ANALYSIS FOR WIND TURBINE GEAR SHAFT WITH OXIDE INCLUSION <u>Ran Liu</u> , Xi'an Jiaotong University				P3210-11 DEVELOPMENT OF BENDING PROCESS FOR THERMOPLASTIC COMPOSITE PIPE DURING PULTRUSION MOLDING PROCESS <u>Asami Nakai</u> , Gifu University	P3212-11 ONE-STEP EXTRACTION OF CELLULOSE NANOCRYSTALS ONLY USING HIGH-PRESSURE HOMOGENIZER <u>Nae-man Park</u> , ETRI A simple and green process to produce cellulose nanocrystals by using only a high pressure homogenizer is proposed. Its yield is about 80%.		
	1205-1210		P3202-12 EXPERIMENTAL CHARACTERIZATION AND MODELLING OF MECHANICAL BEHAVIOR OF MICROCAPSULES IN COMPOSITES <u>Andrey Aniskevich</u> , University of Latvia Mechanical behavior of single microcapsule and embedded in polymer matrixes was investigated experimentally and modelled analytically and numerically.	P3202-13 IMPREGNATION PROCESS IN OPEN MOLDING METHOD USING MULTI-FILAMENT WINDING <u>Kazuma Otake</u> , Gifu University In this study, the heater position and the heating temperature were changed, and the impregnated states of the molds were compared and evaluated by observing the cross section, and the heating condition was examined.		P3206-12 ANALYSES OF MECHANICAL REINFORCEMENT FOR CELLULOSE NANOFIBERS/CLAY NANOCOMPOSITES USING X-RAY DIFFRACTION <u>Shunichi Mori</u> , Kobe University We employed cellulose nanofiber (CNF) as a matrix and montmorillonite (MMT) as a filler, then prepared CNF/MMT nanocomposites. The mechanical reinforcement effect based-on interfacial interaction between CNF and MMT was investigated by "X-ray diffraction method".	P3207-12 INVESTIGATION ON HOMOTHETIC FAILURE ENVELOPES IN THE LAYER-BASED FATIGUE ANALYSIS OF CFRP <u>Marc Möller</u> , Technische Hochschule Köln The present paper mainly deals with the design of homothetic fatigue failure envelopes under multiaxial cyclic stresses for residual strength based fatigue analyses.			P3210-12 PRESS AND INJECTION HYBRID MOLDING OF GF/PP HAT-SHAPED MEMBER AND EVALUATION OF ITS BENDING PROPERTY <u>Kazuto Tanaka</u> , Doshisha University The bending properties of hybrid molded GF/PP hat-shaped member were evaluated and FEM analysis was carried out to clarify the relationship between material cost and mechanical properties.	P3212-12 RESEARCH ON COMBUSTION BEHAVIOR OF HYBRID COMPOSITE BY FIRE DYNAMICS SIMULATOR <u>Yoon Hee Park</u> , Changwon National University As a result, some errors are generated, but the combustion behavior is similar. Research is needed to accurately implement factors and surroundings that affect ignition time and behavior in order to reduce errors.	Altair industry workshop RESEARCH MEETS PRACTICE - APPLYING MULTISCALE MODELING AND OPTIMIZATION IN COMPOSITES ENGINEERING <u>Markku Palanterä</u> , Director of Global Composites Business Development	Mobility between Academia and Industry <u>Isabelle Paris</u> , Bombardier Bridging the gap between education and employment <u>Tony Belcher</u> , Boeing Modernising Composites Regulations <u>Ole Thomsen</u> , Bristol University Increasing access for SMEs to international research <u>Matt Jevons</u> , MT Aerospace This session aims to debate topics that cross between academia and industry in a close and less formal environment. Come and join our animators as we discuss key topics and identify ways forward. Each animator will represent a topic and visitors can move between individual topics or stay with one that particularly interests them.	
	1210-1215		P3202-13 SMART MECHANOLUMINESCENT SHAPE MEMORY FILM FOR FLEXIBLE STRESS SENSING <u>Yang He</u> , Harbin Institute of Technology		P3204-13 PROGRESS IN STRUCTURAL TAILORED POLYMER INSERTS; TRENDS AND STRATEGIES TOWARDS FUNCTIONAL POLYMERIC INTER-PLY REINFORCEMENTS <u>Sithila Thernimulla</u> , Deakin University The world of smart materials offers a progress towards a more intelligent materials design philosophy. This work examines progress in the utilisation of modified thermoplastic additives as multifunctional strain sensing elements.		P3206-13 PREPARATION OF FLUOROALKYL END-CAPPED OLIGOMER/MAGNETITE NANOCOMPOSITES - APPLICATION TO WATER/OIL SEPARATION <u>Hideo Sawada</u> , Hiroskai University Fluoroalkyl end-capped vinyltrimethoxysilane oligomer/magnetite composites, which were prepared by composite reaction of the corresponding oligomer with magnetite, can adsorb effectively oil droplets spread on the water interface under a magnetic field.	P3207-13 CRUCIFORM SPECIMEN DESIGNS FOR PLANAR BIAXIAL FATIGUE TESTING IN COMPOSITES <u>Aakash Mancy</u> , Technical University of Denmark Usage of composite cruciform specimens for planar-biaxial fatigue testing are evaluated using finite element analysis for their uniformity in the stress and the strain state in their biaxial zones.			P3210-13 DESIGN AND ANALYSIS OF COMPOSITE CARBON FIBER REINFORCED ANTI-COLLISION BEAM BASED ON ANSYS ACP <u>Chuanxiang Zheng</u> , Zhejiang University	P3212-13 TUBE MADE FROM POLYLACTIC ACID YARN AND SILK YARN BY FILAMENT WINDING TECHNIQUE <u>Natee Srisawat</u> , Rajamangala University of Technology Thanyaburi	This workshop will run for 90 minutes CONTINUED	CONTINUED
	1215-1220		P3202-14 DAMAGE DETECTION USING DIRECT-WRITE PIEZOELECTRIC TRANSDUCERS AND LAMB WAVES IN COMPOSITE MATERIALS <u>Marilyne Philibert</u> , IMRE, A*STAR, Singapore The objective is to apply direct-write transducers on CFRP plate for active sensing of impact damage by using non-ceramic P(VDF-TrFE) with an electrode patterned for mode selection.				P3206-14 CARBON DOT/POLYPYRROLE NANOPARTICLE COMPLEXES AS MULTIFUNCTIONAL THERANOSTIC AGENTS <u>Tae Eun Kim</u> , Inje University In this study, carbon dots are combined with the polypyrrole nanoparticles to make a novel PTT-imaging agent. The complexes can be utilized as theranostic agents by monitoring in real time.							

CONFERENCE PROGRAM

correct as at 8.8.19 and is subject to change

1430-1440	Move to concurrent rooms														
1440-1600	3301 Nano-composites	3302 Biocomposites	3303 Self-healing	3304 Liquid composites moulding	3305 Additive Manufacturing	3306 Composite structures	3307 Multiscale modelling	3308 Textile-based composites	3309 Fracture and damage	3310 Design and Integration	3311 Defence	3312 Testing methods	3313 Damage tolerance	3314 Fatigue	3315 Metal matrix Composites
	<p>3301-1 PERFORMANCE OF GRAPHENE/EPOXY DIAPHRAGM HEADPHONES <u>Hsien-Kuang Liu</u>, Dept. of Mechanical and Computer Aided Engineering, Feng Chia University</p> <p>Graphene oxide paper (GOP) headphoned possesses highest SPL value 98 dB at first resonant frequency 430 Hz, while the GOP composite headphoned has smoother SPL curve in higher frequency range.</p>	<p>3302-1 INVESTIGATION OF NOVEL FIRE RETARDANT POLYFURFURYL ALCOHOL (PFA) BIO-COMPOSITE MATERIAL <u>Tahir Shanif</u>, University of Derby</p> <p>Polyfurfuryl alcohol (PFA) bioresin is a biological and sustainably sourced thermosetting polymer with excellent natural fire resistance. This study investigates the mechanical, thermal and fire retardant properties of this material, as composite prepreg, in autoclave and oven cure processes.</p>	<p>3303-1 DAMAGE PROGRESSION ANALYSIS OF SELF-HEALING POLYMER COMPOSITES CONTAINING MICROCAPSULES <u>Yasuka Nassho</u>, Toyama Prefectural University</p> <p>Three-dimensional finite element analysis was performed using a representative volume element model to predict damage progression behavior of spread carbon fiber/epoxy laminates containing microcapsules.</p>	<p>3304-1 MULTI SCALE SIMULATION OF FLOW IN DRY FIBER PLACEMENT PREFORMS <u>Oliver Rimmel</u>, Institut für Verbundwerkstoffe GmbH</p> <p>The present work deals with application of a numerical solver to random fibre arrangements to determine micro permeability transverse to the fibre orientation, for later use in meso- and macro scaled models.</p>	<p>3305-1 FIBRE LENGTH AT DIFFERENT STAGES OF ADDITIVELY MANUFACTURED SHORT FIBRE REINFORCED COMPOSITES <u>Lizhe He</u>, University of Nottingham Ningbo China</p> <p>This study investigates the in-plane localised crushing responses of carbon fibre reinforced epoxy (CF/EP) composite sandwich panels under a semi-circular indenter subjected to both quasi-static and dynamic loadings.</p>	<p>3306-1 EXPERIMENT AND PREDICTION OF IN-PLANE LOCALISED CRUSHING RESPONSES OF CF/EP COMPOSITE SANDWICH PANELS UNDER A SEMICIRCULAR INDENTER <u>Yuan Chen</u>, The University of Sydney</p> <p>This study investigates the in-plane localised crushing responses of carbon fibre reinforced epoxy (CF/EP) composite sandwich panels under a semi-circular indenter subjected to both quasi-static and dynamic loadings.</p>	<p>3307-1 MICROMECHANICAL MODELLING OF DENSELY PACKED SYNTACTIC FOAM COMPOSITES <u>Declan Carolan</u>, Fac Technology</p> <p>The presentation deals with a micromechanical homogenisation of the effective elastic properties of AP-PLY composites using a meshfree based modelling approach.</p>	<p>3308-1 STUDY OF THE EFFECT OF IN-PLANE BRAID DISTORTIONS ON THE MECHANICAL PROPERTIES OF BRAIDED COMPOSITES USING STOCHASTIC TOOLS AND FINITE ELEMENT MODELLING <u>Mavank Gautam</u>, University of Manchester</p> <p>Three types of braided composites each with different in-plane distortions, with a mean braid angle of 45° braid angle have been produced, to the study the effect of in-plane distortions on the tensile behaviour (in axial direction) of braid composites.</p>	<p>3309-1 DAMAGE CHARACTERISATION OF COMPOSITE COMPONENTS USING FULL-FIELD IMAGING TECHNIQUES <u>Irene Jimenez Fortunato</u>, University of Southampton</p> <p>Thermoelastic Stress Analysis (TSA) and Digital Image Correlation (DIC) full-field imaging techniques are applied simultaneously on a complex composite substructure subjected to cyclic loading to provide a damage parameter.</p>	<p>3310-1 MULTIFUNCTIONAL COMPOSITES FOR SENSING, ACTUATION, COMPUTATION AND STRUCTURAL POWER: AIR FORCE PERSPECTIVE <u>Dan Inman</u>, University of Michigan</p> <p>3310-2 CURRENT AND FUTURE TRENDS IN MULTIFUNCTIONAL COMPOSITES RESEARCH: A NATIONAL SCIENCE FOUNDATION PERSPECTIVE <u>Siddiq Qidwai</u>, National Science Foundation</p>	<p>3311-1 INTEGRATED HYBRID CERAMIC/S2-GLASS FIBRE REINFORCED COMPOSITE ARMOUR <u>Ali Daliri</u>, Defence Science and Technology Group</p> <p>This study evaluated the ballistic performance of a range of polymer ceramic/S2-Glass armour systems; comparing polymer ceramic strike face and embedding the ceramic powder within a phenolic matrix FRP composite.</p>	<p>3312-1 EVALUATION OF MECHANICAL PROPERTIES OF COMPOSITE PRESSURE VESSELS USING A SEGMENT-TYPE RING BURST TEST DEVICE <u>Woetae Kim</u>, Kaist</p> <p>To verify the stability of pressure vessel, this paper deals with the development of a new segment-type ring burst test device.</p>	<p>3313-1 COMPRESSION STRENGTH AFTER IMPACT ANALYSIS USING DISCRETE DAMAGE MODELLING <u>Jeffrey McQueen</u>, University of Texas at Arlington Research Institute</p> <p>The Regularized-Extended Finite Element Method was used to perform discrete damage modeling of impact-induced delamination and matrix cracks in the scope of compression after impact analysis.</p>	<p>3314-1 A NEW CONSTANT LIFE DIAGRAM MODEL FOR UD LONGITUDINAL FATIGUE <u>Fangfang Li</u>, Shanghai Polytechnic University</p> <p>A new constant life diagram (CLD) model featuring asymmetric bilinear constant-life curves was proposed to better describe the longitudinal fatigue behavior of unidirectional laminae (UD) under a wide range of stress ratios.</p>	<p>3315-1 EVADING STRENGTH AND DUCTILITY TRADE-OFF IN BIO-INSPIRED HIERARCHICAL MAGNESIUM-BASED NANOCOMPOSITE <u>Xi Luo</u>, Southwest Jiaotong University</p> <p>We propose an inverse-nacre structure which the flaky soft phases are embedded in a hard matrix, to evade the trade-off between strength and ductility.</p>
	<p>3301-2 LOW FIELD MICROWAVE ABSORPTION AND MAGNETO RESISTANCE IN PANI-FE NANO FIBRE COMPOSITES <u>Vijaya Srinivasu</u>, Vallabhapuram, University of South Africa</p> <p>*Needs to be on same day as PN: 1264</p> <p>Low field microwave absorption (LFMA) in various systems, namely, Superconductors, magnetic materials and polymer composites is totally different, here we report on the LFMA in Fe nano particle (Nps) embedded PANI nano fibers.</p>	<p>3302-2 MECHANICAL PROPERTY CHARACTERIZATION AND TRANS-SCALE MODELING FOR NACRE <u>Jingru Song</u>, Institute of Mechanics Chinese Academy of Sciences</p> <p>The hierarchical structures of nacre are observed and a trans-scale model is used to describe its mechanical behavior by the nanoindentation test and fracture toughness test.</p>	<p>3303-2 DESIGN OF COMPOSITE PROPELLER BLADE OF TURBOPROP AIRCRAFT CONSIDERING ON SELF HEALING <u>Hyunbum Park</u>, Howon University</p> <p>In this study, aerodynamic and structural design of the composite propeller blade for a regional turboprop aircraft is performed. The self-healing concept for developed propeller was studied.</p>	<p>3304-2 KEY ASPECTS IN MANUFACTURING MULTI-SCALE COMPOSITES USING OOA RFI <u>François Robitaille</u>, University of Ottawa</p> <p>Proposed and investigated a practical method to characterize fusion quality of 3D printed polymer composites, i.e. to conduct DENT tests to determine the specific essential work of fracture of single layer film.</p>	<p>3305-2 CHARACTERISATION OF FUSION QUALITY BETWEEN FILAMENTS BY FDM USING ESSENTIAL WORK OF FRACTURE <u>Qinghao He</u>, School of Aerospace, Mechanical and Mechatronic Engineering</p> <p>CNT was sprayed on spread CF tow and mechanical properties of CF/Nano-PET composites was enhanced.</p>	<p>3306-2 EFFECT OF SPREAD CARBON FIBER TOW ON THE MECHANICAL PROPERTIES OF THE CF/NANO-PET COMPOSITES <u>Yeon-Taek Hwang</u>, Hanyang University</p> <p>CNT was sprayed on spread CF tow and mechanical properties of CF/Nano-PET composites was enhanced.</p>	<p>3307-2 A MESHFREE-BASED MODELLING APPROACH FOR PREDICTING THE EFFECTIVE PROPERTIES OF AP-PLY COMPOSITE LAMINATES <u>Yanhong Chen</u>, University of Oxford</p> <p>The presentation deals with a micromechanical homogenisation of the effective elastic properties of AP-PLY composites using a meshfree based modelling approach.</p>	<p>3308-2 INFLUENCE OF RESIN ON INTRAPLY SHEAR BEHAVIOR IN PREPREG FABRIC FORMABILITY <u>Muhammad Khan</u>, WMG, The University of Warwick</p> <p>This study examined lightning strike damage behaviours of CFRP under atmospheric pressure air and reduced pressure air to evaluate the effect of atmospheric environment on lightning damage behaviour.</p>	<p>3309-2 EXPERIMENTAL STUDY OF LIGHTNING DIRECT EFFECTS ON CFRP UNDER ATMOSPHERIC PRESSURE AIR AND REDUCED PRESSURE AIR <u>Shintaro Kamiyama</u>, Tokyo University of Agriculture and Technology</p> <p>This study examined lightning strike damage behaviours of CFRP under atmospheric pressure air and reduced pressure air to evaluate the effect of atmospheric environment on lightning damage behaviour.</p>	<p>3310-2 CURRENT AND FUTURE TRENDS IN MULTIFUNCTIONAL COMPOSITES RESEARCH: A NATIONAL SCIENCE FOUNDATION PERSPECTIVE <u>Siddiq Qidwai</u>, National Science Foundation</p>	<p>3311-2 PROTECTION PROPERTIES OF BI-CORRUGATED SANDWICH STRUCTURES UNDER HYPER-VELOCITY IMPACT: NUMERICAL SIMULATION <u>Rui Guo</u>, Nanjing University of Science and Technology</p> <p>A review of the main test types and associated fixtures used to determine the bulk properties of composite laminates.</p>	<p>3312-2 A REVIEW OF MECHANICAL TESTING OF COMPOSITE LAMINATES <u>Ian McEntegart</u>, Instron</p> <p>A review of the main test types and associated fixtures used to determine the bulk properties of composite laminates.</p>	<p>3313-2 AN ENERGY-EQUIVALENT COHESIVE LAW FOR MODELLING Z-PINNED COMPOSITE LAMINATES <u>Antonio Mello</u>, Bristol Research Institute</p> <p>A multi-scale framework has been developed for the numerical modelling of composite laminates reinforced with z-pins and submitted to several delaminations of different mode-mixities.</p>	<p>3314-2 EXPERIMENTAL INVESTIGATION OF THE DAMAGE AT THE TIP OF TUNNELING CRACK IN GLASS FIBRE COMPOSITES <u>Ashish Kumar Bangaru</u>, Technical University of Denmark</p> <p>Cu/CF composites were fabricated through MIM process. Effects of fiber contents and fiber orientation on the mechanical properties were investigated.</p>	<p>3315-2 METAL INJECTION MOLDING OF Cu/CF COMPOSITES <u>Toshiko Osada</u>, Tokyo Metropolitan University</p> <p>Cu/CF composites were fabricated through MIM process. Effects of fiber contents and fiber orientation on the mechanical properties were investigated.</p>
	<p>3301-3 DEVELOPMENT OF DIELECTRIC ELASTOMER NANOCOMPOSITES AS STRETCHABLE ACTUATING MATERIALS <u>Lizhi Sun</u>, University of California, Irvine</p> <p>Dielectric elastomers (DEs) are a new type of smart materials showing promising functionalities as energy harvesting materials as well as actuating materials for potential applications such as artificial muscles, implanted medical devices, robotics, and micro-electro-mechanical systems due to their high electromechanical efficiency, stability, lightweight, low cost, and easy processing.</p>	<p>3302-3 POTENTIAL OF APPLYING PULTRUSION FOR THE MANUFACTURING OF BIO-BASED COMPOSITE PROFILES USING CELLULOSE FIBRE AND ALIPHATIC POLYURETHANE <u>Sebastian Strauss</u>, Fraunhofer IGCV</p>	<p>3303-3 METALLIC MICROENCAPSULATION: A DIRECT PATH TO NOVEL MULTIFUNCTIONAL MATERIALS <u>Jinglei Yang</u>, Hong Kong University of Science and Technology</p>	<p>3304-3 MODEL BASED PROCESSING OF HYBRID RTM PARTS <u>Ralf Schiedjewski</u>, Montanuniversität Leoben</p> <p>A one-shot-hybrid RTM process for multi material hybrid parts is the basis to demonstrate a strategy how to generate data for models used for an inline process optimization.</p>	<p>3305-3 STUDY ON 3D PRINTING AND PROPERTIES OF COMPOSITE CATALYST CARRIERS WITH BIOMIMETIC POROUS STRUCTURE <u>Cunbao Huo</u>, State Key Laboratory of Manufacturing Systems Engineering, Xi'an Jiaotong University</p> <p>In this paper, a biomimetic porous ceramic catalyst carrier was prepared by powder bed fusion technology.</p>	<p>3306-3 GUIDED WAVE NDE AND RESIDUAL STRENGTH OF COMPOSITE PANELS WITH STIFFENER IMPACT DAMAGE <u>Hyonny Kim</u>, UC San Diego</p> <p>Stringer-stiffened composite panels assessed by ultrasonic guided waves show strong correlation to damage features as imaged by other NDE techniques (x-Ray CT, ultrasonic), as well as to residual strength.</p>	<p>3307-3 PROJECTILE MATERIALS ON IMPACT RESISTANCE OF 2D TRIAXIAL BRAIDED COMPOSITES <u>Lulu Liu</u>, College of Energy and Power Engineering, Nanjing University of Aeronautics and Astronautics</p> <p>In the current paper, three types of projectile, including cylinder gelatin projectile, CFRP blade-like projectile and titanium alloy projectile, were employed to conduct ballistic impact tests on the 2D triaxial braided composites to figure out the influences of projectile materials on the damage pattern and energy absorption behavior.</p>	<p>3308-3 INFLUENCES OF PROJECTILE MATERIALS ON IMPACT RESISTANCE OF 2D TRIAXIAL BRAIDED COMPOSITES <u>Lulu Liu</u>, College of Energy and Power Engineering, Nanjing University of Aeronautics and Astronautics</p> <p>In the current paper, three types of projectile, including cylinder gelatin projectile, CFRP blade-like projectile and titanium alloy projectile, were employed to conduct ballistic impact tests on the 2D triaxial braided composites to figure out the influences of projectile materials on the damage pattern and energy absorption behavior.</p>	<p>3309-3 THE ROLE OF HOMOGENEOUS AND HETEROGENEOUS TOUGHENING MECHANISMS IN DGEBA FRACTURE <u>Leslie Lamberson</u>, Drexel University</p> <p>This study presents dynamic fracture investigations exploring innate toughening of DGEBA (epoxy-based) resins via heterogeneous and homogeneous additives for improvement in high performance composite systems.</p>	<p>3310-3 DISTRIBUTED SENSING, ACTUATION, AND POWER IN SOFT COMPOSITE MATERIALS <u>Robert Shepherd</u>, Cornell University</p>	<p>3311-3 OBSERVING THROUGH-THICKNESS DAMAGE TIMELINE IN THICK-SECTION MONOLITHIC COMPOSITES UNDER IMPACT LOAD <u>Ignacio Vidal Perez</u>, Technical University of Denmark</p> <p>Braided composites consist of continuous fibers embedded in a matrix. Full-field strain measurement approaches Three Dimensional Digital Image Correlation- 3D DIC and Digital Volume Correlation-DVC will assess braided composite structures.</p>	<p>3312-3 FULL FIELD STRAIN MEASUREMENT OF BRAIDED COMPOSITE STRUCTURES <u>Garrett Melena</u>, York University</p> <p>Braided composites consist of continuous fibers embedded in a matrix. Full-field strain measurement approaches Three Dimensional Digital Image Correlation- 3D DIC and Digital Volume Correlation-DVC will assess braided composite structures.</p>	<p>3313-3 Z-PIN THROUGH-THICKNESS ENHANCEMENT OF A COMPOSITE LAMINATE WITH VARIABLE THICKNESS <u>Joël Serra</u>, UTC Composites - University of Bristol</p> <p>A multi-scale framework has been developed for the numerical modelling of composite laminates reinforced with z-pins and submitted to several delaminations of different mode-mixities.</p>	<p>3314-3 DESIGN OF COMPOSITE STRUCTURE UNDER VARIABLE AMPLITUDE FATIGUE LOADS USING LOCAL LAMINATE LIFE PREDICTIONS <u>Subbareddy Daggumati</u>, IIT Indore</p> <p>Fatigue damage analysis of composite laminates under variable amplitude loads is presented using two different analytical methodologies, namely: i) Piecewise Constant Life Diagrams (PCLD) in combination with Miners damage sum; ii) PCLD with a progressive damage model. The obtained analytical results are compared with the experimental spectral fatigue results.</p>	<p>3315-3 QUANTITATIVE ANALYSIS OF REINFORCEMENT DISPERSION IN METAL MATRIX COMPOSITES <u>Byeonjin Park</u>, Korea Institute of Materials Science</p> <p>An automated dispersion analysis technique is proposed to quantify reinforcement dispersion in metal matrix composites with minimized human intervention by integrating image processing, statistical analysis, and computational intelligence.</p>
1520-1540															

Wednesday
14 August



11-16 AUGUST 2019
 22nd International Conference
 on Composite Materials

CONFERENCE PROGRAM

correct as at 8.8.19 and is subject to change

Wednesday 14 August	1540-1600	3301-4 EXFOLIATION AND FUNCTIONALIZATION OF MXENE: EFFECTIVE FLAME RETARDANT AND REINFORCEMENT FOR THERMOPLASTIC POLYURETHANE ELASTOMER Wei Yang, University of New South Wales	3302-4 TOUGH BIO-INSPIRED CERAMIC COMPOSITES FOR AMBIENT AND HIGH TEMPERATURE APPLICATIONS Behnam Ashrafi, National Research Council Canada This work demonstrates how a bio-inspired approach based on architected designs and lamination could address the brittleness of ceramic structures.	3304-4 PROPERTIES OF POLYAMIDE-6 COMPOSITES USING THERMOPLASTIC RESIN TRANSFER MOULDING James Murray, University of Edinburgh Thermoplastic composite laminates with ~53% fibre volume fraction, ~1% voids volume fraction and excellent mechanical properties were produced using a bespoke low-cost TP-RTM system within 5 minutes using only a 4 bar injection pressure.	3305-4 DEVELOPING HIGH TEMPERATURE - HIGH PERFORMANCE GF/PEKK THERMOPLASTIC PREPREGS Zhongwei Guan, University Of Liverpool A test rig has been developed to produce glass fibre/PEKK prepregs. Through the resin bath nanomaterials can be added to impregnate the fibre. Also fibre content can be controlled.	3306-4 EFFECT OF MATRIX CRACKS ON THE STIFFNESS DEGRADATION OF LAMINATED COMPOSITE BEAMS Oscar Gerardo Castro Ardilla, Denmark	3309-4 IN SITU MICRO-CT IMAGING OF COMPRESSION LOADED CARBON FIBRE REINFORCED POLYMER SPECIMENS WITH VOIDS AND WRINKLES Abhiram Ramesh, University of Auckland CFRP specimens extracted from curved regions containing voids and wrinkles were tested using a novel compression fixture, allowing for in situ X-ray μ -CT scans under several load steps to determine the type and evolution of damage.	3310-4 MECHANICAL PROPERTIES OF MULTIFUNCTIONAL SANDWICH COMPOSITES WITH EMBEDDED LITHIUM-ION POLYMER BATTERIES Adam Best, CSIRO	3312-4 EXPERIMENTAL DETERMINATION OF STATISTICAL CORRELATION BETWEEN FRP ELASTIC PROPERTIES Shufeng Zhang, National University of Defense Technology A methodology is proposed to experimental determination of statistical correlation between FRP elastic properties by a combination of digital image correlation and virtual field methods.	3313-4 EXPERIMENTAL EXAMINATION ON THE HIGH-SPEED BALLISTIC IMPACT FAILURE BEHAVIOR OF LAMINATED AND TEXTILE COMPOSITE PANELS Chao Zhang, Northwestern Polytechnical University The high-speed impact behavior of composite laminates, woven composites and triaxially braided composites were studied experimentally and systematically compared, with the introduction of digital image correlation, C-scan and X-ray CT characterizations.	3314-4 FATIGUE BEHAVIOR OF UNNOTCHED AND OPEN-HOLE QUASI-ISOTROPIC PSEUDO-DUCTILE THIN-PLY CARBON/GLASS HYBRID LAMINATES Meisam Jalalvand, University of Strathclyde	3315-4 COST-EFFECTIVE SYNTHESIS OF COPPER/DIAMOND COMPOSITE WITH ACCEPTABLE THERMOPHYSICAL PROPERTIES Fai Yang, University of Waikato It is feasible and cost-effective to use induction heating plus forging to produce copper/diamond composites with acceptable thermal conductivity, meeting critical application requirements of future high-power electronic device.	
	1600-1630	Coffee break											
	1630-1830	Exhibition hall											
	1630-1830	ICCM Annual General Meeting											

Time	Plenary 2	Meeting room 205	Meeting room 206	Meeting room 208	Meeting room 209	Meeting room 210	Meeting room 211	Meeting room 212	Meeting room 213	Meeting room 214	Meeting room 215	Meeting room 216	Meeting room 217	Meeting room 218	Meeting room 219
0800-0805	Day 4 Welcome & Announcements														
0805-0850	PLENARY LECTURE: TRENDS IN AEROSPACE COMPOSITES Jerry Young, Boeing, USA Plenary 2														
0850-1030	Industry Forum on the Future of Composites Wilhelm Rupertsberger, Fill, Austria Patrick Blanchard, Ford, USA Mike Hinton, High Volume Manufacturing Catapult Centre, UK David Dorai, Quickstep, Australia Richard Simpson, Furnace Engineering, Australia Jennifer Conley, Advanced Fibre Cluster, Australia Sayata Ghose, Boeing, USA Plenary 2 NSF-AFOSR Joint Workshop on Mechanics-Based Design of Intelligent Material Systems by Multimaterial Additive Manufacturing PART 1 ADDITIVE MANUFACTURING OF THERMOSETTING POLYMERS AND COMPOSITES USING FRONTAL POLYMERIZATION Nancy Sottos, UIUC TUNABLE MECHANICS OF POROUS COMPOSITE FILMS VIA PHASE INVERSION AND 3D PRINTING – THEIR APPLICABILITY IN NEXT-GENERATION FLEXIBLE ELECTRONICS AND ENERGY STORAGE Michael F. Durstock, US Air Force Research Lab SELF-SENSING VARIABLE COMPLIANCE COMPOSITES Robert Shepherd, Cornell University UNVEILING BIO-MORPHOGENESIS THROUGH 4-D PRINTING Ximin He, UCLA														
0900-1030	Coffee break Exhibition hall														
1100-1320	4101 ONR Solid Mechanics Symposium	4102 NSF-AFOSR Joint Workshop on Mechanics-Based Design of Intelligent Material Systems by Multimaterial Additive Manufacturing PART 2	4103 Nano-composites	4104 Liquid composites moulding Machining of composites	4105 Additive Manufacturing	4106 Composite structures	4107 Multiscale modelling	4108 Three dimensional composites	4109 Fracture and damage	4110 Offshore and subsea	4111 Automotive	4112 Testing methods	4113 Hybrid composites	4114 Fatigue	4115 Mechanics of Composites
1100-1130	DYNAMIC INSTABILITY OF ANISOTROPIC CYLINDERS IN CONFINING ENVIRONMENTS Arun Shukla, University Of Rhode Island MULTI JET FUSION TECHNOLOGY AND ITS ADVANCED VOXEL POTENTIALS Lihua Zhao, HP Labs														
1130-1140	Move to concurrent rooms														
1140-1200	4101-1 DEGRADATION OF THE EXPLOSIVE BLAST RESISTANCE OF COMPOSITES DUE TO SEAWATER ABSORPTION Adrian Mouriz, RMIT University Degradation of the Explosive Blast Resistance of Composites Due to Seawater Absorption	4103-1 BIOINSPIRED GRAPHENE/LIQUID CRYSTALLINE POLYMER NANOCOMPOSITE COATINGS FOR TRIBOLOGICAL APPLICATIONS Christopher Spadaccini, Lawrence Livermore National Laboratory Novel graphene/LCP composites with layered heterogeneous structures show extremely high wear resistance and are therefore suitable for many tribological applications.	4104-1 CONSIDERATION OF THE DUAL SCALE OF PORE SIZE IN WICKING – VALIDATION ON CARBON REINFORCEMENTS AND APPLICATION TO THE SWELLING OF BIO-BASED REINFORCEMENTS Hong-Nhan Vo, Ecole Des Mines During the capillary wicking in Liquid Composite Moulding, a new model is proposed, taking into account the effect of fibre swelling at two scales: elementary fibres and yarns.	4105-1 LOW VELOCITY IMPACT OF ADDITIVE MANUFACTURING TI-6AL-4V SANDWICH PANELS WITH LATTICE Peng Li, School Of Aeronautics, Northwestern Polytechnical University, Xi'an, China The main objective of this research is to study the low velocity impact response of sandwich panels with BCC and FCC lattice manufactured by SLM.	4106-1 THE PERFORMANCE OF THERMOPLASTIC AND THERMOSET COMPOSITES SUBJECTED TO LOW-VELOCITY AND HIGH-VELOCITY IMPACT LOADING Jun Liu, Imperial College London The performance of thermoplastic (AS4/PEEK) and thermoset (T700/epoxy) laminates under drop-weight and gas gun impacts is evaluated. Three-dimensional Digital Image Correlation (DIC) and ultrasonic C-scan techniques are employed.	4107-1 SHORT FIBER COMPOSITES: COMPUTATIONAL HOMOGENIZATION VS ORIENTATION AVERAGING Seyed Mohsen Mirkhajaf Valashani, University Of Gothenburg/chalmers University Of Technology	4108-1 SYNERGISTIC DELAMINATION TOUGHENING OF COMPOSITES USING NANO- AND MICRO- SCALE REINFORCEMENTS Anil Ravindran, Deakin University	4109-1 DIGITAL VOLUME CORRELATION FOR DAMAGE ANALYSIS IN CARBON FIBER COMPOSITES Mahoor Mehdikhani, KU Leuven Potential of digital volume correlation for investigation of damage in in-situ synchrotron images of carbon fiber composites is explored.	4110-1 LONG TERM FATIGUE DEGRADATION – SUPERPOSITION OF DRY AND WET PROPERTIES Andreas Echtermeier, Ntnu	4111-1 A NEW CONCEPT FOR THE INTEGRATION OF AN INDUCTIVE CHARGING UNIT IN ELECTRIC VEHICLES USING FIBER REINFORCED PLASTIC Tobias Mayr, Bmw Group In this study a new concept for the integration of an inductive charging unit into the underbody of an electric vehicle by using fiber reinforced plastic is described.	4112-1 ASSESSMENT OF THE APPLICABILITY OF COMPOSITE MECHANICAL TEST STANDARDS FOR USE WITH 3D WOVEN COMPOSITES Matthew Poole, National Physical Laboratory	4113-1 CNT FIBER VEIL INTERLEAVED CARBON FIBER/EPOXY LAMINATE COMPOSITE Yunlu Ou, Imdea Materials Mode I interlaminar fracture toughness of woven fabric/epoxy laminate was improved as much as 60% when interleaving as-received fluffy CNT veils, while degradation was observed in the unidirectional system.	4114-1 LONG-TERM SEA-WATER AGEING EFFECT ON FATIGUE CRACK GROWTH PROPERTIES OF CFRP Antoine Le Guen-Geffroy, Ifremer	4115-1 ON THE EXPERIMENTAL VALIDATION OF THE WAVE PROPAGATION MODELLING FOR TWO-DIMENSIONAL PERIODIC TEXTILE COMPOSITES Victor Thiery, University Of Nottingham An experimental validation of a numerical method allowing vibroacoustic and ultrasonic wave propagation analysis in complex woven composites is proposed in this paper.	

CONFERENCE PROGRAM

correct as at 8.8.19 and is subject to change

1330-1415	<p>Quality and future of journal publications Michael Wisnom, Bristol Composites Institute (ACCIS) Tsu-Wei Chou, University of Delaware Ole Thomsen, University Of Southampton Plenary 2</p> <p>NSF-AFOSR Joint Workshop on Mechanics-Based Design of Intelligent Material Systems by Multimaterial Additive Manufacturing PART 3 DESIGNING WITH 4D PRINTING: EXPLORATIONS IN AUTONOMOUS MACHINES <i>Kristina Shea</i>, ETH Zurich TOPOLOGY OPTIMIZATION FOR ACTIVE AND MULTI-FUNCTIONAL COMPOSITES <i>Kurt Maute</i>, University of Colorado Boulder OPTIMIZATION-BASED DESIGN: A FORWARD-LOOKING PERSPECTIVE <i>Miquel Aguillo</i>, Sanidia National Laboratories</p>														
1400-1515	<p>Session continues at 1515</p> <p>PLENARY LECTURE: DESIGN, MANUFACTURE AND PERFORMANCE OF TEXTILE COMPOSITES Andrew Long, Nottingham University, UK Plenary 2</p>														
1420-1505	<p>Move to concurrent sessions</p>														
1515-1550	<p>P4201 Computational and finite element methods</p>	<p>NSF-AFOSR Joint Workshop on Mechanics-Based Design of Intelligent Material Systems by Multimaterial Additive Manufacturing PART 3</p>	<p>P4203 Self-healing Three dimensional composites</p>	<p>P4204 Process modelling</p>	<p>P4205 Recycling and sustainability Renewable energy</p>	<p>P4206 Fracture and Damage</p>	<p>P4207 Joints</p>	<p>P4208 Nano-composites</p>	<p>P4209 Computational and finite element methods</p>	<p>P4210 Testing methods</p>	<p>P4211 Resin and polymers</p>	<p>P4212 Sandwich structures and materials</p>	<p>P4213 Interfaces and interphases</p>	<p>P4214 Fibers</p>	<p>P4215 Multiscale modelling</p>
1515-1520	<p>P4201-1 POTENTIAL APPLICATION OF WIRE WOVEN MESH AS PACKING TOWER BED LIMITER-COMPUTATIONAL APPROACH <i>Vahid Ebrahimejad</i>, University of Southern Queensland The potential application of Wire bulk cross (WBC) truss-like periodic cellular metal as future tower packing support evaluated. FEA and CFD results were combined for real case scenarios to optimise the best porosity ratios.</p>	<p>P4205-1 MICROCAPSULE-BASED SELF-HEALING PROTECTIVE COATING USING LINSEED OIL HEALING AGENT <i>Dong-min Kim</i>, Yonsei University In this study, it was to be developed for a microcapsule-type self-healing protective coating using linseed oil turning into a soft film as a healing agent for application to cementitious materials using linseed oil.</p>	<p>P4204-1 MODELING STRATEGY OF IR LAMPS WITH INTEGRATED REFLECTOR USED IN THE MANUFACTURING PROCESS OF THERMOPLASTIC COMPOSITE TAPES <i>Olivier De Almeida</i>, Institut Clement Ader P4205-1 INFLUENCE OF NOVEL TYPES OF OLEFIN-MALEIC-ANHYDRIDE COPOLYMER BASED ADDITIVES IN BLENDS OF PA AND RECYCLED PET <i>Bianka Nagy</i>, University of Pannonia, Effects of olefin-maleic-anhydride copolymer based additives have been investigated in PET/PA blends. Compatibilizer having lower molecular weight and same ratio of half-ester and unreacted anhydride groups was the most advantageous.</p>	<p>P4206-1 FRACTURE CHARACTERISTICS OF PARTICULATE REINFORCED COMPOSITES USING DIGITAL IMAGE CORRELATION <i>Sangdeok Kim</i>, Chungnam National University In this study, wedge splitting tests were performed to evaluate fracture behavior of particulate reinforced composite materials. Also, digital image correlation method was used to analyze the strain field.</p>	<p>P4207-1 NUMERICAL MODELING OF ADHESIVELY BONDED CFRP JOINTS CONSIDERING NON-LINEAR DEFORMATION OF ADHESIVE LAYERS <i>Shunta Mimura</i>, Kyoto University Numerical analyses were conducted to investigate the fracture behavior in the mode II fracture toughness test. Cohesive zone modeling (CZM) was used to evaluate the failure of adhesives and adherends.</p>	<p>P4208-1 USE OF RESOLE SEPIOLITE- PHOSPHATE NANOCOMPOSITE FOR BUILDING FACADES <i>Lella Souleianji</i>, University Of Melbourne Combustibility of cladding materials in the facade system is a serious problem. Therefore, investigation of new nanocomposite material to be replaced the existing combustible cladding's material is the purpose of this study.</p>	<p>P4209-1 MATERIAL DESIGN SIMULATION FOR FIBER REINFORCED CEMENT-BASED COMPOSITES USING MESO-SCALE ANALYSIS <i>Hiroki Ogura</i>, Shimizu Corporation This paper introduces a numerical simulation for optimizing the mixture of the fiber-reinforced cement-based composites. Short fibers are arranged individually in the specimen. The model capabilities are assessed through bending analyses.</p>	<p>P4210-1 EFFECTS OF GEOMETRY AND STACKING SEQUENCE ON APPARENT POISSON'S RATIO OF QUASI-ISOTROPIC LAMINATE CFRPS UNDER THE COMPRESSION TESTS <i>Eiichi Hara</i>, Japan Aerospace Exploration Agency In this study, the axial compression strength of carbon fiber multifilament has been determined on a series PAN-based carbon fibers using bundle compression test similar to the compression measurement of unidirectional laminated composites. This test allows for rapid response and utilizes smaller amounts of material for initial screening testing.</p>	<p>P4211-1 ANTIPLASTICATION OF ARYL ETHER EPOXIES <i>Larry Reyes</i>, Carbon Nexus, Institute For Frontier Materials, Deakin University The simultaneous improvement of modulus, strength and strain-to-failure was achieved for multi-aryl epoxies by varying the substitution patterns within their backbone without significant decrease in Tg.</p>	<p>P4212-1 FRACTURE BEHAVIOR AND FACE SHEET BUCKLING ANALYSIS OF CFRP/HONEYCOMB SANDWICH PANELS SUBJECTED TO BENDING LOAD <i>Miao Qiao</i>, Tokyo University Of Agriculture And Technology This study clarified the local buckling behavior of the face sheet of a CFRP/Nomex honeycomb sandwich panel subjected to four-point bending load using finite element method.</p>	<p>P4213-1 TUNABLE MICROWAVE DIELECTRIC RESPONSE IN CARBON NANOCOMPOSITES VIA VERTICAL INTERPHASE <i>Faxiang Qin</i>, Zhejiang University This research systematically investigates the wet-spinning of the blends of textile and carbon fibre grade PAN polymers. The stability of the different dope solutions and their spinnability was checked by rheological measurements.</p>	<p>P4214-1 LOW-COST, HIGH STRENGTH POLYACRYLONITRILE PRECURSOR FIBRE <i>Huma Khan</i>, Deakin University, Waurn Ponds, Australia Homogenised mechanical properties are extracted from sheared textile composite unit cell models for use in macro-scale component analysis. Macro-scale mechanical models are then run with the deformation from the forming stage included, for performance predictions.</p>			
1520-1525	<p>P4201-2 FINITE ELEMENT ANALYSIS AND EXPERIMENTAL TESTING OF NON-CRIMP FABRIC COMPACT TENSION SPECIMENS - INFLUENCE OF COHESIVE PROPERTIES. <i>Dimrits Gouskos</i>, Imperial College London</p>	<p>Session continued from 1400</p> <p>P4203-2 FUNCTIONALIZING BISTABLE COMPOSITE LAMINATE STRUCTURES <i>Oliver Myers</i>, Clemson University EFFICIENT MULTISCALE OPTIMAL DESIGN AND FABRICATION OF CONTINUOUS FIBER REINFORCED COMPOSITES <i>Gowri Narasimha Boddeti</i>, Singapore University of Technology and Design</p>	<p>P4203-2 SELF-HEALING PROPERTIES OF CARBON-BLACK IMPREGNATED THERMOPLASTIC POLYURETHANE PROCESSED VIA FUSED DEPOSITION MODELLING <i>Fareed Tamaddon Jahromi</i>, Swinburne University of Technology The objective of our work is to investigate the fibre matrix separation during compression moulding and for that, 1D squeeze flow experiments are performed in a flat geometry.</p>	<p>P4204-2 1D SQUEEZE FLOW ANALYSIS OF CHOPPED LONG FIBRE THERMOPLASTIC COMPOSITE <i>Wagas Ali</i>, University Of Twente The High Performance Discontinuous Fibre technology is an effective and sustainable high performance Aligned Discontinuous Fibre Reinforced Composite (ADFRC) manufacturing process, with the potential for high production throughput. In this presentation, fibre surfaces are modified to increase throughput.</p>	<p>P4206-2 DAMAGE PROGRESSION OF NOTCHED AND UNNOTCHED COMPOSITE LAMINATES UNDER PICTURE-FRAME SHEAR LOADING <i>Daniel Rapkng</i>, The Rx-FEM formulation was preliminarily applied to two distinct material systems for a picture frame shear testing configuration. Both material systems had notched and unnotched configurations.</p>	<p>P4207-2 THE EFFECTS OF ENVIRONMENTAL CONDITIONS ON THE STRENGTH OF DOUBLE LAP JOINTS <i>Aakash Paul</i>, University Of Bristol Tests were conducted at Room Temperature Dry, Hot Temperature Dry and Hot Temperature Wet conditions. The changing failure modes were identified, and material characterisation tests were conducted to understand the joint performance.</p>	<p>P4208-2 NUMERICAL INVESTIGATION ON MECHANICAL PROPERTIES OF POLYMER COMPOSITES REINFORCED WITH MXENE NANOSHEETS <i>Daiva Zeleniakienė</i>, Kaunas University of Technology This study is addressed to identify a suitable methodology based on finite element homogenization approach for prediction of mechanical properties of polymer composite reinforced with MXene 2D nanoparticles.</p>	<p>P4209-2 DYNAMIC STRESS-STRAIN RELATION OF ALUMINUM POWDERS USING MULTI-PARTICLE FINITE ELEMENT METHOD <i>Kefeng Peng</i>, University Of Science And Technology Of China Based on the multi-particle finite element methods, the dynamic stress-strain relationship of granular metal materials was determined.</p>	<p>P4210-2 AXIAL COMPRESSION TESTING OF CARBON FIBERS <i>Shihong Zhu</i>, Aerospace Research Institute Of Materials And Processing Technology, In this study, the axial compression strength of carbon fiber multifilament has been determined on a series PAN-based carbon fibers using bundle compression test similar to the compression measurement of unidirectional laminated composites. This test allows for rapid response and utilizes smaller amounts of material for initial screening testing.</p>	<p>P4211-2 THE PREPARATION, PROCESSING AND HEALING OF DIELS-ALDER EPOXIES AND THEIR FIBRE-REINFORCED POLYMER COMPOSITES <i>Callum Branfoot</i>, University of Bristol Epon 828 (DGEBA) was modified into covalent adaptable networks (CANs) using Diels-Alder chemistry. These CANs were there then thermomechanically characterised and tested as matrices for functional FRP composites.</p>	<p>P4212-2 DESIGN EXPLORATION OF MULTI-LAYER SANDWICH STRUCTURES TO TRANSVERSE LOADING <i>Anbazhagan Subramani</i>, Singapore University Of Technology And Design This study aims to enhance the mechanical performance of fiber reinforced polymeric composites by electrospay deposition of waterborne single-walled carbon nanotube dispersion onto dry woven carbon fabric.</p>	<p>P4213-2 TAILORING INTERFACIAL INTERACTIONS IN FIBER REINFORCED POLYMERIC COMPOSITES BY THE ELECTROSPRAY DEPOSITION OF WATERBORNE CARBON NANOTUBES <i>Murat Tansan</i>, Sabanci University Extension of the parametric HF-GMC to incorporate the finite-strain micromechanics of composites is presented. Macroscale and microscale response of UD is successfully compared with the orthogonal HF-GMC and the FEA.</p>	<p>P4214-2 TRANSVERSE YOUNG'S MODULUS MEASUREMENT OF CARBON FIBRE BY ATOMIC FORCE MICROSCOPE AND NANODENTATION <i>Shanghong Duan</i>, Chalmers University of Technology, Sweden This study aims to enhance the mechanical performance of fiber reinforced polymeric composites by electrospay deposition of waterborne single-walled carbon nanotube dispersion onto dry woven carbon fabric.</p>	<p>P4215-2 FINITE STRAIN PARAMETRIC HF-GMC PREDICTION OF THE MICROMECHANICAL BEHAVIOR OF COMPOSITE <i>Uri Breiman</i>, Tel-aviv University Extension of the parametric HF-GMC to incorporate the finite-strain micromechanics of composites is presented. Macroscale and microscale response of UD is successfully compared with the orthogonal HF-GMC and the FEA.</p>	
1525-1530	<p>P4201-3 MICROMECHANICS MODELING OF TENSILE/SHEAR BEHAVIOR AND CRACK DENSITY OF COMPOSITE MATERIALS <i>Daiichi Hanayama</i>, Ihi Corporation We considered the method to evaluate the relationship between matrix crack and transverse crack and stiffness degradation of brittle matrix composites.</p>	<p>P4203-3 STUDY ON CFRP PI-BEAM PARAMETRIC AND STRENGTH ANALYSIS <i>Geon Tae Park</i>, Changwon National University In this study, we apply the 2D carbon fiber for the beam structure, optimize the parameters of the beam through the experimental evaluation and analysis, and then try to find the optimum strength of the beam by manufacturing the 3D beam.</p>	<p>P4204-3 MACHINE-DRIVEN EXPERIMENTATION FOR SOLVING CHALLENGING CONSOLIDATION PROBLEMS <i>Anatoly Koptelov</i>, Advanced Composites Collaboration for Innovation and Science (ACCIS), University Of Bristol A new consolidation sensor framework for the characterisation of resin flow in composite precursors was developed. Unlike existing characterisation approaches, the proposed consolidation sensor is not limited by the material type and predefined loading schedule for the test.</p>	<p>P4206-3 DEVELOPMENT OF PROGRESSIVE FAILURE ANALYSIS METHOD FOR COMPOSITE LAMINATES CONTAINING OPENINGS WITH DIGITAL IMAGE CORRELATION <i>Donghyun Yoon</i>, Chungnam National University A progressive failure analysis model was developed using crack-band-model according to existing researches. And it was evaluated comparing with experimental results including strain contour obtained from DIC. The numerical results demonstrated a good correlation with the experimental results.</p>	<p>P4207-3 A STUDY ON THE CHANGE OF ADHESIVE SHEAR STRENGTH OF CARBON STEEL/CARBON FIBER REINFORCED PLASTIC COMPOSITE BY SURFACE TREATMENT OF CARBON STEEL <i>Seung Hak Song</i>, Korea University In this study, the changes of the adhesive shear strength according to the surface roughness change and oxide film presence were measured and the cause of the fracture was analyzed through the fractured surface observation.</p>	<p>P4208-3 POLYIMIDE AEROGELS CROSS-LINKED WITH AMINATED AG NANOWIRES: MECHANICALLY STRONG AND TOUGH <i>Tianyi Zhang</i>, Beihang University Accurate modeling of IV type hydrogen storage vessel and optimize the structure design by 3D scanner, based on the progressive damage theory predict burst pressure cylinders</p>	<p>P4209-3 DESIGN OF 70MPa COMPOSITE HYDROGEN STORAGE VESSEL <i>Cheng Shuo</i>, Hefei University Of Technology Accurate modeling of IV type hydrogen storage vessel and optimize the structure design by 3D scanner, based on the progressive damage theory predict burst pressure cylinders</p>	<p>P4210-3 SINGLE FIBER PULL-OUT TEST FOR THE MATERIAL SELECTION OF A HYBRID RESIN COMPOSITE <i>Holger Buettemeyer</i>, Faserinstitut Bremen e.V. This study deals with fibre pull-out test. It gives general recommendations for embedding the fibres into the liquid resin.</p>	<p>P4211-3 THE ONE-POT SYNTHESIS, CHARACTERIZATION AND POLYMERIZATION OF HYPERBRANCHED BENZOAZINE RESINS DERIVED FROM A2 + B3 MONOMERS <i>Wanan Cai</i>, Harbin Engineering University The reaction mechanism of cross-linking process and interphase model of carbon fiber reinforced epoxy composites was developed and analyzed by molecular dynamics simulation.</p>	<p>P4212-3 DECONSOLIDATION BEHAVIOR OF CARBON FIBER REINFORCED THERMOPLASTICS AS CORE IN SANDWICH STRUCTURE <i>Bing Xiao</i>, The University of Tokyo The reaction mechanism of cross-linking process and interphase model of carbon fiber reinforced epoxy composites was developed and analyzed by molecular dynamics simulation.</p>	<p>P4213-3 SPECIMEN PREPARATION FOR TRANSVERSE MODULUS MEASUREMENT OF CARBON FIBRES USING FOCUSED ION BEAM <i>Fang Liu</i>, Chalmers University Of Technology The reaction mechanism of cross-linking process and interphase model of carbon fiber reinforced epoxy composites was developed and analyzed by molecular dynamics simulation.</p>	<p>P4214-3 MOLECULAR SIMULATIONS OF INTERPHASE FORMATION PROCESS OF CARBON FIBER REINFORCED POLYMER COMPOSITES <i>Yingdan Zhu</i>, Ningbo Institute of Material Technology and Engineering (NIMTE), Chinese Academy of Science The reaction mechanism of cross-linking process and interphase model of carbon fiber reinforced epoxy composites was developed and analyzed by molecular dynamics simulation.</p>	<p>P4215-3 DEVELOPMENT OF MULTISCALE DAMAGE PROPAGATION ANALYSIS METHOD FOR WOVEN LAMINATES USING A HOMOGENIZATION THEORY <i>Gai Kubo</i>, University Of Tsukuba In this study, we develop an efficient multiscale analysis method for damage propagation of woven laminates using a homogenization theory.</p>		

Thursday
15 August

CONFERENCE PROGRAM

correct as at 8.8.19 and is subject to change

1620-1820	4301 ONR Solid Mechanics Symposium	NSF-AFOSR Joint Workshop on Mechanics-Based Design of Intelligent Material Systems by Multiscale Additive Manufacturing PART 4	4303 Nano-composites	4304 Process modelling and machining of composites	4305 Additive Manufacturing	4306 Composite structures	4307 Sandwich structures and materials	4308 Fibers	4309 Fracture and damage	4310 Damage tolerance and ceramic matrix composites	4311 Civil engineering and ceramic matrix composites	4312 Hybrid composites	4313 Smart composite structures	4314 Joints	4315 Aerospace
	4301-1 FRACTURE MECHANICS SOLUTIONS FOR INTERFACE CRACKS IN BI-MATERIAL AND SANDWICH BEAMS Roberta Massabo, University Of Genova		4303-1 GRAPHENE BASED NANOCOMPOSITES FOR TRIBOLOGICAL APPLICATION Han Wang, Institute Of Metal Research, Chinese Academy Of Science In this work, graphene were used as lubricating additives for improving tribological behavior of graphene-based nanocomposites.	4304-1 SIMULATING COMPRESSION-INDUCED RESIN TRANSFER FROM A SATURATED NON-WOVEN INTO A DRY FIBER STRUCTURE Tom Allen, Auckland University	4305-1 FIFDM – ADVANCED 3D PRINTING WITH CONTINUOUS FIBER REINFORCEMENT Jens Schlimbach, Institut Für Verbundwerkstoffe GmbH FRPC are an ideal lightweight construction material as they combine low density with very high mechanical performance. However, there is generally a lack of automated processes for the production of geometrically complex components with load-specific and thus economical fiber reinforcement.	4306-1 LOAD ANALYSIS OF SMALL WIND TURBINE BLADES WITH FIBER-METAL LAMINATE SKIN Wei Sai, Nanyang Technological University Calculated the 20kW small wind turbine blade loading at wind speeds of 6m/s, 7.5m/s, 8.5m/s, and 10m/s. The stress in the airfoil was studied numerically and displayed in color codes to show the stress concentration area. The software used in the study is MATLAB.	4307-1 SIMULATING RESIN INFUSION FOR MANUFACTURING SANDWICH-STRUCTURED COMPOSITES Yi-Kai Kao, National Tsing Hua University	4308-1 NANO-MAGNETITE DECORATED CARBON FIBRE FOR ENHANCED INTERFACIAL SHEAR STRENGTH Sobhan Fakhrhosseini, Carbon Nexus/Deakin University	4309-1 EFFECT OF THROUGH-THICKNESS COMPRESSIVE STRESS AND POROSITY ON THE TENSILE STRENGTH OF CARBON-FIBRE REINFORCED COMPOSITES Jan Rokic, MINES ParisTech - PSL Research University A custom testing setup is designed and the influence of porosity is investigated on the tensile strength of cross-ply CFRP specimens in the presence of a through-thickness compressive load.	4310-1 SIMPLE TOOLS FOR ASSESSING DELAMINATION GROWTH UNDER VARIABLE AMPLITUDE LOADS Rhys Jones, Monash University	4311-1 VERTICAL HEAT TRANSFER OF ALUMINUM COMPOSITE CLADDINGS Kate Nguyen, Rmit University	4312-1 EXPERIMENTAL AND NUMERICAL INVESTIGATION OF TENSILE BEHAVIOR OF CARALL FABRICATED WITH DIFFERENT FIBER ORIENTATION Rishi Kumar Gupta, Indian Institute Of Technology Patna The tensile behaviors of carbon fiber aluminum laminates fabricated in three different configurations were studied using experiment, finite element simulation and maximum strength observed in Al0°/Al0°/Al configuration with fiber pull out and delamination as a major failure mechanism.	4313-1 PERFORMANCE OF RARE EARTH ORGANIC COMPLEXES BASED LIGHT ACTIVATED SHAPE MEMORY POLYMER COMPOSITES Madhubhashitha Herath, University Of Southern Queensland Incorporation of selectively triggered photothermal fillers and glass fibre reinforcements into shape memory polymer matrix has demonstrated the potential to develop light stimulus large-scale smart engineering applications.	4314-1 VALIDATION OF LASER BOND INSPECTION (LBI) TECHNOLOGY Kara Storage, U.S. Air Force Research Laboratory Because the ability to inspect bonded joints is considered a high priority within the composites community, the Air Force Research Laboratory has funded work to validate laser bond inspection (LBI).	4315-1 DESIGN AND ANALYSIS OF THE SPACECRAFT COMPOSITE PAYLOAD ADAPTER WITH LOCAL SUPPORTS Evgeny Morozov, University Of New South Wales At The Australian Defence Force Academy Payload adapters are the structural elements that provide mechanical interface between spacecraft and a rocket launch vehicle. In this paper, new designs of the composite adapters are proposed and analysed.
1620-1640	4301-2 DEVELOPMENT OF A MODE I/III TEST RIG FOR COMPOSITE LAMINATES AND SANDWICH FACE/CORE FRACTURE CHARACTERIZATION Pietro Sabbadini, Technical University Of Denmark The aim of this work consists in developing a novel test rig, which is inspired by the Shear Torsion Bending (STB) rig designed for unidirectional composites.	NSF-AFOSR Joint Workshop on Mechanics-Based Design of Intelligent Material Systems by Multiscale Additive Manufacturing PANEL DISCUSSION	4303-2 3D GRAPHENE/POLYMER NANOCOMPOSITES FOR HIGHLY SENSITIVE AND STRETCHABLE SENSORS Shuying Wu, School Of Engineering, Macquarie University The present work demonstrates highly sensitive strain sensors based on 3D graphene network including graphene aerogel and vertical graphene. Effects of the microstructure of 3D graphene on sensing performance of its PDMS nanocomposites were systematically investigated.	4304-4 MODELING COMPLEXITIES IN THE PROCESS SIMULATION OF POLYMER COMPOSITE MATERIALS Robert Brockman, University Of Dayton Research Institute	4305-2 EVALUATION OF A FIBER BUNDLE TWISTING AT A CURVED SECTION OF 3D PRINTED CARBON FIBER COMPOSITES Hirohide Shiratori, Tokyo Institute Of Technology The present study has revealed the twisting mechanism of a continuous carbon fiber bundle in a process of printing a curved section and evaluated its effect on the mechanical properties.	4306-2 DESIGNING FOLDABLE COMPOSITE STRUCTURES ON THE MICROMETRE SCALE Arthur Schlotthauer, ETH Zürich The development of ultra-thin foldable composites for small scale applications (nano-satellites or heart-stents) is investigated with regard to maximizing stiffness whilst maintaining packagability.	4307-2 VIBRATION ATTENUATION PERFORMANCE OF HYBRID COMPOSITE LATTICE SANDWICH PANELS COMBINED WITH HIGH DAMPING MATERIALS Jin-Shui Yang, Harbin Engineering University	4308-2 SIMULTANEOUSLY INCREASING THE HYDROPHOBICITY AND INTERFACIAL ADHESION OF CARBON FIBRES: A SIMPLE PATHWAY TO INSTALL PASSIVE FUNCTIONALITY INTO COMPOSITES Chantelle Arnold, Deakin University The findings of this study dispel the common misconception of increased fibre wettability amounting to an increase in composite strength and provides a rapid method of installing surface functionality that facilitates adaptation of carbon fibres for new applications.	4309-2 NUMERICAL INVESTIGATION OF CNT REINFORCED COMPOSITE IN CRASH Mohammad Rouhi, RISE SiCOMP AB Energy absorption in crash in composite materials is strongly dependent on the layup, fibre architecture and type of resin, e.g. thermoplastic vs. thermoset. Thus, modelling of the crash behaviour of composites is highly influenced by the chosen composite material system, and constitutive models have to some extent to be tailored to the system under consideration.	4310-2 DAMAGE RESISTANCE OF THREE-DimensionALLY WOVEN CARBON FIBER COMPOSITES Roberto Lopez-Anido, University Of Queensland Damage resistance of a 3D woven composite was compared with that of a 2D baseline composite using drop-weight impact, energy absorption analysis, dent depth measurements, ultrasonic C-scan, and Micro-CT imaging.	4311-2 APPLICATIONS OF PULTRUDED FRP TUBES IN CIVIL INFRASTRUCTURE Thiru Aravinthan, University Of Southern Queensland Fibre reinforced Polymers (FRP) have gained increased popularity in civil infrastructure applications in recent years. A review of field applications where pultruded FRP sections have been effectively used in civil infrastructure is presented.	4312-2 TENSILE AND THERMAL PROPERTIES OF T/CFRP LAMINATES BASED ON POLYIMIDE RESIN Yubing Hu, Njust	4313-2 HIGH PERFORMANCE CARBON FIBER REINFORCED SHAPE MEMORY EPOXY COMPOSITES Yayun Liu, National Center for Nanoscience and Technology, CAS	4314-2 THERMAL-FLOATING ROLLER PEEL BEHAVIOUR OF COMPOSITE-TI ADHESIVE JOINTS FOR REPAIR Siddhar Idapalapati, Nanyang Technological University	4315-2 DESIGN OF A COMPOSITE FISHBAC MORPHING DEVICE FOR SPANWISE LIFT CONTROL Andres Riveco, Bristol Composites Institute (ACCIS) - University of Bristol This paper introduces the use of the FishBAC morphing device - a composite camber morphing structure used for aerodynamic optimisation - for spanwise aerodynamic load control. The study is performed using a fluid-structure interaction (FSI) model developed around Mindlin-Reissner Plate Theory (structures) and a viscous corrected lifting-line model (aerodynamics).
1640-1700	4301-3 MODE-II DYNAMIC CRACK INITIATION AND PROPAGATION BEHAVIOR OF CARBON FIBER/EPOXY UNDER ELEVATED MOISTURE CONTENT Rodrigo Chavez, University Of California San Diego The effect of moisture on the dynamic mode-II stress intensity factor of carbon fiber/epoxy composites was studied. Notched carbon fiber/epoxy specimens with high moisture contents were subject to dynamic fracture experiments. The samples were loaded under mode-II conditions and compared to samples with no significant moisture content.		4303-3 IMPROVED MECHANICAL AND BARRIER PROPERTIES OF GRAPHENE/CARBON FIBRE-EPOXY HYBRID COMPOSITES Xudan Yao, The University of Manchester Graphene/carbon fibre/epoxy hybrid composites were fabricated through spray coating followed by resin infusion. Uniform distribution was achieved with barrier properties improved.	4304-3 NUMERICAL STUDY OF THE 3D-FLOW CHARACTERISTICS DURING COMPRESSION MOULDING OF SMC Gustaf Alnersson, Gestamp HardTech AB A numerical model for compression moulding of Sheet Moulding Compound based is presented, in which the charge is modelled as a fluid with a specified viscosity.	4305-3 EFFECTIVE TENSILE STRENGTH OF ADDITIVELY MANUFACTURED DISCONTINUOUS CARBON FIBER-REINFORCED POLYMER VIA COMPUTED TOMOGRAPHY Patrick Stremann, University Of Applied Science Ravensburg-Weingarten A combination of destructive and non-destructive testing methods is used to compensate process-induced defects by additive manufacturing resulting in an effective tensile strength and a local material performance.	4306-3 TECHNOLOGICAL IMPLEMENTATION OF A TOROIDAL COMPOSITE PRESSURE VESSEL FOR HYDROGEN STORAGE Norbert Schramm, LSE GmbH The toroidal composite pressure vessel manufactured with new ring winding technology has a large mass saving potential (up to 30%) compared to cylindrical pressure vessels for hydrogen storage at 700 bar.	4307-3 THE ENERGY-ABSORBING CHARACTERISTICS OF COMPOSITE-REINFORCED HONEYCOMBS Wesley Cantwell, Khalifa University	4308-3 EVALUATION OF THE EFFECT OF TENSION DURING CARBON FIBRE PROCESSING Claudia Creighton, Carbon Nexus, Deakin University	4309-3 PRACTICAL INTERLAMINAR FRACTURE-BASED LIFE METHODS FOR BONDED AIRFRAME STRUCTURE Carl Rousseau, Lockheed Martin Corporation. A simplified fracture method was demonstrated and further development issues identified. The static ECT test was explored; ENF-based fatigue onset and growth tests were demonstrated; and recommendations made.	4310-3 EDGE IMPACT AND COMPRESSION AFTER EDGE IMPACT SIMULATIONS IN CFRP LAMINATES Albertino Arteiro, University Of Porto - Faculty Of Engineering A composite damage model is validated at higher levels of the test pyramid, accurately capturing the edge impact and compression after impact response of different composite laminates, opening new perspectives for its use on material qualification through virtual testing.	4311-3 AN ADAPTIVE BASE ISOLATOR FOR CLT REINFORCED COMPOSITES Wei Chong Liao, Feng Chia University	4312-3 ACHIEVING GRADUAL FAILURE IN HYBRID COMPOSITE LAMINATES IN BENDING Meisam Jalalvand, University Of Strathclyde Two hybrid composite beams are designed, tested and analysed to study their failure process. Unlike standard composites, these hybrid composites show a very successful gradual failure and a significant energy dissipation before final failure.	4313-3 GRAPHENE-CARBON BLACK-SILICONE RUBBER COMPOSITE FILMS WITH LOW TEMPERATURE-COEFFICIENTS OF RESISTANCE FOR LARGE STRAIN SENSORS Velram Balaji Mohan, University Of Auckland	4314-3 HIGH TEMPERATURE TENSILE STRENGTH ANALYSIS OF C/SIC COMPOSITE AND SUPERALLOY BOLTED JOINT STRUCTURE Shuyuan Zhao, Harbin Institute Of Technology In this work, a progressive damage model for 2D woven C/SIC composite was established to predict high temperature tensile performance and failure behavior of single-lap, single-bolt 2D C/SIC composite and superalloy joint. The variations of failure strength with imposed temperature and bolt preload were discussed for the studied bolted joint.	4315-3 DESIGN AND FABRICATION OF W-SHAPED DEPLOYABLE COMPOSITE BOOM Jiaqi Shi, Nanjing University Of Aeronautics And Astronautics
1700-1720															

Thursday
15 August

CONFERENCE PROGRAM

correct as at 8.8.19 and is subject to change

Thursday 15 August	1720-1740	4301-4 COMPUTATIONAL MODELING OF LOW-VELOCITY IMPACT RESPONSE OF WOVEN CARBON LAMINATES IN ARCTIC CONDITIONS <u>Pavana Prabhakar</u> , University Of Wisconsin-madison	4303-4 HIGH GAS BARRIER PROPERTIES OF POLYMER/MOS2 NANOSHEET <u>Jin Zhang</u> , Deakin University	4304-2 EXPERIMENTAL CALIBRATION AND VALIDATION OF POLYMER MATRIX COMPOSITES IN SUPPORT OF PROCESS MODELING <u>Thao Gibson</u> , University Of Dayton Research Institute	4305-4 LOAD PATH VISUALIZATION FOR FIBER TRAJECTORY OPTIMIZATION OF ADDITIVE MANUFACTURING COMPOSITES <u>Takuya Suzuki</u> , IHI Corporation	4306-4 ENHANCED INTERFACIAL PROPERTY OF CARBON FIBRE COMPOSITES BASED ON VERTICAL GRAPHENE FOLDCORE <u>Zhao Sha</u> , UNSW	4307-4 FABRICATION AND COMPRESSIVE BEHAVIORS OF CARBON FIBER REINFORCED COMPOSITE SANDWICH STRUCTURES WITH CURVED-CREASE FOLDCORE <u>Yuntong Du</u> , Center For Composite Materials And Structures, Harbin Institute Of Technology	4308-4 AN EFFICIENT HIGH-THROUGHPUT GRAFTING PROCEDURE FOR ENHANCING CARBON FIBRE TO-MATRIX INTERACTIONS IN COMPOSITES <u>Daniel Eyckens</u> , Deakin University	4309-4 MAPPING STRAINS AND FIBRE FRACTURE IN CARBON FIBRE COMPOSITES USING IN SITU DIGITAL VOLUME CORRELATION <u>Erlich Schobert</u> , University of Southampton	4310-4 MAXIMISING THE FRACTURE RESISTANCE OF GLASS FIBRE COMPOSITES BY CONTROLLED LARGE SCALE FIBRE BRIDGING <u>Stergios Goutianos</u> , Technical University Of Denmark	4311-4 TEXTILE REINFORCED CONCRETE COMPOSITES FOR ADVANCED CONSTRUCTION APPLICATIONS <u>Priyan Mendis</u> , University Of Melbourne	4312-4 ENVIRONMENTAL EFFECTS ON NOTCHED COMPRESSION OF HIERARCHICAL NANOENGINEERED AEROSPACE COMPOSITES STUDIED BY X-RAY MICROTOMOGRAPHY <u>Reed Kopp</u> , Massachusetts Institute Of Technology	4313-4 COMPOSITE ORIGAMI FOR FLUIDIC ARTIFICIAL MUSCLES <u>Michael Dicker</u> , University of Bristol	4314-4 DISCRETE DAMAGE MODELLING OF COUNTERSUNK FASTENED LAMINATED COMPOSITES IN BEARING <u>Alex Harman</u> , Defence Science And Technology Group	4315-4 DETAILED EVALUATION OF VISIBLE DEFORMATION IN CFRP LAMINATES SUBJECTED TO OUT-OF-PLANE IMPACT LOADING <u>Shin-ichi Takeda</u> , Japan Aerospace Exploration Agency	
	1740-1800	4301-5 COMPARISON OF IN-PLANE COMPRESSIVE CHARACTERISTICS OF HEXAGONAL AND AUXETIC HONEYCOMBS WITH FIBRE REINFORCEMENTS <u>Zafar Kazanci</u> , Queens University Belfast	NSF-AFOSR Joint Workshop on Mechanics-Based Design of Intelligent Material Systems by Multimaterial Additive Manufacturing PANEL DISCUSSION <i>CONTINUED</i>	4303-5 UNDERSTANDING CNT DISPERSION IN POLYMER PRECURSOR SOLUTIONS AND PROPERTIES OF COMPOSITES FROM THE ATOMIC SCALE <u>Hendrik Heinz</u> , University Of Colorado Boulder	4304-5 FINITE ELEMENT FORMING SIMULATION OF COMPLEX SANDWICH PANELS <u>Shuai Chen</u> , The University of Nottingham	4305-5 DESIGN OF HIGH TEMPERATURE RESISTANT THERMOPLASTIC COMPOSITES FOR FDM 3D PRINTING <u>Daniel Theriault</u> , Polytechnique Montréal	4306-5 EFFECT OF LIGHTNING STRIKE ON THE BUCKLING BEHAVIOUR OF COMPOSITE MATERIALS – A FINITE ELEMENT STUDY <u>Dhanya T.M.</u> , Indian Institute Of Technology Bombay, India	4307-5 USING FLAX FIBRES AND SHIVES IN SANDWICH STRUCTURES FOR TRANSPORT APPLICATIONS <u>Safa Essid</u> , LOMC	4308-5 ADAPTATION OF WEIBULL ANALYSIS TO REPRESENT STRENGTH BEHAVIOUR OF BRITTLE FIBRES <u>Faisal Islam</u> , Mines ParisTech	4309-5 ESTABLISHING DAMAGE SCENARIO OF RANDOMLY ORIENTED STRAND (ROS) THERMOSET COMPOSITES USING MULTI-INSTRUMENTATION AND MICRO-CT <u>Loic Soufflot</u> , University Of Technology Of Compiègne	4310-5 DETECTION ON CURING PROCESS OF LARGE THICKNESS COMPOSITE USING FIBER BRAGG GRATING <u>Guowei Zhang</u> , Beihang University	4311-5 IN-SITU X-RAY COMPUTED TOMOGRAPHY CHARACTERISATION OF TENSILE DAMAGE EVOLUTION IN TEXTILE CERAMIC MATRIX COMPOSITES <u>Daxu Zhang</u> , Shanghai Jiao Tong University	4312-5 HETEROSTRUCTURED (001)TiO2/G-C3N4 HYBRIDS GREATLY ENHANCED H2 PRODUCTION FROM WATER UNDER UV-VIS LIGHT IRRADIATION <u>Hui Zhang</u> , Beijing University Of Chemical Technology	4313-5 4D PRINTED PROGRAMMABLE STRUCTURES BASE ON ACTIVE SHAPE MEMORY POLYMER COMPOSITES <u>Qinghua Guan</u> , Centre for Composite Materials and Structures, Harbin Institute of Technol	4314-5 JOINING OF AGEING RESISTANT STRUCTURES OUT OF LIGHT METALS AND CARBON COMPOSITES BY ULTRASONICS <u>Frank Balle</u> , University of Freiburg, Department of Sustainable Systems Engineering	4315-5 MODELING OF VOID EFFECT ON MATRIX-DOMINATED STRENGTH OF CFRP LAMINATES <u>Shigeki Aratama</u> , Kawasaki Heavy Industries, Ltd.
	1800-1820	4301-6 FINITE ELEMENT MODELLING OF THE EXPLOSIVE BLAST RESPONSE OF CARBON FIBRE-POLYMER COMPOSITES <u>Alex Gargano</u> , RMIT University		4304-6 PREDICTING FATIGUE LIFE OF COMPOSITE MATERIALS <u>Wahid Ferdous</u> , Centre For Future Materials (CFM), University Of Southern Queensland	4305-6 ADDITIVE MANUFACTURING OF ADVANCED FIBER REINFORCED COMPOSITES AND APPLICATIONS <u>Xiaoyong Tian</u> , Xi'an Jiaotong University, China	4306-6 BUCKLING BEHAVIOUR OF UD CARBON/POXY PANELS SUBJECTED TO DIRECT LIGHTNING STRIKE <u>Ole Thybo Thomsen</u> , University Of Southampton, School Of Engineering	4309-6 THE CRITICAL FIBRE BREAK CLUSTER FOR LONGITUDINAL TENSILE FAILURE OF UNIDIRECTIONAL COMPOSITES: MISCONCEPTIONS AND NEW INSIGHTS <u>Yent Swolls</u> , KU Leuven	4310-6 USE OF DESERT-SANDS TO SYNTHESIZE MG/SiO3-SiC COMPOSITE CERAMICS <u>Zhiming Shi</u> , Inner Mongolia University Of Technology	4311-6 DYNAMIC MECHANICAL IN-SITU ANALYSIS OF CERAMIC MATRIX COMPOSITES AT 1300°C IN OXIDIZING ATMOSPHERE <u>Christian Kudisonga</u> , The University Of Queensland and Netszsch	4312-6 PREPARATION OF HOLLOW SiO2/POSS/FLUORINATED POLY(2,5-THIENYLBENZOBISOXAZOLE) NANOCOMPOSITE FILMS WITH ULTRA-LOW DIELECTRIC CONSTANT <u>Zhe Zhang</u> , East China University of Science and Technology	4313-6 THREE-DIMENSIONAL CONSTITUTIVE MODEL OF SHAPE MEMORY POLYMER COMPOSITES CONSIDERING RATE-DEPENDENT BEHAVIOUR <u>Jinsu Kim</u> , Seoul National University	4314-6 INCREASING THE STRENGTH OF MECHANICALLY JOINED CONNECTIONS OF METAL AND FIBER-REINFORCED PLASTICS USING A STRUCTURED AUXILIARY JOINING ELEMENT <u>Marcel Droß</u> , Technische Universität Braunschweig, Institute Of Machine Tools And Production Technology				
	1845-2230	ICCM Conference Banquet Melbourne Room, MCEC														



11-16 AUGUST 2019
 22nd International Conference
 on Composite Materials

CONFERENCE PROGRAM

correct as at 8.8.19 and is subject to change

Time	Plenary 2	Meeting room 206	Meeting room 209	Meeting room 212	Meeting room 213	Meeting room 214	Meeting room 215	Meeting room 216	Meeting room 217	Meeting room 218	Meeting room 219
0800-0805	Day 5 Welcome & Announcements										
0805-0850	PLENARY LECTURE: CHALLENGES IN COMPOSITES FOR MARINE STRUCTURES Yapa Rajapakse, United States Office of Naval Research, USA										
0850-0900	Plenary 2										
0850-0900	Move to concurrent sessions										
0900-1040	5101 Polymer matrix materials	5103 Defence	5105 Aerospace	5108 Composite structures	5109 Fracture and damage	5110 Rail	5111 Biocomposites	5112 Composite materials	5113 Process modelling	5114 Joints	5115 Sandwich structures and materials
0900-0930	AMELOGENESIS: NATURE'S 3D PRINTING SYSTEM FOR MULTI-SCALE LAMINATES <u>Brian Cox</u>			MANUFACTURING RELATED DEFECTS -WHERE AND WHY THEY OCCUR, AND DO THEY MATTER? <u>Simon Bickerton</u> , Auckland University	RESIN INFUSION COMPOSITES FOR AEROSPACE <u>Michael Edwards</u> , Boeing Australia						MULTI-SCALE MODELING OF FIBER-REINFORCED PLASTIC COMPOSITES: FROM ATOMISTIC MODELING TO STRUCTURAL DESIGN <u>Tomonaga Okabe</u> , Tohoku University
0930-0940	Move to concurrent sessions										
0940-1000	5101-1 BACTERIAL CELLULOSE-POLYCAPROLACTONE COMPOSITES AS ENVIRONMENTAL MATERIALS <u>Takao Aoyagi</u> , Nihon University We have been studying on effective defibrillation of bacterial cellulose (BC) and recently found that polycaprolactone-grafted BC suspension was very useful to prepare a thermo-responsive membrane to control drug permeation.	5103-1 MODELLING COMPACTION VARIABILITY IN OUT-OF-AUTOCLAVE PREPREG LAMINATE <u>Daria Rontch-Osmolovskaia</u> , USQ This paper proposes an experimental method for imaging the flow of trapped air through a OOA prepreg laminate stack. The goal is to quantify the volume of air, trapped between the plies during the manufacturing process which will cause the undesirable porosity in the cured part.	5105-1 VULNERABILITY OF COMPOSITE STRUCTURE FUSELAGE UNDER INTERNAL BLAST EFFECTS: MITE APPROACH <u>Francis Collombet</u> , Clement Ader Institute	5108-1 TRUNCATED SPHERICAL COMPOSITE SHELL FOR TRANSMITTING ELECTROMAGNETIC WAVE AND BEARING CAPACITY UNDER WIND LOAD <u>Lili Tong</u> , Harbin Engineering University In this paper, thickness of a sandwich radome which consists of two dense dielectric skins by a less dense core having a lower relative dielectric constant than the skin are determined by Maxwell equations for highest transmission coefficients and stiffness.	5109-1 NEW INTERFACE ELEMENT WITH NON COINCIDENT NODES TO SIMULATE DISCRETE DAMAGE IN COMPOSITE LAMINATE <u>Antoine Trelu</u> , Isae Supaero - Segula Sad	5110-1 COMPOSITE MATERIALS FOR THE RAILWAY SECTOR <u>Roberto Guzman De Villoria</u> , FIDAMC	5111-1 EFFECT OF DIFFERENT SURFACE TREATMENTS ON CURAUA FIBERS <u>LINCONL TEIXEIRA</u> , University of Brasilia	5112-1 FORMABILITY SIMULATION OF STEEL-POLYMER SANDWICH COMPOSITES <u>Sungjin Han</u> , Seoul National University	5113-1 VIRTUAL AND EXPERIMENTAL HYBRID THERMOFORMING OF GFRP AND ALUMINUM <u>Michael Grubenmann</u> , inspire IVP A hybrid thermoforming process of glass fibre-reinforced thermoplastic and aluminum considering process parameters, tool geometry and validation experiments is experimentally and virtually investigated.	5114-1 INTERLOCKING INTERFACE DESIGN IN METAL-CFRP JOINTS USING A MONTE-CARLO SIMULATION APPROACH <u>Fabian Günther</u> , Tu Dortmund University In experimental single lap joint test and FEM simulations the qualitative and quantitative positioning of mesoscale pin structures in interlocking CFRP joints are developed by a Monte-Carlo approach.	5115-1 STUDY ON THE LOW-VELOCITY IMPACTING RESPONSES AND RESIDUAL PROPERTIES OF COMPOSITE SANDWICHES <u>Xintao Huo</u> , Hunan University This paper revealed the impacting mechanism of foam sandwich structures. Numerical and analytical models were developed to support the design of structural crashworthiness. Besides, the residual properties were also considered
1000-1020	5101-2 EPOXY NETWORKS DERIVED FROM NOVEL AMINES <u>Russell Varley</u> , Deakin University	5103-2 BALLISTIC IMPACT ON COMPOSITE-COVERED CERAMIC AND THE EFFECT ON PROJECTILE FRAGMENTATION <u>Bernt B. Johnsen</u> , Norwegian Defence Research Establishment (FFI) A composite cover on alumina can improve the ballistic performance. The highest effect was with a cover on the back of the alumina, and not on the strike face.	5105-2 INFLUENCE OF SHOCKWAVE ON LIGHTNING DAMAGE OF CFRP LAMINATE <u>Yoshiyasu Hirano</u> , Japan Aerospace Exploration Agency	5109-2 ANALYSIS AND TESTING OF A THERMOPLASTIC COMPOSITE STIFFENED PANEL UNDER COMPRESSION <u>Kevin Van Dooren</u> , Delft University of Technology The analysis and test results of a thermoplastic composite stiffened panel under compression will be presented. Skin-stringer separation has been modelled by VCCT and will be validated by experimental testing.	5109-2 COMPARATIVE ANALYSIS OF MODELLING TECHNIQUES FOR IMPACT ON THICK FABRIC COMPOSITE STRUCTURES <u>Niels Van Hoom</u> , NLR - Netherlands Aerospace Centre A comprehensive characterisation of damage due to impact events on thick fabric composite structures remains an elusive and challenging task. Three methods with varying degrees of computational complexity are developed to simulate and predict a representative impact problem.	5110-2 INFLUENCE OF ENDPOST MATERIALS ON SUB-SURFACE RAILHEAD MATERIAL DAMAGE OF INSULATED RAIL JOINTS DUE TO WHEEL/RAIL CONTACT LOADINGS <u>Nirmal Mandal</u> , Central Queensland University	5111-2 BAMBOO FIBRE COMPOSITES - MOISTURE RESISTANT AND DURABLE <u>Aart Willem Van Vuure</u> , KU Leuven Bamboo fibres show high potential for use in composites due to combination of good mechanical properties, abundant availability, high Carbon capture capability and the fact that they keep their mechanical properties at high humidity.	5112-2 TIDAL TURBINE BLADE COMPOSITES USING BASALT FIBRE REINFORCED POWDER EPOXY <u>Conchur Bradaigh</u> , University of Edinburgh	5113-2 EVALUATION AND SIMULATION ON THE MOLDING PROCESS OF CHOPPED CARBON FIBER TAPE REINFORCED THERMOPLASTICS <u>Tiansheng Han</u> , The University of Tokyo This research aims to evaluate the compression molding outcome of a specific short fiber ROS CFRTTP named as UT-CTT utilizing the analysis of charge ratio and thickness of free-edge samples and simulate the process with a new modeling technology implemented in LS-DYNA®, and eventually leads to mechanical property prediction based on the pre-set molding conditions.	5114-2 MICROPINNED JOINTS UNDER LAP SHEAR LOADING CONDITIONS <u>Simon Inverarity</u> , Rmit University We present a new approach to micropinned joints which involves interference fitting, and its effect is characterised for a composite-to-metal joint under lap shear loading.	5115-2 UTILIZATION OF A LAYERED NANOCOMPOSITE CONSTRUCTED BY LITAWOG NANOSHEETS AND COBALT PORPHYRIN AS ELECTRO-CATALYST TO OXYGEN REDUCTION <u>Jinpeng Li</u> , East China University Of Science And Technology Layered nanocomposite CoTMPyP/LiTaWO6 was constructed by exfoliation/self-assembling method, and the electrocatalytic activity of nanocomposite to oxygen reduction reaction was tested.
1020-1040		5103-3 NUMERICAL MODELLING OF UHMWPE COMPOSITES UNDER IMPACT LOADING <u>Behjat Ansari</u> , University of Bristol A finite element model is developed to predict energy absorption at the interfaces of UHMWPE laminates under varying rates of impact.	5105-3 DESIGN PROCEDURES FOR IMPROVED LAMINATE PERFORMANCE IN BENDING AND EXTENSION <u>Jason Lee</u> , University of Glasgow This article discusses improved laminate performance relating to both in-plane properties (e.g. first ply failure) and out-of-plane properties (e.g. initial buckling) using double angle-ply laminates (with \square and \square ply orientations), which are stiffness matched to standard laminate configurations.	5108-3 EVALUATION OF MOLDING PROCESSES EFFECTS ON INTERNAL GEOMETRY OF RANDOMLY ORIENTED STRANDS <u>Yi Wan</u> , The University Of Tokyo The internal geometry property, which is considered the inner structure with mechanical properties, is evaluated for randomly oriented strands both quantitatively and visually under different molding processes.	5109-3 LOCAL AND NONLOCAL CONTINUUM DAMAGE ANALYSIS OF IMPACT AND COMPRESSION AFTER IMPACT TESTS ON CFRP LAMINATES <u>Reza Vaziri</u>		5111-3 COMPOUNDING NATURAL FIBERS WITH HIGH PROCESS TEMPERATURE-THERMOPLASTICS WITH SOLID-STATE SHEAR PULVERIZATION <u>Katsuyuki Wakabayashi</u> , Bucknell University A chilled twin screw extrusion process called Solid-State Shear Pulverization effectively compounds natural fibers with polymers that are conventionally incompatible because of their high processing temperature.	5112-3 NEW HYBRID MATERIALS BASED ON CARBON NANOTUBES AND METAL ALLOYS <u>Damian Kulawik</u> , Jan Dlugosz University	5113-3 STRENGTH ANALYSIS USING THE RESULT OF COMPRESSION MOLDING SIMULATION FOR LONG CARBON FIBER REINFORCED THERMOPLASTICS <u>Shinya Hayashi</u> , JSOL Corporation New compression molding simulation techniques for long fiber CFRP using a beam-in-adaptive solid coupling function and a component strength analysis using the deformed beams are presented.	5115-3 COMPOSITE SANDWICH OPTIMIZATION OF A STIFFENED PANEL STRUCTURE <u>Yasser M. Meddaikar</u> , DLR - German Aerospace Center Optimization strategy for sandwich composites based on lamination parameters, applied to a stiffened panel problem.	
1040-1110	Coffee break Exhibition hall										

Friday
16 August

CONFERENCE PROGRAM

correct as at 8.8.19 and is subject to change

	1110-1230	5201 Dynamic properties and fracture	5203 Multiscale modelling	5205 Advanced manufacturing and automation	5208 Composite structures	5209 Fracture and damage	5210 Damage tolerance	5211 Biocomposites	5212 Interfaces & Interphases	5213 Process modelling	5214 Joints	5215 Sandwich structures and materials
	1110-1130	<p>5201-1 NUMERICAL INVESTIGATION ON THE LOADING METHODS AND SIZE EFFECT FOR COMPRESSION RESPONSE OF BRAIDED COMPOSITES Pang Liu, Northwestern Polytechnical University</p> <p>The effects of sample size and loading methods on compression response of the triaxially braided composite are numerically investigated using the meso-scale finite element method.</p>	<p>5203-1 DUAL PHASE VOID PREDICTION IN MICROSCOPIC YARN MODELS Silvio Facicoto, Institute Of Aircraft Design - University Of Stuttgart</p> <p>Characteristics of composite coil springs made by the method of 4D printing are presented. In this method, the structure changes from initial simple shape to the final complex shape after curing and cooling.</p>	<p>5205-1 COMPOSITE COIL SPRINGS MADE BY 4D PRINTING METHOD Suong Hoa, Concordia University</p> <p>Characteristics of composite coil springs made by the method of 4D printing are presented. In this method, the structure changes from initial simple shape to the final complex shape after curing and cooling.</p>	<p>5208-1 BUCKLING AND STRENGTH ANALYSIS OF VARIABLE STIFFNESS PANELS MANUFACTURED BY FABRIC STEERING TECHNOLOGY Zhaofei Xiao, University Of Glasgow</p> <p>Novel tests show that specimen volume and ply thickness have a much greater effect on tensile failure strain of carbon-epoxy than other stress components.</p>	<p>5209-1 DETERMINING THE TRUE TENSILE FAILURE STRAIN OF CARBON FIBRE COMPOSITES AND FACTORS AFFECTING IT Michael Wisnom, Bristol Composites Institute (ACCIS)</p> <p>Novel tests show that specimen volume and ply thickness have a much greater effect on tensile failure strain of carbon-epoxy than other stress components.</p>	<p>5210-1 A PLATE MODEL FOR DAMAGE TOLERANCE PREDICTION AND DESIGN FOR MULTI-AXIAL LOADING MICROSTRUCTURE Mark Nielsen, University Of Bath</p> <p>A new semi-analytical method for predicting the strain at which delamination propagation will initiate following sublaminate buckling. Adaptation for design optimisation is included, showing benefit of non-standard surface plies.</p>	<p>5211-1 FRACTURE TOUGHENING OF PERITUBULAR DENTINE IN BIOLOGICAL POROUS MICROSTRUCTURE Rong Wang, Xi'an Jiaotong University</p> <p>The role of PTD microstructure on the fracture properties of human dentine is investigated by analysis</p> <p>of its crack tip shielding effect on microcracks and macrocracks.</p>	<p>5212-1 GRAFTING CARBON NANOTUBES ON CARBON FIBER SURFACE AND ENHANCING THE INTERFACIAL PROPERTIES OF COMPOSITES Shu Xiong, Beihang University</p> <p>This project employs surface electroinitiated emulsion polymerisation (SEEP) process to modify carbon surfaces; focusing on generating multilayer interfaces to induce novel physical and chemical properties in carbon fibre reinforced composites. This process is rapid, scalable, and able to be applied to any conductive surface.</p>	<p>5213-1 MODELLING OF THE HIPERDIF METHOD FOR MANUFACTURING RECYCLED COMPOSITES USING SPH Samantha Huntley, University Of Bristol</p> <p>HiPerDiF enables remanufacturing reclaimed carbon fibres into commercially-valuable products by ensuring a high-level of fibre alignment. The fluid dynamic alignment process is modelled using SPH and the model is validated.</p>	<p>5214-1 COHESIVE ZONE MODEL IDENTIFICATION ON MODE I BONDED ASSEMBLY: SENSITIVITY AND ROBUSTNESS ANALYSIS Agathe Jaillon, Isae-superaero</p> <p>In this study, several investigations of the skin-core interface of sandwich structures are conducted, including physico-chemical interactions based on surface energies and mechanical interlocking influenced by foam surface morphology.</p>	<p>5215-1 INTERFACIAL ADHESION BETWEEN CARBON FIBRE THERMOPLASTIC COMPOSITES AND FOAM IN SANDWICH STRUCTURES Le Quan Ngoc Tran, Singapore Institute of Manufacturing Technology, A-STAR</p> <p>In this study, several investigations of the skin-core interface of sandwich structures are conducted, including physico-chemical interactions based on surface energies and mechanical interlocking influenced by foam surface morphology.</p>
	1130-1150	<p>5201-2 EFFECT OF MICROSTRUCTURE AND STRAIN-RATE ON THE TRANSVERSE STRENGTH OF UHMWPE COMPOSITES Jason Parker, Johns Hopkins University</p> <p>Fiber orientation is reconstructed by spherical harmonics as well as by method of maximum entropy. Subsequently, representative volume elements are generated to investigate the influence on the effective composite properties.</p>	<p>5203-2 INFLUENCE OF FIBER ORIENTATION RECONSTRUCTION ON MECHANICAL PROPERTIES OF SHORT FIBER REINFORCED THERMOPLASTICS Kevin Breuer, Chair Of Plastic Technology</p> <p>Fiber orientation is reconstructed by spherical harmonics as well as by method of maximum entropy. Subsequently, representative volume elements are generated to investigate the influence on the effective composite properties.</p>	<p>5205-2 VIRTUAL MATERIAL CHARACTERISATION OF 3D COMPOSITES Bruce Cartwright, Pacific Engineering Systems International Pty Ltd</p> <p>Virtual material characterisation of 3D composites</p>	<p>5208-1 BUCKLING AND STRENGTH ANALYSIS OF VARIABLE STIFFNESS PANELS MANUFACTURED BY FABRIC STEERING TECHNOLOGY Zhaofei Xiao, University Of Glasgow</p> <p>In this study, impact tests and CAI tests varying the impact energies were conducted using quasi-isotropic laminates which had different ply thickness (0.02, 0.12, 0.24 mm).</p>	<p>5209-2 EFFECT OF PLY THICKNESS ON IMPACT DAMAGE MODE OF THIN PLY CFRP LAMINATES Kohei Yamada, Industrial Technology Center Of Fukui Prefecture</p> <p>In this study, impact tests and CAI tests varying the impact energies were conducted using quasi-isotropic laminates which had different ply thickness (0.02, 0.12, 0.24 mm).</p>	<p>5210-2 LOW VELOCITY IMPACT MODELLING ON LAMINATE COMPOSITE: AN INDUSTRIAL APPLICATION Patrick Peres, ArianeGroup</p> <p>Industrial validation methodology of low velocity impact computation based on experimental results with CFRP for different sizes of sample.</p>	<p>5211-2 BIOCOMPATIBILITY OF B-CA3(PO4)2/MG-ZN COMPOSITES PREPARED BY POWDER METALLURGY Kun Yu, School Of Materials Science And Engineering, Central South University</p> <p>Biocompatibility of B-CA3(PO4)2/MG-Zn composites prepared by powder metallurgy</p>	<p>5212-2 MULTILAYER INTERFACES FOR CARBON FIBRE COMPOSITES Melissa Stanfield, Deakin University</p> <p>This project employs surface electroinitiated emulsion polymerisation (SEEP) process to modify carbon surfaces; focusing on generating multilayer interfaces to induce novel physical and chemical properties in carbon fibre reinforced composites. This process is rapid, scalable, and able to be applied to any conductive surface.</p>	<p>5213-2 SIMULATION OF THE RESIN TRANSFER IN A TRI-AXIALLY BRAIDED PREFORM USING EFFECTIVE PERMEABILITY Hye-gyu Kim, Ulsan National Institute of Science and Technology</p> <p>Numerical simulations for the resin transfer molding process are performed to observe the resin flow through the tri-axial braided preform, including the temperature effect.</p>	<p>5214-2 INDUCTION WELDING BEHAVIOR OF WOVEN-CF/PPS LAMINATES USING HIGH FREQUENCY CONTINUOUS INDUCTION HEATING Kurima Kazuki, KINDAI University</p> <p>This study clarified the behavior of induction welding of woven-CF/PPS laminates using the high frequency power supply of around 2.0MHz.</p>	<p>5215-2 EXPERIMENTAL FORMABILITY STUDY OF STEEL-POLYMER SANDWICH COMPOSITES Jeewook Yang, Seoul National University</p> <p>Points to be noted on applying an analysis model named "beam on Vlasov foundation model" to sandwich SCB test specimen are discussed.</p>
Friday 16 August	1150-1210	<p>5201-3 EXPERIMENTAL CHARACTERIZATION OF STRAIN-RATE SENSITIVITY ON FAILURE PROPERTIES OF CARBON/EPoxy COMPOSITE Fabien Coussa, Onera</p> <p>Experimental characterization of strain-rate sensitivity on failure properties of carbon/epoxy composite</p>	<p>5203-3 ANISOTROPIC THERMO-VISCOELASTIC RESIDUAL STRESS MODEL FOR WARPAGE SIMULATION OF INJECTION MOLDED PARTS Zhilang Fan, Autodesk Australia Pty Ltd</p> <p>Frontal polymerization offers significant cure time savings over conventional composite manufacturing. Applying a local heat trigger initiates polymerization; therefore, using multiple triggers further reduce cure times and enable large-scale manufacturing.</p>	<p>5205-3 MULTIPLE-FRONT POLYMERIZATION FOR RAPID COMPOSITE MANUFACTURING Polette Centellas, University Of Illinois At Urbana-champaign</p> <p>Frontal polymerization offers significant cure time savings over conventional composite manufacturing. Applying a local heat trigger initiates polymerization; therefore, using multiple triggers further reduce cure times and enable large-scale manufacturing.</p>	<p>5208-3 EFFECT OF ABSORBENT FOAM FILLING ON MECHANICAL BEHAVIORS OF 3D PRINTED HONEYCOMBS Leilei Yan, Northwestern Polytechnical University</p> <p>In this paper, compressive properties of diverse octahedral lattice structures assembled by nonplanar cross-shaped parts by mechanical interlocking method were investigated.</p>	<p>5209-3 A SIMPLE MODELING APPROACH TO PREDICTING DAMAGE PROGRESS IN UNIDIRECTIONALLY ARRAYED CHOPPED STRAND LAMINATES Shigeki Yashiro, Kyushu University</p> <p>We successfully designed micro-engineered SRPP/CFPP structures via tailoring laser-cut patterns to meet different damage tolerance requirements at different locations within the same structure, creating engineering solutions of significant industrial impact.</p>	<p>5210-3 LOW-VELOCITY IMPACT SIMULATION WITH A SPECIAL FOCUS ON THICK COMPOSITES Ronny Sachse, Institut für Flugzeugbau - Universität Stuttgart</p> <p>This paper investigates the influence of laminate thickness on damage initiation and propagation during low velocity impact. An enhanced cohesive zone model and impact simulations for validation are presented.</p>	<p>5211-3 TUNING THE MECHANICAL AND THERMO-MECHANICAL RESPONSES OF BIO NANOCOMPOSITE FILMS OF PLASTICIZED POLYLACTIC ACID WITH HALLOYSITE NANOTUBES Swati Sharma, IIT DELHI</p> <p>Poly-lactic acid (PLA), a polyester derived from natural resources had been modified in this work to improve its ductility with the help of plasticizer. To compensate for the decrease in tensile strength, halloysite nanotubes (HNT) have been incorporated in plasticized PLA.</p>	<p>5212-3 INTERPHASE TAILORING OF CARBON FIBER WITH 1-D AND 2-D NANOPARTICLES Dhriti Nepal, Air Force Research Lab</p> <p>Interphase tailoring of carbon fiber with 1-D and 2-D nanoparticles</p>	<p>5213-3 EFFECT OF CURING CYCLE ON THE STRENGTH OF UAV COMPOSITE WING STRUCTURES Zhendong Liu, School Of Aeronautics, Northwestern Polytechnical University, Xi'an, China</p> <p>C/PEEK rivets were molded-in CFRP and Steel joints by Joule heating and pressure. The tested shear strength is higher than typical aerospace grade aluminum rivets.</p>	<p>5214-3 CARBON FIBER/PEEK RIVETS FOR FASTENING COMPOSITES STRUCTURES Louis Laberge Label, Polytechnique Montreal</p> <p>C/PEEK rivets were molded-in CFRP and Steel joints by Joule heating and pressure. The tested shear strength is higher than typical aerospace grade aluminum rivets.</p>	<p>5215-3 ON A BEAM ON ELASTIC FOUNDATION ANALYSIS MODEL FOR SANDWICH SCB TEST SPECIMEN Kazuya Takayasu, Kanazawa Institute of Technology</p> <p>Points to be noted on applying an analysis model named "beam on Vlasov foundation model" to sandwich SCB test specimen are discussed.</p>
	1210-1230		<p>5203-4 APPLICATION OF AUTOMATIC LAY-UP AND IN-SITU CONSOLIDATION TO THE DEVELOPMENT OF A REINFORCED WING SKIN COVER - OUTCOME PROJECT Maria Isabel Martin, Fidamc</p> <p>Application of automatic lay-up and in-situ consolidation to the development of a reinforced wing skin cover - outcome project</p>	<p>5205-4 APPLICATION OF AUTOMATIC LAY-UP AND IN-SITU CONSOLIDATION TO THE DEVELOPMENT OF A REINFORCED WING SKIN COVER - OUTCOME PROJECT Maria Isabel Martin, Fidamc</p> <p>Application of automatic lay-up and in-situ consolidation to the development of a reinforced wing skin cover - outcome project</p>	<p>5208-4 DESIGN AND COMPRESSIVE PROPERTIES OF LONG-LASS-FIBER REINFORCED THERMOPLASTIC OCTAHEDRAL LATTICE STRUCTURE Yueqing Zhao, Beihang University</p> <p>In this paper, compressive properties of diverse octahedral lattice structures assembled by nonplanar cross-shaped parts by mechanical interlocking method were investigated.</p>	<p>5209-4 EXPERIMENTAL INVESTIGATION OF MICRO/MACROSCALE DAMAGE MECHANISM IN THERMOPLASTIC COMPOSITES UNDER QUASI-STATIC AND IMPACT Aniel Yudhananto, Kaust (King Abdullah University Of Science And Technology)</p> <p>We successfully designed micro-engineered SRPP/CFPP structures via tailoring laser-cut patterns to meet different damage tolerance requirements at different locations within the same structure, creating engineering solutions of significant industrial impact.</p>	<p>5210-4 ENHANCING THE DAMAGE TOLERANCE OF SRPP/CFPP HYBRID COMPOSITES VIA A BIO-INSPIRED DESIGN Lorenzo Mancattelli, Imperial College London</p> <p>We successfully designed micro-engineered SRPP/CFPP structures via tailoring laser-cut patterns to meet different damage tolerance requirements at different locations within the same structure, creating engineering solutions of significant industrial impact.</p>	<p>5211-4 BIOINSPIRED ARCHITECTURES TOWARD IMPROVING DAMAGE RESISTANCE ON CFRP LAMINATES Luis Amorim, University Of Minho</p> <p>Under low velocity impact, the bioinspired CFRP laminates proposed have shown more tolerance to damage onset and less prone to larger damages, when compared to a standard aeronautic one.</p>	<p>5212-4 MECHANICAL DIRECT JOINING BETWEEN CFRTP AND METAL SHEET USING HIGH FREQUENCY INDUCTION HEATING Kaname Fujisaku, Nippon Institute Of Technology</p> <p>Joining method between aluminum sheet and CFRTP (Carbon Fiber Reinforced Thermo-Plastic) sheet without rivets by using induction heating was discussed, and joining strength were investigated.</p>	<p>5214-4 MECHANICAL DIRECT JOINING BETWEEN CFRTP AND METAL SHEET USING HIGH FREQUENCY INDUCTION HEATING Kaname Fujisaku, Nippon Institute Of Technology</p> <p>Joining method between aluminum sheet and CFRTP (Carbon Fiber Reinforced Thermo-Plastic) sheet without rivets by using induction heating was discussed, and joining strength were investigated.</p>	<p>5215-4 BUCKLING EXPERIMENTS AND ANALYSIS OF THE SOFT-CORE SANDWICH BEAMS Donglian Zhang, School Of Aeronautics, Northwestern Polytechnical University</p> <p>Buckling experiments and analysis of the soft-core sandwich beams</p>	
	1230-1330	Lunch Exhibition hall										

CONFERENCE PROGRAM

correct as at 8.8.19 and is subject to change

Friday 16 August	1450-1510	<p>5301-5 ACOUSTIC RELATION BETWEEN 5-CYCLE LOAD/UNLOAD AND FULL-CYCLE FATIGUE OF COMPOSITES WITH AND WITHOUT RESIN FLOW CHANNEL <u>Kariappa Maletira Karumbaiah</u>, The University Of Auckland</p> <p>The complex fatigue behaviour of composites requires the identification of the service life under cyclic loads, which involves intricate mechanical testing. Therefore, this study sought to identify a relationship between five-cycle load/unload and full cycle fatigue performance.</p>	<p>5303-5 EXPLICIT DAMAGE MODELLING OF COMPOSITES UNDER COMPRESSIVE LOADING <u>Jie Zhi</u>, National University Of Singapore</p> <p>This work presents a high-fidelity integrated discrete-smear crack approach for modelling notched composite laminates under compressive loads. The predicted failure loads and patterns compare well with experimental data and observations in the literature.</p>	<p>5305-5 HIGH PERFORMANCE/ HIGH RATE COMPOSITE PROCESSING WITH TRAPPED RUBBER <u>Brina Blinzler</u>, Chalmers University Of Technology</p> <p>Trapped rubber processing, an autoclave alternative to achieving high pressures during composite processing, requires an accurate thermomechanical material model for implementation.</p>	<p>5308-5 FUNCTIONALIZATION OF BASALT FIBERS BY HYDROTHERMAL GROWTH OF ZINC OXIDE NANOSTRUCTURES <u>Matteo Lilli</u>, Sapienza University Of Rome</p> <p>Chemical, morphological and mechanical analysis of basalt fibres decorated with zinc oxide nanostructures through a hydrothermal process at different growth times.</p>	<p>5310-5 COMPARISON OF KISSING BOND AND DISBOND DEFECTS IN CFRP LAMINATES BY COMPRESSION AFTER IMPACT TESTING <u>Robert Pierce</u>, University Of Nottingham Ningbo China</p> <p>Defects have been manufactured in CFRP samples using a simple new method, and their effect on compression and CAI performance has been investigated.</p>	<p>5313-5 FINITE ELEMENT MODELLING OF BI-AXIAL FABRIC WITH CONSIDERING BENDING STIFFNESS FOR COMPOSITES PREFORMING <u>Eel Yu</u>, Composites Research Group, University Of Nottingham</p> <p>A macro-scale finite element model was developed by incorporating the effects of fabric bending stiffness, in order to assess its significance on the prediction of defect onset and propagation during forming.</p>	<p>5314-5 SHERLOC: INNOVATIVE MANUFACTURING AND STRUCTURAL HEALTH MONITORING OF THERMOPLASTIC STRUCTURES <u>Jacinto Tortosa</u>, FIDAMC</p>	<p>5315-5 HIERARCHICAL CARBON AEROGEL MODIFIED CARBON FIBER COMPOSITES FOR STRUCTURAL POWER APPLICATIONS <u>David Anthony</u>, Imperial College London</p> <p>Multifunctional structures containing carbon aerogels contribute positively to electro-chemical double layer capacitive performance but reduce overall mechanical properties; the addition of nano-scale reinforcers (carbon nanomaterials) are proposed to address these concerns.</p>
------------------	-----------	--	--	---	---	---	--	--	--