FPCM-10 Technical Program (*July 11-15 2010*)

Day 1: Monday, July 12, Morning		
8h00-8h10	**Welcome and opening Remarks** **Chairs: Dr. V. Michaud, Dr. P.Ermanni**	
8h10-8h55	**Keynote 1: Dr. Georg Reif, CEO, 3A Composites, CH** "Industrial aspects of composite materials" Chair: Dr. V. Michaud, EPFL	
	Auditorium	
9h00-10h20	**Applications I** Chair: Dr. V. Michaud EPFL	
9h00	Industrialisation, optimisation of RTM process applying manufacturing process simulation, François Dumont and Christian Weimer, Eurocopter, Germany.	
9h20	Manufacturing a Composite Gearbox for Rotorcraft Applications Jeffrey Lawrence, V system composites, USA.	
9h40	Effects of groove configurations on fatigue resistance of infused sandwich panels Lars Massüger and Roman Gätzi, Alcan Airex AG, Switzerland	
10h00	Injection of a Complex Preform by RTM. Process Parameters and Quality of the Part. Pierre Ouagne, Damien Soulat, Romain Agogué, Chung-Hae Park, Laurent Bizet, Joel Breard and Didier Zanelli, Polytech Orleans, and University Le Havre, France.	
10h20-10h50	***Coffee Break***	
	Auditorium	*Sala Balint*
10h50-12h20	**Applications II** Chair: Dr. M. Henne, U.Applied Sciences Rapperswil, CH	**Multiphase flow I** Chair: Dr. S. Lomov, KU Leuven, Belgium
10h50	Industrialisation of Liquid Resin Processes (LRI) considering to the stress transferred influences Henri-F. Perrin, Alain D'acunto and Patrick Martin Arts et Métiers Metz/ PPE, France	Void Formation During Preform Impregnation in Liquid Composite Molding Processes Caleb DeValve and Ranga Pitchumani Virginia Tech, USA
11h10	Polyurethane Composite Sandwich Structure Paul Trudeau and Edu Ruiz Ecole Polytechnique de Montréal, Canada	Analysis of Macro/Micro Voids in the Resin Transfer Molding Process Chung Hae PARK, Aurélie LEBEL, Joël BREARD, Abdelghani SAOUAB and Woo Il LEE Université Le Havre, France/Soul National, Korea
11h20	Relationship betwen process parameters and mechanical properties of laminated plates made by LRI. Alvine NJIONHOU KEPNANG, Florentin BERTHET and Bruno CASTANIE, Université de Toulouse, ICA / Mines Albi, France	On wetting of fiber with a resin by capillary force Yoshizumi Fukuhara and Ichiro Ueno Tokyo University of Science, Japan
11h40	Advanced Material and Tooling Concept for a RTM Helicopter Fitting Markus Henne, Manuel Müller, Gion Andrea Barandun, Paolo Ermanni and Markus Zogg, University of Applied Sciences Rapperswil/ ETHZ, Switzerland.	Three-dimensional meso-scale mapping of the fluid content in partially impregnated reinforcement textiles using high resolution magnetic resonance imaging Andreas Endruweit, Paul Glover, Kay Head and Andrew C. Long, University of Nottingham, UK
12h00-13h30 **13h30-15h00**	***Lunch*** ***Break (visit of Monte Verita, rest, work or network)***	

Day 1: Monday, July 12, Afternoon		
	Auditorium	
15h00-16h00	**Round Table on Industrial applications** Chair: Dr. Bodo Fiedler, Ruag Aviation, CH	
16h00-17h30	**Applications III** Chair: Dr. Paul Trudeau, Ecole Polytechnique Montreal, Canada	**Multiphase Flow 2** Chair: Dr. Gerhard Ziegmann, TU Clausthal, Germany
	Auditorium	*Sala Balint*
16h00	A study on the effect of Joule-heating during the liquid composite molding (LCM) process and on the curing of CFRP composite laminates Nikos Athanasopoulos and Vassilis Kostopoulos, University of Patras, Greece	Wetting process of fibrous porous media by resin in VARTM Yoshiaki Kisara and Ichiro Ueno, Tokyo University of Science, Japan
16h20	In-Mould Gel-Coating (IMGC) for Resin Transfer Moulding John Summerscales, Christopher Hoppins, Paul Anstice, Nick Brooks, Dilruk Yahathugoda, Alan Harper, Charles Wood and Mark Cooper, Uni of Plymouth, PERA, Magnum Venus, W Ball and Sons, Scott Bader, UK.	Microscale simulation of resin–air flow around single fibers Yasuhiro Inoue, Michihito Matsumoto, Masaki Hojo, Kazuki Ishida, Naoki Takada and Taiji Adachi Mitsubishi Electric/Tokyo University, Japan
16h40	In-Mould Gel-Coating for Resin Infusion Processes using a Flow Medium Bharaneedharan Muralidharan and John Summerscales, University of Plymouth, UK.	Modeling Unsaturated Flow in Dual-Scale Fiber Mats of Liquid Composite Molding: Some Recent Developments Hua Tan and Krishna Pillai University of Wisconsin-Milwaukee, USA.
17h00	Observations from the filling and post-filling stages of axisymmetric liquid composite moulding with flexible Jamie Timms, Quentin Govignon, Simon Bickerton and Piaras Kelly, University of Auckland, New Zealand.	Analysis of the Saturation in Liquid Composite Molding Processes using an Essentially Non-Oscillatory (ENO) Technique Llanos Gascon, Juan A. Garcia, Francisco Chinesta, Edu Ruiz and Francois Trochu, UP Valencia, Spain/Poly Montreal, Canada.
17h20-17h45	***Coffee Break***	
17h45-18h45	**Applications IV** Chair: Dr. C. Fischer, Alcan Innovation Cell, CH	**Advanced measuring methods** Chair: Dr J. Summerscales, University of Plymouth
17h45	Characterization, analysis and computer aided process design for resin transfer molding Edouardo Ruiz, Vincent Achim and Francois LeBel Ecole Polytechnique de Montreal Canada	Comparing flow-front propagation sensed by FBGs with PAM-RTM simulation Johannes Balvers, Harald Bersee and Adriaan Beukers, TU Delft, Netherlands
18h05	A comparison between numerical simulation and experimental study for a plate infusion test carried out by Liquid Resin Infusion process under industrial conditions Peng Wang, Sylvain Drapier, Jérôme Molimard, Alain Vautrin and Jean-Christophe Minni, Ecole des Mines de St Etienne/Hexcel corporation, France	Vacuum infusion processing of composites with integrated damping elements Véronique Michaud, Antoine Sigg, Rui de Oliveira, and Jan-Anders E. Månson Ecole Polytechnique Fédérale de Lausanne, Switzerland
18h25	Experimental analysis of flexible injection for curved composite parts Philippe Causse, Edu Ruiz and François Trochu École Polytechnique de Montréal, Canada	X-ray microtomography and pull-out test to characterise fibre-fibre contacts in short fibre-reinforced composites during their processing Olivier Guiraud, Laurent Orgéas, Pierre Dumont and Denis Favier University of Grenoble, France
19h00	***Dinner at Monte Verita Restaurant***	

	Day 2: Tuesday, July 13, Morning	
8h00-8h10	***Announcements of Day 2***	
8h10-8h55	**Keynote lecture 2, Dr. Andrew Long, University of Nottingham, UK** "Prediction, measurement and significance of reinforcement permeability" Chair: Dr P. Ermanni, ETHZ, CH	
	Auditorium	
9h00-10h30	**Permeability measurement I** Chair: Dr P. Ermanni, ETHZ, CH	
9h00	A Reference Porous Medium made by Rapid Prototyping as a Calibration Tool for Permeability Measuring Devices Reza Masoodi, Andrew Vechart and Krishna Pillai University of Wisconsin-Milwaukee, USA	
9h20	Evaluation of Resin Impregnation Process in Textile Fabrics Asami Nakai, Yuki Kadoma and Shinji Ogihara, Kyoto Institute of Technology/Tokyo University of Science, Japan	
9h40	An Optically Based Inverse Method to Measure In-plane Permeability Fields, Simon Bickerton, Jia Ming Gan, Fan Zhang, Benoit B. Cosson, Sebastien Comas-Cardona and Christophe Binetruy, Ecole des Mines de Douai, France/University of Auckland, New Zealand.	
10h	Experimental and numerical analysis of the deformation of a woven composite reinforcement. Consequences on the permeability Quang-Thanh Nguyen, Emmanuelle Vidal-Salle, Philippe Boisse, Joel Bréard and Bertrand Laine, INSA Lyon/Université du Havre/ONERA, France	
10h20-11h50	***Coffee Break***	
	Auditorium	*Sala Balint*
10h50-12h20	**Permeability measurement II** Chair: Dr C. Binetruy, Ecole des Mines de Douai (F)	**Textile compaction** Chair: Dr. K.Pillai, University of Wisconsin, USA
10h50	Validation of flexible permeability characterization methods in numerical simulation of resin Infusion processes Enrique Díaz, Concha Sanz and Juan Antonio García, AIMPLAS/UP Valencia, Spain	Fast X-Ray microtomography for the in situ analysis of the compression of a saturated fibre bundle, Pierre LATIL, Laurent ORGEAS, Christian GEINDREAU, Sabine ROLLAND DU ROSCOAT and Pierre DUMONT Université de Grenoble, France
11h10	Correlation of permeability values with flow channel diameters determined by 3D-image analysis of a woven textile Gunnar Rieber and Peter Mitschang, University of Kaiserslautern, Germany	Deviation from Darcy's Law during the Post-filling Stage of Resin Infusion Quentin Govignon, Jamie Timms, Simon Bickerton and Piaras A. Kelly University of Auckland, New Zealand
11h20	Comparison and Evaluation of Two Different Permeability Measurement Methods for Fibre Reinforcement Materials Mathias Wietgrefe, Véronique Michaud ,Jose Pariona Lartiga, Konstantin Schubert and Michael Sinapius DLR, Germany/EPFL, Switzerland	Jonathan Cheng, Piaras Kelly and Simon Bickerton. A Thermomechanical Constitutive Model for the Compaction Response of Fibrous Reinforcements University of Auckland, New Zealand
11h40	Gerd Morren, Hugo Sol and Sven Bossuyt. Permeability measurement of a reference specimen using an inverse method VLB, Belgium/Uni Helsinki, Finland	Influence of the Compaction Speed on the Transverse Continuous Permeability Pierre Ouagne and Joel Breard, Polytech Orléans/Université du Havre, France
12h00-13h30	***Lunch***	
13h30-15h00	***Break (visit of Monte Verita, rest , work or network)***	

	Day 2: Tuesday July 13, afternoon	
	Auditorium	
15h00-16h00	**Round Table on permeability measurement** Chair: Dr B.Laine, ONERA, F Co-chairs: S. Lomov, KULeuven, B, and Dr E. Ruiz, Poly Montreal, Ca Experimental determination of textile permeability: a benchmark exercise, Rene Arbter, Jean-Marc Béraud, Christophe Binetruy, Demaria, Paolo Errmani, Frank Gommer, Senad Hasanovic, Bertrand Laine, Andrew Long, Stepan V. Lomov, Véronique Michaud, Gerd Morren, Romain Nunez, Laurent Bizet, Joel Breard, Eduardo Ruiz, Hugo Sol, François Trochu, Bart Verleye, Julien Verrey and Matthias Wietgrefe.	
	Auditorium	*Sala Balint*
16h00-18h00	**Permeability Modelling** Chair: Dr. S.Bickerton, U. Auckland, New Zealand	**Thermoplastics** Chair: Dr. P. Mitschang, IVW Gmbh Kaiserslautern, Germany
16h00	Permeability prediction for a REV of a fibrous media with a monolithic finite element method Gregory Puaux, Luisa Silva, Patrice Laure and Michel Vincent CEMEF/Université de Nice, France	Interfacial properties of carbon fiber reinforced thermoplastic composites Hajime Nakamura, Yoshitaka Tanaka, Asami Nakai, Satoshi Kobayashi and Nobuo Ikuta Kyoto Institute of Technology/ Tokyo Metropolitan University/Shonan Institute of Technology, Japan
16h20	Permeability of woven fabrics: analytical and numerical predictions Bertrand Laine, Martin Hirsekorn, Philippe Boisse and Fabrice Boust INSA Lyon, ONERA, Polytech Orléans, France/KUL, Belgium	Investigation on the reaction kinetics of adiabatic polymerization of anionic polyamide-6 Julie Teuwen and Harald Bersee TU Delft, Netherlands
16h40	Development of a Multigrid Finite Difference Solver for Benchmark Permeability Analysis Richard Loendersloot, Remko Akkerman and Wouter Grouve University of Twente, Netherlands	Modeling of short fiber composites strength with use of failure indicators Dariusz Bednarowski and Łukasz Malinowski ABB Corporate research, Poland
17h00	A simplified computational treatment for Non-Isotropic Permeability Flow Models based on Flow Pattern Configuration Nicolas Montes, Fernando Sanchez and Nuno Correia INEGI, Portugal/Valencia, Spain	Effect of Dispersed Phase Particle Dispersion on the Thermal Stability of Recycled Poly(ethylene terephthalate)/Polypropylene Blend Yew Wei Leong, Hiroyuki Inoya, Supaphorn Thumsorn and Hiroyuki Hamada Yasuda Sangyo-ko/Tokyo Institute of Technology, Japan
17h20	Alteration of permeability caused by transversal flow-induced deformation of fibres during composites manufacturing Vilnis Frishfelds, Gunnar Hellström and Staffan Lundström Lulea University of Technology, Sweden	Glass/CBT Laminate Processing and Quality Aspects Prabhakaran R.T. Durai, Tom Løgstrup Andersen and Aage Lystrup Risoe, Danemark
17h40	Numerical simulation of coupled Stokes-Darcy flows: application to LCM at the mesoscopic scale Luisa Silva, Puaux Gregory, Patrice Laure and Philippe Boisse CEMEF/Université de Nice/INSA Lyon, France	Design methodology of braided fabric as the reinforcement for pultrusion thermoplastic composite and its mechanical properties Yoshitaka Tanaka, Akio Ohtani and Asami Nakai Japan Aerospace Exploration Agency/Tokyo Institute of Technology, Japan
19h00	***Conference Banquet***	

	Day 3: Wednesday July 14th, Morning	
8h00-8h10	***Announcements of Day 3***	
	Auditorium	
8h10-10h30	**Modelling methods I** Chair: Dr. S.Advani, U Delaware, USA	
8h10	Process development for complex Resin Transfer Molding (RTM) components: optimization of resin injection and laminate porosity Gion Andrea Barandun and Paolo Ermanni, University of Applied Sciences Rapperswil/ETHZ, Switzerland	
8h30	Proper Generalized Decomposition of LCM models: making possible some simulation dreams Francisco Chinesta and Arnaud Poitou Ecole Centrale de Nantes, France	
8h50	Numerical simulation of resin flow in fiber reinforcement with stochastic property field Fan Zhang, Philippe Le Grognec, Sébastien Comas-Cardona, Benoit Cosson and Christophe Binetruy Ecole des Mines de Douai, France	
9h10	Combining a level set method and a stabilized mixed formulation P1/P1 for coupling Stokes-Darcy flows: application to the resin infusion-based processes. Guillaume Pacquaut, Julien Bruchon, Nicolas Moulin and Sylvain Drapier Ecole des Mines de Saint-Etienne, France	
9h30	Modeling the Resin Flow of Reactive Resins in Liquid Composite Molding Suresh Advani and Pavel Simacek University of Delaware, USA	
9h50	Development and Verification of a Model of the Resin Infusion Process During Manufacture of Fiber Metal Laminates by VARTM Alfred Loos, Goker Turncol, Kai Long and Roberto Cano Michigan State University/Nasa Langley , USA	
10h10	A unified continuum mechanics approach to composites manufacturing modeling Maciej Wysocki, Ragnar Larsson and Staffan Toll SICOMP/Chalmers University/KTH, Sweden	
10h30-11h00	***Coffee Break***	
	Auditorium	*Sala Balint*
11h00-12h00	**Modelling methods II** Chair: Dr. Philippe Boisse, INSA Lyon, France	**Laminates** Chair: Dr. A.Loos, Michigan State Universtiy, USA
11h00	Theoretical Investigations of Flow Phenomena in a Liquid Composite Molding Process using SPH Methodology Prabhakaran R.T. Durai, Tom Løgstrup Andersen and Aage Lystrup Risoe, Danemark	Experimental observation and analytical modelling of the resin flow inside an out of autoclave prepreg Timotei Centea and Pascal Hubert Mc Gill University, Canada
11h20	Simulation of LCM Processes with Cellular Automats Markus Henne and Gion Andrea Barandun, University of Applied Sciences Rapperswil, Switzerland	Simulation of nonisothermal prepreg-press-processes for high volume automotive applications Florian Klunker, Matthias Voigt, Wangqing Wu, Widyanto Surjoseputro, Santiago Aranda and Gerhard Ziegmann TU Clausthal, Germany
11h40	Permeability predictions of dual scale fabrics using level set methods Wook Ryol Hwang and Suresh Advani Gyeongsang National University, Korea/University of Delaware, USA	Constitutive modelling of UD reinforced thermoplastic laminates for stamp forming predictions Sebastiaan Haanappel and Remko Akkerman University of Twente, Netherlands
12h00-13h30	***Lunch***	
14h00-21h00	***Excursion to Verzasca Valley*** ***Dinner at the Grotto Costa Azzurra in Ascona***	

	Day 4: Thursday July 15, Morning	
8h00-8h10	***Announcements of Day 4***	
8h10-8h55	**Keynote lecture 3 : Dr. Laurent Bizet, Université du Havre** "Processing plant fiber composites with LCM techniques: from comparisons to opportunities" Chair: Dr F. Trochu, Polytechnique de Montreal, Canada	
	Auditorium	
9h00-10h30	**Natural Fiber Composites I** Chair: Dr F. Trochu, Polytechnique de Montreal, Canada	
9h00	Capillary effects in vacuum assisted resin transfer molding with natural fibers Gastón Francucci, Analía Vázquez, Edu Ruiz, François Trochu and Exequiel Rodríguez University of Mar del Plata, Argentina/Poly Montreal, Canada	
9h20	An Approach to Model Resin Flow in LCM Preforms made of Swelling, Liquid-Absorbing Natural Fibers Reza Masoodi, Hua Tan, Krishna Pillai and Ronald Sabo Forest Products Laboratory/University of Wisconsin, USA	
9h40	Processing and mechanical properties of unidirectional hemp/paper/epoxy composites Mathieu Robillard, Gilbert Lebrun and Lotfi Toubal Université du Québec à Trois Rivières, Canada	
10h	Comparison of in-plane permeability between flax and glass stitched fabrics Christopher Re, Laurent Bizet and Joël Breard Université du Havre, France	
10h20-11h50	***Coffee Break***	
	Auditorium	*Sala Balint*
10h50-12h20	**Natural Fiber Composites 2** Chair: Dr Nakai, Tokyo Institute of Technology, Japan	**Nanocomposites I** Chair: Dr. C. Dransfeld, FHNW, CH
10h50	Impregnation state in short fiber thermoplastic pellet and mechanical properties of composites Yuqiu Yang and Hiroyuki Hamada Kyoto Institute of Technology, Japan	Permeability and compressibility of CNT-CNF grafted Textile Reinforcement Stepan V. Lomov, Lesley Beyers, Larissa Gorbatikh, Ignaas Verpoest, Vitaly Koissin, Zelijko Kotanjac, Mehmet Karahan KU Leuven, Belgium/Uni-Twente, Netherlands/Uludag University, Turkey
11h10	Compression moulding of flax-fibre reinforced composite materials Pierre Dumont, Laurent Orgéas, Maxime Hubert, Bernard Vermeulen, Philippe Vroman, Sabine Rolland du Roscoat and Jean-Francis Bloch Université de Grenoble/ENSAIT, France	Flow and Filtration Modelling of Carbon Nanoparticle Loaded Thermosets in Liquid Moulding Elisabete Reia da Costa, Alex Skordos and Ivana Partridge Cranfield University, UK
11h20	Study of the Compaction Behavior of Jute Fabrics in Liquid Composite Molding Processes Gaston Francucci, Exequiel Rodriguez and Analía Vazquez University of Mar del Plata, Argentina	Dispersion of Carbon Nanotubes in Resin Systems using Chaotic Mixing Jie Chen and Ranga Pitchumani Virginia Tech, USA
11h40	Effect of processing on the durability of fiber reinforced plastics Takeshi Okayama, Yasunari Kuratani, Yuki Kadoma, Masanori Okano, Asami Nakai and Hiroyuki Hamada Kado Corporation/Kyoto Institute of Technology, Japan	Nadir Kchit, Farida Bensadoun, Catherine Billotte, Edouardo Ruiz and Francois Trochu. A Study of Nano-Clay Composites made by Liquid Composite Molding Polytechnique de Montreal, Canada
12h00-13h30	***Lunch***	

Day 4: Thursday July 15, afternoon	
	Auditorium
13h45-14h45	**Nanocomposites 2** Chair: Dr Pascal Hubert, Mc Gill University, Canada
13h45	Development of manufacturing process for polymer/carbon nanotubes network composites Pavel Riha, Petr Slobodian, Robert Olejnik and Petr Sáha T Bata University/Academy of Sciences, Czech Republic
14h05	Study of the Processing Conditions of PCL/clay nanocomposites: morphology, molecular weight degradation, thermal and mechanical properties Leandro Ludueña, Vera Alejandra Alvarez and Analia Vazquez INTEMA/Uni Buenos Aires, Argentina
14h25	Quantification of nanoparticle dispersion techniques using the Poisson distribution Benjamin Boesl and Gerald Bourne US Army Research Lab/Uni Florida, USA
15h00	***End of conference***