

# TECHNICAL SESSIONS

## Applications / Structures

**Room : 1**

**Tuesday, August 29, 2006**

## Applications / Structures I

**10:30 AM**

**(237) Efficient structural computations with parameters uncertainty for composite applications**

N.Carrere, Y.Rollet, F-H-Leroy and J-F Maire, ONERA, Châtillon, France

**10:50 AM**

**(142) Optimisation methodology of composite panels**

A. Carpentier<sup>1</sup>, J-J. Barrau<sup>2</sup>, L. Michel<sup>3</sup> and S. Grihon<sup>4</sup>, <sup>1</sup>AIRBUS France/ENSICA, <sup>2</sup>Université Paul-Sabatier, <sup>3</sup>Ecole Nationale Supérieure d'Ingénieurs de Constructions Aéronautiques, <sup>4</sup>AIRBUS France

**11:10 AM**

**(465) A numerical approach to the mechanical characterization of a motorcycle helmet**

M. Aiello<sup>1</sup>, U. Galvanetto<sup>2</sup> and L. Iannucci<sup>2</sup>, <sup>1</sup> – Univ. Degli Studi Meterranea di Reggio Calabria, Dpto. Arte Scienza e Tecnica del Construire, Italy, <sup>2</sup> – Imperial College London, Dpt. Aeronautics, UK.

**11:30 AM**

**(456) Design of hybrid high modulus/high resistance carbon fibers driveshafts-subcritical and supercritical solutions**

O. Montagnier<sup>1</sup>, C. Hochard<sup>2</sup>, <sup>1</sup>Centre de Recherche de l'Ecole de l'Air, Salon Air, France, <sup>2</sup>Laboratoire de Mécanique et d'Acoustique, Marseille, France

**11:50 AM**

**(452) Optimisation of composite layer for fully overwrapped pressure vessels for hydrogen storage**

\* \*\*F. Gasquez, \*K. Barral, \*\*D. Perreux, \*\*F. Thiébaud, \*\*D. Chapelle, \*\*Université de Franche Comté, Besançon – France, \* Air Liquide, Les Loges en Josas - France

**12:10 AM**

**(185) Theoretical analysis of a composite multi-layer cylindrical hull under pressure**

A. Hocine\*, A. Bezazi\*\*+, J-M. Berthelot\*\*\*, A. Benamar \*\*\*\*, L. Boubakar\*\*\*\*\*

\* University Hassiba Benbouali of Chlef, Chlef, Algeria ; \*\*+ University of Bristol, Bristol UK ;

\*\*\* ISMANS, Institute for Advanced Materials and Mechanics, Le Mans, France ; \*\*\*\* University of Franche-Comté, Besançon, France ; \*\*\*\*\* ENSET, Oran, Algeria.

## Applications / Structures II

**2:00 PM**

**(109) Experimental Evaluation of Gas Permeability through Damaged Composite Laminates for Cryogenic Tank**

T. Yokozeki\*, T. Ogasawara\*, T. Ishikawa\*, Japan Aerospace Exploration Agency (JAXA)

**2:20 PM**

**(600) A Design of a filament wound structure for a bus body**

P. Carvalho Neves, N. Correia, P. Bandeira, A. Torres Marques, INEGI, Leça do Balio, Portugal

**2:40 PM**

**(301) Structural testing on a multi instrumented filament winding pipe : towards the identification of mechanical properties**

L. Crouzeix<sup>1</sup>, H. Hernandez Moreno<sup>1</sup>, J-N. Perié<sup>1</sup>, B. Douchin<sup>1</sup>, L. Robert<sup>2</sup>, F. Collombet<sup>1</sup>, <sup>1</sup>PRO<sup>2</sup>COM-IUT Paul Sabatier, Toulouse, <sup>2</sup> CROMeP, Albi, France

**3:00 PM**

**(807) opportunities for composites in the global aerospace market**

A. Walker, NATEC, Manchester, UK

**3:20 PM**

**(814) Identification and modelling of the mechanical behaviour of car bumpers : recycling effects**

N. Bahlouli, D. Pessey, S. Ahzi and Y. Rémond, IMFS, Strasbourg, France

## **Applications / Structures III**

**4:10 PM**

**(015) Failure of pultruded GRP WF-Section webs in compression – An experimental investigation**

G.J. Turvey, Lancaster Univ., UK

**4:30 PM**

**(384) A proposal for a cable footbridge with load-adapting geometry**

S. Julich, J-F Caron, O.Baverel, Ecole Nationale des Ponts et Chaussées, Marne-La-Vallée, France

**4:50 PM**

**(159) Use of hypar-shell structures with fibre reinforced cement matrix composites in lightweight constructions**

E. De Bolster, P. Van Itterbeeck, H. Cuyper, J. Wastiels and P.W. De Wilde, Vrije Universiteit Brussel, Belgium

**5:10 PM**

**(019) Reliable small-scale qualification tests for carbon/epoxy rings**

W. Van Paepegem<sup>1</sup>, L. Van Schepdael<sup>2</sup>, P. Samyn<sup>1</sup>, J.S. Leendertz<sup>3</sup>, P. De Baets<sup>1</sup>, J. Degrieck<sup>1</sup>, <sup>1</sup>Ghent Univ., Sint-Pieternieuwstraat, Belgium, <sup>2</sup>Solico B.V., The Netherlands, <sup>3</sup>Ministry of Transport, The Netherlands

## **Applications / Structures IV**

### **Room : 1**

### **Wednesday, August 30, 2006**

**8:45 AM**

**(219) Management of failure modes in Z-pinned composite structures**

J.K. Lander, D. D. Cartié and I. K Partridge, Cranfield University, Cranfield, UK

**9:05 AM**

**(307) Study of GRP pipes failure under ring load condition**

H. Faria<sup>1</sup>, A. Sa<sup>1</sup>, M.F. Moura<sup>2</sup>, & R. M. Guedes<sup>2</sup>, <sup>1</sup>INEGI, Leça do Balio, Portugal, <sup>2</sup>DEMEGI, Porto, Portugal

**9:25 AM**

**(251) On the effect of shear stresses on the fibre failure behaviour**

W. Michaeli, M. Mannigel, Aachen University, Germany

**9:45 AM**

**(325) Development of a new generation of filament wound composite pressure cylinders**

J.C. Pereira<sup>1</sup>, J.P. Nunes<sup>1</sup>, P. Antunes<sup>1</sup>, J.F. Silva<sup>2</sup>, A.T. Marques<sup>3</sup>, <sup>1</sup>Univ. of Minho, Portugal, <sup>2</sup>ISEP, Porto, Portugal, <sup>3</sup>DEMEGI-INEGI-FEUP, Univ. Porto, Portugal

**Durability**

**Room : 1**

**Wednesday, August 30, 2006**

**Durability I**

**10:50 AM**

**(175) Fiber strength degradation of FRP under constant loading in water**

A. Kobiki, H. Kawada, Waseda University, Tokyo, Japan

**11:10 AM**

**(407) Influence of laminate thickness on composite durability for long term utilisation at intermediate temperature (100°C to 150°C)**

J. Cinquin\* and B. Medda\*\*, \* EADS, Suresnes, \*\* AIRBUS France, Toulouse, France

**11:30 AM**

**(070) Fatigue behaviour under tension cyclic loading of conventional and negative Poisson's ratio thermoplastic foams**

A. Bezaki, F. Scarpa, Univ. Bristol, UK

**11:50 AM**

**(164) Textile reinforced cementitious composites under repeated mechanical and environmental loading**

P. Van Itterbeeck, H. Cuyper, E. De Bolster, J. Wastiels, Vrije Universiteit Brussel, Brussels, Belgium

**12:10 AM**

**(306) Durability of polymer matrix composites**

R.M. Guedes, DEMEGI, Univ. Porto, Portugal

**Durability II**

**2:00 PM**

**(518) Characterisation of hydric expansion for carbon/epoxy laminates**

J. Jedidi-Bouden\*, F.Jacquemin\*\*, A.Vautrin\*\*\*, \* Polytech'Orléans, \*\* Univ. Nantes, \*\*\* Ecole Nationale Supérieure des Mines, Saint-Étienne, France

**2:20 PM**

**(512) Characterisation and modelling of ageing of composites**

J. Mercier\*, A. Bunsell\*, P. Castaing\*\* and J. Renard\*, \* Centre des Matériaux P.M. Fourt, Evry, \*\* CETIM Nantes, France

**2:40 PM**

**(201) Reduction of the edge effect in the hybrid composites for cyclic environmental conditions**

N. Boualem, Z. Sereir, Univ. Mohamed Boudiaf, Oran, Algérie

**3:00 PM**

**(136) A multi-scale analysis for the design of accelerated hygrothermal cycles**

Z. Youssef, F. Jacquemin, D. Gloaguen and R. Guillén, Univ. Nantes, France

## Durability III

**4:10 PM**

**(409) Reliability model of a drilled composite materials**

L. Guillaumat, Z. Hamdoun, ENSAM, Talence, France

**4:30 PM**

**(091) Characterization of an oxidized layer in epoxy resin and in carbon epoxy composite for aeronautic applications**

N.Q. Ho, F. Pons, M.C. Lafarie-Frenot, ENSMA, Futuroscope-Chasseneuil, France

**4:50 PM**

**(050) Self-healing CFRP for aerospace applications**

G.J. Williams, R.S. Trask, I.P. Bond, Univ. Bristol, UK

**5:10 PM**

**(092) Degradation/properties relationship of carbon/epoxy composites after thermo-oxidative ageing**

I. Ammar-Khodj<sup>1</sup>, C. Picard, M. Fois, C. Marais, P. Netchitaïlo, <sup>1</sup>Univ. Le Havre, <sup>2</sup>Univ. Paris XII, Créteil, <sup>3</sup>ONERA, Châtillon, France

## Interfaces

**Room : 2**

**Tuesday, August 29, 2006**

## Interfaces I

**1:50 PM**

**(703) Estimating the interface integrity in fibrous composites at all temperatures (keynote lecture)**

G. Anagnostopoulos<sup>1</sup>, J. Parthenios<sup>1</sup>, C. Galiotis<sup>1,2</sup>, <sup>1</sup>FORTH, Patras, <sup>1,2</sup>Univ. Patras, Greece

**2:20 PM**

**(341) Using plasma-activated fibers with nanocrystalline structure in producing reinforced composite materials**

V.V. Kudinov<sup>1</sup>, N.V. Korneeva, <sup>1</sup>Baikov Institute of Metallurgy and Materials Science Academy of Sciences, Moscow, <sup>2</sup>Semenov Institute of Chemical Physics of Russian Academy of Sciences, Moscow, Russia

**2:40 PM**

**(295) Stress transfer through a nanoscale interphase in a fibre composite**

F.M. Zhao, Z. Liu, F. R. Jones, Univ. of Sheffield, UK

**3:00 PM**

**(262) Multiscale interfacial correlation of single fibre and high volume fraction composites with a functional nanoscale interphase of varying thickness**

Z. Liu, F. M. Zhao, F. R. Jones, Univ. Sheffield, UK

**3:20 PM**

**(139) Microfocus small angle X-ray scattering as a tool to study the mode of failure at the interface of composite materials**

N.E. Zafeiropoulos<sup>1</sup>, K. Schneider<sup>1</sup>, R. J. Davies<sup>2</sup>, C. Riekel<sup>2</sup> and M. Stamm<sup>1</sup>, <sup>1</sup>Leibniz-Institut für Polymerforschung Dresden, Germany, <sup>2</sup>European Synchrotron Radiation Facility, Grenoble, France

## Interfaces II

**4:10 PM**

**(038) Adhesion of epoxy-polysulfone matrices to fibres under various loading conditions**

T.V. Brantseva\*, Yu.A. Gorbatkina\*\*, \* Institute of Physical Chemistry RAS, Moscow, Russia, \*\*N.N.Semenov Institute of Chemical Physics RAS, Moscow, Russia

**4:30 PM**

**(605) Compatibilizer reinforced interface between a flexible polymer and rodlike polymer**

Y. Seo, Seoul National University, Korea

**4:50 PM**

**(279) Effects of residual thermal stresses on the initiation of fracture mechanisms at the fiber/matrix interface**

B. Poitou, E. Martin<sup>1</sup>, D. Leguillon<sup>2,1</sup> Univ. Bordeaux 1, Pessac, <sup>2</sup> Université P. et M. Curie, Paris, France

**5:10 PM**

**(171) Evaluation of the propagation of an interfacial debonding in single fiber composite**

S. Kimura\*<sup>1</sup>, J. Koyanagi\*<sup>2</sup> and H. Kawada\*<sup>2</sup>,\*<sup>1</sup> Waseda Univ., Tokyo, \*<sup>2</sup> Waseda Univ., Tokyo, Japan

**5:30 PM**

**(296) Photoelastic measurement of shear stresses in single fibre composites**

F.M. Zhao, , F.R. Jones, Univ. Sheffield, UK

## Damage

**Tuesday, August 29, 2006**

### Damage I

#### Room : 2

**10:30 AM**

**(492) Experimental damage studies of 2.5D interlock GRP under uni-axial loading**

C. El Hage<sup>(a-c)</sup>, Z. Aboura<sup>(b)</sup>, R. Younes<sup>(c)</sup>, M.L. Benzeggagh<sup>(a)</sup>, M. Zoeter<sup>(c)</sup>, <sup>(a)</sup>Université de Technologie de Compiègne, France, <sup>(b)</sup>L3M IUT de Tremblay- Paris 8, France, <sup>(c)</sup>Univ. Liban

**10:50 AM**

**(416) Mode II delamination of unidirectional carbon fiber/epoxy composite in four point bend end-notched flexure test**

E. Zile, V. Tamuzs, Univ. Latvia, Riga, Latvia

**11:10 AM**

**(243) Determination of a multiaxial visco-damage law for SMC composites using a multi-scale modelling**

Z. Jendli, , F. Meraghni\*, J. Fitoussi and D. Baptiste, ENSAM Paris, \* ENSAM Metz, France

**11:30 AM**

**(230) On a physical based meso-damage model for UD plies laminate polymer matrix composite**

C. Huchette, N. Carrère, D. Lévêque, J.F. Maire, ONERA, Châtillon, France

*11:50 AM*

**(005) Fatigue residual strength of laminated graphite-epoxy composite circular plates damaged by transversal loads**

G. Minak, P. Morelli, A. Zuchelli, DIEM Univ. degli Studi di Bologna, Italy

*12:10 AM*

**(606) 0/90 unsymatric plates as a tool to measure damage in composite materials**

M. Gigliotti, A. Riccio, Italian Aerospace Research Center, Capua, Italy

**Wednesday, August 30, 2006**

**Damage/Modeling**

**Room : 2**

*8:45 AM*

**(228) A proposal of M3 method to multi-scale analysis of fibrous composites**

M. Zako, T. Kurashiki, H. Nakai, M. Imura, Osaka Univ., Japan

*9:05 AM*

**(359) A computational strategy based on Fourier expansions dedicated to damaged composite pipes**

E. Baranger\*, O. Allix\*, L. Blanchard\*\*, \*LMT Cachan, Alcatel Alenia Spacce,\*\* Cannes la Bocca, France

*9:25 AM*

**(453) A ply scale non local rupture criterion for CFRP laminated composites**

C. Hochard, LMA/CNRS, Marseille, France

*9:45 AM*

**(406) A micromechanical discrete damage based model for woven composite materials**

G. Couegnat\*, N. Carrère\*\*, E. Martin\*, J. Lamon\*, \* Univ. Bordeaux 1, \*\*ONERA, Châtillon, France

*10:05 AM*

**(348) Micromodel based computations for laminated composites**

D. Viloëau, P. Ladevèze, G. Lubineau, LMT Cachan, France

**Damage/Fatigue I**

**Room : 2**

*10:50 AM*

**(379) Voids and their effects on the fatigue fracture behaviour of long glass fibre reinforced injection molded polypropylene**

V.I. Rizov, Univ. Architecture, Sofia, Bulgaria

*11:10 AM*

**(131) Transverse crack growth behaviour in quasi-isotropic CFRP laminates under high-cycle fatigue loading**

H. Hosoi, Y. Arao, H. Kawada, Waseda Univ., Japan

*11:30 AM*

**(418) Fatigue behaviour of short fibre reinforced polyamide under multiaxial loading**

K. Bolender, A. Büter, C.M. Sonsino, Fraunhofer Institute (LBF), Darmstadt, Germany

**11:50 AM**

**(514) Analysis of delamination growth in woven carbon/epoxy laminates under mode I cyclic loading**

G. Lunardon\*, L. Olivier\*\*, M. Quaresimin\*, \*Univ. Padoa, Italy, \*\*ENSMA-Poitiers, France

**11:50 AM**

**(369) A new stiffness degradation model for composite materials under fatigue loading**

M.M. Shokrieh, F. Taheri-Behrooz, Univ. Science and Technology, Tehran, Iran

## **Damage/Fracture I**

### **Room : 2**

**1:50 PM**

**(268) Spline finite strip method for progressive failure analysis of thick composite plates**

**(Keynote lecture)**

G. Akhras, W. Li, S. Simard, Royal Military College, Kingston, Ontario, Canada

**2:20 PM**

**(455) Performance of non-crimp fiber composites in shear**

R.J. Roberts, Lulea Univ., Sweden

**2:40 PM**

**(101) Prediction of non-linear behaviour of discontinuous long glass fibres propylene composites**

E.J. Jules, S.V. Lomov, I. Verpoest, P. Naughton\*, A.W. Beekman\*, R. Van Daele\*, K.U. Leuven, Belgique,

\*Dow Automotive, Schwalbach, Germany, Dow Benelux, Terneuzen, The Netherlands

**3:00 PM**

**(526) Influence of manufacturing induced voids on strain energy release rate**

M. Ricotta<sup>(a)</sup>, Marino Quaresimin<sup>(a)</sup> and Ramesh Talreja<sup>(b)</sup>, <sup>(a)</sup> Univ. Padova, Italy, <sup>(b)</sup> Texas A&M University, USA

**3:20 PM**

**(232) Elastic orthotropic parameter identification of biaxially loaded cruciform composite specimens by a mixed numerical-experimental method**

A. Smits<sup>1</sup>, D. Lecompte<sup>2</sup>, D. Van Hemelrijck<sup>1</sup>, H. Sol<sup>1</sup>, J. Vantomme<sup>2</sup>, A. Cardon<sup>1</sup>, <sup>1</sup> Vrije Universiteit Brussel, Belgium, <sup>2</sup> Royal Military Academy, Brussels, Belgium

## **Damage/Fatigue II**

### **Room : 2**

**4:10 PM**

**(162) Damage accumulation in textile reinforced cementitious composites under repeated loading**

H. Cuypers, P. Van Itterbeeck, E. De Bolster, J. Wastiels, Vrije Universiteit Brussel, Belgium

**4:30 PM**

**(043) A rate dependent constitutive model for carbon-fiber/epoxy-matrix woven fabrics submitted to dynamic loadings**

S. Marguet, P. Rozycki, L. Gornet, Ecole Centrale Nantes, France

**4:50 PM**

**(303) Simulation of delamination under high cycle fatigue in composite materials using cohesive models**

P.P. Camanho\*, A. Turon\*\*, J. Costa\*\*, C.G. Davila\*\*\*, \*Univ. Porto, Portugal, \*\*Univ. Girona, Spain, \*\*\*NASA Langley Res. Center, Hampton, USA

**5:10 PM**

**(371) Web based software for the statistical analysis of composite materials fatigue data**

A.P. Vassilopoulos, G. Mirosos and V. Kostopoulos, Univ. Patras, Greece

**5:30 PM**

**(226) Fatigue life distributions and failure for glass fiber reinforced polymeric composites**

R. Bedi, R. Chandra, National Institute of Technology, Jalandhar, India

## Friday, September 1, 2006

### Damage II

#### Room : 1

**10:40 AM**

**(160) Damage initiation and development in triaxial braid and fine structure of damage**

D. Ivanov, S. Lomov, I. Verpoest, F. Baudry, H. Xie, Univ. Catholique, Leuven, Belgique

**11:00 AM**

**(261) Nonlinear response description of composite laminates by plasticity theory**

E. Sparmins, J. Andersons, Univ. Latvia, Riga, Latvia

**11:20 AM**

**(257) Delamination of multidirectional composite laminates at zero/theta-degree interface**

P. Prombut,<sup>a,\*</sup> L. Michel<sup>a</sup>, F. Lachaud<sup>a</sup> & J.J. Barrau<sup>b,a</sup> ENSICA, Toulouse,<sup>b</sup> Univ. Toulouse III, France

**11:40 AM**

**(288) Micromechanical analysis of thermoplastic matrix composites by digital image correlation**

A. Godara, D. Raabe, Max-Planck-Institut, Düsseldorf, Germany

**12:00 AM**

**(246) Experimental identification of a non-linear behaviour law for composite materials from full-field measurements**

H. Chalal, F. Meraghni\*, S. Avril\*\*, F. Pierron\*\*, \*ENSAM Talence, \*\*ENSAM Châlons-en-Champagne, France

### Damage/Fracture II

#### Room : 1

**2:00 PM**

**(022) Failure and effective elastic properties predictions of Nomex® honeycomb cores**

L. Gornet, G. Marckmann, Ecole Centrale Nantes, France

**2:20 PM**

**(241) Multiscale progressive failure approach for strength analysis of high gradient composite structures**

F. Laurin, N. Carrère and J.F. Maire, ONERA, Châtillon, France



**2:40 PM**

**(085) The influence of thermal residual stress on failure and damage evolution of unidirectional glass/epoxy composites**

A.R. Maligno, A.C. Long, N.A. Warrior, Univ. Nottingham, UK

**3:00 PM**

**(304) Yielding behaviour of a model epoxy resin matrix for fibre reinforced composites**

S. Behzadi, F.R. Jones\*, Univ. of Sheffield, UK

**3:20 PM**

**(508) A meso-scopic experimental determination of matrix damage effects in composite laminates**

D.G. Katerelos<sup>1</sup>, P. Lundmark<sup>2</sup>, J. Varna<sup>2</sup>, L.N. McCartney<sup>3</sup>, C. Galiotis<sup>1,4</sup>, <sup>1</sup>Foundation of research & Technol. Hellas, Patras, Greece, <sup>2</sup>Lulea Univ. Technol., Sweden, <sup>3</sup>National Physical Lab., Teddington, UK, <sup>4</sup>Univ. Patras, Greece

## Modeling/Simulation

### Room : 1

### Thursday, August 31, 2006

**8:45 AM**

**(108) Vibration damping analysis of woven fabric composites with spread tow**

Y. Nakanishi, K. Matsumoto, M. Zako\*, Y. Yamada, Mie Univ. Japan, \*Osaka Univ., Japan

**9:05 AM**

**(191) Modelling of composite materials using FEM and adaptive meshing**

W. Ruijter, J. Crookston, A. Long, A. Jones, A. Becker, Univ. Nottingham, UK,

**9:25 AM**

**(203) New theory of thin walled composite beams with arbitrary layup**

L.P. Kollar, Budapest Univ. Technology & Economics, Hungary

**9:45 AM**

**(302) Free edge effects in bent laminated composites**

N. Viet Tung, J-F. Caron, ENPC, Marne La Vallée, France

**10:05 AM**

**(388) A new approach for the composite structures**

M. Karama, S. Costache, K. Afaq, S. Mistou, Ecole Nationale d'Ingénieurs de Tarbes, France

**10:25 AM**

**(099) Microsecond Nd : YAG CFRP laser machining neural network analysis**

A.J. Garcia<sup>1</sup>, P.L. Galindo<sup>2</sup>, J.C. Diez<sup>3</sup>, M.P. Villar<sup>1</sup>, D. Araujo<sup>1</sup>, C. Estepa<sup>3</sup>, C. Lopez-Gascon<sup>3</sup>, J.I. Pena<sup>3</sup>, R. Garcia<sup>1</sup>, <sup>1,2</sup>Univ. Cadiz, Pto Real, Spain, <sup>3</sup>Univ. Zaragoza, Spain

## Microstructure/Properties Relationships

**Room : 1**

**Thursday, August 31, 2006**

**10:50 AM**

**(801) Dental composites based on urethane macromonomers with carboxylic groups**

T. Buruiana<sup>1</sup>, E.C. Buruiana<sup>1</sup>, V. Pohoata<sup>2</sup>, D. Ivanov<sup>1</sup>, M. Moldovan<sup>3</sup>, <sup>1</sup> Petru Poni Institute of Macromolecular Chemistry, Iasi, Romania, <sup>2</sup>A.I. Cuza Univ., Iasi, Romania, <sup>3</sup>Raluca Ripan Res. Institute Chemistry, Cluj-Napoca, Romania

**11:10 AM**

**(170) Electrical and thermophysical properties of ethylene vinyl acetate/silver-coated glass spheres composites**

B. Agoudjil<sup>\*</sup>, L. Ibos<sup>\*</sup>, J-C. Majeste<sup>\*\*</sup>, A. Boudenne<sup>\*,\*</sup>, Univ. Paris 12, Créteil, <sup>\*\*</sup> Labo. Rhéologie des matières plastiques, Univ. Jean Monnet, Saint Etienne, France

**11:30 AM**

**(468) Injection molding of glass fiber reinforced thermoplastics using FF-LFT (flat fiber-long fiber thermolastic) pellets**

K. Tanaka, K. Ogawa, T. Katayama, T. Yano, T. Tanaka, T. Fujiura, Doshisha, Univ., Kyoto, Japan

## Processing/Microstructure/Properties Relationships I

**Room : 2**

**Friday, September 1, 2006**

**10:30 AM**

**(445) Determination of variations in matrix properties in thick-walled composites (Keynote lecture)**

P.P. Parlevliet, H. E.N. Bersee, A. Beukers, Delft University of Technology, The Netherlands

**11:00 AM**

**(350) Assessment of the effects of voids on some physical, mechanical and damage mechanics properties of carbon/polymeric composites**

P. Olivier<sup>1</sup>, P. Margueres<sup>1</sup>, B. Mascaro<sup>2,3</sup>, F. Collombet<sup>1</sup>, <sup>1</sup>IUT Paul Sabatier, Toulouse, <sup>2</sup>Lab. PHASE, Univ. P. Sabatier, Toulouse, <sup>3</sup>EADS, Suresnes, France

**11:20 AM**

**(299) Injection moulding of short fibre reinforced thermoplastics : a comparison between experimental results and numerical simulation**

M. Vincent, A. Redjeb, P. Laure, T. Coupez, Ecole des Mines de Paris, Sophia Antipolis, France

**11:40 AM**

**(071) Properties of polyester-glass fibre laminates produced by ultraviolet curing**

A. Endruweit, A.C. Long, M.S. Johnson, Univ. Nottingham, UK

**12:00 AM**

**(240) Effect of symmetrical and asymmetrical sequence in the mechanical behaviour of filament wound polymeric composite cylinders**

O. de Carvalho<sup>1</sup>, G. Marinucci<sup>2</sup>; J.L. Rossi<sup>2,1</sup> CTMSP-Iperó, Brazil, <sup>2</sup> IPEN/CNEN, Brazil

## Processing/Microstructure/Properties Relationships II

**2:00 PM**

**(066) Development of composite materials with lightweight reinforcements**

V.A. Popov<sup>1</sup>, K. P. Staudhammer<sup>2</sup>, K. Y. Zhizhin<sup>3</sup>, V. A. Ketsko<sup>3</sup>, N. T. Kuznetsov<sup>3</sup>, <sup>1</sup>Moscow State Institute of Steel and Alloys, Russia, <sup>2</sup>Los Alamos National Laboratory, USA, <sup>3</sup>Kurnakov Institute of General and Inorganic Chemistry, Moscow, Russia

**2:20 PM**

**(603) Influence of modification of resin by NBR in different concentration on fade and recovery of non-asbestos organic friction materials**

J. Bijwe\*, N. Majumdar<sup>#</sup>, \*ITMMEC, Indian Institute of Technology Delhi, New Delhi, India, <sup>#</sup> Dept. of Chemistry, New Delhi, India

**2:40 PM**

**(158) Nanostructured polyurethane/PHEMA semi-IPNs and gradient composites for biomedical applications**

L.V. Karabanova<sup>1</sup>, G.Boiteux<sup>2</sup>, G.Seytre<sup>2</sup>, L.David<sup>2</sup>, I.Stevenson<sup>2</sup>, G.Lachenal<sup>2</sup>, A.W.Lloyd<sup>3</sup>, S.V.Mikhailovsky<sup>3</sup>, G.J.Phillips<sup>3</sup>, Yu.P.Gomza<sup>1</sup>, L. M.Sergeeva<sup>1</sup>, <sup>1</sup>Institute of Macromolecular Chemistry, Kiev, Ukraine, <sup>2</sup>Univ. Claude Bernard Lyon I, Villeurbanne, France, <sup>3</sup>Univ. Brighton, UK

**3:00 PM**

**(275) Development and characterisation of wood plastic composites for structural applications : morphology, mechanical properties and damage analysis**

M. Sarrionandia<sup>1</sup>, J. Aurrekoetxea<sup>1</sup>, M. J. Elejabarrieta<sup>1</sup>, F. Cortes<sup>1</sup>, X. Gomez<sup>1</sup>, W. Greaves<sup>2</sup>, A. Fabian<sup>3,1</sup>, Mondragón Unibertsitatea, Gipuzkoa, Spain, <sup>2</sup>GAIKER, Zamudio, Bizkaia, Spain, <sup>3</sup>ULMA C y E, S. Coop., Oñati, Gipuzkoa, Spain

**3:20 PM**

**(168) Study of mechanical and thermophysical properties of polypropylene/copper composite materials**

M. Fois\*, A. Boudenne\*, L. Ibos\*, J-C. Majeste\*\*, \* CERTES, Univ Paris XII, Créteil, France, \*\* LRMP, St-Etienne, France

## Nanocomposites

**Room : 3**

**Tuesday, August 29, 2006**

## Nanocomposites I

**10:40 AM**

**(207) On the estimation of mechanical properties of single-walled carbon nanotubes by using a molecular-mechanics based finite element approach (keynote lecture)**

M. Rossi, M Meo, Cranfield University, UK

**11:10 AM**

**(485) Improvement of interlaminar shear strength and electrical properties of glass fibre/epoxy composites with carbon nanotube modified matrix**

K. Schulte, M.H.G. Wichmann, B. Fiedler, Technische Universität Hamburg-Harburg, Hamburg, Germany

**11:30 AM**

**(458) The influence of carbon nanotubes on surface functionalities of an epoxy-resin**

B. May, M.R. Hartwich, R. Stenger, Univ. Applied Sciences, Darmstadt, Germany

**11:50 AM**

**(413) Percolation threshold of conducting polymer composites**

J. Li<sup>1</sup>, Jang-Kyo KIM<sup>1\*</sup> and Gad MAROM<sup>2</sup>, <sup>1</sup>Hong Kong Univ. of Science and Technology Clear Water Bay, Kowloon, Hong Kong, <sup>2</sup>The Hebrew Univ. of Jerusalem, Israel

**12:10 AM**

**(394) Effects of processing parameters on the properties of clay/epoxy-amine nanocomposites**

B. Basak Peksen, Peksen, Metin Tanoğlu, İzmir Institute of Technology, Izmir, Turkey

## Nanocomposites II

**2:00 PM**

**(387) Evaluation of properties of polymer nanocomposites under shear loading**

J.Y. Park, Minnesota State Univ. USA

**2:20 PM**

**(236) Effects of organo-clays on fire behaviour of unsaturated polyester nanocomposites**

C.M.C. Pereira, J. Rodrigues, A. Torres Marques, INEGI, Leça do Balio, Portugal

**2:40 PM**

**(137) The incorporation of nanoscale particles to enhance the properties of oriented polymers**

R.J. Foster, P.J. Hine, I.M. Ward, Univ. Leeds, UK

**3:00 PM**

**(090) Effect of moisture on deformability of epoxy/montmorillonite nanocomposite**

A. Aniskevich<sup>1</sup>, T. Glaskova<sup>1</sup>, V. Spacek<sup>2</sup>, P. Svirglerova<sup>2</sup>, <sup>1</sup>Univ. Latvia, Riga, Latvia, <sup>2</sup>SYNPO, Pardubice, Czech Republic

**3:20 PM**

**(084) Influence of carbon nanotube reinforced epoxy matrix materials on the property profile and manufacturing characteristics of CFRP**

F. Kempel, F. Hauptert, R. Schledjewski, K. Friedrich, Univ. Kaiserslautern, Germany

## Nanocomposites III

**4:10 PM**

**(249) Relation between nanoscale morphology and properties of polymer composites for solar energy conversion**

J. Davenas, A. Ltaief, V. Barlier, V. Bounor Legaré, G. Boiteux, P. Alcouffé, CNRS-INSA-Univ. Claude Bernard Lyon 1, Villeurbanne, France

**4:30 PM**

**(283) Damage detection during cyclic loading of CNT doped CFRPs via resistance measurements**

P. Tsotra, A. Vavouliotis, P. Karappapas, N. Nikolaou, S. Tsantzalis, A. Paipetis, V. Kostopoulos, Univ. Patras, Greece

**4:50 PM**

**(032) Nanocomposites based on polymer matrix with increasing durability**

O.L. Figovsky\*, N.Blank\*\*, \*Israeli Research Center Polymate (Haifa), Israel, \*\*EFM GmbH (Berlin, Germany)

**5:10 PM**

**(037) Synthesis and rheological characterization of intercalated polystyrene/organophillic Montmorillonite nanocomposites**

B. Zidkheir<sup>a,\*</sup>, S. Boudjemaa<sup>a</sup>, M.Abdel-Goad<sup>b</sup> and B. Djellouli<sup>c</sup>, <sup>a</sup>Université Mohamed Boudiaf, M'Sila, Algérie, <sup>b</sup>Institute of Polymer Research Dresden, Germany, <sup>c</sup>Université Ferhat Abbas, Setif, Algérie

## Damage Monitoring

Room : 3

Wednesday, August 30, 2006

## Damage Monitoring

8:45 AM

### (476) Integrated monitoring system for damage characterisation in composite structures

C. Bois<sup>1</sup>, C. Hochard<sup>2</sup>, <sup>1</sup>LGMM-Univ. Bordeaux 1, <sup>2</sup>Laboratoire Mécanique & Acoustique-CNRS-Marseille, France

9:05 AM

### (173) Damage identification of CFRP laminate using electrical change method – The application of stochastic approach

Y. Hirano, Japan Aerospace Exploration Agency, Tokyo, Japan, and A. Todoroki<sup>1</sup>, T. Ishikawa<sup>2</sup>, A. Iwasaki<sup>3</sup>,<sup>1</sup> Tokyo Institute of Technology, <sup>2</sup>Japan Aerospace Exploration Agency, <sup>3</sup>Gunma University, Japan

9:25 AM

### (484) The electrical resistance technique applied to damage monitoring and characterization in stitched biaxial multiply carbon fabrics composites

M. Vettori\*, T.T. Chi\*\*, S.V. Lomov\*\*, I. Verpoest\*\*, \*Univ. Parma, Italy, \*\*Katholieke Univ. Leuven, Belgium

9:45 AM

### (354) Fiberoptic sensors in thermoset polymers : fiber coating and sizing effects

P.J.R. Nóvoa<sup>1</sup>, Carlos A. Ramos<sup>1</sup>, Rui F. C. Oliveira<sup>1</sup>, and António T. Marques<sup>2</sup>, <sup>1</sup> Institute of Mechanical Engineering and Industrial Management, Leça do Balio, Portugal, <sup>2</sup> University of Porto, Portugal

10:05 AM

### (323) Validity of process induced residual strain measurement obtained with FBGs in carbon-epoxy laminate. Experimental and numerical study

M. Mulle<sup>1,2</sup>, R. Zitouné<sup>1</sup>, F. Collombet<sup>1</sup>, P. Olivier<sup>1</sup>, Y-H. Grunevald<sup>2</sup>, <sup>1</sup>IUT Paul Sabatier, Toulouse, <sup>2</sup>DDL Consultants, Le Beausset, France

## Damage Monitoring/NDE

10:50 AM

### (135) Multi-axial fibre Bragg sensors for monitoring purposes

L. Geert, W. De Waele, W. Van Paepegem, J. Degrieck, \*J. Vlekken, \*K. Chah, Ghent University, Gent, Belgium, \*FOS&S, Geel, Belgium

11:10 AM

### (817) Disbond growth detection in bonded composite joint using a fibre Bragg grating

J. Palaniappan<sup>1</sup>, H. Wang<sup>1</sup>, S.L. Ogin<sup>1</sup>, A. Thorne<sup>1</sup>, G.T. Reed<sup>2</sup>, A.D. Crocombe<sup>1</sup>, S.C. Tjin<sup>3</sup>, <sup>1</sup>School Engineering, Univ. Surrey, UK, <sup>2</sup>School Electronics & Physical Sciences, Univ. Surrey, UK, <sup>3</sup>Nanyang Technological Univ. Singapore

11:30 AM

### (221) Acoustic emission testing on large scale composite specimens

J.J. Scholey, C. K. Lee, P.D. Wilcox, M. R. Wisnom, M. I. Friswell, Univ. Bristol, UK

**11:50 AM**

**(215) A new thermographic technique using hybrid layers for inspecting fibre reinforced polymer composites**

T.J. Ahmed<sup>1</sup>, G.F. Nino<sup>1</sup>, H.E.N. Bersee<sup>2</sup>, <sup>1</sup>Netherlands Institute for Metals Res., Delft, <sup>2</sup>The Netherlands, Delft Univ. Technology, The Netherlands

**12:10 AM**

**(206) Impact damage detection and imaging on composite plates through nonlinear elastic wave spectroscopy**

M. Meo, G. Zumpano, University Cranfield, Bedford, UK

## **Fibers**

**Room : 3**

**Wednesday, August 30, 2006**

## **Fibers I**

**2:10 PM**

**(364) Nanomechanics of advanced polymer fibres (Keynote lecture)**

P. Colomban, Univ. Pierre & Marie Curie, Thiais,

**2:40 PM**

**(510) Single fibre characterisation of Viscose, Lyocell, hemp and Glass fibres**

R-B. Adusumalli, H. Sixta<sup>1,2</sup>, W. Gindl<sup>1,3</sup>, <sup>1</sup>Wood Kplus - Competence Centre for Wood Composites and Wood Chemistry, Linz, <sup>2</sup>Lenzing R&D, Lenzing, <sup>3</sup>Department of Materials Science and Process Engineering, BOKU-Vienna, Austria

**3:00 PM**

**(602) Tensile behavior of a single flax fiber**

C. Baley\*, J. Breard\*\*, \* L2PIC Univ. Bretagne Sud, \*\*, Université du Havre, France.

**3:20 PM**

**(089) Improving the transverse tension strength of composites using novel shaped fibres**

A. Cannas, I. Bond, Univ. Bristol, UK

## **Fibers II**

**4:10 PM**

**(060) Effect of surface treatment of phosphate glass fibres using (3-Aminopropyl)triethoxy silane on poly( $\epsilon$ -caprolactone) based biomedical composites**

R.A. Khan, A.J. Parsons, I.A. Jones, G.S. Walker, C.D. Rudd, School Mechanical, Materials & Manufacturing Engineering, Univ. Nottingham, UK

**4:30 PM**

**(444) A stress corrosion cracking model for glass based on statistical distribution of surface flaws**

A. Khennane, Univ. Southern Queensland, Toowoomba, Australia

**4:50 PM**

**(061) Model of lifetime prediction at intermediate temperatures (500-800°C) in air of silicon carbide fibres**

W. Gauthier, J. Lamon, R. Pailler, LCTS, Pessac, France

**5:10 PM**

**(056) Enhancement of SiC oxidation in presence of B<sub>2</sub>O<sub>3</sub> under dry air in a SiC/SiC composite**

E. Garitte, F. Rebillat, A. Guette, LCTS, Pessac, France

**5:30 PM**

**(522) Identification of intrinsic carbon fiber oxidation kinetics from TGA data and CFD modelling**

N. Bertrand, F. Rebillat, G.L. Vignoles, Univ. Bordeaux 1, France

**5:50 PM**

**(273) Differentiation of silane adsorption onto model E-glass surfaces from solutions mixed of amino and glycidyl silanes**

X.M. Liu, J.L. Thomason<sup>†</sup> and F.R. Jones, Univ. Sheffield, UK, <sup>†</sup>European Owens-Corning, Battice, Belgium

## Functional Composites

**Room : 2**

**Thursday, August 31, 2006**

### Functional Composites I

**8:55 AM**

**(383) Composite materials for thermal expansivity matching and heat flux thermal management (Keynote lecture)**

A. Kelly, Univ. Cambridge, UK

**9:25 AM**

**(248) Thermal ageing of an active composite with an internal source of heat**

H. Dobrez<sup>2</sup>, G. L'Hostis<sup>2</sup>, F. Laurent, G. Meyer<sup>1</sup>, B. Durand<sup>2</sup>, <sup>1</sup>Cetim Cermat, Mulhouse, France, <sup>2</sup>Laboratoire Physique & Mécanique Textiles, CNRS FRE2636, Mulhouse, France

**9:45 AM**

**(049) Large deformation of functionally graded plate**

A. Sadough Vanini, M. Pazoki, Amirkabir Univ. Technology, Tehran, Iran

**10:05 AM**

**(106) Actuator initiated snap-through of bistable composite structures**

M. Gude<sup>1</sup>, W. Hufenbach<sup>1</sup>, M. Schultz<sup>2</sup>, <sup>1</sup>Technische Uni. Dresden, Germany, <sup>2</sup>NASA Langley Research Center, Hampton, VA, USA

### Functional Composites II

**10:50 AM**

**(816) Micro-scale distribution in adaptative composite systems**

D. Bollas<sup>1,2</sup>, J. Parthenios<sup>1,2</sup>, and C. Galiotis<sup>1,2,3</sup>, <sup>1</sup>ICEHTCP, Patras, Greece, <sup>2,3</sup>Univ. Patras, Greece

**11:10 AM**

**(459) Resistance heating for self-healing composites**

N. Kwok, H.T. Hahn, UCLA, Los Angeles, CA, USA

*11:30 AM*

**(439) Analysis of functionally graded cylindrical shells subjected to mechanical and thermal loadings**

M. Tahani, Ferdowsi Univ. Mashhad, Iran

**Impact**

**Room : 3**

**Friday, September 1, 2006**

**Impact I**

*10:40 AM*

**(225) Numerical and experimental analysis of damage under low speed impact of short fiber composite**

A. Al-Magribhi\*, F. Lachaud\*, J.J. Barrau\*\*, \* ENSICA, Toulouse, \*\* Univ. Paul Sabatier, Toulouse, France

*11:00 AM*

**(209) High velocity impact on NCF reinforced composites**

L.E. Asp, R. Juntikka, SICOMP AB, Mölndal, Sweden

*11:20 AM*

**(188) Dent depth and CAI property of CFRP laminates subjected to low velocity impact**

Y. Aoki\*, H. Kondo\*\*, Y. Iwahori\*, T. Ishikawa\*, K. Hiraoka\*\*, \*Japan Aerospace Exploration Agency, \*\*Tokai Univ. Japan

*11:40 AM*

**(513) Energy absorption during low-velocity impact of composite laminates**

L. Martello, S. Mian, M. Quaresimin, M. Ricotta, Univ. Padova, Italy

*12:00 AM*

**(183) Experimental characterisation and numerical modelling of impact damage in fibre reinforced composites**

F. Van Den Abeele, W. Van Paepegem, J. Degrieck, Ghent Univ., Belgium

**Impact II**

*2:00 PM*

**(217) Finite element analysis of dynamic behaviour and damage of glass/epoxy tubular structures**

M. Tarfaoui<sup>1</sup>, P.G. Gning<sup>1</sup>, P. Davies<sup>2</sup>, F. Collombet<sup>3</sup>, <sup>1</sup> ENSIETA, Brest, <sup>2</sup> IFREMER Brest Center, Plouzané, <sup>3</sup> LGMT-PRO2COM, IUT Paul Sabatier, Toulouse, France

*2:20 PM*

**(205) Improving impact resistance of a composite aircraft winglet using shape memory alloy wires**

M. Meo, V. Bozon, D. Murphy, School of Engineering Cranfield Univ. Cranfield, Bedford, UK

*2:40 PM*

**(346) Low velocity impact behaviour of fibreglass-aluminium laminates with aluminium sheets different in thickness**

G. Caprino, V. Lopresto, Univ. Naples "Federico II", Italy



**3:00 PM**

**(426) Controlled impact testing of shape memory alloy composites**

K. Sofocleous, S. L. Ogin, P. Tsakiroopoulos, A. D. Crocombe, B. H. Le Page, University of Surrey Guildford, Surrey, UK

**3:20 PM**

**(194) Response of composite sandwich panels with a flexible core under simultaneous low-velocity impacts of multiple small masses**

K. Malekzadeh<sup>1</sup>, M.R. Khalili<sup>2</sup>, R.K. Mittal<sup>3</sup>, <sup>1</sup>Malek Ashtar Univ. Technology, Tehran, Iran, <sup>2</sup>K.N. Toosi Univ. Technology, Tehran, Iran, <sup>3</sup>Dept. Applied Mechanics, New Delhi, India

## Ecocomposites

**Room : 4**

**Tuesday, August 29, 2006**

### Ecocomposites I

**10:30 AM**

**(507) Natural fibre composites with regenerated cellulose matrix**

W. Gindl, BOKU-Vienna, Austria

**10:50 AM**

**(505) Tensile behaviour of biopolymers reinforced by randomly scattered flax fibre**

E. Bodros, I. Pillin, N. Montrelay and C. Baley\*, Univ. Bretagne Sud, Lorient, France

**11:10 AM**

**(449) Production of composite materials parts with wool fibres reinforcing**

S. Goncalves\*, J.L. Esteves\*\*, \* Polytechnic Institute of Leiria, Caldas da Rainha, \*\* Faculty of Engineering of the Univ. Porto, Portugal

**11:30 AM**

**(433) Mechanical properties improvement of curaua fiber green composites**

A. Gomes, T. Matsuo, K. Goda, J. Ohgi, Yamaguchi Univ, Japan

**11:50 AM**

**(607) Adhesive single lap joints for vegetal natural fibres reinforced composites**

J.L. Esteves\*, C. Romão\*\*, \* Faculty of Engineering of Univ. Porto, Portugal, \*\* Institute Polytechnic of Viseu, Portugal

**12:10 AM**

**(822) Characterization of surface modified kenaf fibers for polymer composites**

G. Bogoeva-Gaceva<sup>1</sup>, A. Dekanski<sup>2</sup>, V. Panic<sup>2</sup>, D. Poletti<sup>3</sup>, A. Grozdanov<sup>1</sup>, A. Buzarovska<sup>1</sup>, M. Avella<sup>4</sup>, G. Gentile<sup>4</sup>, <sup>1</sup>Faculty of Technology & Metallurgy, Skopje, <sup>2</sup>R. Macedonia, Univ. Belgrade, Serbia & Montenegro, <sup>3</sup>Faculty of Technology & Metallurgy, Belgrade, Serbia & Montenegro, <sup>4</sup>ICTP-CNR, Napoli, Italy

### Ecocomposites II

**2:00 PM**

**(820) Rice-straw reinforced polypropylene composites**

A. Grozdanov\*, A. Buzarovska\*, M. Avella\*\*, M. Errico\*\*, G. Gentile\*\*, G. Bogoeva-Gaceva\*, \*Faculty of Technology & Metallurgy, Skopje, R. Macedonia, \*\*ICTP-CNR, Napoli, Italy

**2:20 PM**

**(276) Flax fibre-reinforced composites : influence of the fibre position in the stem on its mechanical, chemical and morphological properties**

K. Charlet<sup>1</sup>, J.P. Jernot<sup>1</sup>, M. Gomina<sup>1</sup>, J. Bréard<sup>2</sup>, C. Morvan<sup>3</sup>, C. Baley<sup>4</sup>, <sup>1</sup> ESCTM / CRISMAT, Caen, <sup>2</sup> LMPG, Univ. Le Havre, <sup>3</sup> IFR-MP23, Univ. Rouen, Saint Aignan, <sup>4</sup> L2PIC, Univ. Bretagne Sud, Lorient, France

**2:40 PM**

**(156) Process related mechanical properties of press molded natural fiber reinforced polymers**

L. Medina, R. Schledjewski, Institut Verbundwerkstoffe GmbH, Kaiserslautern, Germany

**3:00 PM**

**(810) Characterization and properties of All-cellulose composites**

B. Duchemin, Univ. Canterbury, Christchurch, New Zealand

**3:20 PM**

**(805) The manufacture of composite materials by adding value to a waste**

C-I. Kocsag, G. Stanciu, M. Martin\*, "Ovidius" Univ. Constanta, Romania, \*S.C. Rompetrol Petrochemical, Navodari, Romania

## **Ceramic matrix composites**

**Room : 4**

**Wednesday, August 30, 2006**

### **Ceramic matrix composites I**

**8:45 AM**

**(340) High temperature creep of oxide-fibre/oxide-matrix composites**

S.T. Mileiko, V.M.Kiiko, A.A.Kolchin, V.P.Korzhov, and I.V.Maleev, Solid State Physics Institute of Russian Academy of Sciences, Moscow, Russia

**9:05 AM**

**(082) Study on polysiloxane polymer precursors for manufacturing of C/Si-C-O and C/SiC composites**

T. Gumula, S. Blazewicz, AGH Univ. Science & Technology, Krakow, Poland

**9:25 AM**

**(414) Acoustic emission clustering and damage mechanism identification in a SiC/(Si-B-C) composite.**

M. Moevus, N. Godin, M. R'Mili, D. Rouby, P. Reynaud, G. Fantozzi, INSA Lyon, GEMPPM, Villeurbanne, France

**9:45 AM**

**(527) Mechanical behaviour and lifetime modelling of ceramic composites with self-sealing matrix**

C. Cluzel, P. Ladevèze, S. Letombe, ENS Cachan, France

**10:05 AM**

**(443) Long life duration to CMC materials**

S. Bertrand, E. Bouillon, JM. Rougès, Snecma Propulsion Solide, Le Haillan, France

## Ceramic matrix composites II

*10:50 AM*

**(057) Durability of self-sealing ceramic matrix composites SiCf/(Si, C, B)m for aeronautic applications**

L. Quémard<sup>a</sup>, Rebillat<sup>a</sup>, Alain Guette<sup>a</sup>, Henri Tawil<sup>b</sup> & Caroline Louchet-Pouillier<sup>b</sup>, LCTS, Pessac, France,  
<sup>b</sup>Snecma Propulsion Solide, Le Haillan, France

*11:10 AM*

**(477) Textile-reinforced ceramic matrix composites for sliding applications**

W. Hufenbach<sup>1</sup>, W. Schneider, A. Langkamp<sup>1</sup>, C. Weimann<sup>2, 1</sup> Technische Universität Dresden, Germany  
<sup>2</sup> ThyssenKrupp Bilstein GmbH, Ennepetal, Germany

*11:30 AM*

**(495) Effect of crystallinity of carbon on reaction with silica to develop SiC reinforcing materials by chemical vapour reaction (CVR)**

S. Manocha, B. Patel, Sardar Patel Univ., Vallabh Vidyanagar, Gujarat, India

## Metal matrix composites

**Room : 4**

**Wednesday, August 30, 2006**

## Metal matrix composites I

*2:00 PM*

**(511) SiC-fibre reinforced copper alloy as heat sink material for fusion application**

D. Muchilo, J. Hempenmacher, H. Schurmann, P. Peters, German Aerospace Center, Cologne, Germany

*2:20 PM*

**(493) Control of interfacial phenomena during liquid route processing of 1D-SiC CVD/Ti alloy composites**

C. Arvieu<sup>a,b</sup>, C. Duda<sup>a</sup>, J.M. Quenisset<sup>a,b</sup> and J.M. Franchet<sup>c, a</sup> ICMCB, Pessac, ,<sup>b</sup> LGM<sup>2</sup>B-IUT, Univ. Bordeaux 1, Talence ,<sup>c</sup> SNECMA Moteurs, Moissy-Cramayel, France

*2:40 PM*

**(486) Mechanical and wear characteristics of AA6063/Al<sub>2</sub>O<sub>3</sub>/TiC particulate metal matrix composite**

M. Abdel Aziz<sup>a</sup>, Z. I. Zaki<sup>a</sup>, A. M. Gaafer<sup>b</sup>, T. S. Mahmoud<sup>b, a</sup>CMRDI, Cairo, Egypt.,<sup>b</sup>Univ., Cairo, Egypt

*3:00 PM*

**(154) Long-term creep behaviour of discontinuously reinforced aluminium alloys**

G. Requena, H.P. Degisher, Vienna Univ. Technology, Austria

*3:20 PM*

**(374) Abrasive electrical discharge machining (AEDM) of aluminium metal matrix composites (Al/Al<sub>2</sub>O<sub>3</sub>p-20%) using powder suspended dielectric fluid**

S. Singh, S. Maheshwari, A. Dey\*, Netaji Subhas Institute of technology, New Delhi, India, \*Indian Statistical Institute, New Delhi, India

## Metal matrix composites II

**4:10 PM**

**(399) An improved model of filament/matrix stress transfer applied to fiber fragmentation in titanium matrix composites**

G. Rousset, E. Martin, J. Lamon, N. Carrère\*, LCTS, Pessac, ONERA, \*Châtillon, France

**4:30 PM**

**(192) Processing and testing of aluminium matrix composite wires, double composite and hybrid composite structures**

I. Orbulov<sup>(a)</sup>, I. Kientzl<sup>(a)</sup>, János Dobránszky<sup>(b)</sup>, Árpád Németh<sup>(a)</sup>, Joseph T. Blucher<sup>(a)</sup>

(a) Budapest Univ. of Technology and Economics, (b) Research Group for Metals Technology of the Hungarian Academy of Sciences, Hungary

**4:50 PM**

**(311) A criterion for fiber fracture in titanium matrix composites at elevated temperature**

H. Ghonem, Univ. Rhode Island, Kingston, RI, USA

**5:10 PM**

**(133) Al-Si alloys reinforced by a 3D network of short alumina fibres connected by Si**

F. Lasagni (1), H.P. Degischer (1), P. Schultz (2), (1) Vienna University of Technology, Austria. (2) ARC Leichtmetallkompetenzzentrum Ranshofen GmbH, Ranshofen, Austria.

**5:30 PM**

**(811) Heat treatment and wear characteristics of Al<sub>2</sub>O<sub>3</sub> and TiC particulate reinforced AA6063 alloy hybrid composites**

M. Abdel Aziz, Z.I. Zaki, A.M. Gaafer\*, T.S. Mahmoud\*, CMRDI, Cairo, Egypt, \*Banha Univ. Egypt

## Carbon/carbon composites

**Room : 3**

**Thursday, August 31, 2006**

## Carbon/carbon composites I

**8:45 AM**

**(494) Isotropic carbon-carbon composites with chemically modified pitches**

L.M. Manocha\*, R. Raj, S. Manocha, D. Sathiyamoorthy\*, Sardar Patel Univ., Gujarat, India, \*BARC, Mumbai, India

**9:05 AM**

**(422) Visualization of voids in actual C/C woven composite structure**

M. Košek, P. Sejak, Technical University of Liberec, Czech Republic

**9:25 AM**

**(338) Modelling of the multiaxial mechanical behaviour of a 3D C/C composite at room temperature**

L. Flacelière, C.Tallaron, CEA Le Ripault, France

**9:45 AM**

**(363) Ablation of carbon-based materials : multiscale roughness modelling**

G.L. Vignoles\*, J. Lachaud\*, Y. Aspa\*\*, \* LCTS, Pessac, \*\* IMFT, Toulouse, France

*10:05 AM*

**(284) Damage monitoring in cycling loaded C/C woven composites using acousto-ultrasonics**

T.H. Loutas<sup>1,2</sup>, V. Kostopoulos<sup>1,2</sup>, Univ. Patras, Greece, Foundation of Research and Technology Hellas, Greece

## **Carbon/carbon composites II**

*10:50 AM*

**(392) Prediction of effective mechanical properties of carbon-carbon composite using unit cell modelling and homogenization technique**

M. Venkat Rao, P. Mahajan and R.K Mittal, Indian Institute of Technology, New Delhi, India

*11:10 AM*

**(396) Evaluation of fibre/matrix interfaces in carbon/carbon composites**

M. Rollin, J. Lamon, R. Pailler, LCTS, Pessac, France

*11:30 AM*

**(097) Experimental characterization and 3D modelling of carbon/carbon composites oxidation : role of the interface**

J. Lachaud, Y. Aspa, G.L. Vignoles, G. Bourget, LCTS, Univ. Bordeaux1, France

*11:50 AM*

**(815) Mechanical multi-scale model for carbon/carbon composite under tribological solicitation**

G. Peillex\*, L. Baillet\*\*, Y. Berthier\*, \* INSA Lyon, \*\* Univ. Joseph Fourier, Grenoble, France

## **Textiles**

### **Room : 5**

**Tuesday, August 29, 2006**

## **Textiles I**

*10:40 AM*

**(264) Development of fibrous performs for FRP tube connexions (Keynote lecture)**

R. Figueiro, P. Nunes, F. Soutinho and M. de Araújo, University of Minho, Guimarães, Portugal

*11:10 AM*

**(421) Stochastic simulation of deformation in woven fabrics as composite reinforcement**

M. Tunak, A. Linka, P. Volf, Technical Univ. of Liberec, Czech Republic

*11:30 AM*

**(229) A practical numerical simulation system of mechanical behaviors for textile composites**

T. Kurashiki<sup>1</sup>, M. Zako<sup>1</sup>, H. Nakai<sup>1</sup>, S. Hirose<sup>1</sup>, M. Imura<sup>1</sup>, S.V. Lomov<sup>2</sup>, I. Verpoest<sup>2</sup>, <sup>1</sup>Osaka Univ., Japan, <sup>2</sup>Katholieke Univ. Leuven, Belgium

*11:50 AM*

**(149) Deformability characterization of fabrics using large and small scale full field optical strain measurements**

A. Willems<sup>1</sup>, S.V. Lomov<sup>2</sup>, Z. Yingbo<sup>2</sup>, I. Verpoest<sup>2</sup>, D. Vandepitte<sup>1</sup>, <sup>1</sup>Dept. Mechanical Engineering, Katholieke Univ. Leuven, Belgium, <sup>2</sup>Dept. Metallurgy 1 Mat'ls Eng., Katholieke Univ. Leuven, Belgium

## Textiles II

**2:00 PM**

**(490) Meso-macro textile composites forming simulations**

P. Boisse, N. Hamila, F. Helenon, INSA de Lyon, Villeurbanne, France

**2:20 PM**

**(103) Processing discrete data by gradient matrix : application to strain mapping of textile composite**

A.A. Zisman, D.S. Ivanov, S.V. Lomov, I. Verpoest, <sup>1</sup>Katholieke Univ. Leuven, Belgium, <sup>2</sup>CRISM Prometey, St Petersburg, Russia

**2:40 PM**

**(102) Voxel representation of a unit cell of textile composite : mechanical properties and permeability**

S.V. Lomov, A. Prodromou, I. Verpoest, B. Verleye<sup>1</sup>, D. Roose<sup>1</sup>, T. Peeters<sup>1</sup>, B. Laine<sup>2</sup>, <sup>1</sup>Katholieke Univ. Leuven, Dept. MTM., Belgium, <sup>1</sup>Katholieke Univ. Leuven, Dept. Computer Sci., Belgium, <sup>2</sup>ONERA/DMSC, Chatillon, France

**3:00 PM**

**(068) Internal structure of structurally stitched NCF preforms**

V.E. Koissin †, A.P. Ruopp‡, S.V. Lomov†, I. Verpoest†, V. Witzel‡, K. Drechsler‡, † Katholieke Univ. Leuven, Belgium, ‡ Univ. Stuttgart, Germany

**3:20 PM**

**(333) Tensile performance of multiaxial warp-knitted performs**

N.V. Padaki<sup>1</sup>, R. Alagirusamy<sup>1</sup>, B.L. Deopura<sup>1</sup>, R. Figueiro<sup>2</sup> and M. de Araújo<sup>2</sup>, <sup>1</sup>Indian Institute of Technology-Delhi, India, <sup>2</sup>Univ. Minho, Guimarães, Portugal,

## Textiles III

**4:10 PM**

**(245) Performance assessments of composite geotextiles to be adjustable under confined load**

H-Y. Jeon, INHA Univ., Incheon, Korea

**4:30 PM**

**(223) Analysis of viscoelastic behaviour of coated textile membranes**

W-R. Yu <sup>a)</sup>, Min Sun Kim <sup>b)</sup>, <sup>a)</sup> Seoul National University, Seoul, Korea, <sup>b)</sup> Korea Institute of Industrial Technology, Cheonan, Korea

**4:50 PM**

**(224) Simulation of composite properties reinforced by 3D shaped woven fabrics**

A. Buesgen, K. Finterbusch, A. Birghan, Niederrhein Univ. Applied Sciences, Mönchengladbach, Germany

**5:10 PM**

**(105) Hybrid 3D-textile reinforced composites with tailored property profiles for crash and impact applications**

W. Hufenbach, M. Gude, C. Ebert, Technische Univ. Dresden, Germany

## Joining/joints

Room : 5

Wednesday, August 30, 2006

### Joining/joints I

8:45 AM

**(166) Modeling the continuous welding of thermoplastic matrix composites**

G. Regnier, J. Verdu - LIM – ENSAM, F.Chinesta - LMSP – ENSAM Paris, C. Nicodeau, J.Cinquin, V.Triquenau - EADS CCR, Suresnes, France

9:05 AM

**(144) Examinations of the influence of local effects on sandwich beam failure characteristics**

M. Johannes, E. Bozhevolnaya, O.T. Thomsen, Aalborg Univ., Denmark

9:25 AM

**(417) Structural adhesive tee joints for marine application**

A. Roy<sup>1</sup>, Y. Nadot<sup>2</sup> and P. Casari<sup>3</sup>, <sup>1</sup>CRITT MPC - France ; <sup>2</sup>ENSMA – France ; <sup>3</sup>GeM – UMR CNRS 6183 France

9:45 AM

**(530) Repair and strengthening of aluminum plates with composite patches**

J. Rezaeepazhand<sup>1</sup>, H. Sabouri<sup>2</sup>, <sup>1</sup>Ferdowsi Univ. Mashhad, Iran, <sup>2</sup>Tarbiat Modares Univ., Tehran, Iran

### Joining/joints II

10:50 AM

**(267) Through thickness strain field measurement in an adhesive joint between composite and aluminium**

M-P. Moutrille, K. Derrien, D. Baptiste, LIM, ENSAM Paris, France, LaMI, Blaise Pascal Univ., Aubière, France

11:10 AM

**(093) Development of a reliability approach for the behaviour of adhesively-bonded assemblies in marine applications**

M. Mejri, J-Y. Cognard<sup>1</sup>, P. Davies<sup>2</sup>, <sup>1</sup>ENSIETA, Brest, France, <sup>2</sup>IFREMER Centre de Brest, Plouzané, France

11:30 AM

**(227) Impact tension of composite single LAP adhesive joints**

C. Galliot, J. Rousseau, G. Verchery, ISAT, Nevers, France

11:50 AM

**(403) Simulating the mechanical behaviour and damage processes of bolted joints in composite structures**

F-X. Irisarri, N. Carrère, J-F. Maire, ONERA, Châtillon, France

## Processing/Fabrication/Manufacturing

**Room : 5**

**Wednesday, August 30, 2006**

### Processing/Fabrication/Manufacturing I

**2:00 PM**

**(702) The hot compaction of woven nylon 6.6 multifilaments**

P.J. Hine, I.M.Ward, Univ. Leeds, UK

**2:20 PM**

**(157) Thermoplastic tape placement process – Fully automated lay-up of complex shaped parts**

R. Schedjewski, A.K. Schlarb, Institut für Verbundwerkstoffe, Kaiserslautern, Germany

**2:40 PM**

**(404) Out-of-plane biaxial forming of thermoplastic-based fibre-metal laminates**

J. Gresham, P. Compston, S. Kalyanasundaram, W.J. Cantwell, M.J. Cardew-Hall, Australian National Univ., Canberra, Australia

**3:00 PM**

**(521) Monitoring of resin infusion process by embedded optical fibres**

S. Vacher\*, J. Molimard\*, A. Vautrin\*, H. Gagnaire\*\*, P. Henrat\*\*\*, \* ENSM.SE, Saint-Étienne, \*\* Univ. Jean Monnet, Saint-Étienne, \*\*\* HEXCEL Reinforcements, Les Avenières, France

**3:20 PM**

**(470) Role of processing technique and weave of carbon fabric on performance properties of polyetherimide (PEI) composites**

R. Rattan, J. Bijwe, ITMMEC, Indian Institute Technology Delhi, India

### Processing/Fabrication/Manufacturing II

**4:10 PM**

**(328) Production and processing of PVC matrix towpregs**

L.M. Torres<sup>1</sup>, J.P. Nunes<sup>2</sup>, J.F. Silva<sup>1</sup>, A.T. Marques<sup>4</sup>, <sup>1</sup>ISEP, Porto, Portugal, <sup>2</sup>Minho Univ. Guimaraes, Portugal, <sup>3</sup>DEMEGI-INEGI-FEUP, Univ. Porto, Portugal

**4:30 PM**

**(326) Deposition chamber to produce dry coated long fibre thermoplastic matrix towpregs at industrial scale**

V. Antao<sup>1</sup>, E. Braga<sup>1</sup>, R.F. Silva<sup>2</sup>, J.F. Silva<sup>2</sup>, J.P. Nunes<sup>1</sup>, A.T. Marques<sup>3</sup>, <sup>1</sup>Univ. Minho, Guimaraes, Portugal, <sup>2</sup>ISEP Porto, Portugal, <sup>3</sup>DEMEGI-INEGI-FEUP, Univ. Porto, Portugal

**4:50 PM**

**(322) Optimization of RTM processing parameters for surface finish**

M. Haider, P. Hubert, L. Lessard, E. St-Amant, McGill Univ., Montreal, Canada

**5:10 PM**

**(196) Comparison of pressure profile and flow progression between a radial flow VI and RTM processes**

D.K. Modi, M.S. Johnson, A.C. Long and C.D. Rudd, Univ. Nottingham, UK



**5:30 PM**

**(195) Robotized filament winding to manufacture full section parts with concave surfaces**

L. Sorrentino<sup>1</sup>, W. Polini<sup>1</sup>, L. Carrino<sup>1</sup>, E. Anamateros<sup>2</sup>, <sup>1</sup>Università degli Studi di Cassino, Italy, <sup>2</sup>Agusta Westland, Anagni, Italy

**5:50 PM**

**(442) Autoclave and RTM processes influence on fracture toughness of carbon-epoxy laminates containing thermoplastic phases**

F. Collombet<sup>1</sup>, M. Mulle<sup>1,2</sup>, Y-H. Grunevald<sup>2</sup>, <sup>1</sup>IUT Paul Sabatier, Toulouse, France, <sup>2</sup>DDL Consultants, Le Beausset, France

**Friday, September 1, 2006**

**Processing/Fabrication/Manufacturing III**

**Room : 4**

**10:40 AM**

**(176) Curing stresses in matrix resins containing filler and low profile additives**

M.S. Kiasat<sup>\*</sup>, L. J. Ernst<sup>†</sup>, and R. Marissen<sup>‡, \*</sup>, Iran Univ. of Science and Technology, Tehran, Iran, <sup>†</sup>Delft Univ. Technology, The Netherlands

**11:00 AM**

**(096) Influence of the mould thermal expansion on composite stress build-up during curing**

F. Rakusa<sup>1</sup>, S. Lavanchy<sup>1</sup>, R. de Oliveira<sup>1</sup>, D. Constantini<sup>2</sup>, V. Michaud<sup>1</sup>, J-A. Manson<sup>1</sup>, <sup>1</sup>EPFL, Lausanne, Switzerland, <sup>2</sup>EPFL, Lausanne, Switzerland

**11:20 AM**

**(054) The use of interleaved films for optimising the production and properties of hot compacted, polyethylene self reinforced polymer composites**

P.J.Hine, M.J.Bonner and I.M.Ward, IRC in Polymer Science and Technology, Leeds, UK

**11:40 AM**

**(048) Local heat transfer effect in dynamic composites manufacturing processes**

M. Deleglise, C. Binetruy, P. Krawczak, Ecole des Mines de Douai, France

**12:00 AM**

**(260) Numerical modelling of compression moulding with SMC for the improvement of mechanical properties**

M.S. Kim<sup>a</sup>, W. S. HAN<sup>b</sup>, Alain Vautrin<sup>b</sup>, W. I. Lee<sup>a</sup>, <sup>a</sup>Seoul National Univ., South Korea, <sup>b</sup>Ecole Nationale Supérieure des Mines de Saint-Etienne, France

**Processing/Fabrication/Manufacturing IV**

**2:00 PM**

**(214) Thermoforming of talc reinforced polypropylene sheet material**

X. Fan, <sup>#</sup>, I. Verpoest<sup>#</sup>, D. Vandepitte<sup>\*</sup>, Katholieke Universiteit Leuven<sup>#</sup>, PMA<sup>\*</sup>, Leuven, Belgium<sup>#</sup>

**2:20 PM**

**(198) Internal behaviour of intraply shear in thermoformed composites**

G.F. Nino and H.E.N. Bersee, Delft Univ. of Technology, The Netherlands

**2:40 PM**

**(124) Characterization of continuous basalt fiber reinforced thermoplastic with an in-situ polymerized CBT-matrix**

B. Joris, I. Verpoest, J. Devaux, Katholieke Univ. Leuven, Belgium,

**3:00 PM**

**(104) Experimental investigation and modelling of the compaction behaviour properties for crash and impact applications**

M. Samadifard, F. Robitaille, University of Ottawa, Ontario, Canada

**3:20 PM**

**(181) Reinforced thermoplastic sheet composite deep drawing investigation**

S.A. Sadough, F.R. Biglari, M. Shirani, A. Agahi, Amirkabir Univ. Technology, Tehran, Iran

## **Sandwich**

**Room : 4**

**Thursday, August 31, 2006**

## **Sandwich I**

**8:45 AM**

**(330) Multi-scale experimental and numerical analysis of inserts in sandwich structures**

P. Bunyawanichakul<sup>1</sup>, B. Castanie<sup>2</sup>, J.J. Barrau<sup>3</sup>, <sup>1</sup>Kasetsart Univ., Bangkok, Thailand, <sup>2</sup>IGMT, LMS Supaéro, Toulouse, France, <sup>3</sup>IGMT, Univ. Paul Sabatier, Toulouse, France

**9:05 AM**

**(126) Analysis of a sandwich panel containing a transverse core crack under in-plane loading**

J.H. Andreasen, A. Lyckegaard, Aalborg Univ., Denmark

**9:25 AM**

**(116) Parametric study of the nonlinear behaviour of a curved sandwich beam joined with a straight sandwich beam**

A. Lyckegaard, O.T. Thomsen, Aalborg Univ., Denmark

**9:45 AM**

**(051) Influence of load components and load sequence on the response of core junctions in sandwich structures**

J. Jakobsen,, L.S. Johansen, O.T. Thomsen, E. Lund, Aalborg University, Denmark

## **Sandwich II**

**10:50 AM**

**(497) Vertical compression of corrugated cardboard sandwich**

S. Allaoui<sup>1</sup>, N. Talbi<sup>2</sup>, Z. Aboura<sup>3</sup>, R. Ayad<sup>2</sup>, M.L. Benzeggagh<sup>1</sup>, <sup>1</sup>Univ. Technologie Compiègne, <sup>2</sup>ESIEC, Reims, <sup>3</sup> IUT Tremblay-en-France Paris 8, France

**11:10 AM**

**(025) Parametric study of stress concentrations caused by inserts in sandwich panels**

N.G. Tsouvalis, M.J. Kollarini, National Technical Univ. Athens, Greece

**11:30 AM**

**(041) Improved design of core junctions in sandwich beams**

O.T. Thomsen, E. Bozhevolnaya, A. Lyckegaard, Aalborg Univ., Denmark

**11:50 AM**

**(491) On the modelling of the mechanical behaviour of stitched sandwich structure**

B. Lascoup, \*, Z. Aboura\*\*, K. Khellil\*, M. Benzeggagh\*, \*Univ. Technologie de Compiègne, France, \*\* L3M. IUT de Tremblay en France Paris 8, France