

# PROVISIONAL PROGRAMME

Mechanics of Nano, Micro and Macro Composite Structures  
Politecnico di Torino

A. J. M. Ferreira, E. Carrera (Editors)  
18-20 June 2012

## Sunday, June 17, 2012

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<b>Sunday Afternoon / June 17</b>		
<b>1500 - 1700</b>	<b>Early-Bid Registration</b>	<b>Ground Floor Aula Magna</b>

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## Monday, June 18, 2012

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<b>Monday Morning / June 18</b>		
<b>0730 - 0800</b>	<b>Registration</b>	<b>Ground Floor Aula Magna</b>

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<b>Monday Morning / June 18</b>		
<b>0830 - 0855</b>	<b>Opening Ceremony</b>	<b>Aula Magna</b>

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<b>Monday Morning / June 18</b>		
<b>0855 - 1005</b>	<b>Plenary Talks</b>	<b>Aula Magna</b>
Chaired by: Laura Montanaro, Politecnico di Torino, Italy		

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<b>0855 - 0930</b>	<u>Yapa Rajapakse</u> Solid Mechanics Office of Naval Research, USA <i>Recent Advances in Composite and Sandwich Structures Research</i>	
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<b>0930 - 1005</b>	<u>J. N. Reddy</u> Texas A&M University, College Station, Texas USA <i>A nonlinear modified couple stress-based theories of functionally graded beams and plates</i>	
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<b>Monday Morning / June 18</b>		
<b>1005 - 1040</b>	<b>Coffee-Break</b>	<b>I Rooms</b>

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<b>Monday Morning / June 18</b>		
<b>1040 - 1300</b>	<b>Parallel Sessions</b>	<b>I Rooms</b>

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**Monday Morning / June 18**

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**Session 9.1                      Multiscale structures with anomalous behavior                      1-I ROOM**  
Chaired by: Fabrizio Scarpa (University of Bristol)

1040 Abstract 403	1100 Abstract 153	1120 Abstract 284	1140 Abstract 362	1200 Abstract 450		
Failure of continuum models for vibrations of single-walled carbon nanotubes and graphene sheet	Studying design parameter variability of honeycomb sandwich beams by means of experimental modal data: a stochastic approach	Dynamic behavior of multilayered sandwich composite with auxetic layers	Band-gap acoustic states in 1D and 2D single layer graphene sheet systems	Honeycomb metamaterials exhibiting anomalous mechanical and thermal properties		
R.C. Batra, S.S. Gupta	S. Debruyne, D. Vandepitte, L. Mehrez, E. Debrabandere	W.L. Azoti, Y. Koutsawa, N. Bonfoh, P. Lipinski, S. Belouettar	F. Scarpa, M. Ruzzene	R. Gatt, R. Cauchi, J.N. Grima		

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**Monday Morning / June 18**

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**Session 2.1                      Hierarchical Multiscale Modeling Utilizing Onset Theory                      2-I ROOM**  
Chaired by: Don Kelly (University of New South Wales),  
Jon Gosse (The Boeing Company) and Steve Christensen (The Boeing Company)

1040 Abstract 56	1100 Abstract 71	1120 Abstract 76	1140 Abstract 113	1200 Abstract 178	1220 Abstract 179	1240 Abstract 184
The Boeing onset theory as it applies to structures subject to constrained deformation	Onset theory informed virtual formulation of a new composite matrix using molecular dynamics with selected experimental validation	Molecular dynamics modeling of carbon nanotube reinforcement in polymer resin	Bearing failure prediction for composite pin-loaded holes and bolted joints using onset theory	Introduction to meshfree methods	Application of Boeing onset theory to the open hole tension problem	Atom-Level simulation of resin/fiber interactions
J. Gosse	S. Christensen	J.H. Sul, B. Gangadhara Prusty, D.W. Kelly, L. Zhang, S. Christensen	G. Pearce, D.W. Kelly	D.C. Simkins, Jr.	D.C. Simkins, Jr.	S.J. Tucker, A.R. Browning

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**Monday Morning / June 18**

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**Session 4.1                      Nanocomposites                      3-I ROOM**  
Chaired by: Walter Lacarbonara (University of Rome Tre), Nicola Pugno (Polito)

1040 Abstract 434	1100 Abstract 66	1120 Abstract 24	1140 Abstract 38	1200 Abstract 64	1220 Abstract 90	
Development of copper/diamond functionally graded grinding wheel for CFRP drilling by centrifugal sintered-casting method	Determination of Young's modulus in polyester-AL2O3 and epoxy-AL2O3 nanocomposites using the digital image correlation method	Can quite a few amount of poly(vinyl alcohol) nano-fibers significantly improve the durability of carbon fiber/epoxy composite?	Effect of surface treatment of various ratios (micro/nano)-CaCO3 particles on mechanical and thermal properties of PVC composites	Study on shear thickening fluids comprised of multi-dispersed phase nanomaterials dispersed in polyethylene glycol	Shape memory polyurethane reinforced with carbon nanotubes: synthesis and characterization	
T. Kunimine, M. Shibuya, M. Yamada, H. Sato, Y. Watanabe	J.M.L. Reis, D.C. Moreira, L.A. Sphaier, L.C.S. Nunes	N. TienPhong, T. Fujii, K. Okubo, M.H. Gabr, B. Chuong	S.H.S. Jazi, M.N. Esfahany, R. Bagheri	K. Yu, X. Sha, H. Cao, K. Qian	M. A. Fonseca, F.A.M.M. Gonçalves, A.G.M. Ferreira, R.A.S. Moreira, M.S.A. Oliveira, J.A.O. Simões	

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**Monday Morning / June 18**

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**Session 5.1 Analysis of composite beams, plates and shells 4-I ROOM**  
Chaired by: Francesco Tornabene (Università di Bologna), Mohamad Qatu (Central Michigan University)

1040 Abstract 148	1100 Abstract 12	1120 Abstract 43	1140 Abstract 206	1200 Abstract 253	1220 Abstract 10	
The analysis of laminated plates using a new meshless method	An analytical method for static analysis of thin-walled blades of laminated composite materials	Static analysis with normal and shear stress recovery for anisotropic doubly-curved shell panels using the differential geometry and the GDQ method	Stability analysis of grid-stiffened composite cylindrical shell by differential quadrature method	Three-Dimensional exact solution for the vibration of functionally graded cylindrical shells	Evaluation of load carrying ability of multi-layered cylindrical shell	
J. Belinha, R.M. Natal Jorge, L.M.J.S. Dinis	C. Zhang, S. Wang	F. Tornabene, A. Liverani, G. Caligiana	M.M. Ghomshei, H.K. Filestan	S.S. Vel	S.M. Vereshaka, E.T. Karash, F.A. Hamed	

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**Monday Morning / June 18**

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**Session 6.1 ONR Session on failure of composite and sandwich structures 5-I ROOM**  
Chaired by: G. Belingardi (Polito), S. Abrate (Southern Illinois University),  
V. Lopresto (Università di Napoli), R. Massabò (Università di Genova), Yapa Rajapakse (ONR)

1040 Abstract 468	1100 Abstract 264	1120 Abstract 388	1140 Abstract 51	1200 Abstract 170	1220 Abstract 299	1240 Abstract 250
Delamination failure of sandwich hulls due to water slamming loads	Dynamic response of elastic wedges during slamming	Response of blast loaded foam core sandwich panels	Blast resistance of composite structures	Torsional vibrations of sharp-edged beams under water	Free vibrations of doubly curved functionally graded shells	A multi-scale and multi-physics numerical approach to microcracking on photovoltaic lamionates
R.C. Batra, K. Das	R. Panciroli, S. Abrate, G. Minak	G.S. Langdon, M.Z. Hassan, W.J. Cantwell, G.N. Nurick	J.P. Dear, H. Arora, P. Del Linz, P. Hooper	M. Aureli, C. Pagano, M. Porfiri	F. Tornabene, S. Abrate	M. Paggi, M. Corrado, M.A. Rodriguez

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**Monday Morning / June 18**

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**Session 7.1 Stability of Nano, Micro and Macro Composite Structures 6-I ROOM**  
Chaired by: Christian Mittelstedt (SOGETI Hightech GmbH)

1040 Abstract 107	1100 Abstract 138	1120 Abstract 239	1140 Abstract 247	1200 Abstract 323	1220 Abstract 15	1240 Abstract 19
Closed-Form treatment of the post-critical stability behavior of rotationally restrained, long plates with flexural anisotropy	Delamination analysis of structures with interface elements based on Hellinger-Reissner and Hu-Washizu principles	Three dimensional shear buckling of FG plates with various boundary conditions	On the stability of functionally graded nonlinear elastic plates	In-plane deformation modes of the functionally graded honeycomb	NURBS-Based isogeometric approach for static, free vibration and buckling analysis of laminated composite plates using the third order shear deformation theory	A refined lower bound method for the buckling design of FRP laminated shells
M. Beerhorst, M. Seibel, C. Mittelstedt	W. Wagner	B. Uymaz, M. Aydogdu	H. Altenbach, V.A. Eremeyev, A.A. Girchenko	C.J. Shen, G. Lu, T.X. Yu	C.T. Hoang, H.N. Xuan, T. Rabczuk	H. Wang, J.G.A. Croll

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**Monday Morning / June 18**

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**Session 8.1****Multi-scale Modeling of Graphene- and Carbon Nanotube-Reinforced Composites****7-I ROOM**

Chaired by: Konstantinos Tserpes (University of Patras), Nuno Silvestre (Technical University of Lisbon)

1040 Abstract 144	1100 Abstract 1	1120 Abstract 13	1140 Abstract 37	1200 Abstract 45	1220 Abstract 46	1240 Abstract 49
Analysis of composite structures with piezoelectric d15 shear-response-based torsion actuators	Multiscale analysis of pelvic organ prolapse and effect of collagen content	Atomistic simulations on the mechanical properties of a silicon nanofilm covered with graphene	Forced vibration of orthotropic graphene sheets by considering the small scale effect	On the reinforcement efficiency of wavy carbon nanotubes	Investigation of strain energy release rate in carbon nanotubebased composites	Vibrational Analysis of double walled helically coiled carbon nanotubes using 3d frame element and considering nonlocal effects
M. Krommer, P. Berik, Y. Vetyukov, A. Benjeddou	V. Unnikrishnan, G. Unnikrishnan, J.N. Reddy	Y. Jing, N.R. Aluru	E. Jomehzadeh, A.R. Saidi, N. Pugno	R. Rafiee	R. Rafiee, M. Heidarhaei	S.Z. Mohammadi, M. Farid

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**Monday Morning / June 18**

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**Session 21.1****Experimental Methods on Structures****8-I ROOM**

Chaired by: Aleksander Muc (Cracow University of Technology)

1040 Abstract 459	1100 Abstract 427	1120 Abstract 451	1140 Abstract 452	1200 Abstract 453	1220 Abstract 454	1240 Abstract 455
Free vibrations of carbon nanotubes with structural defects	Vibration analysis of laminated VGCF/Aluminum circular plates with experimental verification	Homogenization methods of smart two-phase materials reinforced by particles	FE modeling of single-walled carbon nanotubes	Modeling carbon nanotubes nanocomposites transverse shear properties	Experimental buckling loads for laminated plated and shell	Active control of buckling loads for laminated cylindrical shells with a pair of piezoelectric actuators
Aleksander Muc, Aleksander Banaś	Y. Narita, S. Honda, N. Koya	M. Barski	M. Chwal	M. Chwal, Aleksander Muc	A. Muc, M. Lysoń, D. Kuś	A. Muc, P. Kędziora

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**Monday Morning / June 18**

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**Session 16.1****Advanced Structural Models for Thin-Walled Structures and Slender Bodies****9-I ROOM**

Chaired by: Marco Petrolo (Polito), Nuno Silvestre (Technical University of Lisbon), Alberto Varello (Polito), Enrico Zappino (Polito)

1040 Abstract 143	1100 Abstract 6	1120 Abstract 7	1140 Abstract 29	1200 Abstract 31	1220 Abstract 16	
1D component-wise models for failure analysis of composites	Torsional buckling of FRP composite thin columns using the complex finite strip method	Effect of longitudinal web stiffener of I-shape FRP composite beams using the complex finite strip method	Advanced composite beam theory and 1D/3D computation. Central solution and end effects.	Two finite element based strategies in viscoelastic composites with an application to rock tunneling	Study on moment carrying capacity of composite beam	
E. Carrera, M. Maiarù, M. Petrolo	H. Amoushahi, M. Azhari	H. Amoushahi, M. Azhari	R. El Fatmi	N.L. Troyani, A. Pérez	C. Karthik, P. Sangeetha, R. Senthil	

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**Monday Morning / June 18**

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**Session 25.1**

**Applications and Experimental Mechanics**

**10-I ROOM**

Chaired by: Nicolae Crainic ("Politehnica" University of Timisoara)

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1040 Abstract 119	1100 Abstract 21	1120 Abstract 25	1140 Abstract 145	1200 Abstract 4	1220 Abstract 36	1240 Abstract 23
Simulation of bone healing process for the fractured tibia applied by composite bone plates	Characterization and failure modeling of notched cross-ply and angle-ply fabric GFRP composite material	Experimental assessment of mixed-mode partition theories	Magnetic nano-composite materials obtained using magnetic nano-fluids	Dynamic analysis of arch dams with FRP joint reinforcement	Crack detection in a piezoelectric-composite beam under bending-torsion load based on Inman-Wang algorithm	Fabric shear determined by yarn pull-out and analysis by analytical-statistical models
D.S. Son, H.J. Kim, J.E. Lee, S.H. Chang	E.G. Koricho, A.T. Beyene, G. Belingardi	C.M. Harvey, S. Wang	N. Crainic, A.T. Marques, L. Vékás, P.J.R. Nóvoa, O. Marinica, N.C. Popa, A. Taculescu, C. Daia, L. Marsavina, A. Cernescu, D. Gubencu, F. Mustata	M. Ghiasian	A. Daneshmehr, A. Nateghi	K. Bilisik, O. Demiryurek

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<b>Monday Afternoon / June 18</b>		
<b>1300 - 1430</b>	<b>Lunch</b>	<b>I Rooms</b>

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<b>Monday Afternoon / June 18</b>		
<b>1430 - 1630</b>	<b>Parallel Sessions</b>	<b>I Rooms</b>

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<b>Monday Afternoon / June 18</b>		
<b>Session 15.1</b>	<b>Multiscale Analysis of Natural Fibre Composites</b>	<b>1-I ROOM</b>
Chaired by: Alexis Beakou (Clermont Université)		

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1430 Abstract 152	1450 Abstract 201	1510 Abstract 514	1530 Abstract 515	1550 Abstract 525	
Low environmental impact composite structure design optimization using robust multi-objective optimization platform	Multiscale modeling of anisotropic hygromechanical behavior of natural cellular composites	A synchrotron X-ray study of the inner structure and the micro-mechanical behavior of single flax fibres	Characterization and modeling of the middle lamella of flax bundle  K. Charlet, A. Beakou	Bio-Composites: An XFEM cohesive model for fiber/matrix debonding in composites: nucleation and propagation of cracks	
C. Morillo, D.S. Lee, G. Bugada, S. Oller, E. Oñate	A. Rafsanjani, A. Patera , J. Carmeliet, D. Derome	S. Eve, A.Thuault, B. Duchemin, K. Charlet, B. Abbey, F. Hofmann, A.M. Korsunsky		A. Makradi, L. Bouhala, S. Belouettar	

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<b>Monday Afternoon / June 18</b>		
<b>Session 2.2</b>	<b>Hierarchical Multiscale Modeling Utilizing Onset Theory</b>	<b>2-I ROOM</b>
Chaired by: Don Kelly (University of New South Wales), Jon Gosse (The Boeing Company) and Steve Christensen (The Boeing Company)		

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1430 Abstract 189	1450 Abstract 196	1510 Abstract 182	1530 Abstract 268	1550 Abstract 269	
A micromechanical sub-modeling technique for implementing onset theory	Damage development ahead of arrested cracks in a strain gradient in unidirectional fibre reinforced plastic composites	Simulating size-dependency of the tensile modulus of alumina/epoxy nanocomposites using the molecular dynamic finite element method	Prediction of failure onset in multilayer graphene reinforced epoxy composites using molecular dynamics simulations	Failure predictions in bulk PMMA and PMMA/CNT composites from molecular dynamics	
T. Tran, D. Kelly, G. Prusty, G. Pearce, J. Gosse	A. Crosky, D. Kelly, G. Pearce, S. Lim, S. Atli, L. Teh	A. Kempe, L. Nasdala, R. Rolfes	C. Li, A. Strachan	A. Strachan, Y.J. Kim, E. Jaramillo, C. Li	

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**Monday Afternoon / June 18**

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**Session 4.2****Nanocomposites****3-I ROOM**

Chaired by: Walter Lacarbonara (University of Rome Tre), Nicola Pugno (Polito)

1430 Abstract 89	1450 Abstract 92	1510 Abstract 129	1550 Abstract 2		
Synthesis of CaSO <sub>4</sub> nanoparticles and PS/CaSO <sub>4</sub> nanocomposite for investigation of water permeability	Influence of nanofibrous mat on epoxy resin under tensile test and DMTA	Small scale effect on the buckling of graphene sheets based on nonlocal mechanics by spline finite strip method	Investigation behavior of steel plate composite by nano-carbon polymers		
S.F. Besharat, M. Manteghian	E. Poodts, R. Palazzetti, A. Zucchelli	H.R. Analooei, M. Azhari	F. Hatami, A. Ghamari		

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**Monday Afternoon / June 18**

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**Session 5.2****Analysis of composite beams, plates and shells****4-I ROOM**

Chaired by: Francesco Tornabene (Università di Bologna), Mohamad Qatu (Central Michigan University)

1430 Abstract 472	1450 Abstract 22	1510 Abstract 42	1530 Abstract 53	1550 Abstract 55	1610 Abstract 3
Free vibration of laminated shells via GDQ method using third-order theories	Numerical study of pultruded composite bumper beam using geometrically optimized profile	Three-dimensional dynamic and static analysis of plates through different variational approaches	CFRP automotive members with crash compatibility	Consistent use of higher order Layer-Wise models for solving 3D elasticity problems for thick laminated composite plates	Study on the seismic behavior properties of composite beam made with polypropylene fiber
N. Fantuzzi, L. Rossetti, E. Viola	A.T. Beyene, E.G. Koricho, G. Belingardi	A. Messina	S. Boria	G.M. Kulikov, S.V. Plotnikova	S. Arivalagan, T.S. Thandavamoorthy

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**Monday Afternoon / June 18**

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**Session 6.2****ONR Session on failure of composite and sandwich structures****5-I ROOM**

Chaired by: G. Belingardi (Polito), S. Abrate (Southern Illinois University),

V. Lopresto (Università di Napoli), R. Massabò (Università di Genova), Yapa Rajapakse (ONR)

1430 Abstract 254	1450 Abstract 176	1510 Abstract 95	1530 Abstract 104	1550 Abstract 93	1610 Abstract 331
Progressive interfacial damage in composite cylindrical shells	Progressive damage and failure strength of notched woven fabric composites under axial loading with varying strain rates	Strain rate effect on the tensile strength of nano-modified twill weave e-glass/epoxy composites	Study of oblique impacts on helicopter blades : a semi-continuous approach for the modeling of thin woven composite panels	Blast resistance of laminated glass facade	Experimental validation of a design method to avoid damages of thick composite parts during cure process
R. Massabò	Y.K. Boey, Y.W. Kwon	G. Belingardi, E.G. Koricho, D.S. Paolino	P. Navarro, J. Aubry, S. Marguet, J.F. Ferrero, S. Lemaire	P. Del Linz, P.A. Hooper, L. Pascoe, D. Smith, D. Cormie, J.P. Dear	C. Bellini, W. Polini, L. Sorrentino



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**Monday Afternoon / June 18**

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**Session 7.2 Stability of Nano, Micro and Macro Composite Structures 6-I ROOM**  
Chaired by: Christian Mittelstedt (SOGETI Hightech GmbH)

1430 Abstract 280	1450 Abstract 330	1510 Abstract 361	1530 Abstract 419	1550 Abstract 432	
Semi-analytical modeling of the post buckling behavior of the g-flute corrugated board	Quasi-3D solutions for sandwich buckling and wrinkling	Thermal buckling analysis of short fiber reinforced laminated plates	Static shape control using piezoelectric actuator	Bending and buckling problems of nonlocal Euler beams using Ritz Method	
J. Vigi��, P.J.J. Dumont	M. D'Ottavio, O. Polit	S. �. Eruslu, M. Aydogdu, S. Filiz	K. Bhagate, J. Ye, A.K. Singh	S.A.M. Ghannadpour, B. Mohammadi, J. Fazilati	

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**Monday Afternoon / June 18**

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**Session 8.2 Multi-scale Modeling of Graphene- and Carbon Nanotube-Reinforced Composites 7-I ROOM**  
Chaired by: Konstantinos Tserpes (University of Patras), Nuno Silvestre (Technical University of Lisbon)

1430 Abstract 58	1450 Abstract 146	1510 Abstract 112	1530 Abstract 103		
A comprehensive study of the size effects on the stiffness and strength of carbon nanotubes and graphene	Influence of the percolation phenomenon on the effective mechanical properties of CNT-based polymer composites	Mechanics of the reinforcement of nanocomposites by graphene	The nonlocal effect on the axial free vibration of nanobar based on the exact nonlocal elasticity		
K.I. Tserpes	W. Leclerc, P. Karamian, A. Vivet, A. Campbell	L. Gong, R.J. Young, I. Kinloch, K.S. Novoselov	Y.M. Yu, C.W. Lim		

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**Monday Afternoon / June 18**

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**Session 21.2 Experimental Methods on Structures 8-I ROOM**  
Chaired by: Aleksander Muc (Cracow University of Technology)

1430 Abstract 456	1450 Abstract 457	1510 Abstract 458	1530 Abstract 313	1550 Abstract 460	
Numerical modeling and experimental analysis of subsurface defects in composite panels	Experimental analysis of fatigue life for composite structures	Damage detection and assessment in composite multilayered structures with delaminations	Effect of through-thickness reinforcement on the strength of composite single-lap joints	Wavelet methods for modeling three dimensional quantum	
A. Muc, P. Pastuszak	A. Muc, P. K�dziora	A. Stawiarski, A. Muc, P. K�dziora	Y.B. Park, B.H. Lee, J.H. Kweon, J.H. Choi	A. Muc, A. Bana�	

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**Monday Afternoon / June 18**

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**Session 16.2****Advanced Structural Models for  
Thin-Walled Structures and Slender Bodies****9-I ROOM**Chaired by: Marco Petrolo (Polito), Nuno Silvestre (Technical University of Lisbon),  
Alberto Varello (Polito), Enrico Zappino (Polito)

1430 Abstract 60	1450 Abstract 70	1510 Abstract 82	1530 Abstract 83	1550 Abstract 47	1610 Abstract 52
Nonlinear free vibration of composite FRP plates by finite strip method	Flexural-Torsional buckling of composite beam structures - Validity of classical closed-form solutions	Pultruded GFRP frame with bolted joints-effects of bolt torque on free vibration response	Model identification and damage assessment of GFRP pultruded elements using modal data	Behavior of shear-bearing lightweight composite sandwich walls with steel egg-box shaped core	Mathematical models of micropolar anisotropic (orthotropic) elastic single and multilayered thin plates
E. Jaberzadeh, S. Hashemi	L. Friedrich, C. Mittelstedt	G. Boscato, J.T. Mottram, S. Russo	G. Boscato, S. Russo	P. Setayeshgar, R. Razani	A.J. Farmanyan, G.S. Hayrapetyan, S.H. Sargsyan

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**Monday Afternoon / June 18**

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**Session 25.2****Applications and Experimental Mechanics****10-I ROOM**

Chaired by: Nicolae Crainic ("Politehnica" University of Timisoara)

1430 Abstract 73	1450 Abstract 88	1510 Abstract 77	1530 Abstract 78	1550 Abstract 523	1610 Abstract 522
Morphological characterization of spray fluidized bed agglomerates by using X-ray $\nu$ -computer tomography	Carbon fiber/phenolic composite bipolar plate reinforced with nano-size carbon black	Development of a forming limit diagram for a fibre metal laminate based on a glass fibre reinforced polypropylene composite	The effect of fiber orientation on the forming behavior of a self-reinforced polypropylene composite	Thermo-Hygro-Mechanical coupled modeling of wood	Hysteretic swelling and shrinkage of wood probed by phase contrast X-ray tomography
M. Dadkhah, M. Peglow, E. Tsotsas	M. Kim, J.W. Lim, D.G. Lee	A. Sexton, W.J. Cantwell, S. Kalyanasundaram	N.A. Zanjani, S. Kalyanasundaram	J. Carmeliet, S. Abbaston, M. Sedighi-Gilani, P. Moonen, D. Derome	D. Derome, A. Patera, A. Rafsanjani, J. Carmeliet

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**Monday Afternoon / June 18**

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**1630 - 1700****Coffee-Break****I Rooms**

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<b>Monday Afternoon / June 18</b>		
<b>1700 - 1820</b>	<b>Parallel Sessions</b>	<b>I Rooms</b>

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<b>Monday Afternoon / June 18</b>		
<b>Session 15.1 (cont)</b>	<b>Multiscale Analysis of Natural Fibre Composites</b>	<b>1-I ROOM</b>
Chaired by: Alexis Beakou (Clermont Université)		
This session does not take place		

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<b>Monday Afternoon / June 18</b>		
<b>Session 3.1</b>	<b>Mechanical Behavior of Functionally Graded Materials</b>	<b>2-I ROOM</b>
Chaired by: Carla M. C. Roque (Universidade do Porto), Paulo R. Nóvoa (Universidade do Porto), Pedro A. L. S. Martins (Universidade do Porto)		

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1700 Abstract 34  Experimental and numerical analysis of functionally graded polymer plates  A.J. Paleo, P.J.R.O. Nóvoa, P.A.L.S. Martins, C.M.C. Roque	1720 Abstract 35  Image analysis of functionally graded particle distribution using Otsu's method  P.A.L.S. Martins, A.J. Paleo, P.J.R.O. Nóvoa, C.M.C. Roque	1740 Abstract 48  Analysis of steady heat conduction for 3D axisymmetric functionally graded circular plate  W. Liu	1800 Abstract 65  Vibration of non-uniform functionally graded nanocomposite beam reinforced by randomly oriented carbon nanotube  M.H. Yas, M. Heshmati
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<b>Monday Afternoon / June 18</b>		
<b>Session 4.3</b>	<b>Nanocomposites</b>	<b>3-I ROOM</b>
Chaired by: Walter Lacarbonara (University of Rome Tre), Nicola Pugno (Polito)		

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1700 Abstract 134  Montmorillonite and its interphase molecular model with verification  R. Pyrz	1720 Abstract 204  Is the most stretchable cocoon silk nanocomposite bundle that of the spider meta menardi?  E. Lepore, A. Marchioro, M. Isaia, M.J. Buehler, N.M. Pugno	1740 Abstract 347  Analytical studies on the low-velocity impact on composite beam  S. Seifoori, G.H. Liaghat, M.J. Khoshgoftar	1800 Abstract 133  Piezocomposites with ellipsoidal ferrite inclusions in piezoelectric matrix  A.A. Pan'kov
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**Monday Afternoon / June 18**

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**Session 5.3****Analysis of composite beams,  
plates and shells****4-I ROOM**Chaired by: Francesco Tornabene (Università di Bologna),  
Mohamad Qatu (Central Michigan University)

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1700 Abstract 80	1720 Abstract 91		
Dynamic response of composite plates under cryogenic environment	A new scaled boundary finite element formulation for the analysis of cracks and notches in laminated plates		
M.J. Jweeg, W.I. Al-Azzawy, E.A. Sadiq	R. Dieringer, J. Hebel, W. Becker		

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**Monday Afternoon / June 18**

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**Session 6.3****ONR Session on failure of composite  
and sandwich structures****5-I ROOM**Chaired by: G. Belingardi (Polito), S. Abrate (Southern Illinois University),  
V. Lopresto (Università di Napoli), R. Massabò (Università di Genova), Yapa Rajapakse (ONR)

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1700 Abstract 242	1720 Abstract 94	1740 Abstract 289	1800 Abstract 298
Effect of fibre failure on low velocity impact of composite laminate with different stacking sequences	Size effect on the damage tolerance of glass/epoxy laminates subject to repeated impacts	Virtual test of low velocity impact on sandwich panels with AL2024 aluminium skins and honeycomb NOMEXTM core	Impact damage response of natural Z-pinned composite sub-structures
C. Bouvet, S. Rivallant, N. Hongkarnjanakul	G. Belingardi, M.P. Cavatorta, D.S. Paolino, A. Scattina	A. Gilioli, A. Manes, M. Giglio	H. Ghasemnejad, A. Aboutorabi

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**Monday Afternoon / June 18**

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**Session 1.1****Ceramic composites for  
harsh working conditions****6-I ROOM**Chaired by: Laura Montanaro (Polito), Claudio Badini (Polito),  
Paolo Fino (Polito), Mariangela Lombardi (Polito), Sara Biamino (Polito)

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1700 Abstract 72	1720 Abstract 156	1740 Abstract 449	1800 Abstract 288
Combination of reinforcing mechanisms in ZTA-SiC nanocomposites	Role of elaboration route and sintering conditions on microstructure and mechanical properties of ZTA composites	Manufacturing technologies of particle, carbonnanotube and fiber reinforced aluminum	A simple approach to obtain metal matrix composites through additive manufacturing
F. Kern, R. Gadow	F. Kern, P. Palmero, R. Gadow, L. Montanaro	R. Gadow, M. Wenzelburger, M. Silber	D. Manfredi, E.P. Ambrosio, S. Biamino, M. Pavese, P. Fino

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**Monday Afternoon / June 18**

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**Session 8.3****Multi-scale Modeling of Graphene- and  
Carbon Nanotube-Reinforced Composites****7-I ROOM**

Chaired by: Konstantinos Tserpes (University of Patras), Nuno Silvestre (Technical University of Lisbon)

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1700 Abstract 131	1720 Abstract 413	1740 Abstract 120	1800 Abstract 121
On the buckling analysis of defective carbon nanotubes by molecular structural mechanics approach	Molecular dynamics simulations of axial deformations of amorphous polyethylene	Nonlinear thermal buckling of shear deformable nanocolumn based on nonlocal stress theory	Nonlocal elasticity theory for bending of curved nanobeams
M. Eftekhari, S. Mohammadi	A. Pacheco, R.C. Batra	Q. Yang, C.W. Lim	R. Xu, C.W. Lim

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**Monday Afternoon / June 18**

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**Session 13.1****Modeling, simulation and testing of  
sandwich and adaptive structures****8-I ROOM**Chaired by: Cristovao Mota Soares (Technical University of Lisbon),  
Filipa Moleiro (Technical University of Lisbon), Aurélio Araujo (Technical University of Lisbon)

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1700 Abstract 399	1720 Abstract 415	1740 Abstract 441	1800 Abstract 520
Effect of mechanical properties on the behavior of sandwich plates with FG core under indentation loading	Lowvelocity impact behavior of cork cored sandwich structures	A multiscale approach for the vibration analysis of heterogeneous materials with viscoelastic inclusions. Application to passive damping	Multiscale modeling of 1-3 composite piezogenerator from porous piezoceramics
M.A. Rezaei, Y. Mohammadi	A. Arteiro, A. Reis, P. Nóvoa, A.T. Marques	K. Attipou, S. Nezamabadi, E.M. Daya, H. Zahrouni	A. Nasedkin

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**Monday Afternoon / June 18**

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**Session 16.3****Advanced Structural Models for  
Thin-Walled Structures and Slender Bodies****9-I ROOM**Chaired by: Marco Petrolo (Polito), Nuno Silvestre (Technical University of Lisbon),  
Alberto Varello (Polito), Enrico Zappino (Polito)

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1700 Abstract 102	1720 Abstract 108	1740 Abstract 132	
Parametric instability of laminated longitudinally stiffened curved panels with cutout using Higher order FSM	A multi-scale structural model for coupling 1-D with 3-D elements	Damping behavior of composites - An evolutionary approach finding mathematical relationships	
J. Fazilati, H.R. Ovesy	J. Yue, A. Fafitis, J. Qian	L. Ulke-Winter, M. Klaerner, L. Kroll	

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**Monday Afternoon / June 18**

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**Session 25.3**

**Applications and Experimental Mechanics**

**10-I ROOM**

Chaired by: Nicolae Crainic ("Politehnica" University of Timisoara)

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1700 Abstract 79	1720 Abstract 86	1740 Abstract 87	1800 Abstract 326
Development of gasket-less carbon composite bipolar plates for PEM fuel cell	Infrared thermography in the inspection of composite materials	Damage evaluation of drilled carbon/epoxy laminates based on area assessment methods	Macro- and micro-mechanical simulations of asphalt composites using elasto-visco-plastic constitutive models
J.W. Lim, M. Kim, D.G. Lee	C. Meola, C. Toscano	L.M.P. Durão, J.M.R.S. Tavares, V.H.C. de Albuquerque, D.J.S. Gonçalves	E. Masad, R.A. Al-Rub, D. Little

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**Monday Afternoon / June 18**

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**1830 - 1930**

**Plenary Talks**

**Aula Magna**

Chaired by: António Torres Marques, Universidade do Porto, Portugal

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**1830 - 1900**

John Dear

Imperial College London, UK  
*Composite structures at their limit*

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**1900 - 1930**

Nicola Pugno

Politecnico di Torino, Italy  
*The fantastic 4 (nanomaterials):  
graphene (the strongest), spider silk (the toughest),  
gecko foot (the most adhesive), lotus leaf (the most anti-adhesive)*

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Chaired by: Federico Miglioretti (Politecnico di Torino)

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**Posters List**

- Abstract 379 Redesign of the rear module of an hybrid bus using composite sandwich panels for HCV project  
P.C. Neves, A.A. Fernandes, K. Andersson, D. Lantz
- Abstract 41 Element-free Galerkin method applied to the analysis of laminated plates in the framework of the Carrera Unified Formulation  
J.D. Rodrigues, C.M.C. Roque, A.J.M. Ferreira
- Abstract 425 Mechanical, thermal and rheological behavior of LLDPE-carbon black nano-composite  
M.A. AlMaadeed, M. Ouederni, N. Madi, N. AlQahtani, M. AlEjji
- Abstract 426 Characterization of male and female date palm leaves for using as reinforcements in polymer composites  
M.A. AlMaadeed, R. Kahraman, P. Noorunnisa Khanam , K. Zadeh
- Abstract 446 Development of hybrid composite of recycled polypropylene  
M.A. AlMaadeed, R. Kahraman, N. Madi, P. Noorunnisa Khanam
- Abstract 500 Optimizing the embedded heaters position in the pultrusion process using finite element analysis  
F.J.G. Silva, F. Ferreira, C. Costa, A.C.M. Castro, M.C.S. Ribeiro
- Abstract 503 Layered double hydroxide intercalated with 12-Aminododecanoate as a fillers for epoxy resins  
M. Herrero, M. Martins, F.M. Labajos, V. Rives, C.M.C. Pereira
- Abstract 512 Influence of zig-zag and warping effects on the free vibration of functionally graded sandwich plates according to hyperbolic shear deformation theories  
A.M.A. Neves, A.J.M. Ferreira, E. Carrera, M. Cinefra, R.M.N. Jorge, C.M.M. Soares
- Abstract 27 Comparative study for a microstructure-dependent Timoshenko beam model using a modified couple stress theory and a meshless numerical method  
C.M. Roque, D.S. Fidalgo, A.J.M. Ferreira
- Abstract 447 The environmental effect of recycle polypropylene reinforced with wood and glass fibers by using life cycle assessment  
M.A. AlMaadeed, N. Gozdeozkerkan, M. AlEjji, N. AlQahtani
- Abstract 538 Seismic improvement of RC beam-column joints using hexagonal CFRP bars combined with CFRP sheets  
C.G. Cho, G.J. Ha, L. Feo
- Abstract 539 Investigation of mechanical properties of modified palm based composites  
D. Kocak, N. Merdan, S. Ilker Mistik, E. Oya Burcak, M. Akalin
- Abstract 541 Investigation of sound absorption properties of environmentally modified luffa cylindrica/ polyurethane composites  
N. Merdan, E. Sancak, D. Kocak, M. Yuksek, S. Ilker Mistik
- Abstract 9 Dynamics of lattice composite payload attach fitting  
A. Skleznev
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**Monday Evening / June 18**

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**1930**

**Posters Session and Welcome Drink**

**Ground Floor  
Aula Magna**

Chaired by: Federico Miglioretti (Politecnico di Torino)

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**Posters List**

- Abstract 412 Particle size effect on mechanical and fracture properties of glass  
bead reinforced epoxy composites. Nano and micro toughening mechanisms  
A.L. Stocchi, R.P. Ollier, C.R. Bernal, V.A. Álvarez
- Abstract 294 Eshelby's problem in the gradient heat conductivity:  
applications to composite materials  
S. Lurie, N. Tchkova, D. Volkov-Bogorodsky, E. Aifantis
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Tuesday, June 19, 2012

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**Tuesday Morning / June 19**

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<b>0800 - 0830</b>	<b>Registration</b>	<b>I-ROOMS</b>
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**Tuesday Morning / June 19**

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<b>0830 - 1015</b>	<b>Plenary Talks</b>	<b>Aula Magna</b>
Chaired by: Mohamad Qatu, Central Michigan University, USA		

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<b>0830 - 0905</b>	Giovanni Belingardi Politecnico di Torino, Italy	
<i>Trends and problems for composite material application in car body design</i>		

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<b>0905 - 0940</b>	Tsu-Wei Chou University of Delaware, USA	
<i>Electromechanical behavior of carbon nanotube fibers and their reinforced composites</i>		

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<b>0940 - 1015</b>	Pierre Ladeveze LMT-Cachan, France	
<i>Damage Virtual Testing of Laminated Composite Structures, Today and Tomorrow</i>		

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**Tuesday Morning / June 19**

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<b>1015 - 1040</b>	<b>Coffee-Break</b>	<b>I Rooms</b>
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**Tuesday Morning / June 19**

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<b>1040 - 1300</b>	<b>Parallel Sessions</b>	<b>I Rooms</b>
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**Tuesday Morning / June 19**

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<b>Session 11.1</b>	<b>Optimization techniques and methods</b>	<b>1-I ROOM</b>
Chaired by: Juri Majak (Tallinn University of Technology)		

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<p>1040 Abstract 59</p> <p>Modeling and manufacturing of microwave absorber tiles for a cube stealth satellite by using nanostructured composite materials and particle swarm optimization algorithm</p> <p>D. Micheli, S. Laurenzi, M. Marchetti</p>	<p>1100 Abstract 61</p> <p>Plates and shells with discrete varying-optimal stiffness</p> <p>J. Šliseris, K. Rocēns</p>	<p>1120 Abstract 159</p> <p>Optimal design of a fiber reinforced timber frame under strength and stability constraints</p> <p>I.U. Cagdas</p>	<p>1140 Abstract 213</p> <p>Probabilistic behavior of composite plate under ballistic impact</p> <p>S.D. Patel, S. Ahmad, P. Mahajan</p>	<p>1200 Abstract 226</p> <p>Reliability-Based probabilistic approach for the composite stiffener of conformal load-bearing antenna structure</p> <p>S. Lee, S. Park, I.G. Kim, O.C. Jun</p>	<p>1220 Abstract 504</p> <p>Clipped optimal vibration control of smart piezolaminated beams</p> <p>M.Y. Yasin, S. Kapuria, S. Kadakuntla</p>
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**Tuesday Morning / June 19**

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**Session 3.2                      Mechanical Behavior of Functionally Graded Materials                      2-I ROOM**Chaired by: Carla M. C. Roque (Universidade do Porto),  
Paulo R. N3voa (Universidade do Porto), Pedro A. L. S. Martins (Universidade do Porto)

1040 Abstract 407	1100 Abstract 173	1120 Abstract 420	1140 Abstract 257			
Nano- and Micro-Indentation properties of ZrO <sub>2</sub> /Ti functionally graded materials fabricated by spark plasma sintering	Static bending of a functionally graded microscale Timoshenko beam based on the modified couple stress theory	Effects of a functionally graded materials coating in a thick-walled circular cylinder under pressure	An analytical approach for buckling analysis of functionally graded rectangular micro-plates			
H. Tsukamoto, Y. Komiya, T. Imai, H. Sato, Y. Watanabe	M. Şimşek, T. Kocatürk, S.D. Akbaş	R. Sburlati	M. Mohammadi, H. Farahmand, M. Fooladi			

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**Tuesday Morning / June 19**

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**Session 4.4    Nanocomposites    3-I ROOM**

Chaired by: Walter Lacarbonara (University of Rome Tre), Nicola Pugno (Polito)

1040 Abstract 344	1100 Abstract 285	1120 Abstract 305	1140 Abstract 529			
A study of mechanical behavior of epoxy-based composites reinforced with functionalized multiwalled carbon nanotube	Nonlinear bending behavior of carbon nanotubes and their composites	Beyond the limits - Alternative testing concepts in nano mechanics	Mechanical and optical properties of nanoclay reinforced polyactides based green film			
A. Rashidi, M. Omid, R. Arasteh, F. Yazdian	S.A. Ponnusami, D. Harursampath	H. Pfaff, J. Hay	C.Y. Chee, Y.C. Ching, I.I. Iskandar			

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**Tuesday Morning / June 19**

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**Session 5.4    Analysis of composite beams, plates and shells    4-I ROOM**

Chaired by: Francesco Tornabene (Università di Bologna), Mohamad Qatu (Central Michigan University)

1040 Abstract 373	1100 Abstract 68	1120 Abstract 169	1140 Abstract 194	1200 Abstract 198	1220 Abstract 400	1240 Abstract 167
Free vibration analyses of thin- and thick-walled orthotropic and composite hollow cylinders using 3D alesticity theory	Fully coupled thermo-mechanical effect in free vibration analysis of anisotropic multilayered plates by combining hierarchical plate models and a trigonometric Ritz formulation	Failure of pin-loaded unidirectional-woven composite joints	Higher order analytical solutions to piezoelectric layers under cylindrical bending	Beam theories for cross-sections of inhomogeneous, anisotropic materials	A constrained finite deformation Cosserat elastic model for composites and its relation to small deformation couple stress theories	3D elasticity solutions of fully clamped laminated composite structures
W. Wang, M.S. Qatu, S. Yarahmadian	F.A. Fazzolari	O. Aluko	S.M. Shiyekar, T. Kant	S.B. Dong, E. Taciroglu	A.R. Srinivasa, J.N. Reddy	E. Kamis, Z.J. Wu

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**Tuesday Morning / June 19**

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**Session 6.4 ONR Session on failure of composite and sandwich structures 5-I ROOM**

Chaired by: G. Belingardi (Polito), S. Abrate (Southern Illinois University),  
V. Lopresto (Università di Napoli), R. Massabò (Università di Genova), Yapa Rajapakse (ONR)

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1040 Abstract 332	1100 Abstract 333	1120 Abstract 30	1140 Abstract 438	1200 Abstract 492		
Experimental campaign on composite materials to support numerical simulations of the low velocity impact behavior	Numerical methods for the impact damage prediction on plastic laminates reinforced with basalt fibre	Residual properties of rubber-toughened thermoplastic composite after bending	Statistical finite element analysis to investigate buckling and crushing behavior of honeycomb structures	Numerical and experimental analyses of local strain fields in composites during stable and unstable interlaminar fracture propagations		
V. Antonucci, F. Caputo, V. Lopresto, A. Riccio, M. Zarrelli	C. Leone, A. Langella, V. Lopresto, G. Caprino	L. Santo, D. Bellisario, C. Prospero, F. Quadrini	D. Asprone, F. Auricchio, C. Menna, S. Morganti, A. Prota	A. Airoidi, A. Baldi, P. Bettini, G. Sala		

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**Tuesday Morning / June 19**

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**Session 14.1 Problems of Impact on Composite Structures 6-I ROOM**

Chaired by: Michele Guida (Università di Napoli), Francesco Marulo (Università di Napoli)

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1040 Abstract 421	1100 Abstract 50	1120 Abstract 69	1140 Abstract 136	1200 Abstract 137	1220 Abstract 259	1240 Abstract 135
Numerical modeling of high velocity impacts on composite laminates	Influence of the geometrical structures and resin rate inside composites structures on the ballistic behavior under high velocity impact	Comparison of damages on 2D and 3D warp interlock fabric composite due to high velocity impact	Shape memory alloy hybrid composites for aeronautical applications	Crash absorber mechanism for a crashworthy landing gear	Falling weight impact characterization of jute cloth/wool felts hybrid laminates	Simulation of low velocity impact on composite laminates with progressive failure analysis
J. Pernas-Snchez, J.A. Artero-Guerrero, D. Varas, J. López-Puente	M. Lefebvre, F. Boussu, D. Coutellier, D. Vallee	B. Provost, F. Boussu, D. Coutellier, D. Vallee, F. Rondot, J. Nussbaum	M. Meo, M. Guida, F. Marulo	M. Guida, F. Marulo, B. Monesarchio, M. Bruno	A.P. Caruso, M. Infantino, E. Nisini, D. Ghelli, C. Santulli, F. Sarasini, G. Minak	L. Maio, E. Monaco, F. Ricci, L. Lecce

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**Tuesday Morning / June 19**

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**Session 8.4 Multi-scale Modeling of Graphene- and Carbon Nanotube-Reinforced Composites 7-I ROOM**

Chaired by: Konstantinos Tserpes (University of Patras), Nuno Silvestre (Technical University of Lisbon)

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1040 Abstract 524	1100 Abstract 165	1120 Abstract 177	1140 Abstract 221	1200 Abstract 163		
Carbon nanotubes - Nano-reinforced aluminium with improved yield strength and toughness	Light-Weight composites reinforcement with carbon nanotubes under shear compression	A concurrently coupled multi-scale model for predicting properties of thermoplastic and thermoset polymer nanocomposites	Multiscale analysis of water diffusion in unidirectional composite materials - Interphases impact: experimental, analytical and numerical approach	Frequency effect on damping of two phase fiber reinforced composite		
S. Marchisio, D. Manfredi, S. Biamino, P. Fino, E. Ambrosio, C. Badini, M. Pavese	J.K. Gomon, L. Kommel, L. Kollo, J. Majak, R. Metsvahi, M. Mihhaltsenkov	S. Roy, N. Hayes, A. Akepati	Y. Joliff, L. Belec, J.F. Chailan	P. Kumar, R. Chandra, S.P. Singh		

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**Tuesday Morning / June 19**

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**Session 13.2****Modeling, simulation and testing of sandwich and adaptive structures****8-I ROOM**Chaired by: Cristovao Mota Soares (Technical University of Lisbon),  
Filipa Moleiro (Technical University of Lisbon), Aurélio Araujo (Technical University of Lisbon)

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1040 Abstract 33	1100 Abstract 84	1120 Abstract 96	1140 Abstract 109	1200 Abstract 363	1220 Abstract 74	
Advanced hybrid composite structure design optimization using robust multi-objective optimization platform (RMOP)	Radar absorbing sandwich construction composed of CNT, PMI foam and carbon/epoxy composite	Effective mechanical properties of a folded sandwich core	Analysis of the ends of sandwich beams subjected to pure bending	Buckling and debond propagation in honeycomb panels containing a face/core debond subject to bending load	Delamination analysis of tapered composite panels with sandwich core	
D.S. Lee, C. Morillo, S. Oller, G. Bugeada, E. Onate	I. Choi, J.G. Kim, I.S. Seo, D.G. Lee	H. Massow, W. Becker	D.F. Caballero, V.R. de la Cruz, J.M. Munoz-Guijosa, S. Nair	J. Chen, W. Gong	M. Dinulovic, B. Rasuo	

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**Tuesday Morning / June 19**

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**Session 16.4****Advanced Structural Models for Thin-Walled Structures and Slender Bodies****9-I ROOM**Chaired by: Marco Petrolo (Polito), Nuno Silvestre (Technical University of Lisbon),  
Alberto Varello (Polito), Enrico Zappino (Polito)

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1040 Abstract 324	1100 Abstract 162	1120 Abstract 190	1140 Abstract 209	1200 Abstract 210	1220 Abstract 211	
Effect of warping due to aerodynamic loadings in composite wings	Buckling analysis of moderately thick composite plates and plate structures using an exact finite strip	Buckling and postbuckling behavior of thin-walled composite channel section beam	Theoretical prediction on the mechanical properties of 3D braided composites using a helix geometry model	Postbuckling analysis of FGM rectangular plates subjected to linearly varying edgewise compression	Lower bound estimation of post-buckling behavior of thin-walled functionally graded structures	
E. Carrera, A. Varello, A. Lamberti	H.R. Ovesy, S.A.M. Ghannadpour, E. Zia-Dehkordi	H. Debski, T. Kubiak, A. Teter	L.L. Jiang, T. Zeng	K. Kowal-Michalska, Z. Kolakowski	Z. Kolakowski, K. Kowal-Michalska	

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**Tuesday Morning / June 19**

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**Session 25.4****Applications and Experimental Mechanics****10-I ROOM**

Chaired by: Nicolae Crainic ("Politehnica" University of Timisoara)

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1040 Abstract 233	1100 Abstract 125	1120 Abstract 26	1140 Abstract 218	1200 Abstract 158	1220 Abstract 181	
On the direct bonding of two silicon surfaces: experiments and modeling	Medusa, an ultra light weight multi-spectral camera for a UAV	Influence of friction forces on the delamination process in carbon/epoxy composites	The residual stresses of photo-sensitive nano and micro composites for dental applications	Influence of matrix type and thermal variations, in the phenomenon of delamination, on unidirectional carbon-fibre epoxy composites	Method of obtaining analytical dependencies of the components of tensor of elastic modules of the crystal from force constants	
N. Cocheteau, F. Lebon, I. Rosu, S. AitZaid, I. S. DeLarclause	E. Euler	V. Mollón, J. Bonhomme, J. Viña, A. Argüelles	A. D'Amore, L. Grassia	P. Coronado, A. Argüelles, J. Viña, J. Bonhomme, V. Mollón	O.A. Nasan, V.I. Repchenkov	

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<b>Tuesday Afternoon / June 19</b>		
<b>1300 - 1430</b>	<b>Lunch</b>	<b>I Rooms</b>

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<b>Tuesday Afternoon / June 19</b>		
<b>1430 - 1630</b>	<b>Parallel Sessions</b>	<b>I Rooms</b>

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<b>Tuesday Afternoon / June 19</b>		
<b>Session 11.2</b>	<b>Optimization techniques and methods</b>	<b>1-I ROOM</b>
Chaired by: Juri Majak (Tallinn University of Technology)		
<p>1430 Abstract 315</p> <p>Optimization of sandwich composite cylinders for underwater vehicle application</p> <p>G.C. Lee, J.S. Kim, J.H. Kweon, J.H. Choi</p>	<p>1450 Abstract 526</p> <p>Stochastic optimization construction for design of heterogeneous material with desired physical properties</p> <p>A. Mikdam, A. Makradi, D. Fiorelli, Y. Koutsawa, S. Belouettar</p>	<p>1510 Abstract 160</p> <p>An integrated procedure to optimize the design of a composite wing</p> <p>F. Romano, R. Borrelli, U. Mercurio, M. Pecora</p>
<p>1530 Abstract 371</p> <p>Optimization of the composite cone structure layers under buckling load</p> <p>H.S.S. Pour, Y. Alizadeh</p>		

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<b>Tuesday Afternoon / June 19</b>		
<b>Session 3.3</b>	<b>Mechanical Behavior of Functionally Graded Materials</b>	<b>2-I ROOM</b>
Chaired by: Carla M. C. Roque (Universidade do Porto), Paulo R. N3voa (Universidade do Porto), Pedro A. L. S. Martins (Universidade do Porto)		
<p>1430 Abstract 266</p> <p>Nonlinear dynamics of magneto electro elastic beams with curved configuration</p> <p>J.M. Ramirez, M.T. Piovan</p>	<p>1450 Abstract 343</p> <p>Free vibration analysis of functionally graded circular solid and annular plate integrated with piezoelectric layers by using differential quadrature</p> <p>A. Alibeigloo, M. Peyvasteh</p>	<p>1510 Abstract 364</p> <p>Dynamic behavior of a functionally graded orthotropic plane with multiple cracks</p> <p>M. Ayatollahi, A. Kasaeian, R. Bagheri</p>
<p>1530 Abstract 273</p> <p>Buckling analysis of moderately thick functionally graded rectangular plates resting on elastic foundation</p> <p>M. Mohammadi, A.A. Solghar</p>		

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**Tuesday Afternoon / June 19**

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**Session 4.5****Nanocomposites****3-I ROOM**

Chaired by: Walter Lacarbonara (University of Rome Tre), Nicola Pugno (Polito)

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1430 Abstract 462	1450 Abstract 470	1510 Abstract 481	1530 Abstract 482	1550 Abstract 483	1610 Abstract 489
Carbon nanomaterial based multi-scale composites	Behavior investigation of carbon fiber microelectrode electrocoated with polyaniline thin film in the presence of dopamine	Debonding-induced fatigue life of a carbon-nanotube supercapacitor	Modeling of hysteresis due to carbon nanotube-matrix interaction in nanocomposites	Dielectric measurements and electromagnetic simulations of magnetite nanofillers in polymer matrix	Efficient dispersion of carbon nanotubes in polyvinylbutyral and mechanical performance of composites thereof
S. Rana, S. Parveen, R. Fangueiro	R. Damian, R. Ciobanu, R. Burlacu	G. Formica, W. Lacarbonara	M. M. Talo, G. Formica, W. Lacarbonara	R. Damian, R. Ciobanu, C. Schreiner	S. Marchisio, A. Troia, G. Cicero, N. Pugno, M. Pavese

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**Tuesday Afternoon / June 19**

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**Session 5.5****Analysis of composite beams, plates and shells****4-I ROOM**

Chaired by: Francesco Tornabene (Università di Bologna), Mohamad Qatu (Central Michigan University)

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1430 Abstract 223	1450 Abstract 238	1510 Abstract 240	1530 Abstract 328	1550 Abstract 217	1610 Abstract 277
On the deformation behavior of isotropic and orthotropic plates under pure bending moments along all edges	Dynamic interlaminar stresses in a vibrating laminated composite plate	Thermal buckling analysis of nanoplates using Levy type solution	Modeling of laminated composite and sandwich structures based on the proper generalized decomposition for mechanical and thermomechanical analysis	Laser excited wave propagation in piezoelectric/piezomagnetic layered structures	Variation of the elastic properties of Carbon-Carbon composite: Image based finite element simulations
M. Minervino, M. Gigliotti, J.C. Grandidier, M.C. Lafarie-Frenot	M. Aydogdu, T. Aksencer	T. Aksencer, M. Aydogdu	P. Vidal, L. Gallimard, O. Polit	Y. Pan, G. Chen, J. Zhao, Z. Zhong	R. Sharma, P. Mahajan, R.K. Mittal

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**Tuesday Afternoon / June 19**

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**Session 6.5 ONR Session on failure of composite and sandwich structures 5-I ROOM**Chaired by: G. Belingardi (Polito), S. Abrate (Southern Illinois University),  
V. Lopresto (Università di Napoli), R. Massabò (Università di Genova), Yapa Rajapakse (ONR)

This session does not take place

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**Tuesday Afternoon / June 19**

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**Session 12.1****Micromechanics of Nanocomposites****5-I ROOM**

Chaired by: Sarp Adali (University of KwaZulu-Natal)

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		1510 Abstract 97	1530 Abstract 98	1550 Abstract 20	1610 Abstract 417
		Fabrication, microstructure and wear characteristics of aluminum/micro-graphite composites (Al/Gr)	A probabilistic characterization of the distribution of elastic moduli in mechanically percolating nanocomposites	The evolution of mechanical percolation in nanocomposites with random periodic microstructures	Micro-mechanics based modeling of diffused damage evolution in unidirectional composites
		A.I. Selmy, F. Shehata, E. Gewfiel	S.C. Baxter, R. Bourn	B.S. Fralick, S.C. Baxter	C.S. Upadhyay, V. Murari, R. Dhama

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**Tuesday Afternoon / June 19**

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**Session 14.2****Problems of Impact on Composite Structures****6-I ROOM**

Chaired by: Michele Guida (Università di Napoli), Francesco Marulo (Università di Napoli)

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1430 Abstract 260	1450 Abstract 262	1510 Abstract 263	1530 Abstract 261	1550 Abstract 276	
Behavior of fibre reinforced honeycomb core under low velocity impact loading	Low velocity impact analysis on an unidirectional laminate composite	Parametric study of a SPH high velocity impact analysis: a birdstrike windshield application	Meshless methods for multiple cracks in composites	Experimental determination of mechanical properties of unidirectional laminates and simulation of impact of laminates	
G. Petrone, S. Rao, S. De Rosa, B. Mace, D. Bhattacharyya	F. Monaco, A. De Fenza, G. Petrone, M. Fabbriatore, F. Abdi, F. Ricci	A. Grimaldi, A. Sollo, F. Marulo, M. Guida	E. Barbieri, N. Petrinic	K.K. Namala, P. Mahajan, N. Bhatnagar	

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**Tuesday Afternoon / June 19**

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**Session 8.5****Multi-scale Modeling of Graphene- and Carbon Nanotube-Reinforced Composites****7-I ROOM**

Chaired by: Konstantinos Tserpes (University of Patras), Nuno Silvestre (Technical University of Lisbon)

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1430 Abstract 241	1450 Abstract 244	1510 Abstract 246	1530 Abstract 291	1550 Abstract 229	
Vibration and bending analysis of multi-walled carbon nanotubes	Multiscale modeling of crack propagation in hydraulic cement concrete using Finite element method and molecular dynamics method	Exceptional mechanical behavior of carbon nanotubes due to interlayer interaction; a molecular dynamics simulation study	Characteristics of single layer graphene sheets	Investigation of defect controlled mechanical behavior of the single wall carbon nanotubes by molecular dynamics simulation	
M. Aydogdu, P. Karaoglu, S. Secgin, S. Filiz	W. Sun, Y. Li, D. Wang, L. Wang	K. Talukdar, A.K. Mitra	A.V. Singh, S. Arghavan	K. Talukdar, A.K. Mitra	

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**Tuesday Afternoon / June 19**

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**Session 13.3****Modeling, simulation and testing of sandwich and adaptive structures****8-I ROOM**

Chaired by: Cristovao Mota Soares (Technical University of Lisbon), Filipa Moleiro (Technical University of Lisbon), Aurélio Araujo (Technical University of Lisbon)

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1430 Abstract 147	1450 Abstract 149	1510 Abstract 154	1530 Abstract 164	1550 Abstract 174	
A Fourier-Related multi-scale analysis on the instability phenomena of sandwich structures	Prediction of the initiation of delamination propagation in composite laminates using layerwise FSDT for unsymmetric lay-up sequences	Numerical evaluation of layerwise models for analysis of multilayered piezoelectric composite plates	Analysis of functionally graded sandwich plate structures with piezoelectric shins, using B-spline finite strip method	Multi-resolution finite element models for simulation of ballistic impact on composite fabric packages	
K. Yu, H. Hu, S. Belouettar, M. Potier-Ferry	M. Kharazi, N. Kharghani, H.R. Ovesy	F. Moleiro, C.M. Mota Soares, C.A. Mota Soares, J.N. Reddy	M.A.R. Loja, C.M. Mota Soares, J.I. Barbosa	R. Barauskas, D. Calneryte, J. Baltusnikaitė, A. Abraitiene	

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**Tuesday Afternoon / June 19**

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**Session 16.5****Advanced Structural Models for****9-I ROOM****Thin-Walled Structures and Slender Bodies**Chaired by: Marco Petrolo (Polito), Nuno Silvestre (Technical University of Lisbon),  
Alberto Varello (Polito), Enrico Zappino (Polito)

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1430 Abstract 215	1450 Abstract 286	1510 Abstract 287	1530 Abstract 212	1550 Abstract 216	1630 Abstract 232
Non-Destructive evaluation of low velocity impact damage in composite laminates using dynamic response	Delamination in adhesive joints: a finite fracture mechanics approach	Analysis of multi-layered thick-walled filament-wound pressure vessels	Energy harvesting from the vibration of smart composite structure	Dynamic buckling of FGM thin-walled plate subjected to inplane bending	Numerical formulation in finite elements of damping in composites materials using first-order shear deformation theory
M.A. Pérez, L. Gil, S. Oller	P. Cornetti	L. Zu, S. Koussios, A. Beukers	P. Gaudenzi, G. Facchini, A. Pizzini	R.J. Mania	A.A. Diacenco, A.M.G. de Lima, E.O. Correa

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**Tuesday Afternoon / June 19**

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**Session 25.5****Applications and Experimental Mechanics****10-I ROOM**

Chaired by: Nicolae Crainic ("Politehnica" University of Timisoara)

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1430 Abstract 185	1450 Abstract 193				
The influence of embedded electronics on the structural performance in carbon fiber laminates	Forming studies of carbon fibre composite sheets in dome forming processes				
H. Herranen, J. Kers, J.S. Preden, R. Talalaev, M. Eerme, J. Majak, M. Pohlak, G. Allikas, O. Pabut, H. Lend	S. Davey, R. Das, W.J. Cantwell, S. Kalyanasundaram				

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**Tuesday Afternoon / June 19**

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**1630 - 1700****Coffee-Break****I Rooms**

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<b>Tuesday Afternoon / June 19</b>		
<b>1700 - 1840</b>	<b>Parallel Sessions</b>	<b>I Rooms</b>

<b>Tuesday Afternoon / June 19</b>		
<b>Session 22.1</b>	<b>Shell finite elements</b>	<b>1-I ROOM</b>
Chaired by: Maria Cinefra (Polito), Gerlando Augello (Thales Alenia Space Italy) Claudia Chinosi (Università di Pavia), Lucia Della Croce (Università di Pavia)		

1700 Abstract 320	1720 Abstract 227	1740 Abstract 532	1800 Abstract 534		
Robust shell finite element for thin to very thick composite structures	Thermo-Mechanical analysis of functionally graded structures via refined shell finite elements	MITC-Type shell elements based on RMVT unified formulation	Benchmarking of commercial codes by refined shell finite element models in the analysis of composite structures		
O. Polit, P. Vidal, M. D'Ottavio	M. Cinefra, E. Carrera	E. Carrera, C. Chinosi, M. Cinefra, L. Della Croce	G. Augello, E. Carrera, M. Cinefra		

<b>Tuesday Afternoon / June 19</b>		
<b>Session 3.4</b>	<b>Mechanical Behavior of Functionally Graded Materials</b>	<b>2-I ROOM</b>
Chaired by: Carla M. C. Roque (Universidade do Porto), Paulo R. N3voa (Universidade do Porto), Pedro A. L. S. Martins (Universidade do Porto)		

1700 Abstract 105	1720 Abstract 383	1740 Abstract 396	1800 Abstract 398	1820 Abstract 110	
Wave propagation and mechanical shock analysis in functionally graded thick hollow cylinder using a hybrid mesh-free method	Effects of temperature distributions on the free vibration analysis of sandwich plates with functionally graded face sheets	Free and forced vibration analysis of sandwich plates with functionally graded core by improved high-order sandwich plate theory	Size dependent buckling analysis of functionally graded Timoshenko micro beams based on modified couple stress theory	Analysis of functionally graded cylindrical panel with piezothermoelectric layer under dynamical loading	
S.M. Hosseini	Y. Mohammadi, S.M. Reza Khalili	Y. Mohammadi, M.A. Rezaei	J. Rezapoure, M. Salamat-talab, A. Nateghi, B. Daneshian	A. Chitgarha, M. Shakeri	

<b>Tuesday Afternoon / June 19</b>		
<b>Session 4.6</b>	<b>Nanocomposites</b>	<b>3-I ROOM</b>
Chaired by: Walter Lacarbonara (University of Rome Tre), Nicola Pugno (Polito)		

1700 Abstract 502	1720 Abstract 509	1740 Abstract 511	1800 Abstract 495	1820 Abstract 490	
Strength optimization strategies in hierarchical nanocomposites using fibre bundle models	A new ultrasonic waves-based SHM procedure for delamination detection in composite structures	Characterization of polyaniline-detonation nanodiamond nanocomposite fibers by atomic force microscopy based techniques	Thermal and mechanical behavior analysis of micro and nanoxide particles modified thermoset polymers	Self-Rechargeable composite structures with carbon nanotubes supercapacitors	
F. Bosia, N.M. Pugno	M. Pasquali, W. Lacarbonara, G. Park, C.R. Farrar	M. Rossi, D. Passeri, E. Tamburri, M.L. Terranova	S. Sousa, A.J.M. Ferreira, M.C.S. Ribeiro	G. Lanzara, L. Basiric3	

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**Tuesday Afternoon / June 19**

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**Session 5.6 Analysis of composite beams, plates and shells 4-I ROOM**  
Chaired by: Francesco Tornabene (Università di Bologna), Mohamad Qatu (Central Michigan University)

1700 Abstract 340	1720 Abstract 356	1740 Abstract 368	1800 Abstract 166	1820 Abstract 350	
Analysis of the vibrational behavior of the composite annular plates reinforced with carbon nanotubes using the modified rule of mixtures theory	Coupling of bending and torsion of cracked MAX beams based on a first order shear deformation beam theory	On the thermoelastic waves in anisotropic laminated composite plates	Finite element analysis of screw shaped fibers in a composite material to improve mechanical adhesion	Linear dynamic analysis of laminated composite plate with sinwave fiber	
M. Omidi, G. Amoabдини, F. Haghierosadat, T. Nazari	A. Daneshmehr, A. Nateghi	K.L. Verma	K.N. Tejadep, A. Sriram	K.H. Ammash, R. Mumtaz	

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**Tuesday Afternoon / June 19**

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**Session 12.2 Micromechanics of Nanocomposites 5-I ROOM**  
Chaired by: Sarp Adali (University of KwaZulu-Natal)

1700 Abstract 531	1720 Abstract 409				
Buckling analysis of shear deformable polymer/clay nanocomposite laminates via a micromechanics approach	Quantifying the effect of CNT agglomeration, orientation and waviness on the tensile modulus of CNT/polypropylene composites				
A.S. Oktem, S. Adali, I. Kucuk	Md.A. Bhuiyan, R.V. Pucha, K. Kalaitidou				

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**Tuesday Afternoon / June 19**

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**Session 14.3 Problems of Impact on Composite Structures 6-I ROOM**  
Chaired by: Michele Guida (Università di Napoli), Francesco Marulo (Università di Napoli)

1700 Abstract 418	1720 Abstract 404	1740 Abstract 543	1800 Abstract 337	1820 Abstract 376	1840 Abstract 401
Repeated impact characterization of glass/epoxy composite laminates	Optimization of dispersed laminates for improved damage resistance under low velocity impact	Higher-Order dynamic response of in-plane prestressed cylindrical sandwich shells with transversely compliant core under low-velocity impact	Finite element evaluation of projectile nose curvature radius effect in ballistic perforation of composite materials	Quasistatic approach to evaluation of composite material reaction to a low-speed impact	Falling-Weight impact test for small scale model of RC type rock-shed without sand cushion
A.M. Amaro, P.N.B. Reis, M.A. Neto	T.A. Sebaey, E.V. González, C.S. Lopes, N. Blanco, J. Costa	O. Rahmani, S.M.R. Khalili, O.T. Thomsen	M.J. Khoshgoftar, G.H. Rahimi, G.H. Liaghat, H. Khodarahmi, S. Seifoori	I.V. Pavelko, M.P. Smolyaninov	A.Q. Bhatti

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**Tuesday Afternoon / June 19**

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**Session 8.6****Multi-scale Modeling of Graphene- and  
Carbon Nanotube-Reinforced Composites****7-I ROOM**

Chaired by: Konstantinos Tserpes (University of Patras), Nuno Silvestre (Technical University of Lisbon)

1700 Abstract 296	1720 Abstract 311	1740 Abstract 249	1800 Abstract 414		
On the kinematics of C-C bonds in tensioned and twisted carbon nanotubes	Free vibration analysis of embedded multilayer graphene sheets by using DQM	Local orientation analysis of abalone nacre by micro-beam Laue diffraction	Effect of non-uniform distribution of the carbon nanotubes on behavior of polyaniline smart polymer using in micro-actuators		
N. Silvestre, B. Faria, J.N.C. Lopes	A. Alibeigloo, M. Shaban	T. Sui, F. Hofmann, L. Tao, K. Zeng, S. Eve, A.M. Korsunsky	M.A. Malakoutian, M. Omid, R. Arasteh, M. Choolaei		

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**Tuesday Afternoon / June 19**

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**Session 13.4****Modeling, simulation and testing of  
sandwich and adaptive structures****8-I ROOM**Chaired by: Cristovao Mota Soares (Technical University of Lisbon),  
Filipa Moleiro (Technical University of Lisbon), Aurélio Araujo (Technical University of Lisbon)

1700 Abstract 312	1720 Abstract 335	1740 Abstract 349	1800 Abstract 545	1820 Abstract 544	1840 Abstract 207
Hygrothermal effects on the strengths of carbon/BMI-Nomex sandwich joints	Finite element model for dynamic analysis of laminated soft core sandwich structures	Numerical simulation of the lamb wave propagation in honeycomb sandwich panels: A parametric study	Low observable radome composed of glass/epoxy, foam core and FSS	Inverse characterization of jute fiber composites	Optimal design of automotive hybrid steel/composite lower arm
Y.B. Park, S.U. Yun, G.C. Lee, J.H. Kweon, J.H. Choi	A.L. Araújo, C.M. Mota Soares, C.A. Mota Soares	S.M.H. Hosseini, U. Gabbert	I.S. Seo	S.C.R. Furtado, A.L. Araújo, A. Silva, C. Alves	D.H. Kim, D.H. Choi, H.S. Kim

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**Tuesday Afternoon / June 19**

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**Session 16.6****Advanced Structural Models for  
Thin-Walled Structures and Slender Bodies****9-I ROOM**Chaired by: Marco Petrolo (Polito), Nuno Silvestre (Technical University of Lisbon),  
Alberto Varello (Polito), Enrico Zappino (Polito)

1700 Abstract 309	1720 Abstract 300	1740 Abstract 306	1800 Abstract 535	1820 Abstract 301	
Generalized beam theory to analyze composite tubes	Stability of composite plates with piezoelectric actuators	Closed-form Local buckling analysis of thick-walled wide-flange open-profile composite beams accounting for transverse shear deformations	Hierarchical modeling of piezoelectric three-dimensional beams via hierarchical modeling	Performance of SPR/bonded hybrid single lap joints CFRP/aluminum	
N. Silvestre	P. Wluka, T. Kubiak	T. Kühn, H. Pasternak, C. Mittelstedt	Y. Koutsawa, G. Giunta, S. Belouettar	G. Di Franco, B. Zuccarello	

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**Tuesday Afternoon / June 19**

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**Session 25.6****Applications and Experimental Mechanics****10-I ROOM**Chaired by: Nicolae Crainic ("Politehnica" University of Timisoara)

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1700 Abstract 195	1720 Abstract 537	1740 Abstract 546	1800 Abstract 205	1820 Abstract 536	
Development of carbon fabric/metal hybrid bipolar plate for PEMFC	Toughening strategies for infusion grade vinyl ester resins	Improvement of the fracture toughness of adhesively bonded stainless steel joints with aramid fibers at cryogenic temperatures	Modeling of fatigue of unidirectional composites using multiple-fibre unit cells	Bonding and optical characters of ternary structures: ZnSe(Te), ZnS(Te), ZnS(Se) and CdSe(Te), CdS(Te), CdS(Se) clusters	
K.H. Kim, J.W. Lim, M.K. Kim, D.G. Lee	G. Perfetti, B. Widjanarko	J.G. Kim, Y.J. Hwang, S.H. Yoon, D.G. Lee	C. Qian, T. Westphal, C. Kassapoglou, R.P.L. Nijssen	S. Xu, C. Wang, W. Lei, Y. Cui	

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**Tuesday Evening / June 19**

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1900	<b>BUS DEPARTURE FROM POLITO TO VILLA SASSI</b>
1945	<b>WELCOME DRINKS AT VILLA SASSI</b>
2030	<b>DINNER AT VILLA SASSI</b>
2300	<b>BUS DEPARTURE TO CITY CENTER</b>

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Wednesday, June 20, 2012

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**Wednesday Morning / June 20**

0800 - 0830

**Registration**

**I-ROOMS**

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**Wednesday Morning / June 20**

0855 - 1005

**Plenary Talks**

**Aula Magna**

Chaired by: Wilfried Becker, Technische Universität Darmstadt, Germany

0830 - 0905

Geremia Puccini

Alenia Aeronautica, Italy

*Fuselage One piece Barrel. History of a product technology revolution*

0905 - 0940

K.M. Liew

City University of Hong Kong, China

*Mechanics of nanostructures and nanocomposites*

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**Wednesday Morning / June 20**

0940 - 1020

**Coffee-Break**

**I Rooms**

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**Wednesday Morning / June 20**

1020 - 1300

**Parallel Sessions**

**I Rooms**

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**Wednesday Morning / June 20**

**Session 20.1**

**Thermo-Mechanical Analysis of  
Composite and Advanced Structures**

**1-I ROOM**

Chaired by: Salvatore Brischetto (Polito), Gaetano Giunta (CRP Henri Tudor)

1020 Abstract 140	1040 Abstract 307	1100 Abstract 319	1120 Abstract 466	1140 Abstract 367	1200 Abstract 533	1220 Abstract 547
Deformation analysis of layered magneto-electro-elastic plates	Estimates of effective properties for heterogeneous materials with co-continuous phases	Assessment of smeared plate theories in thermal stress analysis of laminated composites	Artificial neural networks in numerical homogenization and local stress-strain recovery	The influence of hygrothermal effects on the cross and cracked composite structures in transient mode	Thermo-Mechanical analysis of functionally graded beams via hierarchical modeling	Improvement of the adhesive peel strength of the secondary barrier with level difference for LNG containment system
A. Milazzo	P. Franciosi, R. Brenner, A. El Omri	S.M. Shiyekar, T. Kant	D.P. Boso, M. Lefik, B.A. Schrefler	A. Benkhedda, M.K. Kesba, E.A.A. Bedia	D. Crisafulli, G. Giunta, S. Belouettar, E. Carrera	S.H. Yoon, K.H. Kim, D.G. Lee

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**Wednesday Morning / June 20**

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**Session 3.5 Mechanical Behavior of Functionally Graded Materials 2-I ROOM**Chaired by: Carla M. C. Roque (Universidade do Porto),  
Paulo R. N3voa (Universidade do Porto), Pedro A. L. S. Martins (Universidade do Porto)

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1020 Abstract 471	1040 Abstract 391	1100 Abstract 445					
Stress and displacement recovery for functionally graded conical, cylindrical shells and annular plates	Production of functionally graded surface composites by friction surfacing	Static and stability analysis of third order shear deformation functionally graded micro beams based on modified couple stress theory					
L. Rossetti, N. Fantuzzi, E. Viola	J. Gandra, R.M. Miranda, P. Vilaça, A. Velhinho	B. Daneshian, M. Salamat-talab, A. Nateghi, J. Rezapoure					

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**Wednesday Morning / June 20**

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**Session 19.1 Dynamics and Aeroelasticity 3-I ROOM**

Chaired by: Ranjan Banerjee (City University London), Marco Boscolo (City University London)

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1020 Abstract 516	1040 Abstract 518	1100 Abstract 39	1120 Abstract 295	1140 Abstract 327	1200 Abstract 389	1220 Abstract 106	1240 Abstract 168
Dynamic finite element (DFE) modeling of multilayered delaminated beams	Panel flutter analysis of composite panel with non classical configuration	Flutter analysis of composite wings by 1D CUF models	Natural frequency prediction for laminated rectangular plates with extension-bending or extension-twisting and shearing-bending coupling	Static shape control using piezoelectric actuator	Spatio-temporal stability of an aeroelastic waveguide	Stability and controllability analysis of an aircraft with variable sweep wing	Optimization of a composite wing with a morphing leading edge subject to aeroelastic effect
N.H. Erdelyi, S.M. Hashemi	E. Zappino, E. Carrera, M. Cinefra	M. Petrolo, E. Carrera	D. Li, C.B. York	K. Bhagate, J. Ye, A.K. Singh	A. Bhaskar	L. Xu, S. Guo, S. Yang, B. Mo	Q. Fu, S. Guo, D. Li

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**Wednesday Morning / June 20**

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**Session 5.7 Analysis of composite beams, plates and shells 4-I ROOM**

Chaired by: Francesco Tornabene (Università di Bologna), Mohamad Qatu (Central Michigan University)

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1020 Abstract 423	1040 Abstract 380	1100 Abstract 377	1120 Abstract 378	1140 Abstract 385	1200 Abstract 386	1220 Abstract 394	1240 Abstract 485
The crack analysis of one-layer piezoelectric beam	Mechanical response of a composite stiffener runout specimen including damage processes at the skin-stringer interfaces	Closed-Form nonlinear sectional analysis of pretwisted anisotropic beam with multiple delaminations	Axial compressive strength testing of single carbon fibres	Analysis and design of the composite flexible-membrane stiffened space solar arrays	Formulation and validation of variable-kinematic 2-D Ritz-based models for vibration analysis of FGM sandwich plates	Finite element prediction of flexural and torsional frequencies of laminated composite beams	Fixed wing morphing MAV modeling using VAM
A. Daneshmehr, S. Akbari	J. Reinoso, A. Blázquez, A. Estefani, F. París, J. Cañas, E. Arévalo, F. Cruz	P.S. Prasad, D. Harursamath	I.P. Kumar, P.M. Mohite, S. Kamle	E.V. Morozov, A.V. Lopatin	L. Dozio	M.F. Aly, I. Goda, G.A. Hassan	K. Kumar, D. Harursamath

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**Wednesday Morning / June 20**

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**Session 23.1****Modeling of Composite Structures****5-I ROOM**

Chaired by: Yoshihiro Narita (Hokkaido University)

1020 Abstract 513	1040 Abstract 336	1100 Abstract 353					
Heat transfer and vibration modeling of oil industry turbine blade using numerical solutions	On the modeling of ductile composite under low-velocity impact	An investigation on 1-3 multi-element piezoelectric composites					
A.B. Kasaeian, S. Nasiri, M. Ayatollahi, A. Hajinezhad	M.M. Moure, C. Santiuste, E. Barbero	S. Huang					

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**Wednesday Morning / June 20**

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**Session 14.4****Problems of Impact on Composite Structures****6-I ROOM**

Chaired by: Michele Guida (Università di Napoli), Francesco Marulo (Università di Napoli)

1020 Abstract 510	1040 Abstract 428	1100 Abstract 433	1120 Abstract 474	1140 Abstract 475	1200 Abstract 478		
Repeated impact on glass fiber/epoxy laminates damaged	Numerical modeling of woven CFRP partially fluid filled tubes subjected to high velocity impact	A numerical procedure for the residual compressive strength prediction of impacted CFRP laminates	An experimental investigation into localized low-velocity impact loading on glass fibre-reinforced polyamide automotive product	Compression strength and low-velocity impact performance of nanocored sandwich composites	Impact load analysis by frequency domain methods		
A.M. Amaro, P.N.B. Reis, M.A. Neto, M.F.S.F. de Moura	J.A. Artero-Guerrero, J.Pernas-Sánchez, D. Varas, R. Zaera, J. López-Puente	R. Borrelli, U. Mercurio, F. Romano, G. Giorleo, U. Prisco, A. Squillace	Z. Mouti, K. Westwood, D. Long, J. Njuguna	S. Sachse, F. Silva, K. Pielichowski, A. Leszczynska, J. Njuguna	M.A. Qafari, M. Parvizi		

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**Wednesday Morning / June 20**

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**Session 24.1****Applications and Experimental Mechanics - II****7-I ROOM**

Chaired by: J. Ye (Lancaster University)

1020 Abstract 234	1040 Abstract 237	1100 Abstract 442	1120 Abstract 123	1140 Abstract 463	1200 Abstract 464	1220 Abstract 465	1240 Abstract 448
Analysis of manufacturing induced shape distortions and stress on the application of a large composite structure	A full factorial design analysis of polymeric composites reinforced with eucalyptus wood chip	New applications of biomorphic composites	Effect of process parameters during forming of self reinforced - PP based fiber metal laminate	Characterization tests of cylindrical columns reinforced with active carbon fiber jackets. Calibration with finite element methods	Determination of local fiber undulation caused by void inclusions in carbon fiber reinforced polymers using computational fluid dynamics	Natural fiber composites for structural applications	Interfacial characteristics of exfoliated graphite nanoplatelets-polyamide12-polymer nanocomposites
C. Brauner, A.S. Herrmann	A.L. Christoforo, A.S. Silva, T. Panzera, A.C. Detomi, F.B. Batista, P.H.R. Borges	A.E. Ershov, N.V. Klassen, V.N. Kurlov	S. Kalyanasundaram, S. DharMalin-gam, S. Venkatesan, A. Sexton	P. Gutierrez, P. Carballosa, L. Echevarría	S. Czichon, E. Jansen, R. Rolfes	S. Parveen, S. Rana, R. Fanguero	M. Karevan, K. Kalaitzidou

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**Wednesday Morning / June 20**


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**Session 1.2 Ceramic composites for harsh working conditions 8-I ROOM**

 Chaired by: Laura Montanaro (Polito), Claudio Badini (Polito),  
 Paolo Fino (Polito), Mariangela Lombardi (Polito), Sara Biamino (Polito)

1020 Abstract 54	1040 Abstract 85	1100 Abstract 100	1120 Abstract 124	1140 Abstract 348	1200 Abstract 18	1220 Abstract 519	
SI-SiC-ZrB <sub>2</sub> ceramics by silicon reactive infiltration	Sandwich structured silicon carbide ceramics	Preparation, microstructure and properties of short carbon fibre/silicon carbide multilayer composites by tape casting and pressureless sintering	Effect of oxidation of metal matrix composites with nanodiamond reinforcements	Study of the reduction effect of the channel length in SOI nMOSFET transistor simulated by using Silvaco software	Study of the kink effect in PD SOI nMOSFET transistor and simulation by using Silvaco software	Microwave absorption properties of Co,Mn spinel ferrite-acrylated epoxy polymer nanocomposites	
A. Ortona, S. Biamino, C. D'Angelo, G. D'Amico	C. D'Angelo, S. Gianella, D. Gaia, A. Ortona	W. Yang, E. Padovano, L. Fusco, M. Pavese, S. Marchisio, D. Vasquez, C.V. Bolivar, P. Fino	V.A. Popov	F. Z. Rahou, G. Bouazza, M. Rahou	F. Z. Rahou, G. Bouazza, M. Rahou	H. Bayrakdar	

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**Wednesday Morning / June 20**


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**Session 16.7 Advanced Structural Models for Thin-Walled Structures and Slender Bodies 9-I ROOM**

 Chaired by: Marco Petrolo (Polito), Nuno Silvestre (Technical University of Lisbon),  
 Alberto Varello (Polito), Enrico Zappino (Polito)

1020 Abstract 480	1040 Abstract 325	1100 Abstract 397	1120 Abstract 416	1140 Abstract 375	1200 Abstract 405	1220 Abstract 406	1240 Abstract 411
A 3D discret lattice spring model for quasi static and dynamic response in composite media	Refined kinematics for dynamic analysis of thin-walled composite beams	A viscoelastic finite strip formulation for postbuckling analysis of composite laminated plates	Nanoscale vibration analysis of graphene sheets using nonlocal elasticity theory	A new failure criterion for GFRP composite materials subjected to in-phase and out-of-phase biaxial fatigue loading under different stress ratios	A beam element for PC box girders with corrugated steel webs considering the constraint torsion	Preliminary study on shear lag effect of PC box girders with corrugated steel webs	A new modeling to predict the elastic properties of 2.5D composites
K. Douvon, M. Jrad, A. Daouadji, E.M. Daya	A. Varello, E. Carrera	H. Assaee, S. Hamze	J. Majak, M. Pohlak, M. Eerme, J. Kers	M. Elhadary, M.N. Abouelwafa	Q.M. Wu, R.J. Jiang, Y.F. Xiao, Y.Y. Chen	Y.F. Xiao, Y.Y. Chen, Q.M. Wu, R.J. Jiang	Y. Liu, Z. Chen, J. Zhu

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Wednesday Morning / June 20

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Session 25.7

Applications and Experimental Mechanics

10-I ROOM

Chaired by: Nicolae Crainic ("Politehnica" University of Timisoara)

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1020 Abstract 243	1040 Abstract 248	1100 Abstract 251	1120 Abstract 252	1140 Abstract 115	1200 Abstract 334	1220 Abstract 317
Influence of the fibre-matrix interface properties and fibre radius on the interface crack onset and growth under biaxial loads	The effect of ceramic particles into glass fibre reinforced composites	Influence of organically modified montmorillonite on the morphology of nanocomposites based on thermoplastic starch	Modeling and identification of the mechanical behavior of Kevlar/epoxy composites with nanoparticles embedded in matrix at the macro-scale	Composite pressure resisting structure for the corrugated stainless steel membranes of LNG carriers	Study of chemical and thermal properties of rice husk polypropylene composites	Fatigue life evaluation and crack detection of an adhesive joint with a carbon nano tube
L. Távara, V. Mantic, E. Graciani, F. París	T.H. Panzera, A.C. Detomi, R.M. dos Santos, F. de Paiva Cota, C.C. Martuscelli, A.L. Christoforo	D. Schlemmer, R.S. Angélica, M.J.A. Sales	D. Sébastien, P. Viot, F. Léonardi, J.L. Lataillade, C. Frousety	D. Lee, S.H. Yoon, K.H. Kim, I. Choi, D.G. Lee	V. Kumar, S. Sinha, M.S. Saini, B.K. Kanungo	J.H. Park, J.H. Choi, J.H. Kweon

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<b>Wednesday Afternoon / June 20</b>		
<b>1300 - 1430</b>	<b>Lunch</b>	<b>I Rooms</b>

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<b>Wednesday Afternoon / June 20</b>		
<b>1430 - 1630</b>	<b>Parallel Sessions</b>	<b>I Rooms</b>

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<b>Wednesday Afternoon / June 20</b>		
<b>Session 20.2</b>	<b>Thermo-Mechanical Analysis of Composite and Advanced Structures</b>	<b>1-I ROOM</b>

Chaired by: Salvatore Brischetto (Polito), Gaetano Giunta (CRP Henri Tudor)

1430 Abstract 187  A multiscale model for fully coupled nonlinear thermoviscoelastic analyses of particulate composites  K.A. Khan, A.H. Muliana	1450 Abstract 188  A time-dependent micromechanical model of ferroelectric composites  A.H. Muliana	1510 Abstract 128  Effect of random material properties on nonlinear free vibration response of functionally graded materials plate in thermal environment  K.R. Jagtap, A. Lal, B.N. Singh	1530 Abstract 255  Multiscale Thermoelastostatic analysis of laminated plates with integrated piezoelectric fiber composite actuators  S.S. Vel, A.C. Cook	1550 Abstract 548  Thermo-electro-mechanical coupling effects in static and free vibration analysis of composite plates and shells  S. Brischetto, E. Carrera	
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<b>Wednesday Afternoon / June 20</b>		
<b>Session 17.1</b>	<b>Deformable Sandwich Materials</b>	<b>2-I ROOM</b>

Chaired by: Heinz Palkowski (Clausthal University of Technology)  
Adele Carradó (Institute de Physique et Chimie des Matériaux de Strasbourg)

1430 Abstract 62  Effects of surface roughness and wettability on the adhesion in metal/polymer/metal hybrid sandwich composites  H. Palkowski, A. Carradó, O. Sokolova	1450 Abstract 127  Influence of core and skin materials and their thickness on the formability of metal/polymer/metal sandwich composites  H. Palkowski, M. Kühn	1510 Abstract 203  Polymer/metal hybrids  M.F. Vallat, V. Roucoules	1530 Abstract 225  Simulation and testing of hybrid structures consisting of press-hardened steel and CFRP  C. Reuter, M. Frantz, C. Lauter, H. Block, T. Tröster	1550 Abstract 236  Simulation and manufacturing of deep drawn parts reinforced by carbon fibre prepregs  B. Gorny, F. Hankeln, C. Lauter, H.C. Schmidt, U. Damerow, R. Mahnken, H.J. Maier, T. Troester, W. Homberg	
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**Wednesday Afternoon / June 20**

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**Session 19.2****Dynamics and Aeroelasticity****3-I ROOM**

Chaired by: Ranjan Banerjee (City University London), Marco Boscolo (City University London)

1430 Abstract 392	1450 Abstract 393	1510 Abstract 508			
Flutter and divergence behavior of composite wings at subsonic speeds	Dynamic stiffness formulation for exact buckling analysis of composite plates and stringer panels using a higher order shear deformation theory	Layer wise dynamic stiffness method for exact free vibration analysis of sandwich plates			
F.A. Fazzolari, M. Boscolo, J.R. Banerjee	F.A. Fazzolari, M. Boscolo, J.R. Banerjee	M. Boscolo, J.R. Banerjee			

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**Wednesday Afternoon / June 20**

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**Session 5.8****Analysis of composite beams, plates and shells****4-I ROOM**

Chaired by: Francesco Tornabene (Università di Bologna), Mohamad Qatu (Central Michigan University)

1430 Abstract 395	1450 Abstract 402	1510 Abstract 408	1530 Abstract 440	1550 Abstract 473	1610 Abstract 484
Parametric study on the free vibration response of laminated composite beams	Mode localization in cross-ply composite laminates	An accurate higher-order shear deformation theory for deep composite thick shells	Experimental and computational evaluation of strength of a GRP railway freight bogie model considering microstructure aspects	Modellation of composite plates and beams structures in view of experimentally damage identification	Theory and analyses of generally laminated thick curved beam theory
I. Goda, J.F. Ganghoffer, M.F. Aly	D. Sharma, S.S. Gupta, R.C. Batra	E. Asadi, M.S. Qatu	I. Cerny, R.M. Mayer, G. Jeronimidis, Jinping Hou	A. Marzani, M. Miniaci, E. Viola	M.S. Qatu, M. Hajianmaleki

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**Wednesday Afternoon / June 20**

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**Session 23.2****Modeling of Composite Structures****5-I ROOM**

Chaired by: Jaime Rodrigues (Universidade do Porto)

1430 Abstract 369	1450 Abstract 387	1510 Abstract 424	1530 Abstract 354		
Bending vibrations of rotating nanocantilevers using the Eringen nonlocal elasticity theory	A wide-band absorber with a decreased thickness	A size-dependent refined plate model based on a modified couple stress theory	Design and implementation of a parallel wavelet transform algorithm under unity model and systolic arrays		
J. Aranda-Ruiz, J.A. Loya, J. Fernández-Sáez	M. Olszewska, W. Gwarek	H.T. Thai, D.H. Choi	Y. Aicha, A. Chellil, A. Nour		

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**Wednesday Afternoon / June 20**

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**Session 10.1****Composite structures in civil engineering****6-I ROOM**

Chaired by: Roberto Capozucca (Università Politecnica delle Marche)

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1430 Abstract 390	1450 Abstract 469	1510 Abstract 5	1530 Abstract 8	1550 Abstract 67	1610 Abstract 11
Finite element modeling of timber-to-timber and timber-to-concrete connections made with Dowel-type fasteners	Durability of GFRP/EPOXY resin composites for applications in civil engineering	Model's proposal on composite (GFRP) - concrete interaction	FRP-Steel relation in reinforced concrete members to make an equal confinement	Theoretical model of confined concrete column	Behavior of high strength concrete flat plates reinforced with GFRP bars
E.L. Meghlat, M. Oudjene, H. Ait-Aider, B. Arab	H. Biscaia, G. Pereira, M.G. Silva, M.T. Cidade	G. Boscato, S. Russo	A. Arabzadeh, A. AmaniDashlekeh, M. Ghiasian	E.K. Ata, S. Soliman	E. El Tom, H. Marzouk, N. Dawood

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**Wednesday Afternoon / June 20**

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**Session 24.2****Applications and Experimental Mechanics - II****7-I ROOM**

Chaired by: G. Salmoria (University of Santa Catarina)

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1430 Abstract 467	1450 Abstract 486	1510 Abstract 487	1530 Abstract 488	1550 Abstract 491	1610 Abstract 493
Relations between quantification of CNT dispersion and micromechanical prediction of mechanical properties of CNT/polymer composites	Ply thickness influence on free-edge delamination in laminated composites	Electrical, mechanical and wear behavior of laminated epoxy/carbon fiber composite with different conducting particles	Viscoelastic properties of PA12/MWCNT nanocomposites manufactured by selective laser sintering	Electro optical and structural characterization of CVD-graphene	Improve the thermal performance using microencapsulated PCM for building energy saving
A. Matveeva, F.W.J. van Hattum	G. Guillet, A. Turon, P. Camanho	G.V. Salmoria, L.F.Vieira, R.A. Paggi, G.A. Testoni, G.M.O. Barra	G.V. Salmoria, R.A. Paggi, C.R.M. Roesler, V.E. Beal	A. Mora-Lazarini, M. Ortega-Lopez, Y. Matsumoto, V. Sanchez-Resendiz, J. Santoyo-Salazar	S.G. Jeong, J.H. Lee, S. Kim

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**Wednesday Afternoon / June 20**

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**Session 1.3****Ceramic composites for harsh working conditions****8-I ROOM**

Chaired by: Laura Montanaro (Polito), Claudio Badini (Polito), Paolo Fino (Polito), Mariangela Lombardi (Polito), Sara Biamino (Polito)

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1430 Abstract 130	1510 Abstract 220	1530 Abstract 200	1550 Abstract 202	1610 Abstract 142	1630 Abstract 161
Pressureless sintering of ZrB <sub>2</sub> with different amounts of silicon carbide	SMARTEES, an European collaborative research for advanced ceramic structures in atmospheric thermal protection from space: project overview	Development of electrochemical coatings from MMC with nanodiamond reinforcements	Fatigue response of TI/APC-2 nanocomposite laminates after low-velocity impact	Siliciumcarbide-based ceramic matrix composites for terrestrial and aerospace applications	Tenatomic structural elements of the graphene
E. Padovano, W. Yang, A. Antonini, S. Biamino, M. Pavese	J. Barcena, M. Lagos, I. Agote, C. Jimenez, C. Badini, E. Padovano, S. Gianella, D. Gaia, K. Mergia, S. Messoloras, C. Wilhelmi, A. Ortona, C. D'Angelo, G. Scocchi, V. Liedtke	V.A. Popov	M.H.R. Jen, C.K. Chang, J.G. Chen, B.C. Lin	F. Motschmann, F. Infed	Y.E. Nagorny, V.I. Repchenkov

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**Wednesday Afternoon / June 20**

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**Session 16.8****Advanced Structural Models for  
Thin-Walled Structures and Slender Bodies****9-I ROOM**Chaired by: Marco Petrolo (Polito), Nuno Silvestre (Technical University of Lisbon),  
Alberto Varello (Polito), Enrico Zappino (Polito)

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1430 Abstract 437	1450 Abstract 476	1510 Abstract 477	1530 Abstract 479		
A discrete nonlocal model for vibrations of SWCNT	Modeling of a multifunctional structure plus all solid-state thin-film battery system	Reduced order finite element models for nonlinear vibrations of piezoelectric layered beams with applications to MEMS	Non-linear dynamic response of active hybrid composite beam embedded with SMA wires		
B. Ş. Altan, E. Kapusuz	H. Sreedhara, D. Harursampath	J.F. Deu, O. Thomas, S. Nezamabadi, A. Lazarus	M.B. Dehkordi, S.M.R. Khalili, E. Carrera		

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**Wednesday Afternoon / June 20**

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**Session 25.8****Applications and Experimental Mechanics****10-I ROOM**

Chaired by: Nicolae Crainic ("Politehnica" University of Timisoara)

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1430 Abstract 290	1450 Abstract 527	1510 Abstract 271	1530 Abstract 281	1550 Abstract 282	
Elastic behavior of a polystyrene open-cell foam	Meso-scale modeling of shock wave propagations in a Sic/Al nanocomposite reinforced with WS <sub>2</sub> -inorganic fullerenes nanoparticles	Effect of woven architecture on shear fracture of 3D woven composites	Determin of mechanical properties for sand surface	Determination of virtual cohesion in semi-saturated sand, by centrifuge modeling	
L. Maheo, P. Viot, D. Bernard, A. Chirazi, G. Ceglia, O. Mondain-Monval, V. Schmitt	E. I. Volkova, I. A. Jones, R. Brooks, Y. Zhu, E. Bichoutskaia	M. Pankow, A. Salvi, B. Justusson, A. Waas, C.F. Yen	M. Parvizi, M.A. Qafari	M. Parvizi, H. Salehzadeh, H. Zehtab	

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**Wednesday Afternoon / June 20**

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**1630 - 1700****Coffee-Break****I Rooms**

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<b>Wednesday Afternoon / June 20</b>		
<b>1700 - 1840</b>	<b>Parallel Sessions</b>	<b>I Rooms</b>

<b>Wednesday Afternoon / June 20</b>		
<b>Session 20.3</b>	<b>Thermo-Mechanical Analysis of Composite and Advanced Structures</b>	<b>1-I ROOM</b>
Chaired by: Salvatore Brischetto (Polito), Gaetano Giunta (CRP Henri Tudor)		

1700 Abstract 230	1720 Abstract 279				
Thermomechanical nonlinear analysis of functionally graded cylindrical shell panel with random system parameter	Thermomechanical properties of polylactic acid/wood flour composites				
N.L. Shegokar, A. Lal	P. Georgiopoulos, E. Kontou, N. Antonakopoulos				

<b>Wednesday Afternoon / June 20</b>		
<b>Session 17.2</b>	<b>Deformable Sandwich Materials</b>	<b>2-I ROOM</b>
Chaired by: Heinz Palkowski (Clausthal University of Technology) Adele Carradó (Institute de Physique et Chimie des Matériaux de Strasbourg)		

1700 Abstract 499	1720 Abstract 359				
Effects of locale property changing of hardable sheetmetals to transmission of sound	Testing methods to describe the forming-behavior of sandwich sheets				
A. Lohrengel, R. Schmelter	B. Engel, J. Buhl				

<b>Wednesday Afternoon / June 19</b>		
<b>Session 22.2</b>	<b>Shell finite elements</b>	<b>3-I ROOM</b>
Chaired by: Maria Cinefra (Polito), Claudia Chinosi (Università di Pavia), Lucia Della Croce (Università di Pavia)		

1700 Abstract 345	1720 Abstract 346	1740 Abstract 365			
Asymptotic behavior of shells, part I: theoretical results	Asymptotic behavior of shells, part II: numerical results	High-strength flexible laminate response to dynamic tension			
C. Lovadina, L.B. da Veiga	C. Lovadina, L.B. da Veiga	A. Goodarzi, H.C. Taylor			

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**Wednesday Afternoon / June 20**

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**Session 5.9****Analysis of composite beams, plates and shells****4-I ROOM**Chaired by: Francesco Tornabene (Università di Bologna), Mohamad Qatu (Central Michigan University)

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1700  
Abstract 496Nonlocal continuum  
damage modeling of  
composite laminated  
platesB.P. Patel,  
A.K. Gupta,  
Y. Nath1720  
Abstract 272Studies on FRP  
pultruded structural  
sections for  
transmission line  
towersM. Selvaraj,  
S. Kulkarni,  
R.R. Babu

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**Wednesday Afternoon / June 20**

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**Session 23.3****Modeling of Composite Structures****5-I ROOM**Chaired by: Jaime Rodrigues (Universidade do Porto)

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1700  
Abstract 507A new mixed scheme  
of finite elements  
method for  
investigation of  
layered composites  
with damagesM. Marchuk,  
M. Khomyak,  
T. Goriachko1720  
Abstract 283Evaluation of effective  
mechanical properties  
of graphene-based  
nanocomposites using  
a multi-scale finite  
element approachS.K. Geogantzinos,  
G.I. Giannopoulos,  
N.K. Anifanti

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**Wednesday Afternoon / June 20**

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**Session 10.2****Composite structures in civil engineering****6-I ROOM**Chaired by: Roberto Capozucca (Università Politecnica delle Marche)

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1700  
Abstract 99An analytical and  
numerical study on  
flexural behavior of  
AFRP reinforced  
concrete beamsA. Buyukkaragoz,  
I. Kalkan1720  
Abstract 150Experimental analysis  
of bond-slip effects in  
RC beams  
strengthened with  
NSM CFRP rods

R. Capozucca

1740  
Abstract 151Structural behavior of  
recycled aggregate  
concrete beams  
flexural strengthened  
with CFRP sheets  
under monotonic and  
fatigue loadingJ.F. Dong,  
Q.Y. Wang,  
Z.W. Guan1800  
Abstract 310Anchorage device for  
RC continuous beam  
strengthened with  
CFRP laminate

H. Akbarzadeh Bengar

1820  
Abstract 81Mechanical behavior  
of composite concrete  
- GFRP members: test  
results and modelingG. Boscato,  
S. Russo

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**Wednesday Afternoon / June 20**

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**Session 24.3 Applications and Experimental Mechanics - II 7-I ROOM**Chaired by: TBA

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This session does not take place

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**Wednesday Afternoon / June 20**

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**Session 24.4****Applications and Experimental Mechanics - II****9-I ROOM**

Chaired by: D. Varas (Univ. Carlos III Madrid)

1700 Abstract 429	1720 Abstract 355	1740 Abstract 358	1800 Abstract 422	1820 Abstract 497	1840 Abstract 116
CFRP plates subjected to sphere ice impacts	Superficial modification by plasma of Kevlar fibers	Enhancement in dielectric properties of SWCNT doped ferroelectric liquid crystals	On the application of piezolaminated composites to diaphragm micropumps	Effects of gamma irradiated fibres reinforcement on mechanical behavior of polyester polymer mortars	Cryogenic reliability of the sandwich insulation board for LNG ship
J. Pernas-Sánchez, J.A. Artero-Guerrero, D. Varas, J. López-Puente	M.P.M. da Costa, S.V.O. da Silva, M.G. Gaiotte, R.A. Simão, F.L. Bastian	R. Manohar, S.K. Gupta	R. Ardito, E. Bertarelli, A. Corigliano, G. Gafforelli	S. Sousa, E. Cruz, M. Lopez, G. Martinez, A.J.M. Ferreira, M.C.S. Ribeiro	Y.H. Yu, D.G. Lee

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**Wednesday Afternoon / June 20**

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**Session 25.9****Applications and Experimental Mechanics****10-I ROOM**

Chaired by: Nicolae Crainic ("Politehnica" University of Timisoara)

1700 Abstract 316	1720 Abstract 318	1740 Abstract 528	1800 Abstract 267		
Fatigue behavior of stainless pin-reinforced composite cocured joints	Mechanical properties of novel active chitosan-nanocaly bionanocomposite	A Bottom-up method for prediction of the transverse thermal conductivity of carbon pitch fibers	Elaboration of three dimensional micro-vascular networks based polymer/carbon nanotube nanocomposite by means of UV-assisted direct write technology for self healing applications in space environment		
B.H. Lee, Y.B. Park, J.H. Kweon, J.H. Choi	M. Abdoillahi, M. Rezaei, G. Farzi	H.S. Huang, S. Sihn, V. Varshney, D.P. Anderson, A.K. Roy	B. Aïssa, D. Therriault, E. Haddad, W. Jamroz		

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