

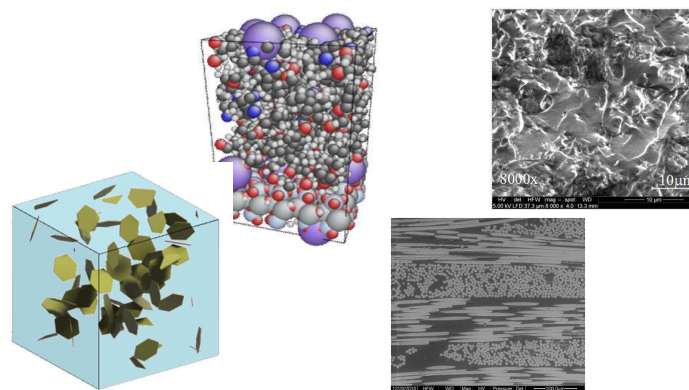


ICNN 4

4th International Conference on Nanomechanics and Nanocomposites



PROGRAM BOOK



SEPTEMBER 14-17, 2016 VICENZA, ITALY



The Business of Science®

PROGRAM AT A GLANCE

WEDNESDAY, SEPTEMBER 14TH

	Room "AULA MAGNA"	Room "N2"
8:30-9:30	REGISTRATION	
9:30-10:00	OPENING CERIMONY (AULA MAGNA)	
10:00-10:50	PLENARY LECTURE 1 (AULA MAGNA) Novel Graphene based Nanostructures and Polymer Nanocomposites and hierarchical Fibre Reinforced Composites K. Schulte <i>Technische Universität Hamburg-Harburg</i>	
10:50-11:20	COFFE BREAK	
11:20- 13:00	MD AND MULTISCALE MODELLING	BIOBASED NANOCOMPOSITES
13:00-14:30	LUNCH	
14:30-15:00	KEYNOTE LECTURE (Aula Magna) On the enhanced properties of graphene based nanoreinforced polymers and CFRP's V. Kostopoulos ¹ , C. Kostagiannakopoulou ¹ , S. Tsantzalis ¹ , G. Sotiriadis ¹ <i>¹University of Patras</i>	
15:00-15:30	KEYNOTE LECTURE (Aula Magna) Microstructural design and additive manufacturing of multi-directional preforms and their composites T.W. Chou ¹ , Z. Quan ¹ <i>¹University of Delaware</i>	
15:30-16:00	KEYNOTE LECTURE (Aula Magna) Mode I and II of laminated composites interleaved with nanocomposite films G. Marom ¹ , T. Miller ¹ <i>¹The Hebrew University of Jerusalem</i>	
16:00-16:30	COFFE BREAK	
16:30-18:10	STRAIN SENSING	NANOMECHANICS
19:30-23:00	WELCOME RECEPTION	

THURSDAY, SEPTEMBER 15TH

	Room "AULA MAGNA"	Room "N2"
9:00-11:00	GRAPHENE BASED NANOCOMPOSITES	NANOCOMPOSITES WITH ENHANCED PHYSICAL AND MECHANICAL PROPERTIES
11:00-11:30	COFFE BREAK	
11:30-12:20	PLENARY LECTURE 2 (AULA MAGNA) Materials by design: multiscale molecular modeling of nanostructured materials M. Fermeglia <i>University of Trieste</i>	
12:20-12:50	KEYNOTE LECTURE (Aula Magna) Three-dimensional conducting networks and their nanocomposites Z.-Z. Yu ¹ , H.-B. Zhang ¹ , Y. Chen ¹ , M. Wang ¹ <i>¹Beijing University of Chemical Technology</i>	
12:50-14:10	LUNCH	
14:10-15:00	PLENARY LECTURE 3 (AULA MAGNA) Microscale mechanical characterization of fiber, matrix and interfaces in fiber-reinforced composites J. LLORCA <i>Technical University of Madrid</i>	
15:00-15:30	KEYNOTE LECTURE (Aula Magna) Mechanical properties of graphene nanoplatelet/carbon fiber/epoxy hybrid composites: multiscale modeling and experiments C.M. Hadden ¹ , D.R. Klimek-McDonald ¹ , J.A. King ¹ , A.M. Reichandadter ¹ , I. Miskioglu ¹ , S., Gowtham ¹ , E.J. Pineda ² , G.M. Odegard ¹ <i>¹Michigan Technological University, ²NASA Glenn Research Center</i>	
15:30-16:00	KEYNOTE LECTURE (Aula Magna) Nanostructured cnt based sensing films used in multi-functional hybrid composites R. Schledjewski ¹ , S. Lloret Pertegás ¹ , J. Matyas ² , R. Olejnik ² , P. Slobodian ² <i>¹Montanuniversität Leoben, ²Tomas Bata University</i>	
16:00-16:30	COFFE BREAK	
16:30-17:50	GRAPHENE BASED NANOCOMPOSITES	HYBRID NANOCOMPOSITES
20:00-24:00	GALA DINNER	

FRIDAY, SEPTEMBER 16TH

	Room "AULA MAGNA"	Room "N2"
10:30-11:00	KEYNOTE LECTURE (Aula Magna) Degradation of mechanical properties in nylon matrix hybrid nanocomposites at high temperatures S. Zhu ¹ , S. Matsuda ¹ , Y. Nakahara ² , A. Usuki ³ , M. Kato ³ <i>¹Fukuoka Institute of Technology</i> <i>²Junshin Gakuen University</i> <i>³Toyota Central R&D Labs Inc.</i>	
11:00-12:40	MULTIFUNCTIONAL NANOCOMPOSITES	NANOMECHANICS AND NANOSCALE MODELLING
12:40-14:00	LUNCH	
14:00- 15:40	STRAIN AND DAMAGE SENSING	NANOMECHANICS AND NANOSCALE MODELLING
15:40-16:00	COFFE BREAK	
16:00-16:15	CLOSING CERIMONY	

SATURDAY, SEPTEMBER 17TH

10:00-17:00	Free visit at the Museums in the downtown*
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*The tickets must be booked at least one week in advance

The conference proceedings can be downloaded directly from the conference website:

www.gest.unipd.it/ICNN4/TechnicalProgram.html

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WEDNESDAY, SEPTEMBER 14TH

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10:50-11:20	COFFE BREAK	
	MD AND MULTISCALE MODELLING <i>Chairman: G. Odegard (Michigan Technological University)</i>	BIOBASED NANOCOMPOSITES <i>Chairman: B. Fiedler (TUHH)</i>
11:20-11:40	Molecular simulations of the impact heterogeneities on rubber filler interfaces G. Raos ¹ , R. Pastore ² ¹ <i>Politecnico di Milano</i> ² <i>University of Napoli Federico II</i>	Polyvinyl alcohol - cellulose nanocomposite for 3D printing A. Cataldi ¹ , V.D.H. Nguyen ¹ , D. Rigotti ¹ , A. Pegoretti ¹ ¹ <i>University of Trento</i>
11:40-12:00	Multiscale homogenization analysis of polymeric nanocomposites including the clusters of nanoparticles M. Cho ¹ , H. Shin ¹ , K. Baek ¹ , J.-G. Han ¹ ¹ <i>Seoul National University</i>	Biobased composite fibers consisting of chitosan and chitin nanofibrils E. Ivankova ^{1,2} , I. Dobrovolskaya ¹ , E. Dresvyanina ² , P. Popryadukhin ² , I. Kasatkin ³ , V. Elokhovskiy ² , V. Yudin ¹ , P. Morganti ⁴ ¹ <i>Saint-Petersburg Polytechnic University</i> ² <i>Institute of Macromolecular Compounds RAS, St. Petersburg</i> ³ <i>Saint-Petersburg State University</i> ⁴ <i>II University of Naples</i>

Wednesday, September 14th

	Room "AULA MAGNA"	Room "N2"
12:00-12:20	Multiscale homogenization analysis of polymeric nanocomposites on the elastic plastic behaviour H. Shin ¹ , J. Choi ¹ , S. Yang ² , J. Ryu ³ , and M. Cho ¹ ¹ <i>Seoul National University</i> ² <i>Chung-Ang University</i> ³ <i>Korea Atomic Energy Research Institute</i>	Single step functionalisation of celluloses with differing degrees of reactivity as a route for in-situ production of all-cellulose nanocomposites K.-Y. Lee ¹ , A. Bismarck ^{2,1} ¹ <i>Imperial College London</i> ² <i>University of Vienna</i>
12:20-12:40	Molecular dynamics simulation of novel elastomer nanocomposites: structure design and property prediction J. Liu ¹ , L. Zhang ¹ , J. Shen ¹ , Y. Gao ¹ , Z. Zheng ¹ ¹ <i>Beijing University of Chemical Technology</i>	Effect of fiber length and mixing process on the mechanical properties of cellulose nano-fiber/natural rubber composites T. Morita ¹ , S. Omori ¹ , K. Mtsumoto ¹ , A. Nagatani ² , T. Tanaka ¹ ¹ <i>Doshisha University</i> ² <i>Hyogo Prefectural Institute of Technology</i>
12:40-13:00	Molecular dynamics simulation of carbon nanotube reinforced matrix S. ThamaraiKannan ¹ , S. C. Pradhan ¹ ¹ <i>Indian Institute of Technology</i>	
13:00-14:30	LUNCH	
14:30-15:00	KEYNOTE LECTURE (Aula Magna) On the enhanced properties of graphene based nanoreinforced polymers and CFRP's V. Kostopoulos ¹ , C. Kostagiannakopoulou ¹ , S. Tsantzalis ¹ , G. Sotiriadis ¹ ¹ <i>University of Patras</i>	
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16:00-16:30	COFFE BREAK	

	Room "AULA MAGNA"	Room "N2"
	STRAIN SENSING <i>Chairman: M. Quaresimin (University of Padova)</i>	NANOMECHANICS <i>Chairman: M. Cho (Seoul National University)</i>
16:30-16:50	Stretchable nanocomposite circuits for smart clothing G.-W. Huang ¹ , H.-M. Xiao ¹ , S.-Y. Fu ² ¹ <i>Chinese Academy of Sciences</i> ² <i>Chongqing University</i>	Multiscale analysis on toughening mechanisms of silica-epoxy composites considering partial debonding of matrix and particle J.-G. Han ¹ , H. Shin ¹ , M. Cho ¹ ¹ <i>Seoul National University</i>
16:50-17:10	Composites based on CNT fibres: understanding mechanical reinforcement and piezoresistive properties B. Mas ¹ , A. Monreal ¹ , S. Frutos ² , J.J. Vilatela ¹ ¹ <i>IMDEA Materials Institute</i> ² <i>Polytechnic University of Madrid</i>	Fracture toughness modelling of polymers filled with inhomogeneously distributed particles B. Lauke ¹ ¹ <i>Leibniz-Institut für Polymerforschung Dresden</i>
17:10-17:30	Flexible strain sensor based on graphene foam/PDMS nanocomposites Y. Q. Li ¹ , Y. A. Samad ² , S. Y. Fu ¹ , K. Liao ² ¹ Chongqing University ² Khalifa University	Damage initiation and failure mechanisms at nanoparticles in polymer-nanocomposites with regard to the size effect C. Leopold ¹ , W.V. Liebig ¹ , B. Fiedler ¹ ¹ <i>Hamburg University of Technology</i>
17:30-17:50	Simulation of the electromechanical response of strain sensing carbon nanotube polymer composites M. A. S. Matos ¹ , V. L. Tagarielli ¹ , S. T. Pinho ¹ ¹ <i>Imperial College London</i>	Toughening micromechanisms in composites enhanced with electrospun thermoplastic nanofibrous interleaves L. Daelemans ¹ , S. van der Heijden ¹ , T. Meireman ¹ , I. De Baere ¹ , H. Rahier ² , W. Van Paepegem ¹ , K. De Clerck ¹ ¹ <i>Ghent University</i> ² <i>Vrije Universiteit Brussel</i>
17:50-18:10	Development of CFRP-composites with CNT/graphene nanoplatelet films as interleaves for enhanced electrical conductivity V. Kostopoulos ¹ , A. Masouras ¹ , P. Loginos ¹ ¹ <i>University of Patras</i>	Modeling of effective mechanical properties of polymer composites using finite element analysis M. Drissi-Habti ¹ , Y. El Assami ¹ , A. Pisupati ¹ ¹ IFSTTAR
19:30-23:00	WELCOME RECEPTION	

THURSDAY, SEPTEMBER 15TH

	Room "AULA MAGNA"	Room "N2"
	<p>GRAPHENE BASED NANOCOMPOSITES <i>Chairman: S. Fu (Chongqing University)</i></p>	<p>NANOCOMPOSITES WITH ENHANCED PHYSICAL AND MECHANICAL PROPERTIES <i>Chairman: B. Fiedler (TUHH)</i></p>
9:00-9:20	<p>Multilayer coextrusion to create oriented Poly(lactic acid) (PLA)/Graphene Nanoplatelet (GNP) Nanocomposites Y. Gao¹, O. T. Picot^{1,2}, E. Bilotti^{1,2}, T. Peijs^{1,2} ¹<i>Queen Mary University of London</i> ²<i>Nanoforce Technology Ltd.</i></p>	<p>Carbon nanotube nanocomposites tailoring towards enhanced damping and toughness G. Formica¹, F. Milicchio², W. Lacarbonara² ¹<i>University of RomeTre</i> ²<i>Sapienza University of Rome</i></p>
9:20-9:40	<p>Poly(trimethylene terephthalate) based nanocomposites containing carbon nanoparticles S.Paszkievicz¹, A. Szymczyk¹, I. Irska¹, E. Piesowicz¹, A. Linares², T.A. Ezquerro², Z. Roslaniec¹ ¹<i>West Pomeranian University of Technology</i> ²<i>Consejo Superior de Investigaciones Científicas, Madrid</i></p>	<p>Effect of the increased load conditions on the friction and wear behavior of peek-based hybrid nanocomposite L.Y. Lin¹, A. K. Schlarb^{1,2} ¹<i>University of Kaiserslautern,</i> ²<i>Leibniz-Institute for New materials</i></p>
9:40-10:00	<p>Graphene/cellulose nanowhiskers nanocomposites via liquid phase exfoliation of graphite G.X. Sui¹, D. Y. Liu¹ ¹<i>Chinese Academy of Sciences</i></p>	<p>Mechanical and thermal properties of new polyimide containing compositions V.V. Tcherdyntsev¹, L.K. Olifirov¹, M.Yu. Zadorozhnyy¹, V.D. Danilov² ¹<i>National University of Science and Technology, Moscow</i> ²<i>Russian Academy of Sciences</i></p>
10:00-10:20	<p>Enhanced tribological properties of graphene-based nanocomposites Y. Zeng¹, H. Wang¹, Y. Tong², L. Zhao^{1,2}, T. Zhang^{1,2} ¹<i>Chinese Academy</i> ²<i>Shenyang Jianzhu University</i></p>	<p>Template-free, facile synthesis of core-shell carbon networks S. Garlof¹, B. Fiedler¹ ¹<i>Technische Universität Hamburg-Harburg</i></p>
10:20-10:40	<p>Manufacturing and characterisation of n- doped three dimensional graphitic structures J. Marx¹, D. Smazna², R. Adelung², B. Fiedler¹ ¹<i>Hamburg University of Technology</i> ²<i>University of Kiel</i></p>	<p>Experimental research on thermal -mechanical properties of shape memory alloys W.L.Pi¹ ¹<i>Chongqing University</i></p>

	Room "AULA MAGNA"	Room "N2"
10:40-11:00	Synthesis of a biocompatible aerogel based on S graphene oxide and a modified polyethylene glycol A. Maio, F. Lopresti, D. Giallombardo, L. Botta and R. Scaffaro <i>University of Palermo</i>	Assessing self healing capacity of advanced lime mortars C. De Nardi ¹ , A. Cecchi ¹ , L. Ferrara ² , L. Ronchin ³ , A. Vavasori ³ ¹ <i>Università IUAV di Venezia</i> ² <i>Politecnico di Milano</i> ³ <i>Università Cà Foscari Venezia</i>
11:00-11:30	COFFE BREAK	
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Thursday, September 15th

15:30-16:00	KEYNOTE LECTURE (Aula Magna) Nanostructured CNT based sensing films used in multi-functional hybrid composites (Aula Magna) R. Schledjewski ¹ , S. Lloret Pertegás ¹ , J. Matyas ² , R. Olejnik ² , P. Slobodian ² ¹ Montanuniversität Leoben ² Tomas Bata University	
16:00-16:30	COFFE BREAK	
	Room "AULA MAGNA"	Room "N2"
	GRAPHENE BASED AND BIOBASED NANOCOMPOSITES <i>Chairman: M. Arai (Nagoya University)</i>	HYBRID NANOCOMPOSITES <i>Chairman: A. Pegoretti (University of Trento)</i>
16:30-16:50	Mechanical properties of graphene oxide modified-short carbon fiber/polyethersulfone composites S. Y. Fu ¹ , F. Li ² , Y. Q. Li ¹ , C. B. Qu ² , H. M. Xiao ² ¹ Chongqing University ² Chinese Academy of Sciences	Novel approaches to nanohybrid films by recycled polystyrene for ultraviolet protection A. Blanco-Hernández ¹ , L. M. Hernandez Cedillo ² , D. Rangel-Miranda ² , G. Hernández-Padrón ² ¹ Instituto Politécnico Nacional- Unidad Zacatenco ² Universidad Nacional Autónoma de México
16:50-17:10	Investigation on beta relaxation in graphene - PEMA nanocomposites M. Coletti ¹ , P. Crespi ¹ ¹ TA Instruments, Milano	Development films hybrid composites of epoxy-phenolic resins matrix by sol-gel route G. Hernández-Padrón ¹ , A. Blanco-Hernández ² ¹ Universidad Nacional Autónoma de México ² Instituto Politécnico Nacional, México
17:10-17:30	Mechanical Property and Structure of Covalent Functionalised Graphene Epoxy nanocomposites R. Varley, M. Naebe, J. Wang, A. Amini, H. Khayyam, N. Hameed, L. H. Li, Y. Chen, B. Fox Deakin University	Recent key developments in isotactic polypropylene in-reactor alloy and nanocomposite technology Y.W. Qin ¹ , J.-Y. Dong ¹ ¹ Institute of Chemistry Chinese Academy of Sciences
17:30-17:50	Mechanical properties of biobased thermoplastic composites reinforced with short natural fibers A. Lazzeri ¹ ¹ University of Pisa	Environmental friendly continuous nano-structured fibers based on cellulose nanofiber S. Hooshmand ¹ , Y. Aitomäki ¹ , A. P. Mathew ² , K. Oksman ^{1,3} ¹ Luleå University of Technology ² Stockholm University ³ University of Oulu
20:00-24:00	GALA DINNER	

FRIDAY, SEPTEMBER 16TH

	Room "AULA MAGNA"	Room "N2"
10:30-11:00	KEYNOTE LECTURE (Aula Magna) Degradation of mechanical properties in nylon matrix hybrid nanocomposites at high temperatures S. Zhu ¹ , S. Matsuda ¹ , Y. Nakahara ² , A. Usuki ³ , M. Kato ³ <i>¹Fukuoka Institute of Technology</i> <i>²Junshin Gakuen University</i> <i>³Toyota Central R&D Labs Inc.</i>	
	MULTIFUNCTIONAL NANOCOMPOSITES <i>Chairman: R. Varley (Deakin University)</i>	NANOMECHANICS AND NANOSCALE MODELLING <i>Chairman: B. Lauke (Leibniz Institute for Polymer Research Dresden)</i>
11:00-11:20	Pd-Pt particles on sulfated zirconia in the gas-phase hydrogen chlorination of chloromethanes J. Bedia ¹ , A. Arevalo-Bastante ¹ , J.M. Grau ² , L.A. Dosso ² , J.J. Rodríguez ¹ , A. Mayoral ³ , I. Diaz ⁴ , L.M. Gómez-Sainero ¹ <i>¹Universidad Autónoma de Madrid</i> <i>²Instituto de Investigaciones en Catálisis y Petroquímica "Ing José Miguel Parera", Santa Fe</i> <i>³Universidad de Zaragoza</i> <i>⁴Instituto de Catálisis y Petroleoquímica, Madrid</i>	Adhesive strength of nano-carbon coating film measured by laser spallation method M. Arai ¹ , A. Hiraku ¹ , K. Goto ¹ , D. Sugiura ² , M. Nishimura ² , H. Ito ³ , H. Cho ³ , T. Yanagisawa ⁴ <i>¹Nagoya University</i> <i>²Shinshu University</i> <i>³Aoyama-Gakuin University</i> <i>⁴GSI Creos Corp.</i>
11:20-11:40	Novel clay-based nanoarchitectures with photocatalytic applications C. Belver ¹ , J. Bedia ¹ , J.J. Rodriguez ¹ <i>¹Autonoma University of Madrid</i>	Thermal expansion coefficient in composites with spherical inclusions: effect of graded interphases R. Sburlati ¹ <i>¹University of Genoa</i>

Friday, September 16th

	Room "N2"	Room "AULA MAGNA"
11:40-12:00	<p>Preparation and regeneration of palladium nanoparticles supported on activated carbon catalysts for the gas-phase hydrodechlorination of dichloromethane L.M. Gómez-Sainero¹, S. Liu¹, A. Arevalo-Bastante¹, M. Martin-Martinez¹, M.A. Álvarez-Montero¹, J.J. Rodriguez¹ ¹Universidad Autónoma de Madrid</p>	<p>Mechanical characterization of PP specimens with graphite nanoplatelets and graphite R. Sesana¹, F. Curà¹, A. Fina¹ ¹Politecnico di Torino</p>
12:00-12:20	<p>Enhanced microwave absorption property of carbon nanotubes by Fe₃O₄ nano-coating N. Li¹, S.-Y. Fu² ¹Chinese Academy of Sciences ²Chongqing University</p>	<p>A study of the mechanisms in the deformation of nanocomposite fibers D. Novel^{1,2}, A. Pegoretti¹, N. M. Pugno^{1,2,3} ¹University of Trento ²Center for Materials and Microsystems, Trento ³Queen Mary University of London</p>
12:20-12:40	<p>Nanocomposites with enhanced biocide activity R. Bertani¹, A. Bartolozzi¹, M. Monsif¹, A. Fabrizi¹, F. Panozzo¹, M. Quaresimin¹, P. Sgarbossa¹, S. Tamburini², M. Zappalorto¹, F. Zorzi¹, F. Tateo^{1,2} ¹University of Padova ²National Research Council of Italy (CNR)</p>	<p>A novel approach for the evaluation of long term resistance of polyethylene based nanocomposites A. Dorigato¹, L.E.Govaert², A. Pegoretti¹ ¹University of Trento ²Technische Universiteit Eindhoven</p>
12:40-14:00	LUNCH	
	STRAIN AND DAMAGE SENSING <i>Chairman: M. Quaresimin (University of Padova)</i>	NANOMECHANICS AND NANOSCALE MODELLING <i>Chairman: B. Lauke (Leibniz Institute for Polymer Research Dresden)</i>
14:00-14:20	<p>Inducing multifunctionality by graphene interphase in fiber reinforced epoxy composites H. Mahmood¹, G. Birhane¹, A. Pegoretti¹ ¹University of Trento</p>	<p>Nanoindentation of thin film: numerical simulations and validation with experimental results J. D. Bressan¹, C. M. Lepienski² ¹University of Santa Catarina State ² Federal University of Paraná</p>

Friday, September 16th

	Room "AULA MAGNA"	Room "N2"
14:20-14:40	Structural Health Monitoring in composites via electrical measurements: theory, applications and challenging issues S.K. Nothdurfter ¹ , M. Quaresimin ² ¹ <i>Automobili Lamborghini</i> ² <i>University of Padova</i>	3D bending solution of functionally graded graphene reinforced circular plates J. Yang ¹ , B. Yang ² , S. Kitipornchai ³ ¹ <i>RMIT University</i> ² <i>Zhejiang Sci-Tech University</i> ³ <i>University of Queensland</i>
14:40-15:00	Damage sensing of symmetric laminates via electrical measurements: an analytical model M. Zappalorto, F. Panozzo, P.A. Carraro, M. Quaresimin <i>University of Padova</i>	Fundamental frequencies of a cantilevered nano beam used for atomic force microscopy (AFM) in tapping mode M. K. Moutlana ¹ ¹ <i>Durban University of Technology</i>
15:00-15:20	Monitoring of delamination in composites through electric potential variation P. A. Carraro, M. Zappalorto, F. Panozzo, M. Quaresimin <i>University of Padova</i>	Experimental and Numerical Investigation of filament-wound pipes with fiber glass and silica nanoparticles under local impact G.H. Rahimi ¹ , H. Rahimi sh. ¹ , G.H. Liaghat ¹ ¹ <i>Tarbiat Modares University</i>
15:20-15:40	Investigation on the piezoresistive behaviour of polymers doped with carbon nanotubes F. Panozzo, M. Zappalorto, P.A. Carraro, M. Quaresimin <i>University of Padova</i>	Enhanced visible-light photocatalytic activity of a G-C₃N₄/BIVO₄ nanocomposite: a first-principles study Y.X. Wang ¹ , J.H. Zhang ¹ ¹ <i>Henan University</i>
15:40-16:00	COFFE BREAK	
16:00-16:15	CLOSING CERIMONY	

SATURDAY, SEPTEMBER 17TH

10:00-17:00	Free visit at the Museums in the downtown
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