

DAY 1 | 3rd September 2018

8h00 – 9h00

Registration

9h00

Opening Session

9h30

Keynote Lecture

European Defence Trends in Materials and Structures Technologies

Giuseppe Daquino

European Defense Agency | **Belgium**

Chair: Raul Fangueiro

Cisterna Room		Lisboa Room		Atlântico Room		
10h15	Session 8 - Impact, Ballistic and Blast Performance Chair: Jos Brouwers	Lead-Free Primary Explosives based on Transition Metal Coordination Compounds Jörg Stierstorfer University of Munich (LMU) Germany	Session 9 - Advanced Materials and Technologies for Defense Chair: Sohel Rana	Raw and Processed Materials Used in the European Defence Industry Claudiu Pavel Joint Research Centre, European Commission Netherlands	Session 2 - Smart Materials and Structures Chair: Maria Conceição Paiva	Reduced Graphene Oxide Coating for Electromagnetic Interference Shielding Application Ricardo Andrade MackGraphe Brazil
10h30		Ballistic Impacts Experiments and Modeling of Plastilina/Protection Systems Lionel Gilson Royal Military Academy Belgium		A Dynamic Mechanical Analysis of T2 Copper at High Strain Rates Shuai Chen ZNDY of Ministerial Key Laboratory, University of Science and Technology China		Smart Acclimatisation Textile Systems for Defense Gilda Santos CITEVE - Technological Centre for the Textile and Clothing Industry of Portugal Portugal
10h45		Alternatives for Protection of Structures and Components Under Near Field Blast Loadings Daniel Ambrosini University of Cuyo, CONICET Argentina		Adaptative Camouflage Technologies of Defense Interest Bruno Marinho Management and Technological Innovation Agency Brazil		Smart and Sustainable Materials for Military Applications based on Natural Fibres and Silver Nanoparticles Diana P. Ferreira Centre for Textile Science and Technology (2C2T), Minho University Portugal
11h00 – 11h30	COFFEE BREAK					

11h30	<p>Invited Lecture Molecularly Imprinted Polymers and Optical Fiber Sensors for Security Applications Nunzio Cennamo University of Campania Luigi Vanvitelli Italy</p>
11h45	
12h00	<p>Experimental and Numerical Characterization of 3D-Printed PLA under Uniaxial High Strain-Rate Loading Hugo B. Rebelo CINAMIL, Military Academy and CERIS, ICIST and Department of Civil Engineering, Faculty of Science and Technology, Nova University of Lisbon Portugal</p>
12h15	<p>Propellant based on Sustainable Polymers from Succinic Acid Nicolis Araujo Federal University of Rio de Janeiro Brazil</p>
12h30	<p>The Effect of PACVD Modification on the Usable Properties of the Ballistic Textiles Applied for the Design of the Body Protectors Marcin Struszczyk Institute of Security Technologies MORATEX Poland</p>
12:45	<p>Textile Electrodes for Heart Rate Measurement: a Comparative Study for Firefighters' Monitoring André G. Ferreira University of Minho Portugal</p>

Session 4 - Advanced Polymers, Fibrous and Textile Materials
Chair: François Bousso

<p>Invited Lecture Closing the gap between Advances in Nanotechnology and Advanced Materials and its deployment Lars Montelius INL Portugal</p>
<p>Lanthanum Hydroxide Nanoparticles / Multi-Wall Carbon Nanotubes Nanocomposite Arvind Kumar Bhakta University of Namur Belgium</p>
<p>Graphene-Based Nanocomposites with Improved Mechanical and Ballistic Protection Properties Israel Gago Technical University of Cartagena, Chemical and Environmental Engineering Department Spain</p>
<p>Application Argonium Plasma Jet with Frequency 10 KHZ in Atmospheric Environment Luis Madson Costa Technical Institute of Aeronautics Brazil</p>
<p>Ballistic Resistance of Magnesium Alloy, AZ31B Reinforced with Carbon Nanotube and Lead under Gas Gun Simulation Mohamad Faizal Abdullah National Defense University of Malaysia Malaysia</p>

Session 6 - Nanomaterials and Nanostructures for Defense
Chair: Petra Pötschke

<p>Comparison of the Ballistic Stability of Composites based on Carbide of Boron, Corund, and Glass-Ceramics (Armored Sital) Yuri Merkulov Independent scientist Russian Federation</p>
<p>Integrity of Carbon Fibre-Reinforced Polymer Composites during Impact whilst under Fire Conditions Robert Chapple Institute for Materials Research and Innovation, University of Bolton United Kingdom</p>
<p>Abrasive Waterjet Machining of Aluminium / Boron Carbide Composite Kanthababu Mani Department of Manufacturing Engineering, College of Engineering Guindy, Anna University India</p>
<p>Damage Investigation Over Upper Skin Composite Panels of the Eurofighter Aircraft Michele Buonsanti Department Diceam Mediterranean University of Reggio Calabria Italy</p>
<p>Rheinfoced cork composites developed for helmet liner with improved damping performance Francisco J. Galindo-Rosales Transport Phenomena Research Center, Faculty of Engineering, University of Porto Portugal</p>
<p>A Hierarchical Impact Force Reconstruction Method for Aerospace Composites Mario Emanuele de Simone University of Bath United Kingdom</p>

Session 1 - Advanced Composites for Defense Applications
Chair: Wang Shijie

13h00 – 14h00		LUNCH					
14h00	Session 3 - CBRN Protection Chair: Rui Costa	Development of a Low-Cost Device for Detection of Explosives Vapors Liliana Martelo Higher Technical Institute – University of Lisbon Portugal	Session 7 - Auxetic Materials Chair: Jun Lou	Invited Lecture Auxetic Materials: Potential for Defense Applications Sohel Rana Fibrenamics, University of Minho Portugal	Session 4 - Advanced Polymers, Fibrous and Textile Materials Chair: Diana Ferreira	Increased Energy Absorption and Reliability of Beams by Improved Web-Flange Joints Nandan Khokar Biteam AB Sweden	
14h15							
14h30		Rapid Deactivation of Organophosphorus Nerve Agents by Reactive Adsorbents Based on Nanocrystalline Metal (Hydr)Oxides Jiri Henych Institute of Inorganic Chemistry of the Czech Academy of Sciences Czech Republic		Indentation and Impact in Dome-Shaped Auxetic Honeycombs Yousef Dobah University of Bristol United Kingdom		Smart Textile Solutions Lisandra Vilaça Smart Innovation Portugal	
14h45		Chemical and Biological Warfare Protection and Self-Decontaminating Fabrics based on Oxide Nanoparticles João F. Pereira Fibrenamics, University of Minho Portugal		Development and Characterization of High Performance Auxetic Fabrics Produced Using Purl Knitted Structures Rui Magalhães Centre for Textile Science and Technology (2C2T), University of Minho Portugal		Meta-Aramid Fiber with Smart and Functional Behaviour Fernando Ribeiro Oliveira University Federal of Santa Catarina Brazil	
15h00		Selection of Chemical Protective Suits by Users: Are the Standard Tests Results Sufficient? Denis Josse Alpes-Maritimes Fire and Rescue Services France		Development of High Performance Auxetic Composites for Application in Protection Area Fernanda Steffens Federal University of Santa Catarina Brazil		Soldier Monitoring Systems: The Potential of Natural Fibres and Metal Oxide Nanoparticles Sofia Costa Fibrenamics, University of Minho Portugal	
15h15		Response of Auxetic Composite Sandwich Panel to Fragment Simulating Projectile Impact Matej Vesenjok Faculty of Mechanical Engineering, University of Maribor Slovenia	The Studied on Dynamic Plastic Deformation Behavior of 5052 Aluminium Alloy Ping Song Nanjing University of Science and Technology China				

15h30		Non-Releasing Biocidal Coatings: A New Eco-Friendly Strategy to Prevent Marine Biofouling Amaya Igartua IK4-TEKNIKER Spain		Characterization of Auxetic and Mechanical Behaviours of Auxetic Composites Developed Using Star Knitted Structures João Pedro Nunes Institute for Polymers and Composites (IPC), University of Minho Portugal		The Studied on Dynamic Plastic Deformation Behavior of 5052 Aluminium Alloy Ping Song Nanjing University of Science and Technology China
15h45 – 16h15	COFFEE BREAK					
16h15	Session 9 - Advanced Materials and Technologies for Defense Chair: Shripad P. Mahulikar	Invited Lecture Ballistic Performance of Nonwoven Fabrics for Lightweight Armours Carlos Gonzalez IMDEA Materials Institute & Technical University of Madrid Spain	Session 8 - Impact, Ballistic and Blast Performance Chair: M. Balakrishnan	Development of A New Technology to Manufacture an Additional Ballistic Protection Panel (Add On) for the New Brazilian Armored Personnel Carrier (GUARANI) Julio Dolce da Silva Brazilian Army Brazil	Session 5 - Design and Analysis of Protection Materials and Composites Chair: Michele Meo	Invited Lecture Molecular Modeling of Mechanical Properties of Semicrystalline Polyethylene Jan Andzelm U.S. Army Research Laboratory United States
16h30				Manufacture and Ballistic Testing of Sheared Dyneema® Plates Behjat Ansari University of Bristol United Kingdom		
16h45		Facilities, Skills and Competence in Advanced Materials Studies for Defense at C2T António Pereira Gonçalves Center for Nuclear Sciences and Technologies (C2TN), Higher Technical Institute, University of Lisbon Portugal		Experimental Evaluation of Impact Resistant Composite Solutions for Commercial Aircraft Fuselage Luis Pina INEGI Portugal		Experimental and Numerical Analysis of Combat Helmet Ballistic Performance José Antonio Loya University Carlos III of Madrid Spain
17h00		A New Approach to Dual Use Research – Janus Project Panagiotis Kavouras National Technical University of Athens, School of Chemical Engineering Greece		Mapping Ballistic Penetration Resistance of Hard Ceramic Targets Joaquim M. Vieira Department of Materials and Ceramic Engineering (DEMaC) and CICECO, University of Aveiro Portugal		Characterization and Constitutive Modelling of Crushable Foams - Application to Highly Demanding Thermomechanical Loading Cases Paulo Antunes Critical Materials Portugal

17h15		Activities at Onera on Materials and Structures for Defence Applications Stefan Drawin ONERA France	Vibration Analysis Of Carbon Fiber Composite High-Pressure Vessel Subjected To Mechanical Impact Maciej Panek Wrocław University of Science and Technology Poland	Comparison between Finite Element Models and Simplified Energetic Models for High Velocity Impacts on an Aluminium Plate Énio Chambel Military Academy Portugal
17h30		Joining Methods of High Entropy Alloys Used for Ballistic Targets Ionelia Voiculescu University Politehnica of Bucharest Romania	Modified Pendulum Impact Test on UHPFRC with Coarse Basalt Aggregate H.J.H. Brouwers Eindhoven University of Technology Netherlands	Comparison of Numerical Modelling Methods of Innovative Materials for Ballistic Shields Adrianna Mackiewicz Department of Mechanics, Materials Science and Engineering, Wrocław University of Science and Technology Poland
18h00 CLOSING				
19h00 SOCIAL PROGRAM - WELCOME RECEPTION Palace of the Marquis of Pombal - visit the palace wine cellar and taste four of the best Portuguese wines grown in this region				

DAY 2 | 4th September 2018

9h00 Conference Announcements

9h15

Keynote Lecture
Multifunctional Coatings based on Two-Dimensional Materials for Defense Applications
Jun Lou
Rice University, **USA**

Cisterna Room Lisboa Room Atlântico Room

Time	Cisterna Room	Lisboa Room	Atlântico Room
10h00	<p>Energy of Micro Crystalline Cellulose- Carbon Nanotubes Reinforced Hybrid Cementitious Composites Shama Parveen Fibrenamics, University of Minho Portugal</p>	<p>Microstructural Analysis on Ballistic Tested Armour Steel Joints Fabricated Using Low Hydrogen Ferritic Consumables for Capping Pass Balakrishnan Marimuthu The Institute for Sustainability and Innovations in Structural Engineering (ISISE), Department of Mechanical Engineering, University of Coimbra Portugal</p>	
10h15	<p>Environmental Stimuli-Responsive Electrospun Composite Nanofibres for Textile Based Advanced Defense Applications Shah M Reduwan Billah Department of Chemistry, Durham University United Kingdom</p>	<p>Behind-Helmet Blunt Trauma: Matching Measurement to Injury Using Finite Element Modelling Ana Ferreira Azevedo Royal Military Academy Belgium</p>	
10h30		<p>A Reduced-Order Modeling Based Design and Optimization for a Lightweight Multilayer Armor Plate against Blast and Impact Weiran Jiang University of Michigan, Ann Arbor USA</p>	
10h45	<p>Ballistic Composites Reinforced with Inorganic Nanotubes of Tungsten Disulfide Danica Simić Military Technical Institute Serbia</p>	<p>Simulation of Ballistic Impacts on Concrete with New Damage Luís Pereira Portuguese Air Force Academy Portugal</p>	

Session 6 - Nanomaterials and Nanostructures for Defense
Chair: Robert Young

Session 5 - Design and Analysis of Protection Materials and Composites
Chair: Paulo Antunes

11h00 – 11h30		COFFEE BREAK	
11h30	11h30	<p>Electrically Conductive Peek Filaments for Additive Manufacturing by FDM José Covas University of Minho Portugal</p>	<p>Invited Lecture Shape Memory Ceramics: Recent Progress and Perspectives for Future Protective Applications Chee Lip Gan Nanyang Technological University Singapore</p>
11h45	11h45	<p>Graphene Nanocomposites for Defense Applications Robert J Young National Graphene Institute and School of Materials, University of Manchester United Kingdom</p>	<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Session 9 - Advanced Materials and Technologies for Defense</p> <p style="writing-mode: vertical-rl; transform: rotate(180deg);">Chair: Chee Lip Gan</p>
12h00	12h00	<p>Hybrid Ballistic Solutions Ricardo Pinto INEGI Portugal</p>	
12h15	12h15	<p>Waterborne Polyurethane Composites with Few Layer Graphene for High Performance Coatings Maria da Conceição Paiva University of Minho Portugal</p>	
12h30	12h30	<p>Electrically Conductive Polymer Based Composites for Thermoelectric Applications Petra Pötschke Leibniz Institute of Polymer Research Dresden Germany</p>	
12h45	12h45	<p>Plasma Electrolytic Oxidation Coatings for Engine Components of Light Armored Vehicles Amaya Igartua ik4-tekniker Spain</p>	
12h45	12h45	<p>Quality Metrics Parameters of Personal Protection Equipment Inese Ziemele Riga Technical University Latvia</p>	
13h00 – 14h00		LUNCH	

14h00	Session 4 - Advanced Polymers, Fibrous and Textile Materials Chair: José Borges	Investigating the Mechanical Behaviours of 3D Warp Interlock Fabrics for Soft Body Armour Design François Boussu ENSAIT France	Session 1 - Advanced Composites for Defense Applications Chair: Sohel Rana	Invited Lecture Carbon Nanotube/ Fiber Reinforced Ceramic Composites Shijie Wang Institute of Materials Research and Engineering (IMRE), A*STAR (Agency for Science, Technology, and Research) Singapore	Special Session on AuxDefense Chair Giuseppe Daquino	Study of the Energy Absorption Capability of Para-Aramid Fabrics Carina Cunha Fibrenamics, University of Minho Portugal	
14h15							Influence of Carbon Nanotubes in the Performance of a Ballistic Helmets Fernando Cunha Fibrenamics, University of Minho Portugal
14h30		Functionalised Fabrics for Organic Compounds Degradation Ana Maria Ferraria CQFM (IN and IBB) Higher Technical Institute Portugal		Multi-Impact Response of Composite Sandwiches Incorporating Cork Cores Paulo Reis University of Beira Interior Portugal		Study of the Influence of the Polymer Matrix on the Energy Absorption in Reinforced Composites with Three-Dimensional Auxetic Meshes João Bessa Fibrenamics, University of Minho Portugal	
14h45				Influence of the Consolidation Pressure on the Shock Wave Propagation in UHMWPE Composites Torsten R Lässig Fraunhofer Ernst-Mach-Institut, Freiburg Germany		Influence of Different Loading Rates on Energy Absorption Capability of Para-Aramid Fabrics Sónia Costa Fibrenamics, University of Minho Portugal	
15h00		Flexible Textile Supercapacitors based on Nitrogen-Doped Carbon Nanomaterials Rui Costa Faculty of Sciences, University of Porto Portugal		Novel Multi-Scale Cimentitious Composites Developed Using Microcrystalline Cellulose (MCC) and Sisal Fibers Shama Parveen Fibrenamics, University of Minho Portugal		Advanced fibrous structures for external layer of ballistic vests Ana Leitão Fibrenamics, University of Minho Portugal	
15h15		Functionalization of a Non-Newtonian Fluid Composed of Silica Nanoparticles into Cotton Substrates for Anti-Stab Protection Filipa Fernandes Ooze Nanotech Portugal		Deep Penetration of Ultra-High Molecular Weight Polyethylene Composites by a Sharp-Tipped Punch Burigede Liu Department of Engineering, University of Cambridge United Kingdom		Study on the Usability of Innovative Knee and Elbow Pads based on Auxetic Composites Marta Brito Fibrenamics, University of Minho Portugal	
15h30		Degradation of DMMP: Functionalised Fabrics as an Efficient Photocatalyst Pedro Neto Unidade Militar Laboratorial de Defesa Biológica e Química Portugal		Effects of Inclination Angle on Pullout Performance of Hooked End Fiber Embedded in UHPC Y.Y.Y. Cao Eindhoven University of Technology Netherlands		Biomimicry Principles And UX In Product Design For Defense Filipe Moreira Fibrenamics, University of Minho Portugal	

15h45
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16h15

COFFEE BREAK

16h15

Invited Lecture

IR-Signatures of Low Flying Aircraft and Their Engine-Embedded Fuselage's Emissivity

Shripad Mahulikar

Indian Institute of Technology Bombay | **India**

16h30

16h45

SHM TB30 – Methodology and Tools for Assessing the Structural Health and Life Extension of Legacy Aircraft

Paulo Antunes

Critical Materials | **Portugal**

17h00

Plasma Electrolytic Oxidation Coatings for Engine Components of Light Armored Vehicles

Igartua Amaya

Fundacion TEKNIKER | **Spain**

17h15

An Overview of Mechanical Behaviour of Cellular Metals as Fillers in Thin-Walled Structures

Isabel Duarte

University of Aveiro | **Portugal**

17h30

Influence of Silane Coupling Agent on Shear Thickening Fluids (STF)

Thiago Santos

Federal University of Rio Grande do Norte – PPGET | **Brazil**

Thermal Isolation/Barriers for Small Caliber Weapon Applications

Adam Foltz

US Army Ardec Picatinny Arsenal | **United States**

Mechanical Properties of Ultra High Performance Fiber Concrete and its Response to Impact Loading

Anna Mina

Department of Civil and Environmental Engineering, University of Cyprus and School of Civil Engineering, National Technical University of Athens | **Cyprus**

Different Composite Behaviours Under Blast Loading

Arthur Voisin

Renault Trucks Defense / GEMTEX | **France**

Performance of Structural Blast Mitigation Measure for Oil and Gas Industrial Facilities

Damjan Cekerevac

Institute for Sustainability and Innovation in Structural Engineering | **Portugal**

UHPFRC Resistance to Projectile Impact in Dependence on Fibre Content

Jindřich Fornůšek

CTU in Prague | **Czech Republic**

Spallation Observed in Hard Metals During Taylor- Impact Tests

Torsten Lässig

Fraunhofer Institut für Kurzezeitdynamik, Ernst-Mach-Institut (EMI) | **Germany**

18h00

CLOSING SESSION

20h00

SOCIAL PROGRAM - CONFERENCE DINNER

Vila Galé Collection Palácio dos Arcos

DAY 1 & 2 | 3rd - 4th September 2018

9h00 –
18h00

Poster Session

Modification the Polyamide 6 Film with Silver Selenide

Remigijus Ivanauskas

Kaunas University of Technology | **Lithuania**

Peculiarities of The Silver Selenide Layers Formation on the Different Nature Fibers Surface

Daiva Milasiene

Kaunas University of Technology | **Lithuania**

Passive and Active Chemical Protection

Ana Leitão

Center for Textile Science and Technology, University of Minho | **Portugal**

Dyeing of Meta-Aramid Fibres Previously Functionalized with PDDACI

Fernando Ribeiro Oliveira

Federal University of Santa Catarina | **Brazil**

Military Textiles – Protection Mechanisms

Fernanda Steffens

Federal University of Santa Catarina | **Brazil**

The Thermal Colour and the Emissivity of Printed Pigments on Knitted Fabrics for Application in Diurnal Thermal Camouflage Garments

Catarina Pimenta

Centre for Textile Science and Technology (2C2T), University of Minho | **Portugal**

Trends in Camouflage

Danielle Beduschi

University of Minho | **Portugal**

Creating Fibrous Composites Enhanced With Electric Field

Wiesława Urbaniak-Domagala

Lodz University of Technology | **Poland**

Predicting the mechanical properties of Cellulosic and Polyester Yarns using CLARA: Cloud Learning Autonomous Reacting Algorithms

Sérgio Branco

University of Minho | **Portugal**