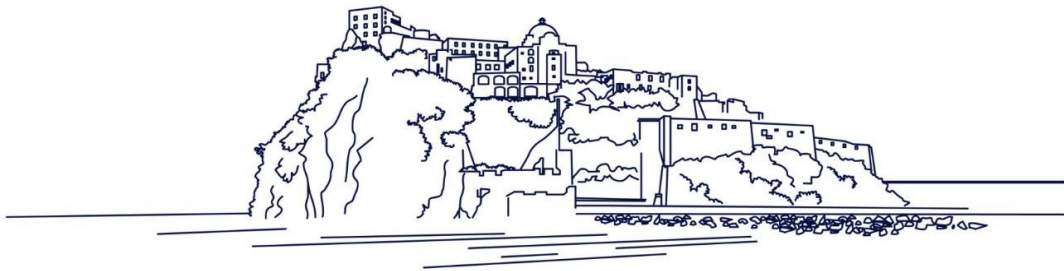


DRaF

CONFERENCE



2022

4th **International Symposium on
Dynamic Response and Failure
of Composite Materials**

DRaF 2022

**June 21-24, 2022
Island of Ischia, Italy**

Chair Person

Valentina Lopresto

Antonio Langella

Department of Chemical, Materials and Production Engineering
University of Naples Federico II

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Valentina Lopresto

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Claudio Cigliano

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M. Ferraris (Polytechnic of Turin)

PROGRAM

Tuesday, June 21st, Afternoon

3.00	4.00	Registration
Room "Aragonese"		
3.30	5.40	<p align="center">Pre-Conference Event</p> <p>Chair - G. Mensitieri, Head of Dpt. of Chem., Mat. and Prod. Eng., Univ. of Naples Federico II Special Issue and Info - V. Lopresto CIRA - S. Cantoni, Large Ground Testing Facilities Dept., Head DAC - Distretto Aerospaziale della Campania, C. Voto, Senior Manager Aeronautics LEONARDO - Labs and Aerotech Academy, N. Gallo, R&D Lead Eng., S.Varetti, Material Lab MEGARIDE -VESEVO - F. Farroni, A. Genovese, Univ. of Naples Federico II CARS - G. Belingardi, Polytechnic of Turin J-TECH - A. Benelli, Polytechnic of Turin HEXAGON - A. Mete, Senior Regional Sales Manager EXEMPLAR - C. Fiaschi, F. Trentini, Account Manager EVIDENT EUROPE GMBH - S. Tamburrini, Regional Sales Manager Industry CEAST-INSTRON - A. Calzolari, Research and Application Engineer</p>
5.40	7.10	<p align="center">Session: Additive Manufacturing and Process Automatization for Hybrid and Composite Materials</p> <p align="center">Chairs: A. Squillace</p>
5.40	5.55	Damage assessment in composite laminates through local impulse excitation technique <u>C. Boursier Niutta</u> , A. Tridello, D. S. Paolino
5.55	6.10	Processing of polymer/basalt composites by filament extrusion and fused deposition modeling: microstructure and mechanical features <u>F. Lupone</u> , C. Sergi, F. Sarasini, J. Tirillò, C. Badini
6.10	6.25	Joining titanium and silicon nitride by means of ceramic adhesives <u>F. Scherillo</u> , A. El Hassanin, A. Silvestri, B. Liguori, P. Aprea, V. Contaldi, D. Di Martino
6.25	6.40	Additive manufacturing of continuous carbon fibre composites <u>A.T. Silvestri</u> , I. Papa, A. El Hassanin, V. Lopresto, A. Squillace
6.40	6.55	Investigation on stress relaxation of discontinuous recycled/repurposed carbon fiber composites <u>B. Palmieri</u> , C. Borriello, G. Rametta, P. Iovane, S. Portofino, L. Tammaro, S. Galvagno, M. Giordano, L. Ambrosio, A. Martone
6.55	7.10	Discussion
7.00	8.00	Poster Session and Award Ceremony Sponsor
7.30	9.00	<i>Welcome Cocktails</i>

Wednesday, June 22nd, Morning**Room “Aragonese”**

8.30	8.35	Welcome by Symposium Chairperson
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8.35	9.20	Plenary Lecture Commercial space: the final frontier. Opportunities and challenges Col. W. Villadei - <i>AF Cosmonaut, Capo RAMI Houston</i>
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9.20	12.20	Session: Aerospace Chairs: M. Guida, F. Marulo
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9.20	9.50	Plenary Lecture Certification by Analysis of Aerospace Structures G. Olivares – <i>National Institute for Aviation Research (NIAR), Wichita</i>
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9.50	10.05	Impact dynamics of different cabin solutions of small airplanes G. Di Mauro, <u>G. M. Gagliardi</u> , M. Guida, F. Marulo
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10.05	10.20	Design of controlled rupture structure for safe vector ejection <u>A. Smarrazzo</u> , M. Guida, F. Marulo, M. Coppola, R. Moliterno
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10.20	10.40	Coffee Break
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10.40	10.55	On the applicability of fiber metal laminates for the leading edge of a tiltrotor under birdstrike conditions <u>F. Di Caprio</u> , P. Losurdo, M. Filippi, M. Belardo, E. Carrera
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10.55	11.10	Preliminary sizing of a hybrid-electric aircraft with structural batteries G. Di Mauro, V. Cusati, <u>S. Corcione</u> , M. Guida, F. Nicolosi
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11.10	11.20	Design and manufacturing of a VLA vertical control surface with LRTM technology <u>M. Viscardi</u>
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11.20	11.35	Sensing and damping capabilities of elastomer reinforced with CNTS <u>M. Viscardi</u> , M. Arena, G. Barra, L. Vertuccio, L. Guadagno
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11.35	11.50	Deep learning algorithms for delaminations detection on composites panels by wave propagation signals analysis <u>E. Monaco</u> , M. Rautela, S. Gopalakrishnan, F. Ricci
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11.50	12.05	Low-velocity impact response of a composite structural battery <u>G. Di Mauro</u> , P. Russo, M. Guida
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12.05	12.20	Discussion
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12.20	1.15	Lunch
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Wednesday, June 22nd, Afternoon**Room “Aragonese”**

1.15	3.30	Session: Auxetic Materials and Structures Chair: P. Russo
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1.15	1.45	Plenary Lecture Impact and energy absorption performance of auxetic porous metamaterials F. Scarpa - <i>University of Bristol</i>
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1.45	2.00	Auxetic metamaterials produced through chiralisation of 2D polyhedral tessellations <u>L. Mizzi</u> , N. Bertozzi, A. Spaggiari
2.00	2.15	Development of Hybrid chiral auxetic sandwich panels for blast and ballistic protection <u>N. Novak</u> , M. Vesenjsek, Z. Ren
2.15	2.30	Mechanical design and characterization of a bio-inspired auxetic metamaterial <u>A. Sorrentino</u> , D. Castagnetti, L. Mizzi, A. Spaggiari
2.30	2.45	Transversely-isotropic chiral metamaterials based on pentagonal tessellations L. Mizzi, L. Grasselli, <u>A. Spaggiari</u> , R. Gatt, P.S. Farrugia, J. N. Grima
2.45	3.00	Design, fabrication and characterization of an impact dissipative layer for fiberglass laminates A. Sevilla, A. Rodríguez-Ortiz, <u>P. Townsend</u> , J. C. Suárez Bermejo
3.00	3.15	A numerical investigation into the potential of using additively manufactured composite cellular cores in ballistic helmets <u>T. Fisher</u> , Z. Kazancı, H. Almeida Jr, B. G. Falzon
3.15	3.30	Discussion
3.30	3.50	Coffee Break
3.50	6.05	Session: <u>Leonardo</u> - Design and development of new generation composite materials for aerospace sector Chair: N. Gallo
3.50	4.05	3D printed carbon PEEK - influence of printing strategy on tensile performances <u>S. Varetto</u> , N. Gallo, I. Scavo, S. Corvaglia
4.05	4.20	Influence of process parameters of 3D printed PEEK on cristallinity and mechanical performances <u>V. Trimini</u> , S. Varetto, G. Percoco, S. Corvaglia, N. Gallo, I. Scavo
4.20	4.35	Application of recycled carbon fibers in aircraft windows frame <u>S. Minosi</u> , G. Buccoliero, M. Araganese, U. Raganato, C. Rosato, S. Corvaglia, N. Gallo
4.35	4.50	Reshaping aerospace composites with graphene; state-of-the-art, challenges and future opportunities <u>M. Zahid</u> , N. Gallo, S. Corvaglia
4.50	5.05	Experimental investigation on fracture toughness of open hole coupons under tension load <u>R. Cumbo</u> , A. Baroni
5.05	5.20	Thermal and morphological evaluation of a composite manufactured with carbon epoxy prepreg via hot compression molding <u>S.D. Brejao De Souza</u> , N. Gallo, I. Scavo, S. Corvaglia
5.20	5.35	Manufacturing of damping composite laminates with aeronautical prepreg and elastomeric interlayer L. Santo, L. Iorio, <u>F. Quadrini</u> , D. Santoro, L. Consolini
5.35	5.50	Anisogrid lattice structure in thermoplastic composite by filament gun deposition F. Quadrini, D. Santoro, <u>L. Santo</u>
5.50	6.05	Discussion
6.00	7.00	Sponsor
7.30	<i>Nice Dinner</i> - Departure from Hotel Hermitage	

Thursday, June 23rd, Morning**Room "Aragonese"**

8.30	10.30	Session: Design and manufacturing of lightweight composite structures Chair: A. Riccio
8.30	9.00	Plenary Lecture Manufacturing opportunities for Double-Double composite structures S. Tsai - Stanford University
9.00	9.15	On the use of Double-Double laminates to improve and innovate the design of an all composite wing box <u>A. Riccio</u> , F. di Caprio, S. W. Tsai, A. Sellitto
9.15	9.30	Double-Double laminate composites for unmanned aerial vehicles F. Di Caprio, A. Riccio, S.W. Tsai, <u>A. Russo</u> , A. Braco, C. Leccia, A. Sellitto
9.30	9.45	Numerical and experimental investigation on single lap composite joints A. Riccio, <u>A. Sellitto</u> , C. Palumbo, U. Mero, V. Acanfora, A. Russo, F. Di Caprio
9.45	10.00	Numerical/experimental study on the compressive behaviour of repaired composite panels A. Riccio, A. Sellitto, <u>A. Garofano</u> , G. Ingenito, M. Zarrelli
10.00	10.15	Influence of laser texturing on mechanical performances of CFRP single lap bonded joint <u>G. Parodo</u> , W. Polini, L. Sorrentino, S. Turchetta
10.15	10.30	Discussion
10.30	10.50	Coffee Break
10.50	1.05	Session: CIRA - Structural integrity assessment of aerospace composite structures Chair: F. Romano
10.50	11.15	Plenary Lecture Multiaxial loading after impact on large composite laminate plate C. Bouvet - Isae Supaero Toulouse
11.15	11.30	Design, numerical and experimental characterization of the composite spar for a regional aircraft M. Esposito, <u>M. Gherlone</u> , M. Mattone, E. Karachalios, V. Prentzias, F. Romano
11.30	11.40	Design, numerical and experimental characterization of the composite rib for a regional aircraft M. Esposito, <u>M. Gherlone</u> , M. Mattone, E. Karachalios, V. Prentzias, G. Fusco, A. Trinchese, N. Nola, F. Romano
11.40	11.55	Design, manufacturing and testing of an out of autoclave – Liquid Resin Infused carbon-epoxy curved stiffened panel <u>D. Fanteria</u> , E. Karachalios, V. Iannone, E. Monaco, F. Romano
11.55	12.05	Impact response of AFP-LRI carbon-epoxy composites: simulations vs. experiments <u>D. Fanteria</u> , N.D. Boffa
12.05	12.20	Equivalent material identification in composite scaled hulls vertical impact tests <u>E. Cestino</u> , G. Frulla, A. Polla, G. Nicolosi
12.20	12.35	Full metal jacket projectiles vs woven composites: an analytical model with the ghost projectile method D. Ma, M. Giglio, <u>A. Manes</u>
12.35	12.50	A novel experimental method for the assessment of the mode II fracture behavior of metal-polymer composites interfaces <u>T. Scalici</u> , Z. Ullah, B.G. Falzon, G. Catalanotti
12.50	1.05	Numerical comparison of damage detection methods using SHM distributed Fiber Optics (FO) and Fibre Bragg Grating (FBG) on a full scale wing beam test article <u>L. Pellone</u> , M. Ciminello, B. Galasso, G. Apuleo, S. Shoham, U. Mercurio, A. Concilio, I. Kressel
1.05	1.55	Lunch

Thursday, June 23rd, Afternoon

Room "Aragonese"

1.55	2.20	Key Note An open thinking for a vision on sustainable green aviation A. Ficca, F. Marulo , A. Sollo	
		Room "Aragonese 1"	Room "Aragonese 2"
2.20	4.20	Session: Structural integrity assessment of aerospace composite structures Chair: F. Romano	Session: Dynamic behaviour of green composites Chairs: F. Sarasini, J. Tirillò
2.20	2.35	Design and maintenance of aircraft composite structures by advanced damage inspection techniques <u>F. Romano</u> , A. Sorrentino, M. Ciminello, S. Ameduri, M. Inverno, R. Sorrentino	Toughened bio-based PA11 composites reinforced with a sustainable intraply basalt/flax fabric for automotive applications <u>C. Sergi</u> , J. Tirillò, P. Russo, L. Vitiello, F. Sarasini
2.35	2.50	Numerical and experimental comparison of impact damage detection by using piezoceramic sensors/actuators on a stiffened composite panel <u>A. Sorrentino</u> , F. Romano	OAK wood chemical densification: microstructure changes and perspectives <u>L. Sansone</u> , C. Cigliano, V. Lopresto, I. Papa, P. Russo, V. Antonucci, M.R. Ricciardi
2.50	3.05	Numerical and experimental comparison of impact damage detection by using distributed fiber optics on a stiffened composite panel <u>M. Ciminello</u> , S. Ameduri, F. Romano	Manufacturing and impact behavior of hybrid natural/carbon fiber composites in thin sandwich configuration <u>L. Boccarusso</u> , M. Durante, D. De Fazio, K. Myronidis, M. Meo, F. Pinto
3.05	3.20	Experimental and numerical evaluation of compression after impact on composite stiffened panels <u>F. Di Caprio</u> , D. Cristillo, A. Langella, F. Romano	Low-velocity impact behaviour of epoxy-based biocomposites reinforced with flax, basalt and hybrid fibres at various temperatures: analytical, numerical and experimental results <u>V. Giammaria</u> , S. Boria, F. Sarasini, J. Tirillò, B. Fischer, J. Pörnbacher
3.20	3.35	Investigation on damage phenomena induced by tool drop on composite anisogrid structures <u>F. Di Caprio</u> , G. Totaro, G. Giusto, P. Spena, F. De Nicola	Damage detection in bio-polyamide 11/woven basalt fibres composite laminates subjected to dynamic events <u>G. Epasto</u> , I. Papa, V. Lopresto, L. Vitiello, P. Russo
3.35	3.50	Uniaxial fatigue tests on polyamide reinforced with short glass fiber D. De Caro, S. Plano, <u>D. Gabellone</u> , M.M. Tedesco, G. Belingardi, D. Paolino	Machining approach for recycling of CFRP laminates <u>M. Durante</u> , L. Boccarusso, D. De Fazio, A. Formisano, A. Langella
3.50	4.05	AF-Challenges-Synthetic materials (Polymer & Ceramic) Lifting Model Blind test validation H. Baid, A. Eftekharian, <u>A. Cantarutti</u> , F. Abdi	Green composites surface modification: an approach from an engineering and chemistry perspective <u>N.A. Gomez</u> , M. Muscat, C. De Marco Muscat-Fenech, D. Camilleri, E. Sinagra, S. Lanfranco
4.05	4.20	Discussion	Discussion
4.20	4.40	Coffee Break	
Room "Aragonese"			
4.40	6.55	Session: Hexagon Solutions: new trends and different approach for aerospace Chair: M. Mottola	
4.40	4.55	Methodology for post buckling analysis of tilt rotor composite wing <u>A. Chiariello</u> , M. Belardo, M. Linari, J. Beretta, S. Orlando, M. Graziano, L. Di Palma	

4.55	5.10	Usage of virtual technology for shelter acoustic design and experimental data correlation <u>E. Perrinella</u>
5.10	5.25	High strain rate composite material characterization for aeronautical radar radome: a way to optimize both bird strike and electromagnetic design <u>M. Cardilli</u>
5.25	5.40	Optimization strategies of a Selective Laser Melting additively manufactured aircraft seat component with focus on lightweighting <u>F.D. Cascone</u> , M. Mottola, B. Vitolo, D. Malacaria, A. Manzo
5.40	5.55	Scanning, digitizing and dimensional measurement of free-form components G. Acampora
5.55	6.10	Virtual product design of VEGA E upper stage separation <u>A. Zallo</u> , S. Urbani
6.10	6.25	Intelligent Maintenance for Innovative CAE Prediction <u>L. Piedimonte</u>
6.25	6.40	_Discussion
6.30	7.30	Sponsor

Friday, June 24th, Morning

Room “Aragonese”

8.30	11.00	Session: Composite materials for lightweighting and safety of vehicles Chairs: D. Paolino, S. Boria, A. Scattina
8.30	8.45	Flax and hemp composites: mechanical characterization and numerical modelling <u>G. Del Bianco</u> , V. Giammaria, S. Boria, D. Fiumarella, R. Ciardiello, A. Scattina, G. Belingardi, V. Castorani
8.45	9.00	Progressive damage analysis of green composite laminates subjected to in-plane crashworthiness V. Giammaria, G. Del Bianco, D. Fiumarella, R. Ciardiello, L. Vigna, <u>S. Boria</u> , A. Scattina, G. Belingardi, V. Castorani
9.00	9.15	Crash testing of polymer matrix composites using flat specimens <u>L.Vigna</u> , V. Lopresto, I. Papa, P. Russo, A. Calzolari, G. Galizia, D. Paolino, G. Belingardi
9.15	9.30	Modeling the strength of laminated parts made by fused filament fabrication additive manufacturing <u>M. Avalle</u> , M. Monti, M. Frascio
9.30	9.45	Impact response of carbon fiber composites: comparison between epoxy and bio-based epoxy matrices <u>R. Ciardiello</u> , C. Boursier Niutta, A. Tridello, D.S. Paolino
9.45	10.00	On the damage sensitivity of guided wave shm system under different loading conditions F. Caputo, D. Perfetto, A. Polverino, A. Aversano, <u>A. De Luca</u>
10.00	10.15	Mechanical characterization of a polymer-metal hybrid structure for automotive applications: quasi-static and repeated impact tests D. Fiumarella, A. Canegrati, L.M. Martulli, <u>A. Bernasconi</u> , G. Mastinu, G. Belingardi, A. Scattina
10.15	10.30	Impact and compression after impact performance of z-pinned composite laminates L. Francesconi, G. Loi, <u>F. Aymerich</u>
10.30	10.45	Thermal/electrical properties and morphology of carbon black PA polymer composites <u>V. Brunella</u> , F. Cesano, R. Ciardiello, A. Ciampaglia, G. Belingardi
10.45	11.00	Discussion

11.00	11.20	Coffee Break
11.20	1.20	Session: Automotive Chairs: D. Paolino, S. Boria
11.20	11.35	Strain-rate dependent FDEM simulation of perforation behavior in woven composites subjected to low velocity impact M. Rezasefat, A. Albertin Xavier da Silva, S. Campos Amico, M. Giglio, <u>A. Manes</u>
11.35	11.50	Chemical and mechanical characterization of virgin and recycled polypropylene filled with talc and glass fiber for automotive application P. Di Matteo, F. Gazza, G. Ciaccio, <u>V. Brunella</u>
11.50	12.05	Experimental characterization of CFRP epoxy composites crashworthiness M.R. Ricciardi, I. Papa, V. Lopresto, A. Calzolari, <u>V. Antonucci</u> , L. Vigna
12.05	12.20	On the crashworthiness behaviour of additive manufactured sandwich panels <u>V. Acanfora</u> , F. Baldieri, A. Garofano, F. Fittipaldi, A. Riccio
12.20	12.35	Certification by analysis of an electric revamped vehicle <u>G. Lamanna</u> , F. Caputo, A. De Luca, D. Perfetto, C. Pezzella, M. Bellucci
12.35	12.50	Multiscale method to modelling and simulation of hybrid joints <u>M. Basso</u>
12.50	1.05	Use of an innovative methodology for the characterization of polymers in the analysis of the UV-light radiation effects <u>A. Genovese</u> , V. M. Arricale, M. Barbaro, M. Sanfelice, G. Napolitano Dell'Annunziata
1.05	1.20	Discussion
1.20	2.20	Lunch
Friday, June 24th, Afternoon		
Room "Aragonese"		
2.20	5.30	Session: Innovative technologies, Damage, NDE, Repairing Chairs: I. Papa, L. Boccarusso
2.20	2.35	Thermo-mechanical simulation of the directed energy deposition (DED) printing process and optimization of scanning strategies - Experimental/numerical comparison M. Damasio, <u>M. Vallone</u>
2.35	2.50	Analysis of the behavior of fiberglass composite panels in contact with water subjected to repetitive impacts <u>A. C. Omaña</u> , J.M. Arenas, J.C. Suarez
2.50	3.05	AM Part Qualification by ICME Melt pool and Grain Boundary Engineering A. Eftekharian, H. Baid, A. Cantarutti, V. Harik, F. Abdi
3.05	3.20	On the sustainability of cold spray metallization of composite materials <u>A. Viscusi</u> , D. Borrelli, A. Caraviello, L. Carrino, R. Della Gatta, A.S. Perna, A. Astarita
3.20	3.35	Cold spray deposition of metal particles on innovative composite structures <u>A. Astarita</u> , A. Viscusi, P. Carlone, H. Parmar, F. Tucci, F. Rubino, A.S. Perna
3.35	3.50	Investigation of injection repair technique for impact damages I. Papa, <u>A. Martone</u> , A. Langella, M. Giordano, M.R. Ricciardi
3.50	4.05	Additive foam manufacturing D. Tamaro, <u>L. Landolfi</u> , A. Detry, M. Villone, P.L. Maffettone, A. Squillace
4.05	4.25	Coffee Break
4.25	4.40	Investigation failure behavior of filament wound tubes by accounting properties at microscale <u>Z. Eren</u> , D. Balkan, Z. Mecitoğlu
4.40	4.55	Multiscale modeling and damage evolution of 3D printed short fiber reinforced nylon materials <u>Z. Eren</u> , Z. Mecitoğlu

4.55	5.10	Sustainability of fused deposition modeling: the role of the plate material E. Cozzolino, F. Napolitano, A. Astarita, V. Lopresto, I. Papa, A. Squillace
5.10	5.25	On the mechanical behaviour of carbon fibre laminates repaired with hot bonding technology by infusion F. Donadio, I. Papa, A. Viscusi, L. Carrino, V. Lopresto, G. Ingenito, G. Caputo, A. Langella
5.25	5.40	Discussion

5.40	Closure of the Symposium	
7.00	<i>Wine Tour</i> Departure from Hotel Hermitage	

IMPORTANT NOTES:

All registered participants at DRaF2022 must wear their name badge when attending luncheons, coffee breaks, Conference Dinner or any official DRaF2022 function.

All the speakers are asked to upload their presentations on the computer in the room, at least 15 minutes before the start of their session.

15 minutes are dedicated to the presentation. The Discussion at the end of the session will be dedicated to questions and discussion. It will be moderated by the Chair of the session. We warmly ask you to be on time.

Poster Session

CARS Center at PoliTo - Composite materials for vehicle lightweight
G. Belingardi,

J-Tech@PoliTO Advanced Joining Technologies
A. Benelli, M. Ferraris

Approaching the influence of marine environment degradation on impacted carbon fiber/vinyl ester laminate with Speckle Interferometry investigation
V. Pagliarulo, I. Papa, V. Lopresto, P. Russo

Speckle Interferometry applied to the detection of defects in stiffened panels
P. Russo, F. Ricci, E. Monaco, G. Laurino, M. Paturzo, V. Pagliarulo

An innovative Non-Destructive Technique for the viscoelastic properties of tires
D. D'Agostinis Rinaldi, A. Genovese, F. Farroni

Commercial fabrics coated with foamed composites for wearable multifunction sensors
J. Liu, G. C. Lama, F. Recupido, A. Aldi, G. Buonocore, L. Veerdolotti, M. Lavorgna, X. Zhang

Reduction of slamming damage on GFRP hulls of high speed boats
A. Pollastro, V. Lopresto, P. Townsend, J.C. Suarez-Bermejo

CONFERENCE SECRETARIAT

Claudio Cigliano

Ilaria Papa

Chiara Cigliano

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