

7th International Conference of Engineering Against Failure

June 21-23, 2023

SPETSES ISLAND, GREECE



Conference Program

ORGANIZED BY

University of Patras, Laboratory of Technology
and Strength of Materials

Technical University of Darmstadt,
Materials Mechanics Group

Under the Auspices of



With the support of



m.j. priniotakis S.A.I.C.



Conference Co-Chairmen

Prof. Spiros Pantelakis, University of Patras

Prof. Michael Vormwald, Technische Universität Darmstadt



Message from the Conference Co-Chairmen

Dear Participant to ICEAF VII, dear Colleague,

It is our particular pleasure to welcome you to the beautiful island of Spetses on the occasion of the International Conference of Engineering Against Failure (ICEAF). This marks the 7th Conference of the successful ICEAF series, following the previous gatherings held in Patras, Mykonos, Kos, Skiathos, Chios, respectively, as well as the one held virtually due to the covid pandemic. This year, we are particularly delighted to be hosting the Conference at Korgialenios venue. The Korgialenios School, established on the island in 1923, stands as a testament to Greece's architectural heritage and serves as a fitting location for our Conference.

The main goal of the ICEAF VII Conference is to create a platform where renowned scientists, young enthusiastic researchers, colleagues, and friends from around the world will come together to present and discuss our latest research findings. We prioritize the opportunity to exchange perspectives on the works presented, fostering fruitful discussions and encouraging meaningful connections among participants. Additionally, we are dedicated to providing young researchers from Greece and beyond with the valuable opportunity to showcase their work to internationally renowned experts, all within a supportive and intellectually stimulating environment.

Our second objective is to ensure that both you and your accompanying persons have an enjoyable time, spending three beautiful days on this remarkable island. We want you not only to enjoy a high quality and pleasant Conference but also experience the beautiful scenery and savor the local cuisine. Therefore, we have taken care to facilitate it. This island holds great historical significance, having played a crucial role in the Greek War of Independence since 1821. Spetses was the first Greek island to raise the flag of Revolution on the morning of April 3rd, 1821. Once known as Isola di Spezie during Venetian rule and referred to as Pityoussa (meaning pine-clad) in ancient times, the captivating island of Spetses, located a mere 54 nautical miles from Athens, enchants visitors with its picturesque, car-free streets, distinctive architecture, illustrious naval history, and culture. The grand mansions along the coast, built by captains over two hundred years ago, stand as testaments to the island's former wealth and grandeur.

The realization of the 7th ICEAF Conference has been made possible through the dedicated efforts of numerous individuals, and we extend our heartfelt gratitude to all of them. We express our particular thanks to our esteemed Keynote speakers, the members of the International Scientific Committee, the authors, presenters, and participants to the Conference, and, of course, the members of the local Organizing Committee, who have done an excellent job in making this event possible.

We want to express our appreciation to the Federation of European Materials Society (FEMS), the European Aeronautics Science Network (EASN), and the Hellenic Metallurgical Society (HMS) for endorsing the Conference. Last, but definitely not least, we want to extend our gratitude to the Sponsors of the Conference: Analytical Instruments S.A., the Hellenic Aerospace Industry, the Hellenic Research Centre for Metals S.A., M.J. Priniotakis S.A.I.C. and Setpoint Technologies.

Please, let us extend our warmest wishes for a highly successful and fruitful Conference, as well as a truly pleasant stay in Spetses.

Warm regards,

Spiros Pantelakis & Michael Vormwald

ICEAF VII Conference Co-Chairmen

The Venue

Anargyrios and Korgialenios School of Spetses

The Anargyrios and Korgialenios School of Spetses is a historical and cultural heritage site of the island of Spetses. It was established in 1923 on a picturesque 120.000m² parcel along the northern coastline of the island.



Welcome to Spetses island

Pre-Conference Day | Tuesday, June 20th 2023

18:00-20:00 | Registrations

19:00 | Welcome Drink



Conference Program

Conference Day 1 | Wednesday, June 21st 2023

08:30-16:30		Registrations				
09:00-09:45		AMPHITHEATRE				
		Opening Ceremony – Welcome by the Chairmen of the Conference				
Keynote Lecture:		Innovative surface engineering to combat failure Prof. Hanshan Dong University of Birmingham, UK				
Chair:		Prof. Michael Vormwald & Prof. Spiros Pantelakis ICEAF VII co-Chairmen				
09:45-10:15		AMPHITHEATRE				
Keynote Lecture:		Effect of microstructure on the electrochemical corrosion behaviour of advanced cermet coatings Prof. Angeliki Lekatou University of Ioannina, Greece				
Chair:		Prof. Michael Vormwald & Prof. Spiros Pantelakis ICEAF VII co-Chairmen				
10:15-10:30		Coffee Break				
10:30-12:50		CLASSROOM ANTIQUE	CLASSROOM 1	CLASSROOM 2	CLASSROOM 4	CLASSROOM 5
Session:	Guidelines against failure (PART I)	Alloy and microstructure design of AHSS to improve their performance (PART I)	Advancements in Understanding and Improving Iron-based and Steel Mechanical System Durability and Performance (PART I)	Joining with predictable Damage Tolerance	Advanced and AI-enhanced nanomechanics for materials assessment and prognostics	
Chair:	Prof. Michael Vormwald TU Darmstadt, Germany	Dr. Alexandros Banis, Dr. Aniruddha Dutta, Prof. Carlo Mapelli, Dr. Dirk Ponge, Prof. Roumen Petrov, Dr. Ilchat Sabirov University of Ghent, Belgium - OCAS, Belgium - Politecnico di Milano, Italy - Max-Planck Institute for Iron Research, Germany - University of Ghent, Belgium - IMDEA Materials Institute, Spain	Prof. Robert Basan University of Rijeka, Croatia	Prof. Oliver Völkerink TU Braunschweig, Germany	Prof. Costas Charitidis National Technical University of Athens, Greece	
10:30-10:50	FKM-Guideline "Analytical Strength Assessment" – Overview and actual developments <i>Roland Rennert, Michael Vormwald, Alfons Esderts</i>	Direct Quenching and Partitioning for Novel Tough Ultrahigh Strength Steels <i>Mahesh Samani (invited), Sumit Ghosh, Pekka Kantanen, David Porter, Jukka Kömi</i>	A study of methods for fatigue parameters and behavior estimation of quenched and tempered steels <i>Robert Basan, Tea Marohnić, Ela Marković, Dario Iljčić</i>	Introduction to a High Fidelity Simulation Framework for the Development of Damage Tolerant Bonded Joints <i>Bonny Sachse, Marco Hoffmann, Thomas Körwien</i>	Mechanical spectroscopy: Machine learning and high speed nanoindentation for high throughput material evaluation <i>Douglas Stauffer, Bernard Becker, Eric Hintsala, Benjamin Stadnick, Ude Hangen</i>	
10:50-11:10		Texture and anisotropy investigation on austenitic lightweight steel <i>Giacomo Villa, Davide Mambelli, Silvia Barella, Andrea Gruttadauria, Carlo Mapelli</i>	Influence of residual stresses caused by shrink fit on strength of hollow shafts <i>Loc Duc Le, Lukas Suchy, Alexander Hasse</i>	A mapping methodology for damage transfer between different numerical modules in a virtual testing chain of bonded CFRP joints <i>Patrick Erdmann</i>	NAVMAT: an AI-powered pathway to knowledge sharing on material failures <i>Nikolaos Melanitis, George Giannakopoulos, Konstantinos Stamatakis</i>	
11:10-11:30	A damage parameter for a critical plane approach for fatigue strength assessment within the FKM-Guideline for non-proportional loading <i>Carl Füllgren, Michael Vormwald, Thomas Beier</i>	GTAW effect on austenitic lightweight steel's microstructure and mechanical properties <i>Giacomo Villa, Davide Mambelli, Silvia Barella, Andrea Gruttadauria, Carlo Mapelli</i>	Fatigue life estimation of corroded welded steel joint using probabilistic approach <i>Darko Pastorcic, Goran Vukelic, Zeljko Bozic</i>	A numerical simulation method for impact damage in adhesively bonded joints <i>Miriam Bostek, Peter Middendorf</i>	A method for the correlation of microstructure with nanomechanical properties in Advanced High Strength Steels for automotive applications <i>Anastasia Alexandratou, Georgios Konstantopoulos, Athanasios Katsavrias, Federico Bruno, Luca Belforte, Edoardo Rossi, Saqib Rashid, Marco Sebastiani, Costas Charitidis</i>	
11:30-11:50	Fatigue strength assessment of preloaded cross-toothed flange connections based on the FKM guidelines <i>Hans Hättel, Carsten Ulrich, Melanie Fiedler, Markus Kästner, Berthold Schlecht</i>	Study of edge cracking during hot rolling of lightweight Fe-Mn-Al-C steels using high-speed camera <i>Aniruddha Dutta, Lode Duprez, Tom Waterschoot</i>	Fatigue strength analysis of thin steel plates <i>Vladimir Chmelka, Marián Semes</i>	Crack growth simulation of bonded joints under mixed mode loading <i>Lukas Münch, Philip Rose, Peter Middendorf, Markus Linke</i>	Phase mapping and identification of complex multiphase CuWCrTi material using Nanoindentation testing and Nanodiffraction mapping <i>Athanasios Katsavrias, Anastasia Alexandratou, Georgios Konstantopoulos, Ennio Capria, Tobias Schulli, Rostislav Daniel, Michal Zitek, Costas Charitidis</i>	
11:50-12:10	Fatigue strength assessment of steel welded joints and components: A comparison of different mechanical engineering guidelines and standards <i>Melanie Fiedler, Roland Rennert, Markus Kästner</i>	The effect of aging treatment on the microstructure and mechanical properties of Fe-Mn-Al-C lightweight steels on macro- and microscale <i>Andrea Gomez-fernandez, Ilchat Sabirov, Miguel Manclús, Manuel Avella, Aniruddha Dutta, Jon Mikel Molina-Aldareguia</i>	Improving the Fatigue Design of Mechanical Systems such as Refrigerator <i>Seongwoo Woo</i>	Investigation of the influence of design parameters onto the cracked lap shear specimen <i>Philip Rose, Markus Linke, David Busquets</i>	Nanomechanical testing of printed nanolayers for application in flexible organic printed electronics devices <i>Spyros Kassaravitis, Theodora Kalampaliki, Argiris Laskarakis, Christos Kapnapoulos, Vasilis Kyriazopoulos, Volha Heben, Alexandros Paliagkas, Alexandros Zachariadis, Thanos Katsavrias, Georgios Konstantopoulos, Evangelos Mekekidis, Costas Charitidis, Stergios Logothetidis</i>	
12:10-12:30	Suggestions for Correcting the Stress Parallel to the Weld Seam <i>Wolfgang Feickert, Tim Kirchhoff, Teresa Schlitzer</i>	The effect of κ -carbides on the deformation of Fe-Mn-Al-C steel after aging <i>Alexandros Banis, Andrea Gomez, Ilchat Sabirov, Roumen Petrov</i>	Influence of Asymmetric Fillet Geometry on Spur Gear Fatigue Life <i>Niko Trumbić, Kresimir Vučković, Ivan Čular, Ivica Galić</i>	Crack tracking on element level for fatigue calculations of adhesively bonded joints <i>Andreas Wulf, Christof Nagel, Olaf Hesebeck</i>	Study of the material engineering properties of high-density poly(ethylene)/perlite nanocomposite materials <i>Yousef Murtaga, Lubomir Lapcik, Assoc. Barbara Lapcikova</i>	
12:30-12:50	Development of a software for fatigue strength assessment of welded joints <i>Heinz Thomas Beier, Carl Füllgren, Michael Vormwald, Jörg Baumgartner, Markus Fab, Tobias Melz, Tim Kirchhoff, Teresa Schlitzer, Filip Bös, Wolfgang Feickert</i>	Understanding Mn and C segregation at the phase boundary in medium Mn steel <i>Faisal Waqar Syed, Binhan Sun, Dirk Ponge, Dierk Raabe</i>	Minimizing Porosity in 17-4 PH Stainless Steel Through Cold Pressing and Sintering for Improved Resistance to Static and Dynamic Loads <i>Tamas Mikó, Dionysios Markatos, Konstantinos Koulouris, Enrico Troiani, Zoltan Gacsi</i>	Static residual strength analysis of fibre composite bonded joints after impact and fatigue using mesoscale progressive damage analysis <i>Oliver Völkerink, Martin Schollerer, Jens Kosmann, Dirk Holzhüter, Christian Hühne</i>	Correlation between structure and mechanical properties in a-quartz single crystal by nanoindentation and Confocal Raman microscopy <i>Esther Enriquez Pérez, Adolfo Del Campo, Julián Jiménez Reinoso, Georgios Konstantopoulos, Costas Charitidis, José Francisco Fernández Lozano</i>	
12:50-13:50	Light Lunch					

Conference Program

Conference Day 1 | Wednesday, June 21st 2023

13:50-16:10	CLASSROOM ANTIQUE	CLASSROOM 1	CLASSROOM 2	CLASSROOM 4	CLASSROOM 5
Session:	Guidelines against failure (PART II)	Alloy and microstructure design of AHSS to improve their performance (PART II)	Advancements in Understanding and Improving Iron-based and Steel Mechanical System Durability and Performance (PART II)	Towards Manufacturing Defects Reduction in Composite Structures	Structural Integrity and Processing Challenges of Additively Manufactured Materials
Chair:	Dr. Melanie Fiedler TU Dresden, Germany	Dr. Alexandros Banis, Dr. Aniruddha Dutta, Prof. Carlo Mapelli, Dr. Dirk Ponge, Prof. Roumen Petrov, Dr. Ilchat Sabirov University of Ghent, Belgium - OCAS, Belgium - Politecnico di Milano, Italy - Max-Planck Institute for Iron Research, Germany - University of Ghent, Belgium - IMDEA Materials Institute, Spain	Prof. Anna Zervaki National Technical University of Athens, Greece	Prof. Antonio Maria Di Ilio & Prof. Antonios Stamopoulos University of L'Aquila, Italy	Dr. Anthoula Poulia & Dr. Spyros Diplas University of Oslo, Norway - SINTEF, Norway
13:50-14:10	PRACTICAL FATIGUE STRENGTH DIAGRAMS FOR COMPRESSION SPRINGS BASED ON THE FKM-GUIDELINE "ANALYTIC STRENGTH ASSESSMENT FOR SPRINGS" <i>Martin Petrich, Ulf Kletz</i>	Fracture characterization of structural steel S690Q by using mini-CT specimens <i>Marcos Sánchez, Sergio Cicero, Borja Arroyo</i>	Fatigue behaviour of advanced high strength steels <i>Sierra-Soraluce A., Gomez A., Banis A., Petrov R., Molina-Aldareguia J., Dutta A., Sabirov I.</i>	Improving the mechanical properties of Glass Reinforced Plastics by slight mechanical compression <i>Isidoros Iakovidis, Sotiria Dimitrellou, George Orfanos, Michael Vlachogiannis</i>	Magnetic High Entropy Alloys for Renewable Electricity Applications: A Comparative Study of Two Fabrication Methods <i>Anthoula Poulia, Amin Azar, Calliope Bazioti, Aleksander Larsen, Joachim Graff, Branson Belle, Patricia Almeida Carvalho, Irena Gajdos Janotova, Pavlo Mikheenko, Anette Eleonora Gunnæs, Spyridon Diplas</i>
14:10-14:30	Investigations on permissible plastic strains using the example of feather key connections <i>Benjamin Muhammedi, Alexander Hasse, Lukáš Suchý</i>	Distribution of residual stresses at welding seams performed at S235 and S355 <i>Eckehard Müller, Thomas Hermann</i>	Phase field modelling of low cycle fatigue in the framework of non-conventional thermodynamics <i>Aris Tsakmakis, Michael Vormwald</i>	Optimization of the cupro-nickel and graphene co-deposition process based on the fracture toughness characteristics. <i>Gabriele Baiocco, Daniel Salvi, Antonios Stamopoulos, Nadia Ucciardello</i>	Phase-separated properties based on the multi-technique nanomechanical characterisation methodologies of ferrite and austenite in 2205 duplex and 2507 super duplex stainless steel produced via Laser Powder Bed Fusion Additive Manufacturing <i>Leonidas Gargalis, Leonidas Karavias, Elias Koumoulos, Joachim S. Graff, Spyros Diplas, Evangelia Karazi</i>
14:30-14:50	Fatigue Life Assessment of Automotive Leafsprings <i>Efstratios Giannakis, Georgios Savaidis, Roselita Fragoudakis, Alexandros Savaidis</i>	Microstructure, texture, and properties correlation of an Ultra-Fast Heat-treated commercial grade steel <i>Spyros Papaethymiou, Alexandros Banis, Ilchat Sabirov, Dr.-ir. Roumen Petrov</i>	An interesting fatigue phenomenon in 316L stainless steel processed by surface mechanical rolling treatment <i>Yanyao Jiang, Seth Henderson, Shicong Liu, Xiaogui Wang</i>	Investigation of Defects in Composite Structures produced with the Fused Filament Fabrication technique using X-Ray Computed Tomography <i>Antonios Stamopoulos, Francesco Pace, Jonathan Glinz, Sasha Senck</i>	Coupling of processing parameters to the columnar to equiaxed transition (CET) using a computationally low-cost model for process mapping and high-throughput screening of new alloys in additive manufacturing <i>Magnus Reiersen, Mohammed Mhamdi, Even Wilberg Hovig, Yanjun Li, Qiang Du, Kai Zhang</i>
14:50-15:10	Finite Element Modelling of Stress Shot Peening: Application on Leaf Springs <i>Christos Gakias, Roselita Fragoudakis, Georgios Savaidis</i>	Cold-forming of quenched and partitioned martensitic stainless steels: from Nakajima to simulation <i>Andres Sierra-Soraluce, Juan Luis de Pablos, Ali Smith, Marta Muratori, Ilchat Sabirov</i>	Microstructure evaluation of cryogenically hardened and tempered 5%Cr hot-work tool steel <i>Dimitrios Papageorgiou, Anthi Tsarouxa, Dionysios Mouzakis, Dimitrios Manolagos</i>	Analysis of the effect of pressure cycle on the impregnation level of textile glass fiber reinforced thermoplastic composites for automotive applications <i>Antonios Stamopoulos, Antoniamaria Di Ilio, Gianluigi Creonti</i>	Optimization approach of DED process to fulfil the requirements on material properties and component performance of water jet impeller <i>Afaf Saai, Siri Marthe Arbo, Sture Henning Serli, Cato Dybdahl, Mette Lokna Nedreberg</i>
15:10-15:30	Robust calculation method for fretting fatigue strength assessment of steel, cast iron and aluminum contacts <i>Denny Knabner, Lukáš Suchý, Alexander Hasse</i>	The deceit of steel strength ductility diagrams: A case study on high manganese lightweight steel. <i>Mohamed Elkot, Binhan Sun, Dirk Ponge, Dierk Raabe</i>	On the high-cycle fatigue properties of a near-net shape manufactured high-nitrogen tool steel <i>Eaazeh Javadzadeh Kalahroudi, Mohamed Sadek, Giulio Maistro, Krishnan Hariaramabalan Anantha, Thomas Mikael Grehk</i>	Identification of the Manufacturing Defects in Composite Structures produced with the Filament Winding technique with contact and non-contact inspection methods <i>Giulio D'Emilia, Antonella Gaspari, Antonios Stamopoulos, Emanuela Natale, Luciano Chiominto</i>	Small fatigue crack growth properties of 316L SS fabricated with Laser-based Powder Bed Fusion process <i>Hary Psihoyos, George Lampeas, Efthymios Palatidis, Christos Sofras</i>
15:30-15:50	The low-cycle fatigue behavior of high-Manganese twinning-induced plasticity steels with various loading orientations <i>Di Song, Heinz Thomas Beier, Michael Vormwald</i>	Improving resistance against hydrogen embrittlement of high strength medium Manganese TRIP steels by heterogeneous Mn distribution Part I: Hydrogen damage mechanisms in medium Mn TRIP steel <i>Dirk Ponge, Binhan Sun, Dierk Raabe</i>	Statistical analysis of parameters and behavior of quenched and tempered steels <i>Tea Marohnic, Robert Basan, Ela Marković, Sunčana Smokvina Hanza</i>	Mode I fracture toughness for hydrothermally-aged filament wound composites <i>Artur Pollet, Humberto Almeida Jr., Antonios Stamopoulos, Sandro Amico</i>	Exploring the Stress Concentration Factor in Additively Manufactured Materials: A Machine Learning Perspective on Surface Notches and Subsurface Defects <i>Amin S. Azar</i>
15:50-16:10	The FKM guideline nonlinear - strength assessment considering elastic-plastic material behaviour <i>Melanie Fiedler, Michael Wächter, Igor Varfolomeev, Alfons Esderts, Michael Vormwald</i>	Improving resistance against hydrogen embrittlement of high strength medium Manganese TRIP steels by heterogeneous Mn distribution Part II: New approach to increase the hydrogen embrittlement resistance of medium Mn TRIP steel <i>Dirk Ponge, Binhan Sun, Dierk Raabe</i>	Performance Analysis of High-speed and High-pressure Non-contact Mechanical Seals under Typical Failure Conditions <i>Xiang Zhao, Ying Liu, Haoran Liao, Hongju Li, Anqi Huang, Zhurong Liang</i>	A "mean object" approach to simulate manufacturing-induced porosity in filament-wound composites <i>Chaman Srivastava, Antonios Stamopoulos, Sotirios Grammatikos</i>	Experimental and statistical investigation on flexural properties of vertically oriented FDM fabricated PLA specimens <i>Nikolaos A. Fountas, Ioannis Papanтониου, John D. Kechagias, Dimitrios E. Manolagos, Nikolaos M. Vaxevanidis</i>
16:10-16:20	Coffee Break				

Conference Program

Conference Day 1 | Wednesday, June 21st 2023

16:20-18:00	CLASSROOM ANTIQUE	CLASSROOM 1	CLASSROOM 2	CLASSROOM 4	CLASSROOM 5
Session:	Guidelines against failure (PART III)	Emerging Techniques for Characterizing and Analyzing Material Properties	Advances in Nanocarbon-Based Composites and Fibre-Reinforced Polymers: Characterization, Functionalization, and Applications	Modeling, Characterization, and Damage Detection and Assessment of Composite Materials	Advances in Materials Science and Engineering: Formability, Fatigue, and Failure Analysis of Advanced Alloys in Industrial Applications
Chair:	Prof. Roland Rennert IMA Dresden, Germany	Prof. George Savaidis Aristotle University of Thessaloniki, Greece	Prof. Konstantinos Galiotis & Prof. Konstantinos Dassios University of Patras, Greece	Prof. Konstantinos Anyfantis & Prof. Angelos Filippatos National Technical University of Athens, Greece - University Of Patras, Greece	Dr. Wolfgang von Bestenbostel Airbus, Germany
16:20-16:40	Proof of structural durability for surface-hardened components based on the local strain approach <i>Patrick Yadegari, Thomas Beier, Michael Vormwald</i>	Approach for the fatigue assessment of welds considering nonlinear elastic-plastic material behavior <i>Winnifred Rudorffer, Michael Wächter, Alfons Esderts</i>	Mechanics of carbon nanomembranes for water separation <i>Marinos Dimitropoulos, George Trakakis, Christos Pavlou, Christos Kostaras, Nikolaus Meyerbröker, Raphael Gehra, Albert Schnieders, Costas Galiotis, Konstantinos Dassios</i>	Investigation and calculation of longitudinal compressive strength of unidirectional glass fiber reinforced plastic considering fiber orientation distribution <i>Tom Blümel, Rabea Sahr, Alexander Krimmer</i>	Durability and fractography of aluminum alloy 6060 after fatigue tests under bending and torsion loading <i>Joanna Malecka, Sebastian Skrobacz, Roman Chudy, Szymon Derda, Juliusz Kuś, Tadeusz Lagoda</i>
16:40-17:00	Notch approximation methods for components under thermomechanical stresses <i>Jan Hamacher, Michael Vormwald</i>	Investigation of intelligent evaluation method of fretting fatigue life assessment based on hierarchical mechanism-based neural network <i>Huang Yuan, Yujing Liu</i>	Study of mechanical properties of epoxy/graphene and epoxy/halloysite nanocomposites <i>Lubomir Lapcik, Yousef Murtaja, Barbora Lapcikova</i>	Multiscale damage modelling for variable-angle filament-wound composites <i>Bruno Christoff, Humberto Almeida Jr., Rui Guedes, Volnei Tita</i>	Influence of geometry on the failure behaviour of force-locking and form-locking shaft-hub connections on the example of the inner knurled press-fit connection <i>Tobias Hentschel, Alexander Hasse</i>
17:00-17:20	FATIGUE LIFE ESTIMATION OF NOTCHED COMPONENTS UNDER MULTIAXIAL NON-PROPORTIONAL LOADING <i>Jan Kraft, Michael Vormwald</i>	Study of experimental and theoretical crack directions for specimens with a circular hole under biaxial cyclic loading <i>Victor Chaves, Jose A. Balbin, Alfredo Navarro</i>	Using the Point Method to estimate failure loads in 3D printed graphene-reinforced PLA notched plates. <i>Sergio Cicero, Sergio Arrieta, Marcos Sánchez, Laura Costanon-Jano</i>	Probabilistic simulation methods in micromechanical modeling of fiber-reinforced composites <i>Janot Lubritz</i>	Towards Automated Fatigue Striation Counting <i>Wolfgang von Bestenbostel, Klaus Schertler</i>
17:20-17:40	Comparison of the strength assessments of the FKM guidelines <i>Melanie Fiedler, Roland Rennert</i>	Verification of a nonlocal analytical model to simulate cracked nanobeams under mode I static loading <i>Andrea Zanichelli, Andrea Carpinteri, Camilla Ronchei, Daniela Scorza, Sabrina Vantadori</i>	An electrostatic glue <i>Mark Geoghegan (invited)</i>	Design Optimization of an Aircraft Canopy against Bird Strike <i>Tezel M, Özkan Ö, Acar E</i>	Very High Cycle Bending Fatigue response of Ni-Al Bronze <i>Katerina Chantziara, Mohamed Sadek, Ahmed Chabbah, Mikael Grehk</i>
17:40-18:00	Black-box system identification approach for damage detection in a small-scale wind turbine blade <i>Mengen Liu, Helon Vicente Hultmann Ayala</i>	Toughness of Hydrogels <i>Konstantinos Garyfallogiannis, Prashant Purohit, John Bassani</i>		Investigation of conduction welded thermoplastic composite joints in Mode-I and Mode-II loading conditions <i>Konstantinos Fotopoulos, Stavros Vallis, George Lampeas, Bas Tjjs</i>	New temptations in hot structural fabrication of aero engine components <i>Joel Andersson</i>
18:00	End of Day 1				

Conference Program

Conference Day 2 | Thursday, June 22nd 2023

08:30-16:30	Registrations				
09:00-09:30	AMPHITHEATRE				
Keynote Lecture:	Validating structural simulations of large-scale aeronautical components Prof. George Lampeas University of Patras, Greece				
Chair:	Prof. Spiros Pantelakis ICEAF VII co-Chairman				
09:30-11:30	CLASSROOM ANTIQUE	CLASSROOM 1	CLASSROOM 2	CLASSROOM 4	CLASSROOM 5
Session:	Fatigue and Fracture of additively manufactured materials	Advances in Fracture Analysis of High-Performance Metals and Alloys: Experimental Investigations and Numerical Modeling	Additive manufacturing	Exploring Fracture Phenomena in Materials & Structures under Extreme Conditions of Operation	Computational and experimental techniques for the tolerance analysis and robust design of materials and devices
Chair:	Prof. Giovanni Meneghetti University of Padova, Italy	Dr. George Pantazopoulos ELKEME, Greece	Prof. Katarina Monkova Technical University in Kosice, Slovakia	Prof. Dionysios Mouzakis Hellenic Army Academy, Greece	Prof. Vincenzo Tucci & Dr. Monica La Mura University of Salerno, Italy
09:30-09:50	A review of the use of the Theory of Critical Distances to perform the uniaxial/multiaxial fatigue assessment of notched 3D-printed metals <i>Luca Susmel (invited)</i>	Hydrocode numerical modeling of projectile impact on moving aluminum targets <i>Costas Kalfountzos, George Bikakis, Efstathios Theotokoglou</i>	Comparison of the bending properties of a radially and rectangularly distributed lattice structure made of ABS material <i>Katarina Monkova, Peter Pavol Monka, Milan Zaludek, Martin Korol, Marek Kocisko, Petr Baron, Matej Skyvara</i>	Protecting Spacecraft against Hyper-Velocity Impact: Problems and Solutions <i>Dionysios Tampros, Dr-Ing. Dionysios Mouzakis</i>	A novel reliability evaluation method combining improved subset simulation and adaptive Kriging model for rare failure events <i>Debiao Meng, Shiyuan Yang, Peng Nie, Yipeng Guo</i>
09:50-10:10	MICROSTRUCTURE AND FATIGUE BEHAVIOR OF A HIGH STRENGTH ADDITIVELY MANUFACTURED AL-CU ALLOY <i>Gianni Nicoletto, Giovanni Fortese, Tibor Varmus, Radomila Konecna</i> <i>Mr Enrico Carrara will present on behalf of Dr. Giovanni Fortese</i>	The anisotropy behavior of metallic foams under Charpy impact tests <i>Sergiu-Valentin Galatanu, Emanoil Linul, Jaroslav Kovčik, Liviu Marsavina</i>	Dissimilar joining by 3D printing: Study of the joint design <i>Teresa Morgado, Carlos Leitão, Rui Lead, Ivan Galvão</i>	Bird strike analysis of new composite inlet for tilt rotor aircraft <i>Radek Doubrava, Jarmil Vlach, Martin Oberthor, Petr Bělský</i>	A hybrid adaptive strategy for support vector machine-based structural reliability analysis <i>Shiyuan Yang, Debiao Meng, Peng Nie, Hongtao Wang</i>
10:10-10:30	Probabilistic defect-notch interaction assessment of AM materials under size effect <i>Xiaopeng Niu, Filippo Berto, Jinchao He, Shunpeng Zhu</i>	Understanding the crack initiation mechanism under thermal-mechanical fatigue in polycrystalline superalloys <i>David Collins, Mikael Segersäll, Johan Moverare, Angus Wilkinson, Baptiste Gault, Paraskevas Kontis</i>	Investigation of bio-based and recycled materials for Additive Manufacturing using Fused Layer Modelling <i>Stefan Junk, Philipp Vögele</i>	Temperature dependent fiber/matrix interfacial debonding in CFRPs <i>George Zaverdinos, Dimitrios Dragatogiannis</i>	Application of novel diffraction methodologies for estimation of fatigue state of the material <i>Elzbieta Gadalińska, Anna Trykowska, Maciej Malicki, Bartosz Madejski</i>
10:30-10:50	Fatigue Behavior of Miniaturized Ti6Al4V Lattice Structures: Investigating the Influence of Building Orientation and Stress Ratio for Improved Design and Manufacturing of Biomedical Devices <i>Simone Murchio, David Maniglio, Andrea Rigatti, Luca De Nart, Valerio Luchin, Matteo Benedetti</i>	Wear Behavior of SBR/BR Compounds Including Different ZnO Types <i>Cansu Börüban Binaoğlu, Şeyda Polat, Ş. Hakan Atapek</i>	Numerical investigation of 3-D auxetic meta-material for high-performance concrete <i>Neeraj Sharma, Kshiti Kumar Yadav</i>	Armor plates made from household and "off-the-shelf" materials for use by citizens in life threatening conditions <i>Nasikas N, Emmanouil P, Markoulakis A, Mouzakis D</i>	Plastic stress concentration effects in the tolerance to short fatigue cracks <i>Jaime Castro, Mengmeng Liu, Carlos Bandeira, Antonio Miranda, Renato Vieira, Marco Meggiolaro</i>
10:50-11:10	MULTI-SCALE ASSESSMENT OF MECHANICAL PROPERTIES AND FATIGUE PERFORMANCE OF ADDITIVELY MANUFACTURED NICKEL-BASE SUPERALLOYS <i>Huang Yuan, Tinglian Zhang, Shengzhe Jin</i>	Experimental and Computational study of Microhardness Evolution in the HAZ for Al-Cu-Li alloys <i>Stavroula Maritsa, Anna D. Zervaki</i>	Innovative Additive Manufacturing of Biomimetic 3D Constructs for Enhanced Impact Energy Dissipation <i>Nikolaos Michallidis, Georgios Malliaris, Apostolos Argyros, Emmanouel Smyrniaos</i>	Determination of stresses in the combination of proportional cyclic bending and torsion of RG7 bronze according to different plasticity models <i>Michał Paduchowicz, Karolina Glowacka, Joanna Malecka, Tadeusz Lagoda</i>	Modeling ductile failure – A non-local plasticity model for porous metals with deformation-induced anisotropy <i>Nikolaos Aravas, Ioanna Papadioti</i>
11:10-11:30	Fatigue threshold estimation of as-built surfaces of Ti6Al4V alloy specimens based on equivalent crack models <i>Giovanni Meneghetti, Daniele Rigon, Filippo Coppola</i>	Pressure equipment in refineries: Correlation of process conditions with life span under the existence of welding defects <i>A. Fotiadis, D.Oikonomou, A.D.Zervaki and G.N.Haidemenopoulos</i>	Investigation of the damping capacity of stochastic lattice structures <i>Elias Sarafis, Andreas Stamkos, Georgios Malliaris, Sofia Kavafaki, Vassilios Mitridis</i>	Fatigue and fracture of the aeronautical Al-Cu-Li 2198 alloy for different ageing tempers <i>Ioannis Goulas, Alexis Keramandis, Christina Charalampidou, Stavros Kourkoulis, and Nikolaos Alexopoulos</i>	EXPERIMENTAL AND NUMERICAL ASSESSMENT OF FAILURE IN AIRCRAFT COMPONENTS MANUFACTURED BY LIQUID RESIN INFUSION (LRI) <i>E. Karachalios, T.S. Plagianakos, K. Muñoz, M. Jiménez, V. Prentzas</i>
11:30-11:40	Coffee Break				

Conference Program

Conference Day 2 | Thursday, June 22nd 2023

11:40-13:20	CLASSROOM ANTIQUE	CLASSROOM 1	CLASSROOM 2	CLASSROOM 4	CLASSROOM 5
Session:	Environmental degradation, corrosion and wear	Multi-material design and function-integration for sustainable mechanical systems	Safety Aspects in Aircraft Design	Surface engineering and coatings	Failure in civil and environmental engineering analysis / prevention / repair
Chair:	Prof. Angeliki Lekatou University of Ioannina, Greece	Prof. Angelos Filippatos University Of Patras, Greece	Prof. Andreas Strohmayer University of Stuttgart, Germany	Prof. Hanshan Dong University of Birmingham, UK	Dr. Kaluza Marta & Prof. Charis Apostolopoulos Silesian University Of Technology, Poland - University of Patras, Greece
11:40-12:00	Corrosion and wear performance of a biomedical CoCrMo alloy fabricated by Vacuum Arc Melting <i>Sevasti Emmanouilidou, Aggelos Papagiannopoulos, Angeliki Lekatou</i>	Integrating sustainability into conceptual design of an aircraft structure for and beyond an eco-design approach <i>Angelos Filippatos, Dionysios Markatos, Kaushik Abhyankar, Georgios Tzortzinis, Maik Gude, Spiros Pantelakis</i>	Design of a TRL 3 Concept for Supersonic Variable Pitot Inlets with a Safe Design Approach for Academic Environments <i>Stefan Kazula, Klaus Höschler</i>	Degradation of Thermoelectric Materials and their Protection by Chromium-based Coatings <i>Zhenxue Zhang, Mikdat Gurtaran, Xiaoying Li, Hanshan Dong</i>	Textile Reinforced Mortar strengthening as effective prevention against premature failure of masonry walls made of AAC blocks subjected to diagonal compression <i>Marta Kaluza</i>
12:00-12:20	Fly ash as a corrosion inhibitor of AISI 316L and 304L stainless steel concrete reinforcements under the combined effect of acid rain and seawater <i>Sofia Tsouli, Pantelis Goutzos, Spyros Kleftakis, Angeliki Lekatou</i>	Modelling the shredding process of multi-material structures for recycling-oriented design <i>Magdalena Heibek, Jonas Richter, Thomas Mütze, Angelos Filippatos</i>	Common Cause Analysis of the Air Supply System of Fuel Cell-Powered Propulsion Systems in Electrified Aviation <i>Stefan Kazula</i>	Improvement of IFSS of CFRP composites by ASP treatments <i>Xiaoying Li, Behnam Dasthozorg, Hanshan Dong</i>	Simulation of the degraded (steel-concrete) bond strength due to corrosion via modeling pull out tests <i>Konstantinos Koulouris, Alkiviadis Charalampopoulos, Charis Apostolopoulos</i>
12:20-12:40	Development of a tool for the prediction of wear in spur gears. Application to wind turbine's pitch system <i>Maite Garcia, David Cubillas, Mikel Escalero</i>	Inspection and evaluation of corroded steel bridges with high resolution 3D laser scanning and convolutional neural networks (CNN) <i>Georgios Tzortzinis, Angelos Filippatos, Jan Wittig, Maik Gude, Chengbo Ai, Simos Gerasimidis</i>	Review of Potential Safety Challenges Associated with Electromagnetic Interference for Future Electrified Aero Engines <i>Stefanie de Graaf</i>	Oxidation Behaviour of CrSi Coatings for Combating Degradation of 316 Austenitic Stainless Steel at High Temperatures <i>Mikdat Gurtaran, Zhenxue Zhang, Xiaoying Li, Hanshan Dong</i>	Effect of shot blasting treatment on mechanical behavior of steel reinforcement <i>Maria Basdeki, Charis Apostolopoulos</i>
12:40-13:00	The Corrosion Resistance of High-Strength Steels: An Examination of Microstructural Effects Using Localised Electrochemical Methods <i>Aytac Yilmaz, Satyakam Kar, Gaojie Li, Konstantina Traka, Jilt Sietsma, Maria J. Santofimia, Yaiza Gonzalez-Garcia</i>	Ice detection on composite blades using artificial neural networks under different icing conditions based on their vibration behavior <i>Jan Wittig, Georgios Tzortzinis, Angelos Filippatos</i>	Analysis of Critical Loss of Thrust for Hybrid-Electric Aircraft Configurations and Implications on Preliminary Aircraft Design <i>Jonas Mangold, Andreas Strohmayer</i>	Active screen plasma nitriding of laser powder bed fusion processed 316L stainless steel for the application of fuel cell bipolar plates <i>Kaijie Lin, Jingchi Qiao, Dongdong Gu</i>	Structural Health Monitoring implementation in standards and application to historic masonry structures <i>Dimitrios Diamantidis, Miroslav Sjkora</i>
13:00-13:20	Effect of Environmentally Friendly Surface Treatments on the Corrosion Behavior of New Al-Li Alloys <i>Alexandra Karanika, Nikolaos Vourdas</i>	Experimental Study of Composite Driveshafts for Marine Applications <i>Elias Bilalis, Georgios Tzortzinis, Nicholas Tsouvalis, Angelos Filippatos</i>	Zonal safety analysis for the powertrain and fuel supply system of a hydrogen-powered aircraft <i>Nicolas Moels, Jonas Mangold, Andreas Strohmayer</i>	Plain fretting crack initiation - experimental and numerical fracture mechanics analyses <i>Denny Knabner, Lukáš Suchý, Alexander Hasse</i>	Damage of a post-tensioned concrete bridge - unwanted cracks of the bridge girders <i>Bartosz Sobczyk, Mikolaj Miśkiewicz, Łukasz Pyrzowski</i>
13:20-14:20	Light Lunch				
14:20-14:50	AMPHITHEATRE				
Keynote Lecture:	Imaging using Ultrasonics and X-ray CT: Problems and Solutions Prof. Elena Jasiuniene Kaunas University of Technology, Lithuania				
Chair:	Prof. Michael Vormwald ICEAF VII co-Chairman				

Conference Program

Conference Day 2 | Thursday, June 22nd 2023

14:50-16:10	CLASSROOM ANTIQUE	CLASSROOM 1	CLASSROOM 2	CLASSROOM 4	CLASSROOM 5
Session: Chair:	Non-Destructive Testing, Structural Health Monitoring and Robotic applications for prevention of failure and maintenance of different infrastructures (PART I) Prof. Elena Jasiuniene & Dr. Valentina Ivanova Kaunas University of Technology, Lithuania - CEA, France	Size effect and probabilistic failure assessment (PART I) Prof. Alfonso Fernandez-Canteli & Dr. Miguel Muniz-Calvente & Dr. Sergio Blazón University of Oviedo, Spain	Smart and Sustainable Aerospace Engineering: Aeroelasticity, Morphing, and Maintenance Prof. Konstantinos Stamoulis Amsterdam University of Applied Sciences, Netherlands	Environmentally induced degradation and damage: advanced modelling, characterization and optimization aspects (PART I) Prof. Mikhail Zheludkevich & Dr. Natalia Konchakova & Prof. Nikolaos Alexopoulos Helmholtz-Zentrum Hereon, Germany - University of the Aegean, Greece	Additive Manufacturing & 3D printing: Design, Mechanical Performance, and Structural Integrity (PART I) Dr. Pietro Foti Norwegian University Of Science And Technology, Norway
14:50-15:10	A Novel Non-Local Structural Health Monitoring Method for Real-time Crack Growth Analysis Faraz Ganjdoust, <u>Adnan Kefal</u> , Ali Javili	Probabilistic buckling assessment and reliability of FML, composite and aluminum cylindrical panels under compression with load and fabrication uncertainties <u>Costas Kalfountzos</u> , George Bikakis, Efsthios Theotokoglou	Buckling Prediction of Single-Walled Carbon Nanotube-Reinforced Laminated Composite Structures under Hygro-Thermo-Mechanical Conditions Stelios Georgantzinos, Panagiotis Antoniou, <u>Konstantinos Stamoulis</u> , Christos Spitas	How modelling can accelerate the design of active protective coatings? Mikhail Zheludkevich	Peening based surface treatments for post-processed additive manufactured AISI10Mg alloy Erfan Maleki, Asghar Heydari Astaraee, <u>Amir Ardeshiri Lordjeani</u> , Sara Bagherifard, Mario Guagliano
15:10-15:30	Development of novel multi-dimensional data fusion technique for evaluation of adhesive bonded joints using ultrasonic and X-ray radiographic non-destructive testing <u>Gawher Ahmad Bhat</u> , Bengisu Yilmaz, Damira Smagulova, Vaidotas Cicenas, Egidijus Zukauskas, Elena Jasiuniene	Investigation of the size effect on the critical distance and fatigue life using the highly stressed volume approach <u>Jinchao He</u> , Shunpeng Zhu, Xiaopeng Niu, Ding Liao	Liquid Hydrogen Storage Tank Virtual Crashworthiness Design Exploration for Civil Aircraft Antoine Gallois, Ioannis Giannopoulos, <u>Efsthios Theotokoglou</u>	Interoperability of experimental and simulation data along production chains on the VIPCOAT Open Innovation Platform <u>Natalia Konchakova</u> , Peter Klein, Peter Visser, Heinz A. Preisig, Thomas F. Hagelien	Cold spray depositions of Multi-Principal Element Coatings – Sprayability and Characterization Magesh Kumaravel, <u>Amir Ardeshiri Lordjeani</u> , Sara Bagherifard, Mario Guagliano
15:30-15:50	Monitoring of structures integrity in operation <u>Vladimir Chmelko</u> , Tomáš Koščo	Probabilistic lifetime assessment of a lost foam cast Al-Si alloy based on microcomputed tomographic measurements <u>Martin Wagner</u> , Gerrit Barth, Andreas Mösenbacher, Martin Hoyer, Marco Riva, Hans-Jürgen Christ	Liquid Hydrogen Storage Tank Loading Generation for Civil Aircraft Damage Tolerance Analysis Ioannis Giannopoulos, <u>Efsthios Theotokoglou</u>	Modelling mechanically induced failure of PEO coated extruded magnesium <u>Eugen Gazonbiller</u> , Natalia Konchakova, Maria Serdechnova, Carsten Blawert, Daniel Höche, Mikhail L. Zheludkevich	On the Effect of Load Ratio on the Fatigue Behaviour of C45 Steel <u>Pietro Foti</u> , Aldo Milone, Stefano Filippo, Raffaele Landolfo, Filippo Berto
15:50-16:10	Improved Damage Mapping with Hyperbola Approach for Guided Waves Based Structural Health Monitoring Using Fiber Bragg Grating sensors <u>Rohan Soman</u> , Kara Peters, Tomasz Wandowski, Wieslaw Ostachowicz	The Generalized Local Model: Review of applications during the last 5 years <u>Miguel Muñoz Calvente</u> , Alfonso Fernandez Canteli	A Novel, Non-Contact NDT Scanner Case Study: Thickness Measurement, Debonding and Crack Detection in Composites Arno Volker, <u>Konstantinos Stamoulis</u> , Donald Tongeren, Bart Bekkema, Robert Poppe	Numerical simulation of corrosion-induced damage on Al-Cu-Li 2198 alloy Eleftheria-Sotiria Louka, Paraskevas Papanikos, Markos Margaritis, Christina Margarita Charalampidou, <u>Nikolaos Alexopoulos</u>	FATIGUE TESTING OF A LIGHTWEIGHT COMPONENT MADE OF ADDITIVELY MANUFACTURED ALUMINUM ALLOY <u>Gianni Nicoletto</u> , Federico Uriati, Giovanni Fortese, Enrica Riva Mr Enrico Carrara will present on behalf of Prof. Gianni Nicoletto
16:10-16:20	Coffee Break				
16:20-17:40	CLASSROOM ANTIQUE	CLASSROOM 1	CLASSROOM 2	CLASSROOM 4	CLASSROOM 5
Session: Chair:	Non-Destructive Testing, Structural Health Monitoring and Robotic applications for prevention of failure and maintenance of different infrastructures (PART II) Prof. Elena Jasiuniene & Dr. Valentina Ivanova Kaunas University of Technology, Lithuania - CEA, France	Size effect and probabilistic failure assessment (PART II) Prof. Alfonso Fernandez-Canteli & Dr. Miguel Muniz-Calvente & Dr. Sergio Blazón University of Oviedo, Spain	Innovative composites for sustainability (PART I) Dr. Claudio Mingazzini University of Padova, Italy	Environmentally induced degradation and damage: advanced modelling, characterization and optimization aspects (PART II) Prof. Mikhail Zheludkevich & Dr. Natalia Konchakova & Prof. Nikolaos Alexopoulos Helmholtz-Zentrum Hereon, Germany - University of the Aegean, Greece	Additive Manufacturing & 3D printing: Design, Mechanical Performance, and Structural Integrity (PART II) Dr. Pietro Foti Norwegian University Of Science And Technology, Norway
16:20-16:40	RIMA network of Digital Innovation Hubs a tool for the innovation in Inspection and Maintenance of infrastructures <u>Peter Trampus</u> , Christophe Leroux, Mariann Mertz	Probabilistic assessment of rolling contact fatigue including the scale effect <u>Mikel Escalero</u> , Haritz Zabala, Mireia Olave	Fatigue behaviour of 10% wt. short glass fibre reinforced recycled Polypropylene with mineral filler in presence of notches Filippo Coppola, <u>Mauro Bicatta</u> , Marco Garilli, Luca Fabbro, Ivan Azzalini, Giovanni Meneghetti	The effect of artificial ageing kinetics on mechanical performance of Al-Cu-Li alloy AA2198 <u>Nick Birbilis</u> , Christina Charalampidou, Nikolaos Alexopoulos	Crystal plasticity modeling of lamellar deformation in bimodal Ti-6Al-4V under mechanical fatigue <u>Keke Tang</u> , Yindun Zhao, Paolo Ferro, Filippo Berto
16:50-17:00	Implementation of a Robotic Mobile Manipulator moving a NDT probe inside Steel Cylinder Concrete Pipes for Corrosion Assessment <u>Eric Lucet</u> , Farès Klouy, Lucas Si Larbi Dr. Frederic Colledani will present on behalf of Dr. Eric Lucet	Fatigue crack growth prediction: from lab to real component <u>Giovanna Calvin Garcia</u> , Mikel Escalero, Haritz Zabala, Miguel Muñoz-Calvente	Mechanical characterizations on biobased FMLs, being developed for battery boxes, before and after ageing in salt spray chambers <u>Claudio Mingazzini</u> , Enrico Leoni, Stefano Bassi, Tiziano Delise, Matteo Scafe, Giulia De Aloisio, Luca Laghi, Gian Luca Falletti	Investigation on the effect of artificial ageing kinetics on corrosion susceptibility of Al-Cu-Li 2198 alloy Mikhail Zheludkevich, <u>Christina Charalampidou</u> , Markos Margaritis, Nikolaos Alexopoulos	High-cycle fatigue performance of hierarchically porous titanium scaffolds produced by additive manufacturing and its possible improvement by gas nitriding <u>Karel Slámečka</u> , Adelia Kashimbetova, Serhii Tkachenko, Pavel Gejdos, Jaroslav Pokluda, Edgar Benjamin Montufar, Ladislav Celko
17:00-17:20	Combining Thick and Thin Film Sensor Manufacturing Techniques for Realization of Smart Components via High and Low Pressure Die Casting <u>Dirk Lehmbus</u> , Marco Cen, Adrian Struss, Tim de Rijk, Christoph Pille, Aynur Klatt, Walter Lang	An extension of the Weibull regression model to cover the LCF, HCF and VHCF regimes for fatigue results performed at different stress ratios R <u>Alfonso Fernández-Canteli</u> , Enrique Castillo, Sergio Blason, Abilio de Jesus, José Correia	Thermophysical characterization of innovative and recyclable composites, being developed and considered for battery boxes mass production <u>Giulia De Aloisio</u> , Mattia Morganti, Luca Laghi, Leonardo Ghetti, Claudio Mingazzini, Stefano Bassi, Tiziano Delise, Enrico Leoni	The effect of pre-stretching induced microstructural transformations on the corrosion behaviour of Al-Cu-Li 2198 alloy <u>Roelf Mostert</u> , Christiaan Pretorius, Muhammed Salojee, Christina Charalampidou, Nikolaos Alexopoulos, Stavros Kourkoulis	Wear and Friction Behaviour of Additive Manufactured PEEK under Non-conformal Contact <u>Yong Chen</u> , Gongbiao Lin, Z. M. Shukur, Steve Kukureka, Karl Dearn
17:20-17:40	Low-frequency air-coupled transducer based damage detection in composite materials <u>Tomasz Wandowski</u> , Pawel Kudela, Maciej Radzienski	A probabilistic fatigue model based on nonlinear Kohout-Vechet function: Application to 42CrMo4+QT steel <u>Julian M.F. Marques</u> , Jan Papuga, Milan Růžička, Denis Benasciutti	Chemical recovery of carbon fibers from composites via plasma assisted solvolysis <u>Dimitris Marinis</u> , Ergina Forsari, Eleftherios Amanatides, Dimitrios Mataras, Christiana Alexandridou	The effect of solution aggressiveness on the corrosion-induced degradation of Al-Cu-Li 2198 alloy <u>Margarita Christina Charalampidou</u> , Nikolaos Alexopoulos, Mikhail Zheludkevich, Carsten Blawert	Atomic-scale grain boundary engineering for crack-free additively manufactured superalloys Stoichko Antonov, Arthur Després, Olav Vad, Charlotte Mayer, Guilhem Martin, <u>Paraskevas Kantis</u>
20:30	Conference Dinner				
17:40	End of Day 2				

Conference Program

Conference Day 3 | Friday, June 23rd 2023

08:30-11:00						
Registrations						
09:00-09:30						
AMPHITHEATRE						
Keynote Lecture: Multifunctional graphene composites for aerospace and automotive applications Prof. Costas Galiotis University of Patras & FORTH/ICE-HT, Greece						
Chair: Prof. Spiros Pantelakis ICEAF VII co-Chairman						
09:30-10:50						
	CLASSROOM ANTIQUE	CLASSROOM 1	CLASSROOM 2	CLASSROOM 4	CLASSROOM 5	CLASSROOM 3
Session:	Crack propagation in materials and crack-stop engineering (PART I)	Experimental and Numerical Investigation and Validation of Sandwich Composite Materials and Aircraft Structures (PART I)	Innovative composites for sustainability (PART II)	Structural Health Monitoring for Composite Structures (PART I)	Characterization of Fractures (PART I)	Steel health monitoring & rehabilitation
Chair:	Prof. Ehrenfried Zschech deepXscan GmbH, Germany	Prof. George Lampeas & Prof. Alexis Kermanidis & Dr. Athanasios Dafnis University of Patras, Greece - University of Thessaly, Greece - RWTH Aachen University, Germany	Dr. Claudio Mingazzini University of Padova, Italy	Prof. Konstantinos Tserpes University of Patras, Greece	Dr. George Pantazopoulos ELKEME, Greece	Prof. Evangelos Hristoforou National Technical University of Athens, Greece
09:30-09:50	3D Crack Propagation Study of a Railway Component using XFEM Method <i>Teresa Margado, Ricardo Dias, Manuel Pereira</i>	Parametric study of guided wave propagation in honeycomb sandwich panel for model-assisted damage assessment method <i>Piotr Fiborek, Pawel Kudela</i>	Fire Resistance characterization and post-fire evaluation of residual mechanical strength <i>Patricia Ares, Jesus Balletero, Claudio Mingazzini, Enrico Leoni, Stefano Bassi, Matteo Scafe</i>	Acoustic Emission Analysis on Mechanical Properties and Damage Evolution of Multiscale Kevlar/Glass Hybrid 3D Orthogonal Woven Composites under Flexural Loading <i>Abdulrahman Al-Nadhami, Halil Senol, Hasan Ulus, Serra Topal, Mehmet Yildiz</i>	Failure analysis on premature fracture of valve rod of circulating pump gate valve in a nuclear power plant <i>Zhen-Guo Yang</i>	Universality in magnetically detected residual stresses in steels and method to determine the actual stress level distribution <i>Georgia Stamou, Polychronis Pattakos, Spyridon Angelopoulos, Aphrodite Ktena, Evangelos Hristoforou</i>
09:50-10:10	The role of intermetallic particles and grain boundaries at various mechanical orientations in AA 7075 aluminum alloy <i>Alexandros Prospathopoulos, Apostolos Argyros, Christos Gakias, Georgios Savvalidis, Nikolaos Michailidis</i>	Experimental and Numerical Investigation of the In-Plane Shear Behavior of A-5052 Honeycomb Core under monotonic tension loading <i>John Pikilidis, Antonis Tsirigotis, Nikos Sevastianos, Alexis Kermanidis, George Labeas</i>	Aging Behavior of Rubber Compounds Prepared with Different ZnO Types <i>Cansu Bariskan Rinaqi, Seyda Polat, S. Hakan Atapek</i>	A vibration-based machine learning type Structural Health Monitoring methodology for populations of composite aerostructures under uncertainty <i>Ioannis E. Saramantas, Panayotis E. Spiliatopoulos, Fatima T. Fera, Dimitrios Bourdalis, John S. Sakellariou, Spiros D. Fassois, Yoav Ofir, Iddo Kressel, Moshe Tur, Christos Spandonidis</i>	Microstructure of White Etching Area around Subsurface Cracks in Bearings <i>Alexandros Banis, Ksenija Nikolic, Loic Malet, Boumen Petrou</i>	On the Barkhausen noise in naval steels <i>Polychronis Pattakos, Georgia Stamou, Spyridon Angelopoulos, Aphrodite Ktena, Evangelos Hristoforou</i>
10:10-10:30	Properties of the crack resistance of layered composite and simulation of a crack quasi-static growth <i>Vitalijs Paveiko</i>	Mechanical behavior of perforated and unperforated aluminum honeycomb core under shear loading <i>Markus Gastens, Athanasios Dafnis, Kai-Uwe Schröder</i>	Crosspreg[®], an innovative reactive hybrid prepreg, mass production dedicate, with a low LCA profile and easy recyclable for Fenice Kic Project <i>Gianluigi Creont, Claudio Mingazzini, Matteo Scafe</i>	Development and experimental validation of a Machine Learning based SHM prototype system for composite aerostructures <i>Panayotis E. Spiliatopoulos, Fatima T. Fera, Panagiotis Papadopoulos, Fotios Giannopoulos, Christos Spandonidis, Moshe Tur, Yoav Ofir, Iddo Kressel, Ioannis Saramantas, John Sakellariou, Spiros Fassois</i>	Tensile properties of 3D printed INCONEL 718 cellular specimens <i>Katerina Mankou, George A. Pantazopoulos, Peter Pavol Manka, Anagnostis I. Tsoufatzis, Kristina Lengyelova, Sofia Papadopoulou</i>	AMR sensor for Steel Health Monitoring <i>Georgia Stamou, Spyridon Angelopoulos, Polychronis Pattakos, Aphrodite Ktena, Evangelos Hristoforou</i>
10:30-10:50	Construction of prior models used within Bayesian schemes for fatigue crack growth SHM in marine structures <i>Nicholas Siliotis, Panos Makris, Konstantinos Anyfantis</i>	Multi-physics finite element model of a general aviation liquid hydrogen fuel tank <i>George Tzoumakis, George Lampeas</i>	DEVELOPMENT OF WATER-BASED INORGANIC MATRICES FOR THE PRE-IMPREGNATION OF FIRE-RESISTANT LAMINATED COMPOSITES <i>Annalisa Natali Muri, Elettra Papa, Elena Landi, Claudio Mingazzini, Matteo Scafe, Valentina Medri</i>	Inverse finite element analysis for delamination detection in composite structures subjected to forced vibration <i>Faraz Ganjoudj, Adnan Kefal, Alexander Tessler</i>	The influence of over-aging on the multiaxial fatigue behavior of the cast AlSi7Cu0.5Mg0.3 alloy <i>Viet-Duc Le, Pierre OSMOND, Daniel BELLET, Franck MOREL</i>	Hall Sensors For Steel Health Monitoring <i>Polychronis Pattakos, Spyridon Angelopoulos, Georgia Stamou, Aphrodite Ktena, Evangelos Hristoforou</i>
10:50-11:00						
Coffee Break						
11:00-12:00						
	CLASSROOM ANTIQUE	CLASSROOM 1	CLASSROOM 2	CLASSROOM 4	CLASSROOM 5	
Session:	Crack propagation in materials and crack-stop engineering (PART II)	Experimental and Numerical Investigation and Validation of Sandwich Composite Materials and Aircraft Structures (PART II)	Innovative composites for sustainability (PART III)	Structural Health Monitoring for Composite Structures (PART II)	Characterization of Fractures (PART II)	
Chair:	Prof. Ehrenfried Zschech deepXscan GmbH, Germany	Prof. George Lampeas & Prof. Alexis Kermanidis & Dr. Athanasios Dafnis University of Patras, Greece - University of Thessaly, Greece - RWTH Aachen University, Germany	Dr. Claudio Mingazzini University of Padova, Italy	Prof. Konstantinos Tserpes University of Patras, Greece	Dr. George Pantazopoulos ELKEME, Greece	
11:00-11:20	Quasi-static and fatigue crack growth simulation in co-consolidated thermoplastic joints containing crack arrest features <i>Ioannis Sioutis, Konstantinos Tserpes, Paraskevas Papanikos</i>	Development of a numerical methodology for the analysis of the post-buckling and failure behaviour of composite stiffened panels considering the effect of initial debonding <i>Hary Pithoyas, Konstantinos Fotopoulos, George Lampeas, Jan Waleson, Michel Brethouwer</i>	Mechanical characterizations on bio-based recyclable composites, being developed for fire resistance <i>Enrica Benco, Cristiana Talon, Claudio Mingazzini, Matteo Scafe</i>	RANDOM VIBRATION-BASED PROGRESSIVE FATIGUE DAMAGE MONITORING OF THERMOPLASTIC COUPONS UNDER POPULATION AND OPERATIONAL UNCERTAINTY <i>Niki Tsiavouraki, Konstantinos Tserpes, Spiros Fassois</i>	Evaluation of the susceptibility of Refractory Multicomponent alloys to Thermal Shock towards the improvement of their manufacturability <i>Ricardo Salvarado, Paul Stavroulakis, George Pantazopoulos, Russell Goodall</i>	
11:20-11:40	A structural-thermal coupled modeling approach on the formation of adiabatic shear bands in steel sheet blanking process <i>Konstantina Karantzou, Nikolaos Vaxevanidis, Dimitrios Manolakas</i>	Stiffened panel crack propagation simulation by representative fuselage fatigue spectrum <i>Panagiotis Kardas, George Lampeas, Theodoros Kermanidis</i>	Finite element virtual validation on basalt reinforced sustainable composites, based on bio-based or innovative cleavable recyclable resins <i>Claudio Mingazzini, Enrico Leoni, Stefano Bassi, Enrico Benco, Jaime Ferrer Dalmou, Daniele Pullini, Matteo Basso</i>	Condition Monitoring Framework for Damage Identification in CFRP Rotating Shafts using Model-Driven Machine Learning Techniques <i>George Karayfyllas, Josef Koutsoupakis, Panagiotis Sevontekidis, Dimitrios Giagopoulos</i>	Investigation of artificial aging response to pre-deformation by microstructural examination, microhardness testing and differential scanning calorimetry of Al 6063 extruded profile <i>Eva Stachouli, Georgios-Kirykos Lamnatos, Sofia Papadopoulou, Andreas Rikos, Phoivos Aslanis, Athanasios Vazdirvanidis</i>	
11:40-12:00	Eliciting stable nanoscale fracture in single-crystal silicon <i>Frank W. DelRio, Scott J. Grutvik, William M. Mook, Sara M. Dickens, Paul G. Kotula, Eric D. Hintsala, Douglas D. Strauffer, Oden L. Warren, Brad L. Boyce</i>	Utilization of nanostructured coatings for tribocorrosive applications <i>E.P. Georgiou, A. Koutsomichalis, D. Drees, J.-P. Celis</i>	SIC/SIC composites tolerance to high temperature combustion atmosphere and post ageing mechanical and microstructural characterisation <i>Stefano Bassi, Claudio Mingazzini, Enrico Leoni, Matteo Scafe, Paride Fabbri, Gerard-Louis Vignoles, Francis Rebillat, Q. Antonin, Pierre Bertrand</i>	A SHM architecture for indirect load estimation in wind turbine rotor blades through strain sensing <i>Theodora Liangou, Ilias Zilakos, Konstantinos Anyfantis</i>	Fracture analysis of a cold working die used in the aluminum packaging tubes production <i>Dimitrios Papageorgiou, Mrs Niokeleta Mastoridou, Carmen Medrea</i>	
12:00-13:00						
Poster session						
13:00-13:10						
AMPHITHEATRE						
Concluding remarks and closing of the Conference						
13:10-14:10						
Light lunch						
14:10						
End of Conference						

Conference Program

Poster Session | Friday, June 23rd 2023

Poster session	
1	Materials characterization of advanced fillers for composites engineering applications <i>Lubomir Lapcik, Barbora Lapcikova, Yousef Murtaja</i>
2	Nano-scale Characterisation, Deformation and Failure Mechanisms in Enhanced-Performance Modern Steels <i>Angelos Kaldellis, Nikolaos Makris, George Fourlaris, Petros Tsakiridis</i>
3	Characterisation of TCP Precipitation Sequences of Superaustenitic Stainless Steel and Correlation with Electrochemical and Mechanical Properties <i>Nikolaos Kountouris, Nikolaos Makris, Dimitra Ioannidou, Anastasia Alexandratou, Stavros Deligiannis, Angelos Kaldellis, Petros Tsakiridis, George Fourlaris</i>
4	Experimental verification of PEKK stiffened panel under compression <i>Borjan Růžek, Ing. Adam Karkulín, Jakub Šedek</i>
5	Mechanical characterizations on biobased Sheet Molding Compound (SMC), being developed for battery boxes <i>Alberto Minimi</i>
6	Assessing the prediction uncertainty of Puck failure criterion for unidirectional composite laminates using interval analysis <i>Aikaterini Anagnostopoulou, Dimitrios Sotiropoulos, Konstantinos Tserpes</i>
7	Reliable material characterization for crashworthiness simulations of unidirectional composite laminates <i>Maria Pia Falaschetti, Nicola Zavatta, Francesco Rondina, Enrico Traiani, Lorenzo Donati</i>
8	Microstructural characterization of dissimilar welding and repair welding between super-austenitic and austenitic stainless steels, using different filler materials <i>Efimi Varouti, Aimilios Zervas, Isidoros Iakovidis, Stavros Chionopoulos</i>
9	Research on the 18th-century buildings in terms of static schemes changes <i>Monika Mackiewicz, Janusz R. Krentowski, Kamil Zimiński</i>
10	Evaluation of the historic wooden structures condition based on the results of non-destructive tests <i>Monika Mackiewicz, Kamil Zimiński, Joanna A. Pawłowicz, Piotr Knyziak</i>
11	Reverse engineering as a non-invasive examining method of the water tower brick structure condition <i>Joanna Pawłowicz, Aldona Skotnicka-Siepsiak, Janusz Krentowski, Piotr Knyziak, Carles Serrat</i>
12	Research and numerical assessment of design and construction errors in the swimming pool facility structure <i>Joanna Pawłowicz, Aldona Skotnicka-Siepsiak, Romuald Szeląg, Janusz Krentowski, Carles Serrat</i>
13	Contribution of texture analysis on the formability examination of 6061 Al alloy for the automotive industry <i>Phivos Aslanis, Grigoris Symeonidis, Sofia Papadopoulou, Andreas Rikos, Eva Stachouli, Athanasios Vazdirvanidis</i>
14	Numerical and experimental approach in the prevention of construction failure of remotely controlled demolition robots <i>Damian Derlukiewicz, Jakub Andruszko</i>
15	Capturing additively manufactured composites behavior by digital image correlation technique <i>Marina Franulovic, Kristina Markovic, Matej Gljuscic</i>
16	On the strength of the piezoceramic transducer in the system of structural health monitoring <i>Igor Pavelko</i>
17	Structural integrity of cold spray repaired aerospace components <i>Tiago Werner, Mauro Madia, Kai Hilgenberg, Thomas Klassen, Frank Gärtner</i>
18	Plasma Enhanced Chemical Vapor Deposition of SiO_xCyHz thin films for corrosion protection of metallic surfaces <i>Ergina Farsari, Charalampos Voulgaris, Eleftherios Amanatides, Dimitrios Mataras, Christiana Alexandridou</i>
19	Fluxgates for Steel Health Monitoring <i>Georgia Stamou, Spyridon Angelopoulos, Panagiotis Priftis, Aphrodite Ktena, Evangelos Hristoforou</i>
20	Energy Harvester for Remote Sensing <i>Polychronis Pattakas, Angelos Katsoulas, Spyridon Angelopoulos, Georgia Stamou, Aphrodite Ktena, Evangelos Hristoforou</i>



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