



22nd International Conference on

**Fracture, Damage and Structural Health
Monitoring, 22-24 September 2025**

Rhodes, Greece

FDM2025

Conference Program

Conference Venue: Rhodes Palace Hotel ([Rodos Palace](#) | [How to reach](#)) Iraklidon Avenue (Trianton), Ixia, 85100 Rhodes, Greece

T: +30 22410 97222, Email: info@rodos-palace.gr



<https://fdm.engineeringconferences.net/new/>

Day 1: 22nd September

Nafsika A	
8.15	Registration
8.55	Opening Remarks: Ferri Aliabadi

Plenary Session Chair Zahra Sharif Khodaei

9.00	Keynote lecture: Effective thermal conductivity of carbon/ultra-high-molecular-weight-polyethylene nanocomposites; Stanislav Buklovskyi, Kateryna Miroshnichenko, Igor Tsukrov , Rebecca J. Thomson, Peder C. Solberg, Douglas W. Van Citters
9.30	Keynote lecture: Comparative analysis of the performance of 2D and 3D progressive damage models (PDM) in characterizing crack propagation in FRP cylindrical tubes under torsional loading; Yichen Zhang, Wouter De Corte and Wim Van Paepegem

10.00 Coffee Break

Session A1: Nafsika A	
Chair: Vincenzo Mallardo	
10.30	Influence of initial misfit strains on small scale domain switching ahead of interface crack between piezoelectric layer and dielectric isotropic substrate; Miroslav Hrstka , Michal Kotoul , Tomáš Profant, Ferri Aliabadi
10.50	Modelling of the Probabilistic Low-Cycle Fatigue Lifetime for Cast Nickel-based Alloys using Defect Distributions; F. Mader , M. Wagner, H. Saage, O. Huber
11.10	A Finite Element Methodology for the Fatigue Analysis of a Gear with Nitriding Treatment Subjected to a Potential Overload; Francesco Manni , Simone Messina , Matteo Giacomini
11.30	Reliability Analysis of Shell Structures Under Small Failure Probabilities Using Adaptive Multi-Fidelity Sampling; Mengke Zhuang , Nicolas O. Larrosa, Julian D. Booker, Christopher E. Truman
11.50	Fatigue of metallic glasses at variable amplitude loading; Michael Marx , Ralf Busch, Christian Motz
12.10	Crack pattern scenarios in masonry structures; Riccardo Giacometti , Nicola Grillanda and Vincenzo Mallardo

Session B1: Nafsika B	
Chair: Ilias Giannakeas	
10.30	Digital Twin Framework for In-Service Crack Monitoring and Fatigue Prognosis in Metallic Aerospace Structures; Sadjad Naderi , Yuhang Pan , Zahra Sharif Khodaei and Ferri Aliabadi
10.50	Damage Index Selection For Ultrasonic Guided Waves Based Structural Health Monitoring System; Antonio Polverino , Donato Perfetto, Francesco Caputo, Dimitrios Zarouchas, Alessandro De Luca
11.10	A digital twin to optimize monitoring and maintenance of pressure vessels; M. Bennebach , I. Khaled, J.L. Iwaniack
11.30	A simple K-SVD dictionary learning method for baseline-free damage identification purely based on analytical excitation; Haomiao Fang , Zahra Sharif Khodaei and Ferri Aliabadi
11.50	Simulation of Damage Sensing in Smart Self-Sensing Composites for Digital Design Integration; Sakineh Fotouhi , Amin Farrokhhabadi, Mohammad Fotouhi
12.10	Digital Twin Development for the identification of the equivalent excitation force distribution on a wing; A.S. Nobari , Y. Pan , A.E.S. Nobari , Z. Sharif Khodaei, Ferri M.H. Aliabadi

12.40 Lunch

Session A2: Nafsika A

Chair: Aki Saimoto

14.00	Finite element analysis of anisogrid lattice structures; Emanuele Vincenzo Arcieri, Sergio Baragetti
14.20	Modeling of Mechanical Behavior in FFF Lattice Struts: Integrating Porosity and Inter-Filament Bonding; R.Salem , F.Barbe, I.Benedetti
14.40	Correlation between the structural geometry and damage localization of Triply periodic minimal surface-based ceramic unit cells; Thi Ngoc Diep Tran , Romana Piat
15.00	Physics-Informed Neural Networks for Multiscale Large Deformation Analysis of Metamaterial; Haolin Li , Zahra Sharif Khodaei, M. Kotoul and Ferri Aliabadi

Session B2: Nafsika B

Chair: Romana Piat

14.00	Fatigue life and damage mechanism of fiber-reinforced composites under combined high and low cycle fatigue loads; Zheng, Tao (invited)
14.20	Effects of mechanical loading on corrosion performance of legacy cast iron pipe materials; L. Ronayne , J. A. Wharton, P.A.S. Reed
14.40	Fracture Behaviour of 3D Printed Thermoplastic and Effects of Seawater Aging; Prince Shukla, Sandip Haldar
15.00	A Finite Element Methodology for the Fatigue Analysis of High-Performance Electric Motor Gears; Simone Messina , Francesco Manni, Matteo Giacomini

15.20 Coffee Break

Session A3: Nafsika A

Chair: Michal Kotoul

15.50	Thermal creep in Zircaloy-4 nuclear fuel cladding alloy; Vaclav Sklenicka, Marie Kvapilova , Kveta Kucharova, Petr Kral, Jiri Dvorak
16.10	Effect of CNF Added Location on the Interlaminar Fracture Toughness of CF RTP; Seiji Mitsubayashi, Kenichi Takemura and Ryohei Asakawa
16.30	Failure mechanisms and repair technologies of wind turbine blades: Computational modelling; Leon Mishnaevsky Jr
16.50	Temporary monitoring system on the pedestrian cable bridge in Sátorajaujhely, Hungary; Balázs Kövesd, Péter Hegyi , László Dunai, Szabolcs Rózsa, Csaba Égető, Bence Turák

Session B3: Nafsika B

Chair: Sami Holopainen

15.50	Collocation Mixed FEM for 3-d Crack Analyses in Flexoelectric Solids; Xinpeng Tian, Yuchen Hu, Jan Sladek , Vladimir Sladek, Qian Deng
16.10	A mode-I SIF for a deep surface crack subjected to internal pressure varying with power of the coordinate variable; Yohei Sonobe , Sei Hisatsune, Takuichiro Ino, Atsuhiro Koyama, Akihide Saimoto
16.30	A unified chemical potential-based framework for hydrogen-promoted phase-field brittle and ductile fracture; V. Diddige , S. Roth, B.
16.50	Development and Verification of Shear Projection Virtual Element and application to crack problems; Luke Wyatt, Zahra Sharif Khodaei and Ferri Aliabadi

19.00 Welcome Reception (Drinks and Small Bites)

Day 2: 23rd September

Session A4: Nafsika A

Chair: Imad Barsoum

9..00	Keynote: Digital Twin for Transformative Air vehicle with IoT sensors towards safer skies (AVATAR), Z Sharif Khodaei , Ilias Giannakeas, Ferri Aliabadi
9.30	Role of Ultrasonic Guided Wave-Based SHM in Detecting Low-Velocity Impact Damage in CFRP Laminates; Alessandro De Luca, Giuseppe Lamanna, Luciano Pianese , Antonio Polverino, Nima Rezazadeh, Antonio Aversano
9.50	A wireless fatigue life monitoring sensor node; Aliakbar Ghaderiaram , Erik Schlangen and Mohammad Fotouhi
10.10	A baseline-free method for in-service crack monitoring under complex loading conditions; Yuhang, Pan , Zahra Sharif Khodaei, Ferri Aliabadi

Session B4: Nafsika B

Chair: Marie Kvapilova

9..00	Keynote: Progressive buckling of hydraulic actuators; Emanuele Vincenzo Arcieri, Sergio Baragetti
9.30	Assessing Bolt Assembly in Thermoplastic Flange Connections Under Realistic Service Conditions; Sherif Ezzeldin, Rehan Umer, Imad Barsoum
9.50	The effect of specimen's stiffness on bridging tractions in mode I delamination of layered composites; J. Botsis and G.A. Pappas
10.10	Numerical modelling of the impact behavior of interleaved composites considering mechanical uncertainties; Chen, Yanhong (Invited)

10.30 Coffee Break

Session A5: Nafsika A

Chair: Sakineh Fotouhi

11.00	Multi-objective Optimization of Sensor Placement for Load Monitoring in Composite Wings; Ilias Giannakeas , Zahra Sharif Khodaei and Ferri Aliabadi
11.20	Numerical Methods for Thermo-Structural Analysis in Tubular Heat Exchanger Reactors for Synthetic Fuel Production; Saverio Giulio Barbieri, Andrea Piergiacomi , Matteo Giacomini, Fabio Ruggeri
11.40	Predicting the Deformation Behavior of Biocomposites using Combined Mathematical and AI-Based Modeling; Thierry Barriere, Vincent Placet, Sami Holopainen , Ndeye Niang
12.00	Numerical Investigation of Multi-modal Vibration Effect on Crack Propagation in Compressor Blisk; Yirui Teng , Jianxing Mao, Xiaojie Zhang, Dianyin Hua, Jinchao Pan, Rongqiao Wang
12.20	Creep deformation and fracture of superalloy IN939 produced by L-PBF method; Marie Kvapilová , Ivo Kuběna, Ivo Šulák, Jiří Dvořák, Petr Král, Václav Sklenička

Session B5: Nafsika B

Chair: Igor Tsukrov

11.00	Simulation of fracture propagation in adhesive joints using the natural neighbours radial point interpolation method; D. C. Gonçalves , L. D. C. Ramalhoa, R. D. S. G. Campilhoa,b, J. Belinha
11.20	Numerical Characterization of Thermal Shock Resistance in MgO–C Refractories; J. V. Gopi , S. Roth, B. Kiefer
11.40	Modelling Fatigue Crack Growth in Porous Metals; Pavel Šandera , Marta Kianicová, Karel Slámečka, Jana Horníková , Michal Kotoul , Jaroslav Pokluda
12.00	Cohesive properties of the human blood vessels and their numerical characterization; Lukáš Horný , Zdeněk Petřivý, Petr Tich
12.20	Investigation on Damage Evolution of Fiber-Reinforced Woven Composites by Multi-information Fusion Method; Kai Huang , Yuhang Liu, Xiaodong Liu, Jindi Zhou, Xiaojian Han and Licheng Guo (invited)

12.40 Lunch

Session A6: Nafsika A

Chair: Jana Horníková

14.00	Interface matrix/inclusions damage and matrix effects on the electromechanical performance of KNN based piezoelectric composite; Rodríguez-Tembleque, Luis
14.20	Electroelastic response of an edge crack in a piezoelectric half plate; Akihito Saimoto , Yohei Sonobe, Takuya Kitamura, Atsuhiko Koyama
14.40	Strength Improvement of CFRP Gears by Hybrid Reinforcement Using Carbon Fiber Fabrics and Short Fibers; Seiji Mitsubayashi, Kenichi Takemura
15.00	Chemo-Thermo-Mechanical Phase Field Modeling of Sulfide Stress Cracking in DCB Testing and Effect of Plasticity; M. Elkhodbia, I. Barsoum

Session B6: Nafsika B

Chair: Wouter De Corte

14.00	Investigation of J-integral in Hydrogen-promoting environment; L.Gritti , D. Fiorona, S. Ferrari, M. Pelucchi, M. Cabrini, T. Pastore
14.20	The Effects of Build Orientation on the High-Temperature Fatigue Behaviour of As-Built Laser Powder Bed Fusion IN718; Matthew Hulbert , Philippa Reed, Andrew Hamilton
14.40	Evaluation of Tensile Properties of Single Flax Yarn Reinforced Biocomposite Materials using Poly (lactic acid) and Shellac under Loading Speed; Hideaki Katogi
15.00	Study on the Damage Characteristics and Numerical Simulation of Deep Fractured Coal Rock Considering Time Effect; Kunhong Lv , Hui Zhang, Jun Li, Qi Chen, Juncheng Zhang

15.20 Coffee Break

Session A7: Nafsika A

Chair: Luis Rodríguez-Tembleque

15.50	Quantifying the effect of residual stresses on pipe burst in carbon steel tubulars in sour service through phase-field modelling; Alok Negi, Imad Barsoum
16.10	Deep learning approaches for impact identification on composite structures under environmental and operational variabilities: a comparative study; Xiao, Dong , Zahra Sharif Khodaei and Ferri Aliabadi
16.30	Critical Assessment of Various Guided Wave Based Imaging Damage Detection Algorithms; Zou, Guangxiao , Zahra Sharif Khodaei
16.50	Numerical simulation methods and law for hydraulic fracturing in anisotropic reservoirs and the law of hydraulic fracture propagation; Dong Xiong

Session B7: Nafsika B

Chair: Yanhong Chen,

15.50	Investigation into the Mechanical Performance of Cold Spray as Repair Technique for Aluminium Alloys in Aerospace Components; Rosemary Reed , Philippa Reed, Ali Alperen Bakir, Adrian Wei-Yee Tan
16.10	Slip character of Inconel 718 during early-stage fatigue crack propagation Y. Alyousif , E.A. Saunders, S. Taylor . J.C. Walker, P.A.S. Reed
16.30	Yield Criterion for a Surface-Based Gyroid Structure: a Homogenization Approach; Mauro Giacalone, Nicolò Lodini , Sara Mantovani, Angelo Caiani
16.50	Soils' dynamic characterization through the structural design natural period and ambient vibration tests, and vertical displacements estimation of a bridge-type structure in Mexico City with triaxial accelerometers and dynamic loading tests; Jorge A. Avila , Roberto Durán and Jorge A. Avila-Har

19.30 Conference Banquet

Day 3: 24th September

Session A8: Nafsika A

Chair: Ali Nobari

9.00	Keynote: Modelling effective electrical resistance in particle reinforced composites using Generative Adversarial Network; Vinit Vijay Deshpande, Alexander Pascal Happ, Romana Piat
9.30	Comparative Study of Fatigue Crack Growth in FCC and ODS BCC Materials with Emphasis on Intergranular Propagation; Tomáš Vražina , Jaroslav Polák, Ladislav Poczkán, Ivo Šulák, Jiří Svoboda
9.50	The effect of microstructure on the behavior of an underground excavation supporting pillar; Xiroudakis G.
10.10	Predicting scaling effects of plain-woven composites using a multiscale modelling framework; Xu, Ziwen (invited)

Session B8: Nafsika B

Chair: Václav Sklenička

9.00	Keynote: On Implementation of a Computational Approach of Phase-Field Fracture to Elasto-Plastic Materials; Roman Vodicka
9.30	Applications of Peridynamic methods in Corrosion Fatigue Analysis; Wang, Han
9.50	Experimental and Numerical Assessments of the Corrosion-Induced Failure of a J55 Tubing in an Ultra-Deep Gas Well; Ghadeer Mubarak, Mohamed Elkhodbi, Ibrahim Gadal, Imad Barsoum, Akram Alfantazi
10.10	Failure Analysis of Polycarbonate Parts: A Case Study for Production Processes ; Oğuz Gözcü, Ayşe Ödemir, Alp Eren Gürol

10.30 **Coffee Break**

Session A9: Nafsika A

Chair: Zahra Sharif Khodaei

11.00	Distributed Strain Sensing in Fluid-Structure Interaction Using Fiber Optics; Oliveira, Francisco , Zahra Sharif Khodaei and Oliver Buxton
11.20	Damage Depth Characterization in Thick Composite Hydrogen Pressure Vessels Using Multimode Lamb Wave Interaction and Compressive Spatial Sampling; Ali Nokhbatolfoghahai , Zahra Sharif Khodaei and Ferri Aliabadi
11.40	Preliminary Development of Flexible Printed Strain Gauges for Structural Health Monitoring; Marilyne Phillibert , Zahra Sharif Khodaei and Ferri Aliabadi
12.00	Digital twin for aerodynamics and structural interaction; Tafara Makuni , Zahra Sharif Khodaei and Ferri Aliabadi
12.20	A Study on AI-Based Structural Health Monitoring; Park, Hyunbum

Session B9: Nafsika B

Chair: Ferri Aliabadi

11.00	Beyond Compressed Sensing: A Deep Compression Framework for MEMS-Based Structural Monitoring; Duarte-Tano, Andy , Castro-Triguero, Rafael, Gallego-Sevilla, Rafael
11.20	Dynamic response analysis of gear tooth with multiple faults conditions; Aselimhe Oreavbiere , Muhammad Khan
11.40	Fatigue of metallic glasses at variable amplitude loading; Park, Hyunbum
12.00	Study of passive guided waves in the thick-walled tube for local SHM; Vitalijs Pavelko
12.20	Non-Destructive Detection and Localization of Debonding in FRP Concrete Beams; Reza Soleimanpour , Ahmad Said Saada, Mohammad Hany Yasina

12.40 **Lunch & End of the Conference**

Event: Welcome Cocktail (all delegates)

Location: Rodos Palace Hotel – Outdoor Pool Yacht Bar

Date: Monday, September 22nd 2025

Time: 19.00

Hot & Cold Selections

Mini “Ntakos” with marinated tomato, black olive tapenade and olive oil

Tortilla with tuna, vegetables and thousand island cream

Samosas with vegetable and curry cream

Crostini with spicy cheese salad, smoked paprika, tomato

Mini Cheese Pie

Pork Souvlaki with Rhodian spices

Desserts

Fresh seasonal fruits; Mini Greek delicacies; “Mosaiko”, with dark chocolate, cognac and biscuits

Drinks

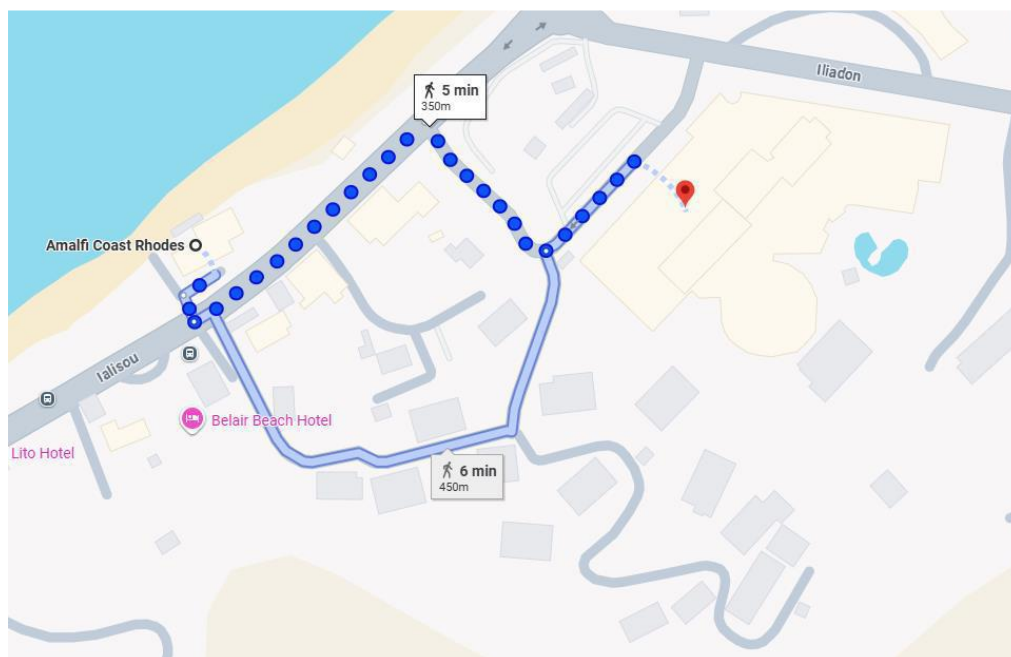
Wine (White, Red); Beer; Soft Drinks; Water

Event: Conference Banquet (delegates booked for dinner)

Location: Amalfi Coast Rhodes, Ialissou, Rodos 851 01. The venue is located on the beachfront, a short walking distance from the conference hotel (see the map below).

Date: Tuesday 23rd September 2025

Time: 19.00



Lunches (all delegates)

MONDAY 22/09/2025

Chicken soup with vegetables and lemon GF+LF

Chicken skewerd with oregano, garlic and gravy sauce GF+LF

Oven baked pork with pepper sauce GF+LF

fried white fish LF

potatoes "giahni" with tomatoes, onion and olive oil GF+VEGAN

bulgur with spices and eggplant VEGAN

Steamed corn GF+VEGAN

Oven baked giant beans GF+VEGAN

Traditional "Mousakas"

Boglonnaisse GF+LF, Tomato sauce GF+VEGAN

Pasta with tomato sauce, peppers and capers VEGAN

Pasta a la crem with bacon and mushrooms

GRILL

Beef escalopes GF+LF

French fries VEGAN

TUESDAY 23/09/2025

tomato soup GF+VEGAN

Oven baked chicken marinated with curry and colliander GF+LF

Duck fillet al orange

Poached fish with saffron sauce GF+LF

Leek pie with crispy phyllo VEGETERIAN

Baked potatoes with oregano and garlic GF+VEGAN

Eggplant stew GF+VEGAN

Rhodian rice with orzok VEGAN

Ckickpeas with spices GF+VEGAN

Boglonnaisse GF+LF, Tomato sauce GF+VEGAN

Mediterranean pasta with tomatoes, olives and zuchini VEGAN

Pasta with 4 cheece sauce VEGETERIAN

GRILL

Grilled porks escalopes GF+LF

French fries VEGAN

WEDNESDAY 24/09/2025

Beans soup GF+VEGAN

Chicken Katsiatore LF

Pork on the spit white fish with garlic sauce

Kebaps with yogurt sauce and tomato

Potatoes with smoked paprika GF+VEGAN

Steam rice GF+VEGAN

Carrots with olive oil GF+VEGAN

Zucchini ragout GF+VEGAN

Boglonnaisse GF+LF, Tomato sauce GF+VEGAN

Lagzania with vegetabes and bechamel sauce VEGETARIAN

Pasta with pepper, tuna and tomato sauce

GRILL

Grilled swordfish with olive and lemon sauce GF+LF

French fries VEGAN