

International Scientific Committee

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Plenary and Keynote Speakers

The **IRF2025** program will include a number of Invited Plenary and Keynote Lectures by distinguished professionals and scientists in the field:

Prof. Shaker A. Meguid
(U. Toronto, Canada)

Prof. Humberto Varum
(U. Porto, Portugal)

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Conference Sponsors



Scientific Program

The Scientific Program of the conference will be daily arranged around *Invited Plenary and Keynote Lectures* by distinguished scientists, and parallel sessions for oral paper presentations. Paper presentations in the form of Posters will also be possible, and facilities for that purpose will be available during the days of the **IRF2025** conference.

Social Program

In parallel with the Technical and Scientific Program, a full range of social activities will be offered to Delegates and Accompanying Persons during all days of the Conference. Most of these will be organised by a competent local travel agency to be associated with the **IRF2025** conference.

Registration

All attendees, including invited speakers, are strongly advised to register in advance of the Conference. The registration fees are as follows:

Registration Fee	Prior to 29 FEB 2025	1 MAR - 30 APR 2025
Full Delegate	750,00 Euro	900,00 Euro
Student Delegate	600,00 Euro	750,00 Euro
Accompanying Person	200,00 Euro	250,00 Euro

Registered delegates are entitled to the presentation and online publication of one Abstract/Paper (oral or poster), a copy of the USB-card with the conference Proceedings, attend all technical sessions, early-bird reception, coffee-breaks, lunches, conference banquet and privileged access to all initiatives of the social program. Accompanying Persons are entitled to early-bird reception, banquet and access to the optional initiatives of the social program.

Further Information

For further information, please see the conference website, or contact the Organising Committee at the following address

Prof. J.F. Silva Gomes
FEUP/APAET
E-mail: sg@fe.up.pt



1st ANNOUNCEMENT AND CALL FOR ABSTRACTS

This is the First Announcement and Call-for-Papers for **IRF2025**, the *8th International Conference on INTEGRITY-RELIABILITY-FAILURE*, to take place in Porto, Portugal from 15 to 18 July 2025. The deadline for Abstract Submission is 24 January 2025. Full information about the conference can be found in the **IRF2025** website, at the following address:

<https://fe.up.pt/irf/IRF2025/>

Institutional Sponsors

The conference is jointly sponsored by

Faculty of Engineering, University of Porto (FEUP)
Mech. and Aerospace Design Lab., University of Toronto (MADL)
Portuguese Society for Experimental Mechanics (APAET)

Relevant Dates

Submission of Abstracts	24 January, 2025
Notification of Acceptance	31 January, 2025
Deadline for Early Registration	28 February, 2025
Submission of Full Papers	31 March, 2025
Conference	15 - 18 July, 2025

Conference Co-Chairs

Prof. J.F. Silva Gomes
Faculty of Engineering
University of Porto

Prof. Shaker A. Meguid
Mech and Aerospace D.L.
University of Toronto

Organising Committee

(Local Members)

Carlos C. António (U.Porto); Catarina Castro (U.Porto)
José M. Cirne (U.Coimbra); José Reis Campos (U.Porto)
Paulo Piloto (IPB); Teresa Morgado (ISEL)

Conference Venue

The **IRF2025** conference will be held in the beautiful city of Porto, in northern Portugal, at the facilities of the Faculty of Engineering, University of Porto, which are very convenient for conferences and other events, in terms of equipment, transportation and proximity to the city center and hotels.

Porto is one of the oldest tourist destinations in Europe, considered European Best Destination in 2012, 2014, 2017 and 2023. Porto made its name over two centuries ago because of its connection with the port wine industry, and is listed as a UNESCO World Heritage Site.



Apart from Porto, Northern Portugal is often forgotten by international tourists. However, as Portuguese who have travelled extensively in our country, we know that Northern Portugal is probably the most authentic region, with a wide range of interesting destinations!

The Douro is the highest-flow river of the Iberian Peninsula. It rises near Duruelo de la Sierra in Soria Province, central Spain, meanders south briefly then flows generally west through the north-west part of central Spain and into northern Portugal, to its mouth at Porto.



Portuguese Gastronomy is one of the most valuable cultural resources of this beautiful country. If you are to spend some time in Portugal, do not miss out and try some of the most valuable typical dishes. Fresh fish, seafood and the famous Portuguese Stew are renowned reference dishes worldwide.

Scope

IRF2025 is the eighth international gathering of a prestigious series of conferences coordinated by the International Scientific Committee on Mechanics and Materials in Design. This series of conferences started in 1999 and they are wholly devoted to advances in assessing the integrity, reliability and failure of engineering systems, materials, manufacturing and biomechanics.

Contributions in the fields of Nanotechnologies, Nanomaterials, Biomechanics and Experimental and Computational Mechanics applied to mechanical, aeronautical, space, civil, automotive, biomedical, environmental, and nuclear engineering will be welcome. The goal is to enable engineers, researchers and scientists to present their most recent findings and developments and exchange ideas on the different topics of the conference.

Main Topics

- **Composite and Advanced Materials:** Multiscale Modelling and Characterisation, Multifunctional Composites, Nanomaterials and Nanotechnologies, Interfacial Properties at Varied Length Scales, Smart Structures and Materials, Processing/Fabrication/Recycling, Durability/Damage/Fracture, Health Monitoring and Repairability, Adhesive Bonding, Case Studies.
- **Fatigue and Fracture Mechanics:** Fracture Behaviour at Varied Length Scales, Mechanisms for Crack Propagation, Tribological Effects and Surface Damage, Thermomechanical Fatigue, Corrosion-Fatigue Interaction, Crack Closure in Crack Healing, Fatigue Fracture of Intelligent Materials, Effect of Surface Treatments, Crack Monitoring Techniques, Case Studies.
- **Structural Dynamics:** Testing Techniques, Measurement in Dynamics, Vibration Analysis, Control Systems, Earthquake Engineering, Crashworthiness, Ballistic Studies, Energetic Materials, Impact Behaviour of Materials, Case Studies.
- **Mechanical Design and Prototyping:** Mechanical Design, Product Development, 3-D Printing and Additive Manufacturing, Fastening and Joining Technologies, Prototyping, Design of Sensors and Actuators, Design for Manufacturing, Eco-Design, Conversion Technologies, Case Studies.
- **Civil Engineering Applications:** Buildings, Bridges and Infrastructures, Materials Characterization, Wood Mechanics and Timber Engineering, Structural Analysis, Structural Integrity, Experimental Tests and Structural Monitoring, Concrete and Composite Structures, Metallic Structures, Structural Rehabilitation, Case Studies.

Main Topics (continued)

- **Biomechanical Applications:** Mechanics and Design of Protheses, Biomaterials and Biocompatibility, Stress Monitoring, Dental and Orthopaedic Biomechanics, Sports and Rehabilitation Biomechanics, Biofluid Mechanics, Modelling of Biomechanical Systems, Advanced Bioimaging, Medical Devices, Case Studies.
- **Energy and Thermo-Fluid Systems:** Energy Systems, Thermal Barrier Coatings, Heat and Mass Transfer, Combustion, Experimental Fluid Dynamics, Computational Fluid Dynamics, Solid-Fluid Interactions, Interfacial Dynamics, Turbulence Analysis, Case Studies.
- **Industrial Engineering and Management:** Systems Engineering, Manufacturing Engineering, Production systems for metallic materials, Production systems for polymeric materials, Safety Engineering, Sustainable Technologies and Processes, Risk Assessment, Product Reliability, Operations Management, Case Studies.

Thematic Symposia

A number of thematic symposia will be organized under the auspices of **IRF2025** – The 8th International Conference on Integrity-Reliability-Failure. Interested authors should contact the coordinators directly.

Individuals interested in running a Symposium on any or derivatives of the main conference topics should inform the conference chairs of their intention as soon as possible. Upon approval, the symposium organiser will be requested to submit a summary of his/her plans with regards to the title of symposium, number of sessions required (5 papers per session), names of potential authors and any other special requirements.

Technical Exhibition

IRF2025 will provide facilities for a technical exhibition on equipment, software and services related to the main theme of the conference during the whole period of the event. Companies and individuals interested in displaying software, services, equipment or any other kind of material at the technical exhibition should inform the conference chairs of their intention as soon as possible.