

IRF'2009

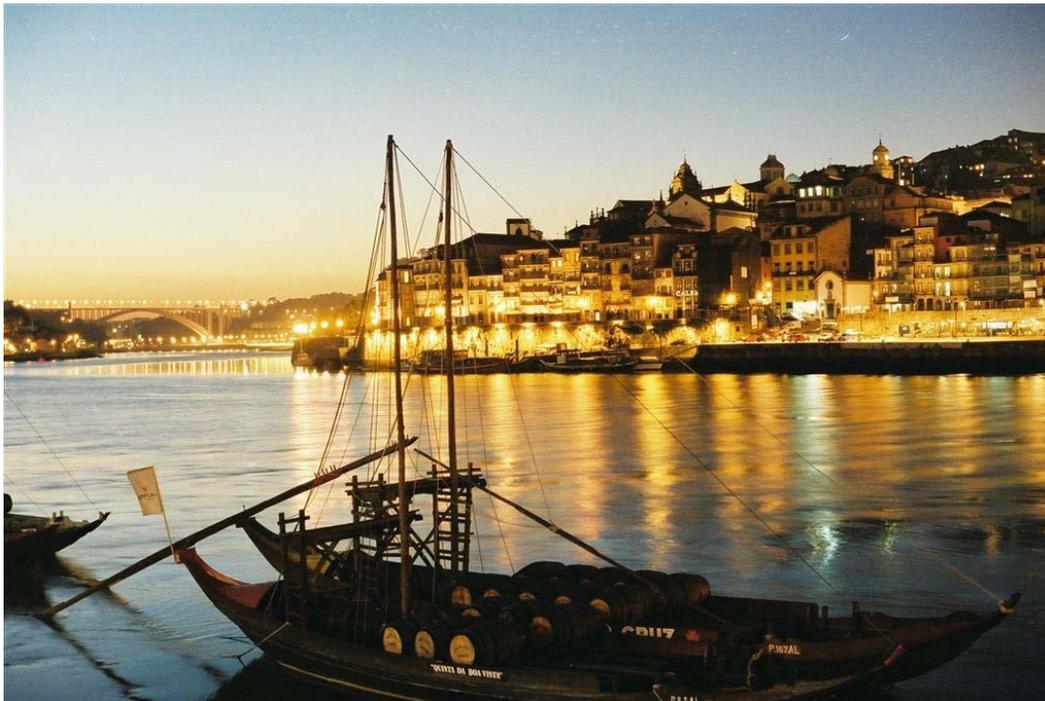
INTEGRITY - RELIABILITY - FAILURE CHALLENGES AND OPPORTUNITIES

Third International Conference

**Faculty of Engineering, University of Porto
Porto-Portugal
July 20-24, 2009**

(Sponsored by University of Toronto, Canada)

FIRST ANNOUNCEMENT CALL FOR ABSTRACTS



Porto is a beautiful city in the North of Portugal

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CONFERENCE THEME

As the engineering community continues to cross the boundaries of known practices, materials and manufacturing techniques into the frontiers of new materials, environments and applications, the opportunities for failure will inevitably increase. If our knowledge of how to engineer systems, structures and components to minimize or prevent failure is to keep pace with modern demanding applications and the intolerance of a safety conscious society, we must develop and apply superior analytical and experimental tools to evaluate the potential for damage or failure of engineering structures and/or components.

IRF'2009 is the *third* international gathering of scientists and engineers interested in the fields of engineering mechanics, design and materials engineering planned for July 20-24, 2009 in Porto, Portugal. The first conference was also held in Porto, in 1999, and a second meeting was held in Singapore, in 2004. These meetings resulted from the belief that of those disciplines associated with advanced product design and manufacture, engineering mechanics and materials engineering have made the most significant advance in recent years. Important and dramatic improvements in component design can be made by the use of the latest advances in Integrity, Reliability and Failure of structures and materials.

The development and utilisation of materials, fillers, devices, and systems with dimensions on the order of 0.1 to 100 nanometers, exhibiting novel and significantly enhanced mechanical, physical, chemical, and biological properties, due to their nanoscale size, is attracting considerable attention from the scientific community. Contributions in the fields of Nanotechnologies and Nanomaterials will also be welcome.

It is therefore the objective of this meeting to provide a forum for the discussion and dissemination of recent advances in three related areas: Integrity, Reliability and Failure of engineering structures, components and systems. The goal is to enable *mechanical, aeronautical, civil, automotive, biomedical and nuclear engineers, researchers and scientists to exchange ideas on the following topics.*

TOPICS OF INTEREST

The conference will address the following main topics:

Analytical and Numerical Tools:

FEM, BEM and hybrid methods
 Analysis of Structural Components/Members
 Optimum Design Techniques
 Metal Forming and Metal Cutting
 Dynamics and Vibration
 Computational Methods in Failure Diagnostics
 Dynamic Loading of Structures
 Probabilistic Methods
 Reliability Assessment

Design Against Failure:

Structural Integrity
 Safe Life and Damage Tolerance
 Design for Reliability
 Advanced Composite Materials
 Optimum Design
 Riveted, Welded, Threaded and Adhesive Joints
 Explosive and Seismic Effects
 Crashworthiness
 Biomedical Systems Design
 Intelligent Manufacturing
 Damage Failure Analysis

Testing and Diagnostics:

Condition Monitoring
 Destructive and Nondestructive Testing
 Damage Mechanics and Assessment
 Prototyping and Full-Scale Testing
 Vibration Monitoring
 Failure Diagnostics
 Residual Stresses

Modes of Failure:

Fatigue, Corrosion-Fatigue
 Stress Corrosion Cracking
 Fatigue Creep Interaction
 Environmentally Assisted Failures
 Brittle Fracture

Surface and Interface Engineering:

Functionally Graded Materials
 Adaptive Structures and Smart Materials
 Coatings, Plating and Metal Finishing Damage
 Failure of Interfaces
 Surface Integrity
 Surface Treatments and Shot-peening

Nanotechnologies & Nanomaterials:

NEMS and MEMS Technologies
 Nanocomposites
 Nanodevices
 Diagnostics and Control
 Nanosensors
 Molecular Devices

CONFERENCE VENUE

Porto, the country's second largest city, is in itself full of interest, but the district it heads, though largely industrialized, offers the visitor plenty to see. Along the coast, holiday resorts like the cosmopolitan beach of Espinho, busy ports like Matosinhos, with splendid seafood, or traditional fishing towns like Póvoa de Varzim, but where there is also an animated casino. Inland, for example, the quaint charm of Amarante, with 17th century mansions overlooking the river and famous for a kind of sweet egg pastries called "*papos de anjo*" (*angel bellies*). Right next to Porto you can visit, in Vila Nova de Gaia, the lodges where Port wine is blended and aged and where you can taste the different varieties, or you may choose to take a river cruise along the Douro. The whole district is filled with prosperous towns, as commerce and industry thrive there, but you can drive along many calm roads with wonderful views over the river or enjoy a rugged and still unspoilt coastline.

The conference will be held at the new campus of Faculty of Engineering, University of Porto.



IRF'2009 BOOK OF EXTENDED ABSTRACTS AND PROCEEDINGS

All abstracts of invited and contributed papers to be presented in the **Third International Conference on Integrity, Reliability and Failure** would appear in a book, and full papers in a CD-ROM, both being made available to delegates during the event. Instructions to authors are given below.

JOURNAL PUBLICATIONS OF SELECTED ARTICLES

Extended versions of ALL papers will be considered for publication in the **International Journal Mechanics and Materials in Design** (*SPRINGER*). Requirements will be provided at a later stage. Please visit the conference web page for further information and instructions.

INTERNET ACCESS

All conference information, including titles, registration, hotels, social program, sessions and papers schedule will be provided at the conference web page:

<http://paginas.fe.up.pt/clme/IRF2009/>

This site will be updated regularly. Please check the announcement page for all updates.

COMPLEMENTARY SYMPOSIA

Individuals interested in running a Symposium on any or derivatives of the above main 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.

SOCIAL PROGRAMME

A social programme for delegates and accompanying persons will be arranged during the days of the conference. A full day tour & river cruise, reception and banquet will be organized for delegates and registered accompanying persons. Costs for the complementary optional programmes will be posted on the conference home page.

SUMMARY OF DEADLINES

Receipt of Abstracts	28 February, 2009
Acceptance Letters	21 March, 2009
Deadline for Early Registration	31 March, 2009

Receipt of Full Papers for CD

10 May, 2009

FORMAT & SUBMISSION OF ABSTRACTS

Extended abstracts of TWO pages should be written in the same format as the full papers for the CD-ROM (no limitation in length for these):

<i>Paper Size:</i>	A4
<i>Margins:</i>	Top 1 st page 4,0 cm; Top other pages 3 cm; Bottom 2,5 cm, Left&Right 2,5 cm
<i>Font and line spacing:</i>	Times New Roman; single space
<i>Title:</i>	Capital letters, size 14, bold, left alignment at one column
<i>Authors Names:</i>	Size 10, bold, left alignment at one column, two lines interval from title above
<i>Authors Affiliation:</i>	Size 10, left alignment at one column, two lines interval from text below
<i>Main Text:</i>	Size 12, full justification at one column, 6 pt space after paragraph, no indentation
<i>Headings:</i>	Capital letters, size 12, bold, one line interval from text above
<i>Legends (Figs & Tables):</i>	Size 10
<i>References:</i>	References to cited literature should be identified in the text with author(s) name(s) and year of publication (ex: Mascarenhas, 1997). Full citations should be grouped at the end of the paper and in alphabetical order of first author's name. Always give inclusive page numbers for references to journal articles and a page range for books. Each reference must be cited in the text.

A sample abstract will be available for download as a Microsoft Word file in the conference website.

PLEASE SUBMIT YOUR ABSTRACT BY ELECTRONIC MAIL AS FILE ATTACHMENT(S) IN WORD FORMAT TO PROF. J.F. SILVA GOMES, AT:

sg@fe.up.pt

Online facilities for direct upload of abstracts will also be available soon

REGISTRATION

Registration Fee [†]	Prior to 31 March 2009	After 31 March 2009
Full Delegate	600,00 Euro	750,00 Euro
Student Delegate	400,00 Euro	500,00 Euro
Accompanying Person	240,00 Euro	300,00 Euro

[†] Entitles the registrant to one copy of the book of abstracts, CD-ROM, attend all technical sessions, reception, refreshments, lunches, banquet and full day tour & river cruise. Accompanying Persons are entitled to reception, banquet and full day tour & river cruise.

Instructions for **Online Registration and Payment** by Credit Card (VISA and Master Card), Certified Cheque or International Money Order will be available soon. Alternatively, a **Registration Form** will also be available for download as a *Microsoft Excel* file from the conference website.

For additional information, please contact either of the following:

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