



Thematic Session on Vibrations, fatigue and fracture problems in safety of engineering structures

1. Thematic session title

Thematic Session on **Vibrations, fatigue and fracture problems in safety of engineering structures (VFFFSPSES)**

2. Organizers, including affiliations

Grzegorz Lesiuk (Wrocław University of Science and Technology, Poland)

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4. Short description of the symposium including the scope and target public

The International Symposium on **Vibrations, fatigue and fracture problems in safety of engineering structures (VFFFSPSES)** is organised within of the “**1st International Conference on Risk Analysis and Safety of Complex Structures and Components (IRAS)**”, which will take place on the beautiful Porto city, Portugal, on 1 2 July 2019. This Symposium is intended to be a forum of discussion of the recent advances on vibration problems, its diagnostic role and the predictions of the fatigue crack paths, growth rate based on the theoretical, experimental and numerical approach in various engineering materials. All papers with practical failures case studies and examples of its improvements with fatigue, vibration, fracture

mechanics approach will be invited. The International Symposium will be also a good opportunity for implementation recent-modern scientific fracture mechanics developments in engineering practice. This thematic session will cover the following topics:

- Vibrations and damping analysis in materials and complex structures
- Recent trends in experimental modal analysis
- Numerical and experimental analysis
- Non-destructive investigation methods for materials and structures
- Factors influencing the fatigue life and crack initiation in structures as well as lifetime prediction
- Influence of geometric effects (scale, notches, etc.) on the initiation and fatigue growth of a crack in metals and composites
- Heat treatment and load frequency effects on the behaviour of materials, components and structures
- Influence of stress ratio on the behaviour of structures under fatigue loading (crack growth)
- The influence of mechanical factors on the lifetime of brittle and ductile materials and damage/degradation
- The local and global approach to crack growth in mixed modes
- Structural integrity and fatigue and fracture assessment
- Computer-aided fatigue crack growth behaviour in complex structures

It is expected contributions from engineers, R&D companies, material scientists, among others, allowing a very multidisciplinary discussion.

All contributions in the form of extended abstracts will be peer-reviewed by the members of B-IRAS2019- VFFFSPSES Scientific Committee. Full papers will be published in special issues of the scientific journals **Engineering Failure Analysis (EFA)**, **Fracture and Structural Integrity (FIS)** and **Advances in Materials Science and Engineering** Special Issue on *Cumulation of Failure and Crack Growth* in Materials available for IRAS2019 event upon peer review and acceptance.

Please submit your work by email to **grzegorz.lesiuk@pwr.edu.pl** or **iras2019@fe.up.pt** with subject **B-IRAS2019- VFFFSPSES**.