



## **Thematic Session on Structural Integrity of Lightweight Structures – experimental, theoretical and numerical approach**

### **1. Thematic session title**

Thematic Session on Structural Integrity of Lightweight Structures – experimental, theoretical and numerical approach

### **2. Organizers, including affiliations**

Lothar Kroll (Chemnitz University of Technology, Germany) – Chair

Wojciech Błazejewski (Wrocław University of Science and Technology, Poland)

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

José A.F.O. Correia (University of Porto, Portugal)

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

The Thematic Session on Structural Integrity of Lightweight Structures – experimental, theoretical and numerical approach (SILS) 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 in maintenance, safety, risk analysis, probabilistic assessment, life-cycle performance, fatigue, fracture, damage mechanics, numerical simulation of a wide range of infrastructures, such as, engineering technical systems, transportation systems, bridges, buildings, dams, railways, underground constructions, wind and transmission towers, offshore platforms, pipelines, naval vessels, oceanic structures, nuclear

power plants, airplanes and other types of structures including aerospace and automotive structures are considered. This thematic session will cover following topics:

- Composite materials and components, lightweight structures
- Design and manufacturing of lightweight hybrid structures
- Numerical and experimental analysis
- Methods for testing of composite materials
- Computational methods and simulation techniques
- Engineering methods of design, calculations, and simulations
- Simulations of material and structural behavior using classical and novel approaches
- Rheology of composite materials and structures
- Homogenization methods in composite mechanics
- Optimization problems and sensitivity analysis
- Fatigue strength and fracture mechanics
- Composite from renewable materials and recycling of composite structures
- Composites and hybrid structures in mobile applications
- Composite materials and lightweight structures with high thermal resistance
- Processing and technology of composite materials and lightweight structures
- Use of composite materials for engineering constructions and their reinforcement
- Non-destructive investigation methods for composite materials and structures
- Functional and special composite materials (e.g. smart materials).

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 D-IRAS2019-SILS Scientific Committee. Full papers will be published in special issues of the scientific journals 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 **D-IRAS2019-SILS**.