

# HPSM/OPTI /SUSI 2022

**WIT**  
CONFERENCES  
Call for Papers

**High Performance and Optimum Structures and  
Materials Encompassing Shock and Impact Loading**

**11 – 13 July 2022 | Lisbon, Portugal**

**Organised by**

Wessex Institute, UK  
University of A Coruna, Spain  
University of Liverpool, UK

**Sponsored by**

WIT Transactions on the Built Environment  
International Journal of Computational Methods  
and Experimental Measurements



[www.witconferences.com/hpsmoptisusi2022](http://www.witconferences.com/hpsmoptisusi2022)



This scientific event is a new edition of the High Performance and Optimum Design of Structures and Materials Conference and follows that originated in Southampton as long ago as 1989 and the Structures under Shock and Impact that started in Cambridge, Massachusetts, also in 1989 .

The use of novel materials and new structural concepts nowadays is not restricted to highly technical areas like aerospace, aeronautical applications or the automotive industry, but affects all engineering fields including those such as civil engineering and architecture. The conference addresses issues involving advanced types of structures, particularly those based on new concepts. Contributions will highlight the latest development in design and manufacturing issues.

Most high-performance structures require the development of a generation of new materials, which can more easily resist a range of external stimuli or react in a non-conventional manner. Particular emphasis will be placed on intelligent structures and materials as well as the application of computational methods for their modelling, control and management.

The conference also addresses the topic of design optimisation. Contributions on numerical methods and different optimisation techniques are also welcome, as well as papers on new software. Optimisation problems of interest to the meeting involve those related to size, shape and topology of structures and materials. Optimisation techniques have much

to offer to those involved in the design of new industrial products, as the appearance of powerful commercial computer codes has created a fertile field for the incorporation of optimisation in the design process in all engineering disciplines.

The performance of the structures under shock and impact loads is another objective of the meeting. The increasing need to protect civilian infrastructure and industrial facilities against unintentional loads arising from accidental impact and explosion events as well as terrorist attacks is reflected in the sustained interest worldwide. While advances have been made in the last decades, many challenges remain, such as developing more effective and efficient blast and impact mitigation approaches than those that currently exist or assessing the uncertainties associated with large and small scale testing and validation of numerical and analytical models. All of that aimed to a better understanding of critical issues relating to the testing behaviour, modelling and analyses of protective structures against blast and impact loading.

The meeting will provide a friendly and useful forum for the interchange of ideas and interaction amongst researchers, designers and scholars in the community to share advances in the scientific fields related to the conference.

All published papers from previous meetings are permanently archived in the Wessex Institute eLibrary ([www.witpress.com/elibrary](http://www.witpress.com/elibrary)) where they are freely available to the international community.

## Location

Lisbon is one of the oldest cities in Europe and predates other European capitals such as London, Paris and Rome. Its compact historic centre means that it is easy to explore the narrow and winding streets. The city boasts many museums, squares, towers, gardens and cafes. The Castle of St George, which overlooks Lisbon in its entirety, dates back to the 6<sup>th</sup> Century and is one of the city's top attractions. Due to its coastal location there are also fantastic beaches where it's possible to make the most of the warm summer climate.

## Venue

The conference will take place at the Melia Lisboa Oriente. The hotel is located in the heart of the Parque das Nações, alongside the ultramodern transport hub at Gare do Oriente and the Vasco da Gama Bridge (the longest bridge in Europe). The hotel is just a few minutes from the centre of the city and 3km from Lisbon International Airport, it is also in the vicinity the Oceanarium, the Vasco da Gama shopping mall, and the marina. It has more than 200 rooms, a fitness centre, a private garage and free WiFi access throughout the hotel.

## Benefits of Attending

### USB Drive

Delegates will receive a USB drive at the conference containing the presented papers.

### Publication

Papers presented at HPSM/OPTI/SUSI 2022 are to be published in a Volume of WIT Transactions on the Built Environment (ISSN 1743-3509). The publication will be available in both electronic and hard copy.

### Indexing

The WIT Transactions are DOI registered with CrossRef and are currently listed in indexing services such as Scopus and Google Scholar, as well as being submitted to the Web of Science. All conference books are listed in the British Library and American Library of Congress.

### Open Access and Digital Archive

All conference papers are archived permanently on our electronic library where they can be downloaded for free. ([www.witpress.com/elibrary](http://www.witpress.com/elibrary))

### Peer Review

To ensure the quality of our publications, abstracts and papers are double peer-reviewed by members of the International Scientific Advisory Committee and other experts, with manuscripts processed through CrossRef Similarity Check to screen for plagiarism.

### Reduced Fee for PhD Students

The Wessex Institute believes in the importance of encouraging PhD students to present and publish innovative research at its conferences. As a result, the Institute offers PhD students a much-reduced conference fee.

### Networking

Participants can present their research and interact with experts from around the world, as part of a unique community.

### Journal Publication Opportunity

After the conference, delegates will be invited to submit an enhanced version of their conference paper to one of the WIT Press International Journals.

## Conference Chairmen

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University of A Coruna, Spain  
*Member of WIT Board of Directors*

### Graham Schleyer

University of Liverpool, UK

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University of Edinburgh, UK

### Victor Yepes

Universitat Politècnica de Valencia, Spain

### Dichuan Zhang

Nazarbayev University, Kazakhstan

## Conference Topics

The following list covers some of the topics to be presented at the conference. Papers on other subjects related to the objectives of the meeting are also welcome.

### Composite materials

Material characterisation

Natural fibre composites

Nanocomposites

Green composites

Composites for automotive applications

Transformable structures

Environmentally friendly and sustainable structures

Reliability-based design optimisation

Non-deterministic approaches

Evolutionary methods in optimisation

Aerospace structures

Biomechanics application

Lightweight structures

Design for sustainability

Design for durability

Lifecycle assessment

Structural reliability

Smart materials and structures

Optimization of civil engineering structures

Optimization in mechanical engineering

Optimization in the car industry

### Design optimization of tall buildings

Metaheuristic algorithms

New algorithms for size and topology optimisation

BIM tools for design optimization

Emerging materials

Impact and blast loading

Energy-absorbing issues

Computational and experimental results

Response of reinforced concrete under impact

Seismic behaviour

Protection of existing structures

Industrial accidents and explosions

Security issues

Response of composite structures to blast and impact

Vehicle impact

Ballistics analysis

Dynamic material behaviour

Fluid-structure interaction

Seismic soil-structure interaction

Case studies

## Submission Information

**Abstracts of no more than 300 words should be submitted as soon as possible.**

Abstracts should clearly state the purpose, results and conclusions of the work to be described in the final paper. Final acceptance will be based on the full-length paper which, if accepted for publication, must be presented at the conference.

The language of the conference will be English.

### Online submission:

[www.witconferences.com/hpsmoptisusi2022](http://www.witconferences.com/hpsmoptisusi2022)

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For more information visit: [www.witconferences.com/hpsmoptisusi2022](http://www.witconferences.com/hpsmoptisusi2022)