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Guest Editorial: IJF Special issue of the International Conference on Structural Integrity and Durability, ICSID 2017, “Fatigue at all Scales”



The International Conference on Structural Integrity and Durability, ICSID 2017, with the subtitle “Fatigue and Fracture at all Scales” was organized by the Faculty of Mechanical Engineering and Naval Architecture, University of Zagreb, and held in Dubrovnik, Croatia, from August 15 to 18, 2017. The conference was attended by more than 100 participants from 30 countries. The 4th ESIS Summer School “Fatigue and Fracture Modelling and Analysis”, with leading scientists in the field as lecturers, was organized prior to the ICSID 2017 conference, from August 14 to 15, 2017. The Summer School was attended by 36 participants from 21 countries. The events were supported by the European Structural Integrity Society (ESIS), and formally opened by the ESIS President Professor Leslie Banks-Sills.

ICSID 2017 and the 4th ESIS Summer School were held at the Centre for Advanced Academic Studies (CAAS) of the University of Zagreb, in the city of Dubrovnik. The magnificent old building of the CAAS is situated in the centre of Dubrovnik on the Croatian Adriatic Coast, in the vicinity of the most prominent historical places of the Old Town.

The ICSID 2017 conference followed the successful 16th International Conference on New Trends in Fatigue and Fracture, NT2F16, which was also supported by ESIS, and held at the same venue in Dubrovnik in May 2016. The objective of the ICSID 2017 conference was to bring together scientists, researchers and engineers to discuss how to characterize, analyse, predict and assess the fatigue and fracture of structural components and materials. The Conference was a forum for discussion of the contemporary and future trends in experimental, analytical and numerical fracture mechanics, fatigue, failure analysis, structural integrity assessment, and other important issues in the field.

This special issue on “Fatigue at all Scales” contains thirteen papers from the Proceedings of ICSID 2017 which have been selected by the

Guest Editors following significant extension by the authors. It covers a range of topics including: fatigue and fracture simulation and testing at all length scales; microstructural scale computational modelling; damage mechanics and models; cyclic deformation and crack initiation; effect of residual stresses; finite element methods and their application; low, medium and high cycle fatigue; reliability and integrity of engineering structures; environmentally enhanced degradation and cracking. The papers present work that links numerical or analytical analysis with experimental work to yield a better physical understanding of mechanisms of fatigue.

The Guest Editors of this Special Issue from the ICSID 2017 conference, we would like to express our thanks to the authors for their valuable contributions and also to the reviewers who assisted us in the review process. We wish to express our sincere gratitude to Professor Neil James, Co-Editor of this International Journal, for his assistance with this Special Issue. Many thanks to Ms. Dora Liu and Ms. Emily Wan for their assistance and help.

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