

Recent progress on experimental characterisation of fatigue and fracture behaviour of materials

Pablo Lopez-Crespo, Belen Moreno, David Nowell

It is our pleasure to provide a guest editorial for this Special Issue on Recent progress on experimental characterisation of fatigue and fracture behaviour of materials. This Special Issue is based on the works presented at the GEF (acronym in Spanish for Spanish Group of Fracture) congress, held in Malaga (Spain) in March 2018. Among more than 100 contributions, for this Special Issue published in Journal of Strain Analysis for Engineering Design, the Guest Editors selected the following articles aiming at offering a view of the state of the art on advanced experimental methods for understanding the fatigue and fracture behaviour of materials.

In the work of Luis Tavera and his co-authors, a novel procedure is presented, based on cohesive zone model to analyse the effective fracture energy on a structured interface.

Alfredo Navarro and his colleagues at the University of Seville showed a thorough study of the impact of the notch size relative to the overall specimen size on the fatigue limit for a 304-L stainless steel.

The work by Federico Gutiérrez-Solana and co-authors presented different methods for characterising the fracture toughness of notched specimens. Useful recommendations are given regarding the optimal procedure to be followed when using the small punch test in hydrogen embrittlement scenarios.

Maria Lluisa Maspoch and her co-authors also conducted advanced small punch tests to evaluate the influence of ultraviolet radiation exposure on the mechanical properties of recycled polyethylene terephthalate objects.

Eugenio Giner and co-authors presented an original study assessing the head trauma injury outcome resulting from a high-speed impact with full metal jacket bullet on different composite ply configurations of a helmet.

The very interesting contribution of Stanislav Seitzl and co-authors focuses on the fatigue damage caused by 80 years of corrosion on a structural steel component in the Ostrava region.

Jesus Rodriguez and co-authors combined experimental and numerical data to evaluate the fracture resistance of notched samples made of polyamide 12 fabricated via the additive manufacturing process of selective laser sintering. Due to a handling error, this manuscript was published in a previous volume of this journal (volume 54, issue 3, pages 192–198).

Jesus Manuel Alegre and co-authors described a comprehensive study, combining both numerical and experimental assets to determine the applicability of the hole-drilling method for the evaluation of residual stresses for the case of rounded ends.

The above fully peer-reviewed papers address a variety of important topics, ranging from new methodologies for characterising the fracture and fatigue performance of materials to understanding the properties of newly produced materials. As guest editors of this Special Issue, we are very pleased with the quality and depth of the works selected and we hope that the papers would provide useful information to engineers, researchers and scientists. We would like to warmly thank all authors for their valuable contributions and the Editor in Chief and the Board of the Journal

of Strain Analysis for Engineering Design for choosing this subject for a Special Issue. We would also like to gratefully acknowledge the numerous reviewers who assisted us in the reviewing process for their efforts to maintain the high quality of the publication.

Pablo Lopez-Crespo

University of Malaga, Spain

Belen Moreno

University of Malaga, Malaga, Spain

David Nowell

Imperial College London, UK