

# Forward to special issue on blast and impact of engineering structures

Editorial

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The blast and impact behaviour of structures are dependent on many factors, such as the type of loading and the behaviour of constituent materials at high strain rates. Blast can be defined as a large scale, rapid and sudden release of energy. For example, in physical explosions, energy may be released from the catastrophic failure of a pressure vessel, or from the chemical interaction of two or more liquids. Structural impact deals with the behaviour of structures and components subjected to large dynamic loads involving contact, which could be the outcome, for example, of a high velocity projectile or a high speed crash.

The prediction of the effect of a blast load on a structure is an important step in designing advanced blast protective structures. Blast energy is released within a very short period of time, which can be less than 1ms, making it challenging for protection material to absorb a majority of the blast energy. For blast impact analysis, the complexity of the problem can be attributed to the high speed wave front propagation, the flow of materials under these conditions, and the large structural deformation. Researchers are actively pursuing all these issues related to blast and impact analysis and means of developing protection against blast and impact forces. Since an explosion is a hypervelocity impact, numerical simulation is an attractive method to

determine the dynamic loads produced by the explosion on structural elements. The computational methods employed in the area of blast effect mitigation are used in the prediction of blast loads on the structure and to calculate the resultant structural response. It is important, of course, that computational methods are validated and, hence, theoretical, numerical and experimental aspects of the blast and impact of structures are all of current interest.

The papers in this Special Issue were selected from those submitted to a call from the Central European Journal of Engineering (CEJE) for papers on the blast and impact behaviour of engineering structures. The Special Issue is dedicated to the research and development of the blast protection of structures from explosive loadings, the impact protection of passengers in space and ground vehicles through structural energy absorbing systems, the response of composite and metal structures under impact and blast loadings, missile penetration, energy absorbing systems, seismic loadings, the dynamic properties of materials and other related problems of industrial importance. The Special Issue is aimed at facilitating the dissemination of the researches to a wider audience and it contains 16 peer reviewed papers focused on experimental, theoretical and computational aspects of the blast and impact of engineering structures. We, the editors, sincerely hope we have fulfilled this goal and would also like to thank and congratulate the authors who contributed to this issue.

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this Special Issue to publication. Every paper included in this issue was rigorously reviewed anonymously by at least two experts in the field. Because of the broad scope of this Special Issue we are especially indebted to the diverse group of people who assisted us with the review process. We would like to sincerely thank all the reviewers

for their time and efforts that have contributed to enhancing the quality of the papers in the Special Issue. We hope that readers find the research in the Special Issue to be interesting and informative and that this leads to further advances in this topical and challenging field.