

# Preface

Design and analysis of materials and structures is nowadays an important discipline which enables a better and more reliable application of engineering components. Furthermore, limits of materials and structure can be accurately determined which may influence the design process and result, for example, in much lighter structures than a few decades ago. Much of these advancements are connected with the increased computer power (hardware) and the development of well-engineered computer software. This directly influences the design and analysis process, for instance, based on numerical simulations (e.g. finite element method) or advanced experimental investigations with modern data acquisition and analysis tools.

The fifth international conference on advanced computational engineering and experimenting, ACE-X 2011, was held in Algarve, Portugal, from 3–6 July, 2011 with a strong focus on computational-based and supported engineering. This conference served as an excellent platform for the engineering community to meet with each other and to exchange the latest ideas. This volume contains 12 revised and extended research articles written by experienced researchers participating in the conference. The book will offer the state-of-the-art of tremendous advances in mechanical and civil engineering, ranging from automotive to dam design, transmission towers up to machine design, and examples taken from the oil industry. Well-known experts present their research on damage and fracture of material and structures, materials modeling, and evaluation up to image processing and visualization for advanced analyses and evaluation.

The organizers and editors wish to thank all the authors for their participation and cooperation which made this volume possible. Finally, we would like to thank the team of Springer-Verlag, especially Dr. Christoph Baumann, for the excellent cooperation during the preparation of this volume.

June 2012

Andreas Öchsner  
Lucas F. M. da Silva  
Holm Altenbach



Design and Analysis of Materials and Engineering  
Structures

Öchsner, A.; da Silva, L.F.M.; Altenbach, H. (Eds.)

2013, VIII, 180 p., Hardcover

ISBN: 978-3-642-32294-5