

# Preface

The idea of this monograph is to present the latest results related to mechanical and materials engineering applied to the design of modern engineering materials and components. The contributions cover the classical fields of mechanical, civil, and materials engineering up to bioengineering and advanced materials processing and optimization. The materials and structures covered can be categorized into modern steels, aluminum and titanium alloys, polymers/composite materials, biological and natural materials, material hybrids, and modern nano-based materials. Analytical modeling, numerical simulation, the application of state-of-the-art design tools, and sophisticated experimental techniques are applied to characterize the performance of materials and to design and optimize structures in different fields of engineering applications.

The 8th International Conference on Advanced Computational Engineering and Experimenting, ACE-X 2014, was held in Paris, France, from June 30, 2014 to July 3, 2014 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 35 revised and extended research articles written by experienced researchers participating in the conference. Well-known experts present their research on damage and fracture of material and structures, materials modeling and evaluation up to recent printing, and visualization for advanced analyses and evaluation.

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Andreas Öchsner  
Holm Altenbach

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