

Preface

Common engineering materials reach in many engineering applications such as automotive or aerospace; their limits and new developments are required to fulfill increasing demands on performance and characteristics. The properties of materials can be increased, for example, by combining different materials to achieve better properties than a single constituent or by shaping the material or constituents in a specific structure. Many of these new materials reveal a much more complex behavior than traditional engineering materials due to their advanced structure or composition. The expression ‘composed materials’ should indicate here a wider range than the expression ‘composite material’ which is many times limited to classical fiber reinforced plastics.

The 5th International Conference on Advanced Computational Engineering and Experimenting, ACE-X 2011, was held in Algarve, Portugal, from July 3 to 6, 2011 with a strong focus on the above-mentioned materials. 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 engineering technologies of composed materials with complex behavior and also serve as an excellent reference volume for researchers and graduate students working with advanced materials. The covered topics are related to textile composites, sandwich plates, hollow sphere structures, reinforced concrete, as well as classical fiber reinforced materials.

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

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Mechanics and Properties of Composed Materials and
Structures

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2012, VIII, 200 p., Hardcover

ISBN: 978-3-642-31496-4