

Advanced Structured Materials

Volume 90

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Common engineering materials reach in many applications their limits and new developments are required to fulfil increasing demands on engineering materials. The performance of materials can be increased by combining different materials to achieve better properties than a single constituent or by shaping the material or constituents in a specific structure. The interaction between material and structure may arise on different length scales, such as micro-, meso- or macroscale, and offers possible applications in quite diverse fields.

This book series addresses the fundamental relationship between materials and their structure on the overall properties (e.g. mechanical, thermal, chemical or magnetic etc.) and applications.

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Generalized Models and Non-classical Approaches in Complex Materials 2

 Springer

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*Dedicated to the memory of a great creative
spirit, G. A. Maugin*

Preface

At the beginning of February 2017, the invitation letters for a special remembrance book were sent to approximately 70 friends and colleagues of the great French scientist in the field of Continuum Mechanics (or more general Continuum Physics) Gérard A. Maugin who died on September 22, 2016. As usual in such case that the response is 50% sending a kind reply that they will submit a paper, and finally one gets 15–20 papers. In the case of Gérard, the resonance was overwhelming—the editors got finally approximately 60 papers and the decision was made to publish two volumes. This is the second one including 15 papers from authors living in 13 countries following volume 1 (Altenbach, H., Pouget, J., Rousseau, M., Collet, B., Michelitsch, Th. (Eds.) *Generalized Models and Non-classical Approaches in Complex Materials 1*, *Advanced Structured Materials Vol. 89*, Springer International Publishing, 2018).

The scientific interests of Gérard are well reflected by variety of subjects covered by the contributions to this book including the following branches of Continuum Mechanics:

- relativistic continuum mechanics,
- micromagnetism,
- electrodynamics of continua,
- electro-magneto-mechanical interaction,
- mechanics of deformable solids with ferroic states (ferromagnetics, ferro-electrics, etc.),
- thermomechanics with internal state variables,
- linear and nonlinear surface waves on deformable structures,
- nonlinear waves in continua,
- Lighthill–Whitham wave mechanics, lattice dynamics,
- Eshelbian Mechanics of continua on the material manifold,
- geometry and thermomechanics of material defects,
- material equations, and
- biomechanical applications (tissue and long bones growth).

In addition, he published several papers and books on the history of continuum mechanics. This was reason that the authors of this book have submitted so different papers with the focus on the research interests of Gérard.

We have to thank all contributors for their perfect job. Last but not least, we gratefully acknowledge Dr. Christoph Baumann (Springer Publisher) supporting the book project.

Magdeburg
Paris
February 2018

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Bernard Collet
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The original version of the book was inadvertently published without chapter 15. A correction to the book can be found at https://doi.org/10.1007/978-3-319-77504-3_16

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