PREFACE

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Foreword

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This Special Issue of Continuum Mechanics and Thermodynamics on *Polymer Mechanics* gathers a selection of peer-reviewed papers, originally presented during a special session on Polymers at ACEX conferences over several years.

Polymers are a very important class of materials for mechanical applications over a wide range of industrial fields and functions, from sealing to damping and from structural resistance to biological compatibility. Polymers therefore offer a very exciting field of investigation to scientists, as their nonlinear behavior, microstructure, and failure mechanisms interact strongly with the process parameters and history, the very different environmental service conditions and the various combination of time, thermal, and mechanical loading.

This special issue covers many of these aspects, throughout three main topics. The first one is the description and the modeling of multi-physics phenomena: curing of epoxy and electroactive polymers, aging of nitrile-based elastomers, natural rubber crystallization, and thermodynamics of solids in interaction with fluids and diffusion. The second main topic is the modeling of a very wide range of polymers natures and microstructures: epoxy, PU adhesives, particulate, and fiber-reinforced thermoplastic composites but also architected polymers, opening the way to even more freedom for material design. The last topic is dealing with fatigue and damage, described with up-to-date tomographic and thermographic tools.

The editors would like to thank all the contributors and the reviewers for their thorough work on the papers that we are proud to present in this special issue. We hope you will enjoy the reading!

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