

## Foreword

### *Many Faces of Mechanics*

Mechanics is traditionally regarded as a science which studies the motion of physical objects and the forces which act upon them. The fact that it is axiomatized, and the solution to its problems requires application of subtle mathematical methods, make it both a branch of mathematics as well as a branch of physics. In the last decades, mechanics crossed the traditional boundaries and we witness its application to diverse areas of science and engineering. This includes deeper understanding of fundamental principles and embracing mechanics and thermodynamics in a unifying framework; analysis of mechanical behavior of materials and providing their proper mathematical description; application of mechanics to emerging engineering problems in vibrational systems, wave propagation and robotics; development of a mechanical framework and application of numerical methods in the analysis of biomechanical problems. The list is far from being exhaustive, but reflects many faces of mechanics which can be recognized in contemporary research.

This Special Issue of Theoretical and Applied Mechanics, entitled *Many Faces of Mechanics*, aims to present the diversity of mechanical problems to which researchers are focused. We are honored to present five articles by five invited authors, with their collaborators, which cover different areas of mechanics. Francesco Oliveri (University of Messina, Italy) analyzed equilibrium configurations of third grade Korteweg fluids – a problem interesting for its constitutive modeling and numerical computation of equilibrium configurations. Róbert Kovács (Budapest University of Technology and Economics, Hungary) studied the theoretical framework for describing gradient-dependent transport coefficients in viscous and heat conducting fluids. Danilo Karličić (Mathematical Institute, Serbian Academy of Sciences and Arts, Serbia) presented the analysis of unidirectional wave propagation in metamaterials. Salvatore Federico (University of Calgary, Canada), in a paper with didactic intonation, discussed the inverse problem in rigid body mechanics and its biomechanical application. Alfio Grillo (Polytechnic University of Turin, Italy) presented a computational algorithm for the analysis of soft biological tissues. We express our sincere gratitude to all the contributors of this Special Issue that helped us present diverse problems encountered in contemporary mechanics, both theoretical and applied.

Guest Editor  
Srboľjub Simić