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Preface

It is our greatest honor to edit this special issue of the Journal of Biomechanical Science and Engineering, especially dedicated to the mechanical behavior of soft tissues and their substitutes. This is published to commemorate the 20th Biofrontier Conference held on 7th to 8th November, 2009 at the Wakayama Prefectural Cultural Hall, Wakayama, Japan. The conference is organized by the Bioengineering Division of the Japan Society of Mechanical Engineers.

Soft tissues are major components of human body. Examples of the tissues are muscles, blood vessels, tendons, ligaments, internal organs, and so on. The function of all biological organisms is closely related to the mechanical behavior of soft tissues, about which this special issue is concerned. From a biomechanical viewpoint, biological soft tissues have attraction for many investigators. Most of them exhibit a nonlinear, inelastic, heterogeneous, anisotropic characteristic that varies temporally, spatially, and individually. Moreover, they have a unique hierarchical structure making of complex fiber-reinforced composites. These characteristic and structure change with exercise, age, and disease. Therefore, a quantitative biomechanical study is one of the prerequisites for design and development of soft tissue prosthetics and has the potential to greatly improve diagnosis and therapeutical techniques for diseases and injuries of the tissues.

We hope that the papers presented in this special issue will stimulate the continued interest to approach the numerous complex and important problems remaining in soft tissue biomechanics.

Finally, we would like to express our sincere gratitude to the editorial committee of the journal for giving us the opportunity to organize this special issue, as well as all of the contributing authors for their excellent submissions.

Guest Editor
Toshiro MATSUMOTO, PhD, Professor
Department of Intelligent Systems
Faculty of Biology-Oriented Science and Technology
Kinki University

Associate Guest Editor
Ei YAMAMOTO, PhD, Associate Professor
Department of Mechanical Engineering and Biomimetics
Faculty of Biology-Oriented Science and Technology
Kinki University

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