



## Preface

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*In Recognition of the 60th Birthday of Gerhard Holzzapfel*

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The papers forming the collection in this special volume of the Journal of Elasticity have been prepared by colleagues and friends in recognition of the sixtieth birthday of Professor Gerhard Holzzapfel (May 22, 2021). The 16 papers herein form a tribute to Gerhard for both his outstanding scientific contributions and his exceptional service to the community.

Since 2007 Gerhard has been Full Professor of Biomechanics and Head of the Institute of Biomechanics at Graz University of Technology, Austria. Prior to that (from 2004 to 2007) he was Full Professor of Biomechanics in the Department of Solid Mechanics at the Royal Institute of Technology (KTH), Stockholm, Sweden, and held an adjunct Full Professor position there from 2007 to 2013. Since 2016 he has also held an Adjunct Full Professor position at the Norwegian University of Science and Technology (NTNU), Trondheim, Norway.

Gerhard's research contributions embrace all three elements of theory, computation and experiment, and effectively blend these elements with applications to the understanding of the mechanics of soft tissues in humans and the underlying diseases that affect them. His wide-ranging contributions include seminal theoretical papers based on rigorous continuum mechanics, impressive simulations based on finite element analysis and extensive innovative experimental work.

His work has had, and continues to have, a major influence internationally on the biomechanics of soft biological materials, not just on the artery and heart tissues on which his attention has mainly been focused, but on soft fibrous tissues more generally. Several of his

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material models have been implemented in commercial software, such as Abaqus, ANSYS and ADINA, and this enables the models to be applied by a wide range of practitioners in different areas of engineering, not just in biomechanical applications. Gerhard has published well over 200 journal papers as well as several books, numerous chapters contributed to edited volumes, and conference papers. His impact is reflected in the more than 32,000 citations of his work that are reported in Google Scholar. Over the years he has built up a strong team of co-workers and has attracted many postdoctoral researchers and graduate students to his department, as well as many international visitors, all of whom have benefited from his enthusiastic encouragement and mentoring.

Gerhard has outstanding communication skills that have led to the many occasions on which he has been invited as a plenary or keynote lecturer at international conferences. These events and his general promotional activities have helped to raise the profile of biomechanics in the international arena. A major initiative that Gerhard spearheaded (jointly with Professor Jay Humphrey) led to the establishment of the journal “Biomechanics and Modeling in Mechanobiology” (BMMB), published by Springer-Verlag since 2001. Gerhard is a Founding Co-Editor of this highly successful journal and remains as one of the two Co-Editors-in-Chief.

It is not just for his research contributions that he is well known. He has had a major leadership role in the international solid mechanics and biomechanics communities. For example, he has been heavily involved in conference organization as chair or co-chair of many symposia, and as a member of scientific committees or advisory boards of many conferences. In particular, he was Organizer and Chairman of the 8th European Solid Mechanics Conference, held in Graz in 2012 with over 1200 participants, and for the last few years he has had an important role within the European Mechanics Society (EUROMECH) as chair of their Solid Mechanics Conference Committee. Additionally, he has been very active in organizing, in Graz, very successful Advanced Courses for PhD students from many countries, typically attracting about 100 participants.

His work has been recognized by many awards, an early representative of which is the “Josef-Krainer Würdigungspreis 2003 for exceptional achievements in the field of Biomechanics”. He gained the Erwin Schrödinger Prize 2011 from the Austrian Academy of Sciences, and since 2012 he has been a Corresponding Member of the Austrian Academy of Sciences. He was elected as a Fellow of EUROMECH in 2015. Most recently, in 2021, he was awarded two prestigious international medals – the Prager Medal of the Society of Engineering Science (SES) and the Warner T. Koiter Medal of the American Society of Mechanical Engineers (ASME). These are very fitting recognitions of his enormous achievement and influence.

It has been my privilege and pleasure to have been a very good friend of Gerhard for 25 years. We have worked very closely together during that time on many projects, and I am delighted to be able to bring together this special volume of papers in his honour.

Glasgow, June 2021

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