Preface: Mechanics of soft materials and flexible structures

Haibao Lu¹ · Shaoxing Qu² · Xiqiao Feng³

Published online: 15 June 2021

© The Chinese Society of Theoretical and Applied Mechanics and Springer-Verlag GmbH Germany, part of Springer Nature 2021

Soft materials and flexible structures have become essential and hot topic, which is expected to significantly promote the research and development of current mechanics, physics, chemistry and life science. Furthermore, the soft materials and flexible structures have attracted enthusiastic attentions due to their great potential and practical applications in deployable structures, morphing structures, sensors, actuators, health-monitoring etc.

Mechanics in soft materials and flexible structures plays an essential role, due to their complexity and flexibility of thermodynamic entropic parameters, which have played as the key issues of all subjects, from physical sciences, life sciences to social sciences. As is well known, the working principle of thermodynamic entropy is only originated from and determined by the structural motions, which are completely governed and covered by the mechanics, whatever they are resulted from multipartite scales or multiple fields. Therefore, the mechanics in soft materials and flexible structures is able to promote their fundamental research and development.

Here, this thematic issue will focus on interdisciplinary research into Mechanics of Soft Materials and Flexible Structures, with the aim to develop further understandings of novel findings, innovative techniques to achieve unique mechanical behaviors, mechanistic insights, modelling and to explore structure–property–functions relationships.

Finally, we appreciate the efforts made by all the authors and reviewers for their contributions to this special issue. We are grateful to the editor Haixuan Chen, the staff of the editorial office of *Acta Mechanica Sinica* for kind managing, assistance, and support.

Publisher's Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Haibao Lu received his PhD degree in 2010 from Harbin Institute of Technology, China. Dr. Lu got his full professor position of Science and Technology on Advanced Composites in Special Environments Laboratory at Harbin Institute of Technology in 2012. Since 2007, he has authored and coauthored more than 150 papers in refereed international journals, as well has edited 7 books and book chapters, as evidence in the Google Scholar showing over 4000 citations. Currently, he has conducted foundational research on polymer physics and mechanical engineering of soft matter. He has got the funding from the National Natural Science Foundation of China (NSFC) for Distinguished Young Scholars in 2017.

Shaoxing Qu is a Distinguished Professor of Chang Jiang Scholars, Ministry of Education, China, serves as the Director of the Key Laboratory of Soft Machines and Smart Devices of Zhejiang Province, and the vice Dean of School of Aerospace of Zhejiang University. He got his bachelor degree from university of Science and Technology of China in 1997, Master of Engineering from Tsinghua University in 2000, and Ph.D. from University of Illinois Urbana-Champaign (UIUC) in 2004. After spending two years at Brown University as postdoc, he joined Zhejiang University in 2006 and was promoted to full professor in 2011. In 2015, he was awarded Distinguished Young Scholar grant from NSFC. His primary research interests include Soft Materials & Soft Machines,

✉ Haibao Lu
luhb@hit.edu.cn
Shaoxing Qu
squ@zju.edu.cn
Xiqiao Feng
fengxq@tsinghua.edu.cn

¹ State Key Laboratory of Science and Technology On Advanced Composites in Special Environments, Harbin Institute of Technology, Harbin 150080, China

² Key Laboratory of Soft Machines and Smart Devices of Zhejiang Province, Department of Engineering Mechanics, Zhejiang University, Hangzhou 310027, China

³ Institute of Biomechanics and Medical Engineering, AML, Department of Engineering Mechanics, Tsinghua University, Beijing 100084, China

Mechanics of Composites, and Micro/Nano Mechanics. He has published more than 160 journal papers.

Xi-Qiao Feng is a Distinguished Professor of Chang Jiang Scholars at Tsinghua University. He received bachelor, master, and doctoral degrees of solid mechanics in 1990, 1991, and 1995 at Tsinghua University, respectively. From 1997 to 1999, he worked as an Alexander von Humboldt research fellow in Technical University of Darmstadt and Delft University of Technology. He rejoined Tsinghua University as an associate professor in 1999 and was promoted to a professor in 2001. During

2010–2014, he served as the secretary-general of Chinese Society of Theoretical and Applied Mechanics (CSTAM); during 2011–2020, he was the head of Department of Engineering Mechanics at Tsinghua University; during 2006–2020, he was the director of Institute of Biomechanics and Medical Engineering (IBME) at Tsinghua University.

Currently, he is a vice-president of CSTAM, and also serves as an editor-in-chief of Engineering Fracture Mechanics, and associate editors or editorial board members of fifteen international journals. He has authored about 360 papers and 3 monographs. His research interests include damage and fracture mechanics; mechanics of cells, biological materials, and tissues. Selected Feng's honors include the National Prize of Science and Technology of China (2019), the Award of Science and Technology for Young Scientists of China (2007), Distinguished Young Scholar Award of NSFC (2005), etc.